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- Understand issues and problems of the private sector;
- Fill knowledge gaps and share information on trade and investment trends and state of affairs;
- Analyze and assess the business, investment, and macroeconomic environment of the country;
- Identify issues of competitiveness and investment opportunities as well as the comparative advantages and level of business competence of Ethiopian companies against other economies; and
- Analyze public policy and the regulatory environment to come up with concrete evidence and policy recommendations for the consumption of Public-Private Dialogue forum.

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ABSTRACT

Illegal cash flows in Ethiopia, such as illegal remittances, trade mis-invoicing, informal businesses, capital flight and tax evasion, continue to undermine the country's economy. In order to address the problem, this study assessed the gaps between actual and potential remittance inflows, sources of illegal remittance inflows, means of addressing the problems and explore possibilities to boost formal remittances inflows into the country, while curbing illicit outflows.

The study used both primary and secondary data gathered from systematically selected sources and resourceful professionals by means of documents review, key informant interviews, focus group discussions, and questionnaires. Both qualitative and quantitative data were collected and analyzed using appropriate techniques to understand the true nature of the problem, and draw plausible solution recommendations.

Remittances play a crucial role in the Ethiopia's economy, both at national and household levels, making up about a quarter of the total forex inflows in 2021/22. But, the majority of them also come through the informal channels. This assessment study on illegal cash flows and remittances in Ethiopia provides a detailed analysis of illegal financial transactions that occur within the country, including their causes, and consequences.

Illicit financial flows are generally believed to be originated from commercial, criminal or corrupt activities driven by combination of economic, institutional and political factors. These include weak institutional capability of regulatory and law enforcement authorities; political instability and level of corruption within the country; political and economic risk perception among the business actors; differentials in interest rates and exchange rate regimes to mention just the few.

Findings of the study revealed that illegal cash flows that involve trade mis-invoicing, buying of customs declaration at entry ports without bringing in the forex, buying of forex from the parallel market, and even payment of bribes in foreign exchange are significantly practiced among the business community in Ethiopia. Loose regulatory system and forex shortage are identified as the major causes of illegal cash flows followed by national peace and security issues and business people behavior.

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The regulatory framework in Ethiopia doesn't have instruments that are directly aimed at curbing illicit financial flows. However, proclamations focusing on money laundering and financing of terrorism, investment, forex regulations and others indirectly attempt to address the issue of illicit cash flows.

In conclusion, illegal remittances to Ethiopia pose significant challenges to the country's economic stability and development. Addressing the issue requires a multi-faceted approach, including improved regulations and law enforcement, increased transparency and accountability, public education and awareness, international cooperation, investment in technological solutions, and sustained effort and collaboration among concerned agencies. By working together, it is possible to reduce the effects of illegal remittances on Ethiopia's economy and promote a brighter future for the country.

Key Words: Foreign Exchange, Illegal Cash Inflows, Illegal Cash Outflows, Remittance

1. INTRODUCTION

1.1 Background

Illegal cash flows, also known as illicit financial flows (IFFs), are the illegal transfers of capital or money from one nation to another. Illicit money is defined by the Global Financial Integrity as money that has been acquired, transferred, or used against the law. It merits the title if it breaks rules or regulations during the transfer or use. According to the High-Level Panel on Illicit Financial Flows from Africa's report, three places are where these money frequently come from mainly from business, crime, and corruption. An estimated \$88.6 billion, or 3.7% of Africa's GDP, leaves the continent each year in the form of illicit capital, according to the United Nations Trade and Development Agency's Economic Development in Africa Report 2020.

These withdrawals come close to matching the total annual inflows of official development assistance/ODA/ and foreign direct investment /FDI/that African nations receive. IFFs deprive Africa and its people of a significant amount of money that could have been used to finance the urgently required investments in infrastructure, education, health, and the development of productive capacity; this poses significant risks to their political and economic stability.

Ethiopia experiences illegal cash flows in a similar fashion since it loses billions of dollars through IFFs every year. According to the Global Financial Integrity 2015 Report, between 2004 and 2013, these illegal financial flows totaled an average of \$2.538 billion annually. According to a different GFI research, illegal/unlawful withdrawals cost Ethiopia an estimated \$3.3 billion in losses in 2018, or 5.5% of its GDP. The investigations showed that trade mis-invoicing was a major factor in the majority of these outflows.

Alemayehu and Addis (2017) calculated that the levels of capital flight from the nation, which include IFFs, have resulted in an average loss in GDP growth of 2.2% per year and that poverty would have decreased even more by roughly 2.5% over the past ten years if it weren't for capital flight.

This significant amount of money has reportedly been transferring illegally from Ethiopia to countries in the United States, Europe, the Middle East, and the Far East, according to the GFI research previously stated. GFI identifies a variety of criminal activities that support these outflows, but over 80% of the losses are attributed to widespread trade mis-invoicing.

According to reports from the NBE and Ministry of Planning and Development, Ethiopia received around \$21.5 billion in foreign exchange for the previous fiscal year, which concluded on July 7, 2022. Exports of goods and services, individual remittances, aid and assistance to non-profit organizations, and foreign direct investment, or FDI, are major sources of foreign exchange inflow. As a result, it may be claimed that the country's forex sources are restricted to a small number of items, of which remittances account for a sizable portion.

According to NBE data from 2011/12 to 2020/21, private remittances are the largest source of foreign cash inflow, with average annual receipts of \$3,976 million. Although private/individual remittances are important for the influx of foreign exchange, data indicates that informal networks/channels continue to be a popular route for Ethiopians to send money home. According to estimates, up to 78% of all remittances may be received through unofficial channels in some areas of the country.

In light of the aforementioned, this study assessed illegal cash inflows (remittances) and outflows in Ethiopia with the prime objective to investigate the situation of illegal financial inflows into and outflows from the country.

1.2 Rationales of the Study

Availability of Forex reserve plays a critical role for the overall process of economic development of a country. The demand for Forex becomes essential if the country depends on imported technology, equipment, raw materials, supplies and many more items.

The Ethiopian government in this case makes a substantial step to increase Forex inflows through the formal channels, while at the same time tackling illegal outflows and diversions of incoming Forex to other destinations.

Private remittances make up a significant portion of total Forex inflow into the country. However, the country is also losing significant amount of Forex to the informal channels due to various factors.

Given the volume and scope of remittances arriving in Ethiopia, it would be ideal if it were possible to channel these cash into worthwhile investments that would help in the long-term progress of the nation. The government has anyway put in place a number of regulatory initiatives to tackle unlawful transfer 'hawala', boost formal remittance inflows, lower transfer costs, and promote access to foreign remittance services.

Additionally, the Home-Grown Economic Reform (HGER) aims to address foreign exchange imbalances, alleviate business restrictions, and promote private sector growth through a variety of structural and macroeconomic initiatives, including those intended to dismantle monopolies and eliminate market inefficiencies in the banking sector.

On the other hand, the country's economy has so far been negatively impacted by illicit forex flows that were orchestrated by influential personalities and organizations. Due to the surge in the premium on the parallel market over the bank rate as a result, one USD is now worth more than 100 Birr.

Due to insufficient supply of foreign exchange from official sources to meet the demand, there is an excessive exchange premium in the parallel market. Increased illegal forex/remittance inflows and outflows in the parallel market result from the mismatch between the demand and supply of foreign exchange.

Other mechanisms, such as mis-invoicing, price transferring, rent seeking (mischiefs) of various institutions, etc., contribute to this illicit financial activity in addition to the informal remittance (hawala) systems, which account for a sizeable portion of the illegal financial inflows and outflows in Ethiopia.

In light of the aforementioned, this study was carried out to evaluate the gaps between actual and potential remittance inflows, sources of illicit remittance inflows into Ethiopia, ways to address issues related to illicit cash inflows and outflows, and potential ways to increase formal remittance inflows into the country while reducing illicit outflows. Addis Ababa Chamber of Commerce and Sectoral Associations (AACCSA) will use this study as a starting point for its stakeholder interactions and evidence-based policy advocacy initiatives.

1.3 Objectives of the Study

The main objective of the study is to analyze the illicit inflows and outflows of foreign exchange in Ethiopia and suggest plausible solutions that can help to address the issue. Specific objectives the study, among others, include the following:

- ✓ To identify and assess the causes and sources of cash inflows (remittance) into and outflows from Ethiopia;
- ✓ To examine the pros and cons of illegal cash inflows (remittance) and outflows;
- ✓ To identify the necessary system and infrastructure needed to tackle illegal cash inflows and outflows;
- ✓ To find out any relevant incentives and supports needed to bring informal channel players into the formal channels and harness the benefits; and
- ✓ To propose solutions and to provide policy inputs for advocacy and policy influencing based on the study findings.

1.4 Scope of the Study

The scope of this study is to conduct detailed research on the scope and extent of illegal remittance foreign exchange (cash) inflows and outflows in Ethiopia. The research outcome is expected to generate data that assist the chamber in its evidence-based policy advocacy endeavors.

The scope includes the following, among other things:

- ✓ Analyze and compare data trends and patterns of both legal and illegal remittance inflows in Ethiopia.
- ✓ Assess recent initiatives made to facilitate remittance inflows through formal channels as well as curb illegal outflows.
- ✓ Examine Ethiopia's remittance policy measures, legal and regulatory frameworks;
- ✓ Benchmark best remittance inflows practices from best performing countries; etc.

1.5 Methodology

This study is carried out based on a scientific and proven research methodology and in accordance with accepted research ethics in order to accomplish the objectives of the assignment.

The study used a participatory approach, incorporating important stakeholders, pertinent government and non-government organizations, import- export companies, participants in the official and informal remittance actors, professional associations, research institutes, and think tanks.

The study's approach is both descriptive and analytical, and it relied on both primary data from key informant interviews, focus group discussions conducted by personnel who were systematically selected from the NBE, Ethiopian Financial Intelligence Service, commercial banks, law enforcement agencies, etc., and secondary data from research outputs, official reports, media coverage, statutory provisions, and other online and offline sources. The study applied qualitative and quantitative data analysis techniques to analyze data.

2. LITERATURE REVIEW

2.1 Illicit Financial Flows, Overview

2.1.1 Definition, Concepts and Trends

Illicit financial flows refer to the illegal movements of money or capital from one country to another. Illicit finance refers to the national and international financing of illegal operations in a broader sense. Illicit money, as defined by the GFI, is any cash that has been obtained, transferred, or used against one's will. This term has been expanded to encompass capital that is earned, moved, or used through legal snares and dubious schemes that seek to go around domestic and international legal norms as a result of continuous global discussions between academicians and practitioners.

These financial movements are regarded as illicit since they are illegal in terms of their origin, transfer, and usage. The idea of IFF actually encompasses much more than just the shady movement of money within or across borders; rather, it refers to an exchange of value through one or a combination of the methods used in the process.

IFFs are thought to be influenced by a mix of economic, institutional, and political variables. Institutional capability, political unpredictability, levels of corruption, interest rate discrepancies, exchange rate regimes, and other factors fall under this category.

Wealthy people and businesses have motivations and opportunity to turn their revenues into illicit outflows in institutionally weak nations with lax regulations and restrictions.

According to the 2017 Basel AML Index Report, nations with weak anti-money laundering and counter-financing of terrorism (AML/CFT) regulatory systems, high levels of corruption, ineffective judicial systems, lax financial sector standards, and significant political risk are the most susceptible to money-laundering and terrorism financing activities.

IFFs are also influenced by how the corporate community perceives political risk. Different studies have found that multinational companies engage in profit shifting tactics when political risks exist in a nation, such as the seizure of investment assets, erratic changes in laws and regulations, or a weak and unstable currency.

IFFs are becoming multidimensional and transnational in nature, as well as challenging to spot and regulate, due to high levels of cross-border capital/funds movement, rapid globalization, and the growing ease with which payments are made across borders. Many reports on IFFs indicate that illicit money typically originate from three major category of sources. They are:

- i. Commercial activities such as tax evasion mis-invoicing;
- ii. Criminal activities including drug trade, human trafficking, illegal arms dealing, and smuggling of contraband; and
- iii. Corrupt proceeds of bribery and theft by authorities/officials.

Trade mis-invoicing is the manipulation of the price, quality, or quantity values of traded goods in order to avoid paying domestic taxes and customs fees with the aim of exporting foreign exchange profits outside of the country.

In Africa, especially in the nations with abundant natural resources, under-invoicing of exports is rather widespread. Several factors, including capital account openness, corruption, differences in interest rates, and exchange rate regimes, have been linked to trade mis-invoicing, according to Patnaik, Gupta, and Shah (2012).

IFFs driven by criminal activities usually have the purpose of hiding such transactions from the eyes of law enforcement agencies. These activities include human trafficking, drugs and arms smuggling, as well as fraud in the financial sector such as unauthorized or unsecured loans, money laundering, stock market manipulation and outright forgery. The situation in Ethiopia is getting attention these days.

Several criminal activities engaged in these illicit activities now seen and operate within Ethiopia. The misuse of government power for personal gain is known as corruption, which also serves as a source or conduit for IFFs. It requires financial services in high-secrecy jurisdictions or tax havens since the proceeds of corruption must be hidden. Bribing tax or customs officials may be used as a method for the movement of these funds out of a country to avoid taxation.

Research findings have shown that IFFs are high and have been rising over time throughout Africa. IFFs seriously jeopardize the political and economic security of Africa and its people by robbing them of vital resources for infrastructure, education, health care, and the development of their productive ability. Therefore, tackling illegal financial flows is a way to provide African nations more money for both their own development agendas and the Sustainable Development Goals.

The Economic Development in Africa 2020 Report by UNCTAD states that an estimated \$88.6 billion, or 3.7% of the continent's GDP, departs the region each year in the form of illicit capital. These outflows are almost equal to the whole amount of official development assistance and foreign direct investment that African nations get annually in inflows. The overall illicit capital flight from Africa between 2000 and 2015 was \$836 billion. This makes Africa a "net creditor to the world" compared to its \$770 billion overall stock of external debt in 2018, the report claims.

Through IFFs, Ethiopia also loses billions of dollars annually. According to the GFI 2015 Report, between 2004 and 2013, these illegal financial flows totaled an average of \$2.538 billion year. In a similar vein, Alemayehu and Addis (2017) calculated that the levels of capital flight from the nation, which includes IFFs, have resulted in an average loss in GDP growth of 2.2% each year, and that poverty would have decreased even more by around 2.5% in the previous decade if capital flight had not occurred.

According to the GFI research already cited, this significant amount of money has been moving illegally from Ethiopia to other countries in the Middle East, the Far East, Europe, and the United States. Although GFI cites a variety of criminal types as aiding these outflows, it places the blame for around 80% of the losses on widespread commercial mis-invoicing.

Illegal cross-border movement of capital is increasing in Ethiopia and so is the number of cases filed in courts. Nearly 300 cases involving the unauthorized cross-border transfer of capital have been brought at the Federal High Court between the years 2014–2015, Ethiopian Business Review reports.

At the time of reporting, 110 of these defendants had already received verdicts. The amounts involved in each instance range from ETB 50 to ETB 300 million, however some point out that those cases represent a minuscule part of the criminal activities taking place in the nation.

2.1.2 Pros and Cons of Illegal Cash Flows

Remittances are essential for the recipient country's growth in many respects. Remittances are usually transfer of money/capital without any reciprocal obligations from the receiver. They are valuable sources of money that increase household discretionary income while also boosting the country's forex inflow in a place like Ethiopia where a lack of foreign exchange is a significant economic and corporate concern.

Remittances give recipient families access to additional money, which they can use for things like basic necessities, healthcare, education, and even fixed assets like savings or investments. This raises recipients' living standards, which increases domestic demand and frees up resources for trade and investment, all of which contribute to the nation's economic growth.

Remittances, however, can also foster a culture of dependency, lower labor force participation, encourage conspicuous consumption and slow economic growth in the receiving country, despite the fact that they can improve the welfare of family members left behind and strengthen the economies of receiving nations.

Illicit financial flows not only have negative effects on a nation's economy in terms of investment and growth, but they also inadvertently obstruct efforts to advance human development and ensure the protection of fundamental human rights. Africa's attempts to fight poverty are being undermined by capital flight out of the region. If a lack of resources were the only barrier to human development, then 4–6% more people would be living in poverty today if the flight capital from Africa had been invested with the same efficiency as real investment. According to the MDGs, this performance would have allowed African nations to reduce severe poverty by half by 2015 (AfDB et al., 2012, 77).

IFFs have an impact on a country's social development by influencing the standard of political institutions, tax systems, and social structures. Tax Justice Network Africa has conducted case studies that demonstrate how widespread tax evasion makes it more difficult for the government to deliver fundamental services to the public and advance institutional changes.

2.2 Major Aspects of Remittances in Ethiopia

Remittance, in its formal sense, is the transfer of capital/funds from a sender to a recipient through the use of intermediaries such as money transfer service providers. Remittances come in a variety of forms, but they are most often financial transfers sent by those working abroad to their loved ones back home.

According to reports from the IOM and World Bank (2015), formal remittances to developing nations act as a lifeline for vulnerable households in low-income countries by helping to meet their basic needs and assisting them in coping with external shocks and income variations. In the majority of poor nations, remittances are the main source of external financing at the national level. The least variable sources of foreign exchange include remittances, which have shown to be more reliable than private debt, FDI, and official aid flows.

2.2.1 Features of Remittances in Ethiopia

According to the WB Migration and Remittances database, an estimated 1.3 million Ethiopians who have left the country send close to \$5 billion back to their homeland each year.

This accounts more than 5% of Ethiopia's GDP and roughly one-fourth of its annual foreign exchange earnings. However, the average cost of sending money to Ethiopia from Europe, the Middle East, and North America is 7%, 4%, and 5% of the transaction value, respectively.

Evidence suggests that informal networks continue to be a significant route for Ethiopian diaspora to send money home, despite the Government's enormous efforts in recent years to enhance the flow of remittances through the formal bank channels. Along with the exorbitant expense of sending money home, many of the undocumented Ethiopian migrants also struggle to use the established money transfer facilities. This is mostly caused by a lack of required documentation, which the KYC standards of service providers in the host nations require. Some beneficiaries of remittances who live far from domestic formal payment infrastructure, such as banks, MFIs, or agency services, have the same difficulties.

According to the NBE and Ministry of Planning and Development estimates, Ethiopia received a total inflow of foreign currency in the fiscal year 2021/22 of roughly \$21.5 billion. This includes profits from important streams like exports of goods and services (\$4.10 billion), private remittances (\$5.62 billion), and foreign direct investment (\$3.31 billion).

It is understood that the country's forex sources are limited to few line items, out of which private remittances make a significant contribution, a little over quarter of the total inflow of forex into the country in 2021/22. NBE reports from 2011/12 to 2020/21 also indicate that foreign exchange inflow from private remittances averages to about \$3,976 million a year and the amount excels the average earnings from all other major sources, during the same period.

Private remittances play a crucial part in Ethiopia's foreign exchange influx when they are received through the official banking system. The majority of the market, however, is run through informal networks. According to a study by the IOM, up to 78% of all remittances may be received through unofficial methods in some regions of the nation.

2.2.2 Sources of Illegal Cash Inflows and Outflows

Illegal cash flows are typically thought to result from corrupt business practices, illegal acts, or both. Since these cash flows are unlawful by nature, the people and institutions participating in them usually try to keep them out of the sight of law enforcement. Because of this, it is difficult to track, document, disclose, and manage unlawful cash flows.

GFI and other relevant reports indicate that illegal cash flows in Ethiopia emanate from the following activities:

- **Trade mis-invoicing:** Trade mis-invoicing is the deliberate misrepresentation of the value, amount, or makeup of products on customs declaration forms and invoices, typically with the objective of avoiding taxes or money laundering. Traders may understate the volume of imports in a transaction to avoid paying appropriate taxes and tariffs. Over 80% of the entire value of IFFs in Ethiopia is thought to be caused by trade mispricing. For the purposes of illicit cash flows, trade mis-invoicing mostly entails import over-invoicing and export under-invoicing.
- **Informal remittance systems:** According to the IOM (2018), there are more than three million Ethiopians and persons of Ethiopian origin living in various parts of the world. Many of them send money home to support their friends and family. According to NBE Annual Reports, the amount of official remittances made through the banking system has consistently climbed from roughly \$3,245.8 million in 2011/2012 to \$5,227.1 million in 2020/21.

Although legitimate remittances to Ethiopia are expanding, according to an IOM report, up to 78% of the remittance money is sent through unofficial routes known as the hawala systems in some areas of the nation. In such arrangements, the informal facilitators receive funds from Ethiopians living abroad in foreign currencies and then distribute them to the beneficiaries back home in Birr, sometimes at exchange rates that are even higher than the black-market prices there. The Ethiopian Diaspora is very interested in their services and prefers them to the established bank channels as a result.

In conclusion, Ethiopia loses access to a significant source of foreign cash that it could have obtained from its Diaspora because of the informal remittance systems. In order to illegally shift resources away from the nation, alternative remittance routes are severely harming the Ethiopian economy.

- **Price transferring:** Foreign investors in Ethiopia tend to over-invoice raw materials and inputs they import to get extra foreign currency out of the country and also to reduce income tax liabilities, since input costs increase at the production stage of their business. A critical legal provision that encourages investors to over-invoice their imports is the fact that most of their imports are exempted from customs duties, and hence prices cross checking, as an incentive to attract FDI.
- **Embassies and diplomatic channels:** There are evidences that some embassies use diplomatic channels to assist their citizens and companies in Ethiopia to illicitly transfer funds out of the country. The embassies collect Ethiopian currency from their nationals and pay their nationals at home in their home currency. In this way the diplomatic offices use the local currency to finance their activities in Ethiopia and assist their nationals to transfer funds out of the country. There are also reports that diplomats, who are usually not searched when entering and leaving the country, have been caught carrying foreign currency illegally.
- **Corruption:** The report, entitled *Illicit Financial Flows from Developing Countries* financial flows from Ethiopia was a result of increased corruption, kickbacks, and bribery. Although drug and human trafficking, terrorism and illegal weapons trades all contribute to capital flight, corruption is one of the major catalysts for illicit finance in Ethiopia. In fact, significant amount of money is lost through corruption, rent-seeking practices, kickbacks and bribery .According to Transparency International Corruption Perceptions Index 2020, Ethiopia ranked 101st from 180 countries with a score of 38 out of 100. This score indicates that the country is perceived to have a high level of corruption in its public sector.

- **Illegal Migration and Human Trafficking:** It is believed that there is higher tendency of the unemployed youth in Ethiopia, to travel abroad in search of jobs better income. However, the legal ways to travel and foreign employment are very limited. This situation has created fertile grounds for illegal migration brokers and human traffickers. In contrast to human trafficking which can take place both domestically and internationally, migrant smuggling is a crime that takes place across borders. It consists in assisting migrants to enter or stay in another country illegally, for a financial or material gain. These practices involve a lot of illegal cash transactions to facilitate trafficking and migration operations.

2.3 Countries' Experiences on Remittances

Illegal cash flows have always posed serious problems on countries' economies, both at micro and macro levels. On the one hand they divert significant amount of scarce resource away from the formal channels and cause shortages of forex for economic and social development causes. On the other hand, they promote lawlessness in businesses, public services, law enforcement and other sectors in the country. Therefore, countries attempt to do everything possible to convince and encourage their people living in the rest of the world to use the formal banking channels while sending money home. At the same time, they also establish different regulatory instruments to control and punish illegal cash flows from and into their territory.

Remittances play significant positive roles in the national economies of many developing countries. The problem, however, is that many rely on informal channels, diverting the funds into the wrong hands and there exists little data on the total amount of funds sent home. According to some reports, immigrants from Africa send around \$40 billion annually to their families and local communities back home. For the region as a whole, this represents 50% more than net ODA from all sources, and, for most countries, the amount also exceeds FDI.

The top five recipient countries for remittances in 2021 were India, Mexico, China, the Philippines, and Egypt. Similarly, economies where remittance inflows stand at very high shares of GDP are Lebanon (54%), Tonga (44%), Tajikistan (34%), Kyrgyz Republic (33%), and Samoa (32%).

Remittance inflows to Sub-Saharan Africa soared 14.1% to \$49 billion in 2021 following an 8.1% decline in the prior year. Growth in remittances was supported by strong economic activity in Europe and the United States. Recorded inflows to Nigeria, the largest recipient country in the region, gained 11.2%, in part due to policies intended to channel inflows through the banking system.

For this study, the experience of selected countries, with remarkable performance in their inward remittances is assessed to draw lessons and experiences for Ethiopia.

☛ India

India is the world's largest democracy, having a fast-growing and diverse economy with a large, skilled workforce. Indians form the world's largest diaspora group at around 18 million. That has enabled India to receive ever-increasing remittances over the years. In 2021 alone, India received around US \$87 billion, making it the world's largest recipient of remittances.

This was a 4.6% gain on its remittance inflows from the previous year. In 2022, the amount has already touched \$100 billion, making the country the first ever to reach the figure, according to the World Bank data. Inward remittances in 2022, account for around 3% of India's GDP, surged by 12% from the previous year. Remittance flows to India were enhanced by the wage hikes and a strong labor market in the United States and other OECD countries, a November 30 World Bank release stated.

☛ Nigeria

Nigeria, the seventh most populous country in the world and the first in Africa, is the continent's leading economy and an emerging country with huge potential. It has an ever-growing, highly educated and entrepreneurial population. The Nigerian diaspora is spread all over the world from the United States to the UK, South Africa to the UAE and can even be found in European nations such as Italy and Spain. As per IOM reports, Nigerians in the USA are amongst the most educated and entrepreneurial migratory groups.

At \$398 billion, Nigeria has the 30th largest economy in the world, and some of that economic boost comes from remittances. The country, over the years, has continued to receive the largest remittance inflows into Sub-Saharan Africa, amounting to over USD 19 Billion in 2021. This is due to the fact that the most populous country in Africa also has a significantly sizable diaspora base, according to the WB Press Release, May 11, 2022.

According to a study by Oluwafemi and Ayandibu (2017) political instability, financial sector and business climate ineffectiveness, bureaucracy, corruption, over-reliance on natural resources, as well as non-formulation and implementation of adequate remittance programs are some of the factors militating against the developmental impact of remittances in Nigeria.

☛ Egypt

Egypt is one of the world's oldest civilizations where in, tourism makes up one of its biggest industries, along with agriculture and manufacturing. Egypt is among the top remittance recipient countries in the world and the leading in North Africa and the Middle East region. Remittances in Egypt play important role in supporting the local economy.

Since the beginning of the Coronavirus pandemic, remittances in Egypt have registered a near 10.4% year-on-year increase. In 2019/2020 they stood at \$27.76 billion. A majority of these remittances were sent in the local currency but some arrived in US dollars as well, according to Africa Report. Remittances from Egyptians abroad are expected to rise by 2.5% in 2022, climbing to \$32.3 billion from \$31.5 billion in 2021, according to the World Bank's latest forecast. Egypt's remittance inflow is expected to benefit from surging oil prices, which will increase transfers from Egyptian workers based in the Gulf countries.

The exchange market system, among other reasons, caused a plunge in the inflows of hard currency, with remittances – which significantly impacted Egypt's current account – recording merely \$17.08 billion in the fiscal year 2015/2016. The change in the exchange management system coupled to aggressive expansion of Egypt's real estate market can be seen as part of the reason why remittances surged in the subsequent years.

☛ The Philippines

It appears that a community of Filipino immigrants has either already established itself or is just getting started anywhere in the world. Filipinos are one of the world's most solely devoted workers, with truly admirable qualities, who are compelled emigrate looking for higher pay, enhanced overall working conditions or a substantially better lifestyle. Vast numbers of Filipino emigrants send large amounts of money home annually. The Philippines considers its emigrant population to be the nation's most valuable foreign exchange earner. Roughly 10% of the country's population works abroad, which is undoubtedly a sizable proportion of the Filipino labor force.

Its economy is also maintained by remittance inflows from “OFWs” or “Overseas Filipino Workers”. An Overseas Filipino Worker is a person of Filipino descent who lives outside the country. The term OFWs refers to Filipinos who are living in another country as legal immigrants as well as those who are visiting for work or study. The ILO reported in March 2022, that there are about 11 million Filipinos living abroad.

For decades, remittance inflows from OFWs have become one of the domestic economy's growth operators. OFWs are considered to be modern-day heroes all over the Philippines. Their remittances from different foreign countries have significantly reduced poverty and played important roles in transforming the once-struggling financial sector of the country into the thriving one it is today. Increased remittances from our OFWs make the Philippine local currency, Peso, stronger. It is also beneficial in several ways, including lowering the cost of imported goods so that consumers can purchase them for less; supporting the nation's debt payments; and increasing the value of the Peso relative to other currencies.

In 2021, Filipinos sent a record \$31.4 billion in cash to the country. This represents a 5.1% increase from 2020 when the Corona virus pandemic forced some Filipino families to return home. The U.S. makes up the largest source of these remittances.

☛ **Pakistan**

The seventh most populous country in the world, is known for its textiles; although its export-driven economy has struggled to obtain foreign investment in part because of its rocky political climate and tensions over its borders.

However, the Pakistani diaspora has a key role to play in its economy. Remittances into the country tally up to about \$21.19 billion in 2018. It receives most of its remittances from the Gulf countries, with Saudi Arabia and the UAE making up a significant portion, according to Migrant Resource Centre. In 2020 Pakistani researchers found that for every 1% decrease in remittance costs there is a 0.25% to 1.6% increase in remittances.

The Pakistani government has chalked out a comprehensive plan to boost flow of foreign remittances into the country by incentivizing the Pakistani expatriates for using legal channels to send money back home. The move was aimed at promoting legal means for the transfer of remittances and discouraging the use of informal channels.

3. FINDINGS OF THE STUDY & DISCUSSIONS

In this section, primary and secondary data that were gathered throughout the course of the study are presented together with their analysis and findings.

Primary data was collected from the business community engaged in import and export businesses, the diaspora community, remittance receivers and operators in the informal forex related businesses. Online and paper-based questionnaires were administered (See Annex VI) to capture the reflections and perceptions of the respondents.

The difficult part of gathering data was persuading participants that their identities would not be used in any way in the research process or the final report. Despite being foreseen from the start, this circumstance has reduced the number of respondents in all data gathering instruments used. But according to the experts, adequate information has been gathered from each category of respondents to show the true nature of the country's ongoing illegal cash inputs and outflows.

3.1 Primary Data Analysis

The study collected primary data from different stakeholders (engaged in import and export businesses, remittance recipients, parallel market operators and the diaspora community) using questionnaires, FGDs and KIIs. The primary data analysis and findings are presented below.

3.1.1 Businesses in the Import/Export Sectors.

This section presents analysis of data and findings collected from companies engaged in import-export related business activities, using a systematically designed questionnaire. To help respondents feel at ease answering the questions, the questionnaire was written in the Amharic language.

A total of forty firms, were identified from the AACCSA members list for the data collection. Out of the forty questionnaires, seven were disqualified due to reasons such as returned unfilled, checked on "I don't know" options for all questions, etc. The remaining thirty-three replies are used to make the analysis below. Respondent's individual and organizational profiles are presented in Annex IV (1).

Over 80% of the respondents to the surveys had managerial positions, and 76% had a first-degree education or higher. The questionnaires were completed by top level executives of business organizations. As a result, it is likely that data is collected from people who are aware of the true nature of the issue and who offer honest comments. An average of sixteen years have been spent in commercial engagements by the study's participating firms.

Respondents were asked to indicate, based on their perception and awareness, the level to which the business community is engaged in twelve types of pre-identified illegal cash flow related activities. To prevent swaying respondents' responses, the activities are mentioned without any reference to their illegality.

The degree of businesses’ level of engagement in each of the illicit activities is categorized from 0 to 5, referring to none, very small, small, medium, high and very high, respectively. If respondents don’t have any information on an activity listed, they indicate it by choosing on the “I don’t know” option. Such choices are excluded from the analysis.

The figure below summarizes the average score of respondents’ perceptions on the level of engagement of businesses in each of the preidentified illicit cash flow related activities.

Figure 1: Average score of engagement levels of businesses in illegal cash transactions (on a scale from 0 - None to 5.0 - Very High)



The findings reveal that businesses are highly involved in the practice of trade mis-invoicing, with an average engagement level score of 4.20 on a scale of 0 to 5. Other illicit activities with a significant engagement level average score values are bribing officers at entry ports to get forex customs declaration (3.95); paying local parallel market brokers in Birr and receive the forex equivalent in foreign country for any reason (3.81); and buying forex from the local parallel market to finance import businesses (3.79).

According to the aforementioned data, it is abundantly obvious that the respondents are aware of the extent to which the business community is involved in the previously listed illicit financial activities, which are motivated by economic, institutional, and political factors. The most frequent practice has been determined to be trade mis-invoicing since it is intimately tied to the lack of foreign currency in commercial banks needed to finance import operations.

Respondents were also asked to prioritize list of four major causes for the involvement of businesses in illicit financial activities. Accordingly, loose regulatory system was rated as the main reason for such practices, followed by the shortage of foreign currency, national security concerns and greedy nature of the traders.

3.1.2 Remittances Recipients

Recipients of remittances were approached, when they come to a bank branch to collect their money, to voluntarily fill in a systematically designed and structured questionnaire. A total of twenty-eight questionnaires were completed and found to be valid for the analysis.

Most of the respondents (64.3%) received three or more number of transfers annually during the past two years; and 67.8% receive Br. 10,000.00 or less in any one transfer. The respondents also said that most of their remittances (64.3%) come through the formal banking system. Detailed replies to the above questions are presented in the table below.

Table 1: Responses of remittance recipients

Description	Value	Description	Value	Description	Value	Description	Value
Age structure of remittance recipients, Years:							
Less than 25	10.7%	25 to 50	67.9%	Above 50	17.8%	No response	3.6%
Total number of remittances received by any means, during the past two years.							
> 5 times	28.6%	3 to 5 times	35.7%	2 or less times	32.1%	No response	3.6%
Average amount of money received in any one remittance transfer, Birr.							
< 10,000.00	67.8%	10,000 – 25,000	28.6%	25,000 – 50,000	3.6%	> 50,000.00	0.0%
Of the total remittances received from abroad, the amount sent through the bank system is:							
Most of it	64.3	Half of it	14.3	Less of it	17.8	No response	3.6

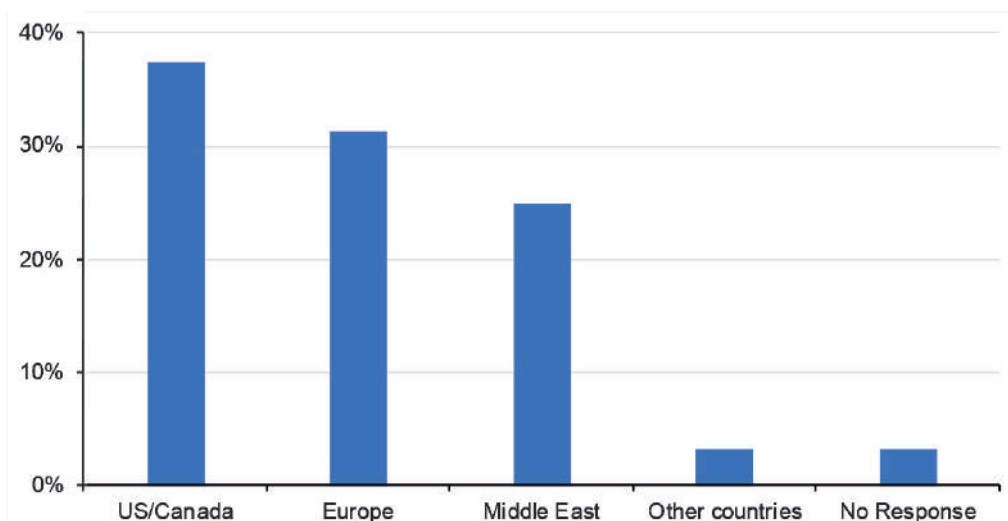
Respondents were also asked if they received money transfers through different legal and illegal mechanisms during the past two years. The findings show that respondents receive remittance monies through both formal and informal methods, as shown below.

It is anticipated that the respondents, who completed the questionnaire while visiting bank branches to pick up their remittance funds, have prior experience receiving remittances through the banking system. However, the research also reveals that many of them got remittances through illegal means. The biggest percentage of these illegal methods for receiving foreign currency cash is through visitors to the nation (50%) followed by individual operators in Birr (46.4%).

Respondents, who received forex cash through travelers to Ethiopia were asked how they exchange the forex into Birr. Accordingly, half of them said that they do it at banks; while 14.3% go to illicit individuals and shops, and 7.1% use other methods. The remaining 28.6% preferred to skip the question with no replies.

Finally, respondents were asked to indicate the countries/regions from which they receive remittances. Accordingly, most of the respondents receive transfers from US/Canada (37.5%) and Europe (31.3%) as shown in the figure below.

Figure 3: Source countries/regions of remittances



3.1.3 Parallel Market Operators

It was quite challenging to persuade participants in illegal FX markets to supply information for the study. After much pleading with their friends and assurances of anonymity, the study team was able to find five people, four men and one woman, with an average age of 25 to 50 and five years of experience, who were willing to fill out the questionnaire.

Respondents were asked to indicate the trends, during the past two years, of the amounts of foreign currencies exchanged into Birr in the local parallel market and that of the incoming remittance transfers through the hawala system.

The results demonstrate that during the previous two years, both illicit remittances and the sums of foreign currencies exchanged have increased significantly.

According to the respondents, USA, Middle East countries, Canada and Europe are the major sources of incoming remittances; whereas China, Dubai and Turkey are the major destinations of outgoing money transfers from the country.

The respondents believe that the parallel market exchange premium is the main reason for increasing trend in illicit remittances; while forex shortage in the banks drives outgoing transfers through the parallel market. They also indicated that most operators exchange and/or transfer from about half a million to multi-millions of Birr per week, on average.

Respondents were asked if they would be interested to do their business under the rules of law, if it becomes legally allowed. Accordingly, 80% said they are willing to get licensed and pay income taxes. They also suggested that the government shall make the exchange market free and legal, improve export performance and increase forex reserves of the country to solve illicit businesses related to remittances and exchange services.

3.1.4 The Diaspora Community

A systematically designed and structured questionnaire was administered online using the Google Forms platform, which was open from January 06, 2023 to February 05, 2023. It aimed to capture the experiences and reflections of the diaspora community on illicit cash flows. Information about the questionnaire, and a request for concerned individuals to fill it in, was distributed through personal and social media networks.

Accordingly, a total of 24 respondents filled in the questionnaire. Respondents' profiles indicate that 62.5% are male and equal proportion are in the 31 to 45 years of age range; 54.2% have lived overseas for 16 to 25 years, and most of the respondents, 83%, live in the US/Canada area. Detailed profiles of the respondents in presented in Annex IV (2). Respondents were asked to indicate the number of times they send money in any one year as well as the average amount they send at any one transfer. Accordingly, 58.3% said they send money three to five times, while 25% said they send six to ten times a year. Those who claim to send only once or twice and eleven times or more a year account to 8.3% of the respondents each. There was no respondent who didn't send money home.

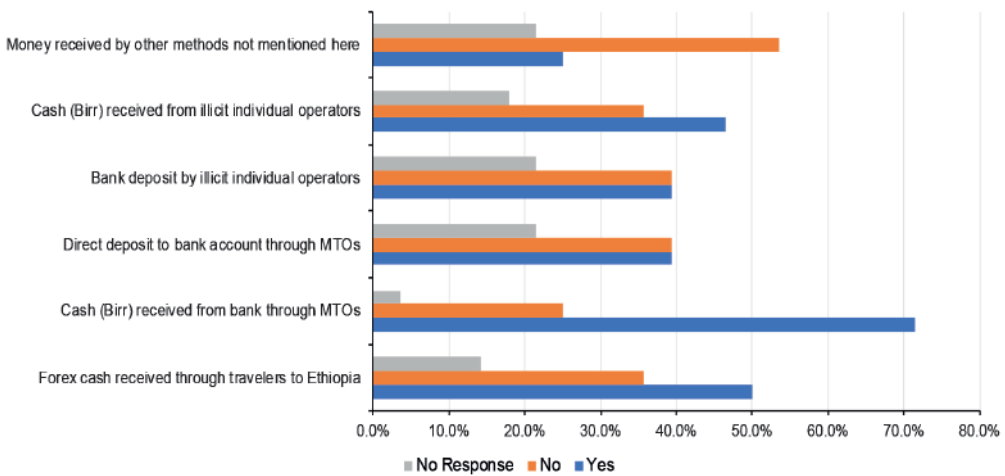
Regarding the average amount of money sent home at any one transfer, 37.5% send \$500 to \$1,000; while 29.2% send \$500 or less. Respondents who send between \$1,000 to \$2,500 and above \$2,500 make up 12.5% and 20.8% respectively.

It is observed that Ethiopians in diaspora remit small amounts (two-thirds send \$1,000 or less) of money with high number of transfers in a year (83.3% make remittances 3 to 10 times a year).

The majority (91.7%) of the respondents send money to close families while the remaining 8.3% send to friends or relatives. Most of the money sent home is for regular family support, 66.7%; or holiday gift, 20.8%. Remittances that are for business, investment or related causes make up just 12.5%. Hence, it can be said that most Ethiopian diaspora send small amounts of regular family support, spread throughout the year.

Respondents were also asked about methods of money transfer they use. Four pre identified remittance methods were listed and respondents were asked to indicate their degree of using each method by choosing from available options of: always, mostly, sometimes and none. Accordingly, the most frequently used method is to give the forex to individuals or shops who arrange payment to the recipient back home in cash (46%). The least used method is direct deposit from the sender to recipient’s bank account using mobile phone or similar applications, which is not used by 54.17% of respondents. Detailed finding of the study in this regard is presented in the figure below.

Figure 4: Frequency of using common money transfer methods by the diaspora



Respondents were asked about what justifies their choice of money transfer method. Accordingly, dominantly for 70.8% of respondents’ better exchange rate determines their choice. It is clear that the exchange rate gap between bank and parallel markets is really wide. Hence, most of the diaspora send money through friends who travel to Ethiopia or through the parallel market operators. In both ways, the forex is exchanged into local currency at the attractive parallel market rate.

In order to substantiate the above claim, respondents were asked to pinpoint the common money transfer methods used by most people they know in their areas. With this respect, majority (over 90% of the respondents) confirmed that people they know send remittances through the informal channels, including sending forex cash by travelers to Ethiopia.

The respondents were also asked if they have non-resident (diaspora) forex bank account at any one of the local banks in Ethiopia, or at least know about the availability of the service. Accordingly, two-thirds of them said that they have heard about it but less than 10% have it. Hence, even though many of the respondents have knowledge about it, only few of them went on to open the diaspora account.

It has been learnt that the diaspora community uses the informal remittances channels mainly to get a better exchange rate for its forex, while sending money home. Hence, an anticipated proposal was made in the questionnaire.

The proposal is to allow banks to use remittance funds for three months before paying the money to beneficiaries, and share the proceeds from the funds use on top of the formal exchange amount.

In this way, total amount of money received by remittance recipients (formal exchange value plus proceeds from fund use) will get closer to the parallel market exchange rate amount. In order to test acceptability of this proposal, respondents were asked if they will be willing to use such services and send remittances through the bank system. The findings show that half of the respondents said they are willing to at least give the service a try, with 21% willing to use it always. While a third of the respondents don't want even to try it, about 17% preferred to have some more detailed information before trying such a service.

3.1.5 Findings of FDGs and KIIs

To support the key theme areas of the study and gather participants' views, the research team conducted semi-structured KIIs and FDGs with experts in the field.

Accordingly, a total of five KIIs and three FDGs were held with expertise from the NBE, Ethiopia Diaspora Service, law enforcement government agencies, the banking industry, international agencies, formal and informal money transfer service providers, academic and research institutions and import-export businesses.

Additional informal discussions were also conducted with individuals, who prefer not to engage in the formal KIIs and FDGs. It was extremely challenging to conduct and record even the formal meetings because the subject was so delicate and so many people preferred to remain anonymous.

The moderators of these sessions have made all efforts to capture participants' opinions, comments and suggestions by taking short notes during the discussions, asking respondents to speak slowly and at times to repeat what they said. Transcriptions of the KII and FGD sessions, at which proper recordings were allowed to be taken, are attached in Annex V and summarized findings are presented in three categories as follows:

i. Causes of illegal cash flows in Ethiopia:

The following five issues were identified, through KIIs and FDGs, as the major causes of illegal cash flows in Ethiopia.

Foreign exchange shortage: Lack of foreign exchange from official sources, i.e., commercial banks, forces companies to search for alternate sources, such as the parallel market, to cover their imports.

Sourcing of the necessary forex from the parallel market requires cash flows that are not recorded in the official financial accounts of these businesses. This situation required companies to have dual cash flows: the formal, which is actually registered and reported to the tax authority; and the informal, done behind the eyes of the law enforcement authorities.

Informal businesses, which are not registered, licensed, accounted and thus not taxable; are becoming significant these days in the country and hence illegal cash flows. Traders and even manufacturers are becoming hesitant to issue official sales invoices for the items they manufacture and sale. This is partly because of intentions to hide such transactions from the tax authority, on the one hand and also to compensate for the unrecorded costs incurred while importing their inputs and supplies.

Lack of peace and security: the prevailing political and economic instability have caused insecurity for most businesses in Ethiopia. This situation makes people want to transfer their valuables to locations they deem safe outside of the country. People in Ethiopia turn to informal procedures because the country's financial system forbids the free flow of capital. These asset transfers through shady or illegal channels include cash transfers, buying foreign assets, selling local assets, and more. There are also

incidents that some diaspora who returned home for business or retirement purposes have returned back due to absence of peace and security in the country.

Prevalence of corruption: Transparency International reports that corruption has significantly hampered corporate operations in Ethiopia. Even in basic daily activities and commercial processes, it is evident. Almost every area of life is affected by corruption, from basic public services to tax approval, bank loans, access to land, and other commercial requirements. Any money exchanged as a result of corruption is forbidden and kept out of sight of law enforcement.

Non-Resident (Diaspora) and FCY Saving Accounts: Government introduced these and other related bank service products in order to attract foreign currency deposits into the country. However, they are becoming conducive mechanisms for informal forex access corridors to the business community facilitated by the banks. Their priority attractiveness stems from the fact that forex deposits and transfers to these accounts are not subjected to the NBE's forex retention and surrender requirements.

An account holder, with fair amount of forex deposit into such accounts, can sell the forex to any importer at the parallel market rate. The deal is commonly arranged and facilitated by bankers, who prepare documents showing that the account holder sold the forex to the bank. The bank then allocates the same forex to the designated importer, who pays the value at the official rate to the bank and the balance of value, per black-market rate, privately to the account holder. Bankers, who expedite the deal, are paid with commissions from both sides. Such transactions involve significant amount of informal payments, and are illegal cash flows.

Customs Procedures: The Ethiopian customs commission lacks comprehensive global prices data to identify and correct mis-invoiced imports and exports. It seems that customs commission is primarily concerned with increased revenues from import/export duties and taxes. Hence, it assumes that almost every import is under-invoiced and thus assigns a higher price as the basis for determining duties and taxes, with little room for the importer to challenge the decision. This situation, coupled to the prevailing forex shortage from the banks, forces importers to under-invoice imports. Hence, part of the forex payment of the imports is settled through the parallel market mechanisms leading to the illegal cash flows.

ii. Consequences of Illegal Cash flows in Ethiopia:

The economic consequences of illegal cash flows are significant in a poor country like Ethiopia. The following four concerns were mentioned by the KIIs and FGDs participants.

Loss of Forex Resources: Large amount of forex is diverted away from coming in or illegally taken out of the country due to illegal cash flows. This has deprived the banks, business community and the economy at large from the much-needed foreign exchange.

Loss in Tax Revenues: Informal financial transactions, facilitated by illegal cash flows, are not officially recorded in the accounting books. Hence, the tax authorities will have no way of enforcing tax obligations on the players. Thus, government loses huge revenues from such transactions.

Lawlessness: Business activities that result in illegal cash flows, unless controlled by the authorities, result in increased lawlessness in the sector. Illegal traders benefit from the unfair advantages, over those operating legally, such as uncontrolled forex access, no tax liabilities and the like. Such situations would tempt formal businesses to jump into the informal trading activities.

Legalizing Illicit Cash Flows: When customs authorities levy duties on under invoiced imports based on their imprecise data or judgments and issue import declaration documents accordingly, they are somehow legalizing transactions that are partly financed by forex sourced from the parallel market. Since the tax authority considers customs declarations as credible document making up the cost of imported goods, any payment made to foreign suppliers through the parallel market mechanisms becomes recognized, at least partially, in the financial records of the importers.

3.2 Secondary Data Analysis

The analysis of secondary data sources for the study concentrated on the patterns of remittances and the national regulatory framework for preventing illicit cash flows. For this study, it has been challenging to assemble trustworthy data on the volume and pattern of illegitimate cash withdrawals from the nation as well as informal remittances into it. There is fragmented and inconsistent information available online from several sources, but the research team didn't consider them reliable enough to be referenced. Hence, formal remittance trends, as gathered from the NBE annual reports and reliable study reports that estimated illegal cash outflows are presented in the following section.

3.2.1 Remittance Trends in Ethiopia

Remittances play significant role as a major source of forex inflow in Ethiopia. NBE reports show that remittance inflows amounted to \$5,227.1 in 2021/22. This is only second to the earnings of non-factor service exports (\$6,349.6 million) over the same period. Formal remittance inflows have also been increasing over the past decade, with a slight decline in the year 2019/20, despite the fact that the informal channel is still the predominant way for the diaspora to send money home.

The table below compares annual forex gains from private remittances and goods export over the years from 2014/15 to 2021/22. The third column shows the percentage of forex earnings of private remittances over that of goods export.

Table 2: Ethiopia's annual foreign exchange inflow (remittances, goods exports and their percentage comparison), USD Million

Year	Private Remittances (A)	Goods Export (B)	(A/B) %
2014/15	3,796.7	3,019.3	125.75%
2015/16	4,420.3	2,867.7	154.14%
2016/17	4,427.5	2,907.5	152.28%
2017/18	5,121.4	2,839.8	180.34%
2018/19	5,292.4	2,666.5	198.48%
2019/20	4,275.1	2,987.7	143.09%
2020/21	4,931.3	3,617.0	136.34%
2021/22	5,227.1	4,103.7	127.38%

Source: NBE Annual Reports

Even while regular remittances sent through banks are important for households and the country in Ethiopia, a sizable quantity of money lost as a result of unauthorized cash inflows and outflows. According to NBE's own study, which resulted in restrictions on money transfers from one account to another being imposed to only five per week in January 2021, there are instances of suspicious and sizable money transfers from people's accounts occurring very quickly.

The study also reveals that individuals frequently had millions of Birr in suspected money transfers credited to or debited from their accounts without any legitimate business reason. These transfers from one account to numerous recipients are thought to be remittance payments made through unofficial means.

In August 2021, the surge in demand for illicit cash outflows, have exacerbated the already widening exchange rate gap between the formal and parallel markets in Ethiopia. This could mainly be attributable to rising insecurity concerns following the war in the northern part of the country. During that period, demand for foreign exchange soared due to the fact that some people wanted either to keep their money in foreign currency, which is believed to be stable compared to the Birr, or send it out of the country for safety reasons. As a result, the parallel market rate rocketed and presented attractive offer to the diaspora, diverting much of inward remittances away from the bank channels.

These situations, mainly fueled by the prevailing national security concerns at the time, forced the government to officially urge the diaspora to use formal financial channels for remittances and not fall into the trap of aiding and abetting terror organizations through informal black-market channels. The call went as “...your country needs you and it is a critical juncture to stand guard for Ethiopia,”¹ through its communication outlets.

Illegal cash outflow from Ethiopia is also a serious concern. According to a study report² on analysis of African countries IFF data from 1980 to 2018, Ethiopia lost a total of \$84.316 billion over these years. This amount places the country in third positions in both highest total IFFs (next to South Africa (\$441.48 billion) and DR Congo (\$165.65 billion)) and highest IFFs as percent of trade at 33.5% (next to São Tomé and Príncipe (57.3%) and Sierra Leone (53.9%)) in the continent.

GFI’s estimates also show that between 2005 and 2014, an average of \$1,259 to \$3,153 million dollars left Ethiopia as IFFs every year³. This is equivalent to:

- ✓ 11% to 29% of the country’s total trade (GFI 2017)
- ✓ 40% to 97% of the total aid inflows to the country (OECD 2016)
- ✓ 10% to 30% of the government’s total revenue (IMF 2016)

3.2.2 Remittance Potential in the Diaspora

The number of Ethiopian Diasporas is estimated at different levels by different agencies. According to the estimates by the United Nations Population Division (UNPD), more than 1.2 million Ethiopians live abroad.

¹.<https://new.business.ethiopia.com/economy/ethiopia-urges-diaspora-to-use-formal-money-transfer/>

². Illicit financial flows in Africa, Drivers, destinations, and policy options, March 2020.

³. Illicit Financial Flows in Ethiopia, Roberto Martinez B. Kukutschka, September 2018.

However, from the Government side, this number could reach up to 3 million, including undocumented and irregular migrants⁴. The NBE annual reports show that Ethiopian migrants remit about USD 5 billion each year, accounting for more than 5% of the country's GDP and one-quarter of its foreign exchange earnings. This is the amount of remittances sent through the formal bank system. It is believed that most of the remittances into the country is sent through the informal channels, which are estimated to reach as high as 78% in some corridors of the country.

According to the Ethiopian Ministry of Foreign Affairs (2016) technical expert report, the volume of informal remittances is high and continues to rise mainly due to limited access for migrants to reliable and efficient remittance services and the absence of legal status for many Ethiopian migrants mostly in the Middle East, Gulf countries and South Africa.

According to studies, whether money is sent through formal or informal channels depends on a number of factors, including the socioeconomic status of the recipients' household members, the volume and nature of economic activity in the recipient country, the exchange rate, the cost of sending money abroad, and the relative effectiveness of formal versus informal channels.

Remittances may flow much more into unofficial channels as a result of the existence and significance of a parallel exchange rate market. The existence of a parallel exchange rate market in Ethiopia with a sizable premium may encourage migrants to use informal channels rather than the legitimate ones.

According to the 2016 US Census data, Ethiopian born immigrants constitute the United States second largest African immigrant group after Nigeria. It also indicates that, while the Ethiopian median annual income has increased since 2014 and reached \$41,357, it was still below the overall U.S. median income of \$50,000, at the time of the report. The Ethiopian diaspora in the USA, being the main source of remittances sent to Ethiopia, plays significant role in determining forex inflow into the country.

According to a study titled Mapping of Ethiopian Diasporas Residing in the United States of America (IOM 2018), there are perceived barriers preventing the diaspora from participating in Ethiopian development. As a result, issues with the government include a lack of accountability, fraud or corruption, unpredictable future government policies, taxes on imported goods, a challenge in getting the attention of government officials, unclear import/export procedures, political instability, and a lengthy importation

⁴ Changing patterns of migration and remittances in Ethiopia 2014-2018.

process, a challenge in moving money into and out of Ethiopia, and personal safety and security worries. Some, if not most, of these obstacles to diaspora engagement in the country's affairs seem to contribute towards their choice of informal channels for sending remittances.

3.2.3 Policy and Regulatory Framework in Ethiopia

Illicit financial flows are complex in nature and are performed across different sectors of an economy as well as in multiple of countries. Therefore, the combating strategy to controlling IFFs need to involve a wide range of policies and regulatory frameworks. According to the World Bank (Badré 2015)⁵, efforts to curb IFFs should aim to:

- ✓ address their direct sources by controlling activities of crime, corruption and tax evasion,
- ✓ prevent illegal money from entering and leaving the country, and
- ✓ Restrict financial intermediaries and other service providers from accepting illicit assets.

To achieve these goals, countries need to adopt and enforce policies that promote good governance, tackle corruption, control dirty money and apply transparent tax systems. The finance sector in Ethiopia is strictly controlled by the government. NBE, is authorized to regulate exchange rates, banks and other financial institutions. It also has strong control over import and export trade through the foreign currency market. Generally, Ethiopia has very strict laws that are meant to prevent money laundering and illicit financial flows into, within and out of the country. Some of these legal instruments that are related to IFFs and reviewed for this study are presented below

The National Bank of Ethiopia Establishment (as amended) Proclamation No. 591/2008: The proclamation is enacted to establish the national bank in order to ensure healthy financial system in the country. The proclamation gives broad powers to the national bank including the regulation of the financial environment of the country. The proclamation empowers NBE to issue directives, as and when necessary.

The Prevention and Suppression of Money Laundering and Financing of Terrorism Proclamation No 780/2013: This proclamation is enacted as a comprehensive legal framework to prevent activities of money laundering and financing of terrorism as well as ensure healthy financial transactions in the country. It mainly focuses on controlling the financing of terrorism and money laundering in Ethiopia and treats illicit financial flows in relation to the practices of money laundering and terrorism financing.

⁵ as quoted in Illicit Financial Flows in Ethiopia, 2018.

The proclamation, however, establishes a framework that helps to control illicit financial flows in such a way that it imposes legal obligation on any person to declare to the customs authority at the ports of entry any currency, negotiable instrument, precious stones and metals they possess when they leave or enter the country (Article 3(1)).

Banks operating in the country are obliged, by this proclamation, to conduct customer identification and due diligence as well as report any suspicious transaction and abnormal pricing. They are also required to evaluate the reputation of foreign financial institutions prior to establishing cross border banking relations with them (Article 4) and examine the legality of fund transfers to Ethiopia. In addition, they are required to maintain records of financial transactions for 10 years and avail it to authorities whenever they are requested.

Investment proclamation No 1180/2020: The proclamation, among other economic motives, aspires to increase and diversify FDI inflow into the country, maximize linkages between foreign and domestic investments, and leverage foreign capital to promote the competitiveness of domestic investors.

The proclamation grants foreign investors with the right to remit forex out of Ethiopia for causes including profits and dividends accruing from the investment, principal and interest payments on loans secured from foreign sources, proceeds from the sale, capital reduction or liquidation of an enterprise. It also allows the transfer of funds out of Ethiopia to pay for technology transfer agreements, consultancy services and to cover overhead costs. However, it does not have a mechanism to control possible abuse of these very generous provisions to transfer funds out of Ethiopia. Foreign investors highly prize the law for giving them the uncurbed right to transfer funds out of Ethiopia freely and they frequently praise them as good measures to attract more foreign investors to Ethiopia.⁶

NBE Directives for Foreign Exchange Surrender, Retention and Utilization: The NBE issues and amends directives to administer incoming forex from export proceeds, private remittances, NGO proceeds as well as the allocation of forex into priority and non-priority imports by banks. The latest of such directives granted 70% of export revenues, private remittances and NGO transfers to be surrendered to NBE (FXD/78/2022, Article 3(1)); and the remaining 30% to be shared between recipients (20%) and the bank (10%) (FXD/79/2022, Article 4(2)). The recipients of forex inflows, who are usually engaged in export businesses, utilize their forex share for payments of

⁶ Illicit Financial Flows in Ethiopia, 2018.

import items for business purposes. Commercial banks allocate 50% of their share of the forex to the first, second and third priority listed imports in a 15:45:40 proportion, respectively (FXD/77/2021).

Non-resident Ethiopians and foreigners of Ethiopian origin are also allowed to open NR forex accounts (diaspora accounts) at banks so as to increase forex inflow. Owners of these accounts can use the funds to make payments including for import of goods that are listed in the priority import sectors for business purposes (FXD/69/2021, Article 8(1)).

Similarly, resident nationals and foreigners living or working in the country are also allowed to open forex saving accounts with local banks (FXD/68/2020, Article 3). Such accounts are credited by money transfer services or cash deposits. Bearers of these accounts can use the funds in forex for payments to personal or family related expenses, withdraw the local currency equivalent in cash or sell the forex to the bank at any time.

The Franco Valuta Import Privilege: In April 2021, the Ethiopian Ministry of Finance issued a directive⁷, allowing the import of basic commodities on franco valuta basis, to counter rising market prices. Accordingly, basic food items such as edible oil, sugar, rice, wheat, and milk for children worth 250,000 USD and above (this minimum limit was lifted a year later), could be imported by Ethiopians who have the funds overseas. The directive aimed to attract Ethiopians who have the forex to directly pay for imports. In reality, however, most of the Franco Valuta commodities are coming from neighboring countries. ... gold, hard currency notes, coffee, live animals, oilseeds and even grains are smuggled out of Ethiopia to neighboring countries and the forex is then used to import commodities under the Franco Valuta scheme⁸.

The misuse of franco valuta privileges resulted in surge of forex demand causing rapid growth in the exchange rate gap between the formal and parallel markets. As a result, incoming remittances are diverted away from the formal channel. Hence, the unfair utilization of franco valuta scheme, which was planned to alleviate price escalations of basic commodities, exacerbates illegal cash flows as it fueled the smuggling of exportable commodities into neighboring countries, diverting incoming remittances away from bank channels, non or under-invoiced sales of imported commodities using the privilege, etc.

⁷ https://www.ena.et/web/eng/w/en_23628

⁸ Franco Valuta is backfiring on the poor, haunts economy. The Reporter, July 2, 2022.

Economic woes in the country are systemic and hungry for more profound and transformative reforms. Short-term, desperate policy tools alone – be they franco-valuta, foreign exchange controls or credit rationing – cannot address them. ..., they may substantially increase imports over exports, further widening trade deficit of the country⁹.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Ethiopia has been dealing with issues with illegal cash inflows and outflows, which have had a severe impact on the economy of the nation. The unlawful hawala, commercial mis-invoicing, tax evasion, corruption, money laundering, and other illegal activities are thought to be the cause of the illegal inflows and outflows. The current lack of available foreign currency from banks is also increasingly motivating the corporate community to participate in unlawful transactions that result in substantial illegal cash flows.

It is reported by the GFI that, Ethiopia lost an estimated \$3.3 billion to illegal outflows in 2018 alone, which is equivalent to 5.5% of the country's GDP and the majority of these outflows were related to trade mis-invoicing, which involves falsifying the value of goods to avoid taxes or transfer funds illegally.

NBE and Ministry of Planning and Development reports indicate that the country's total forex inflow is about \$21.5 billion in 2021/22, and a quarter of which is obtained from private remittances. However, mainly due to the high exchange rate premiums, informal remittance channels take the lion's share of remittance money coming into the country.

Given the volume and magnitude of remittances arriving in Ethiopia, it would be ideal if it were possible to channel these cash into worthwhile investments that would aid in the long-term progress of the nation. Despite the regulatory measures put in place by the government to stop unlawful hawala and increase official remittance inflows, the nation continues to lose a sizable quantity of foreign exchange to these channels.

This study is therefore sanctioned by the Addis Chamber to assess illegal cash inflows and outflows in Ethiopia and come up with recommend plausible solutions that could be used in the association's policy advocacy endeavors to curb the problem.

⁹ Mussie Deleegn Arega, Will Ethiopia's "Franco-valuta" permit address underlying structural economic problems? The Reporter, June 11, 2022.

The study's findings show that businesses are heavily involved in the practices of trade mis-invoicing, bribing customs officials at entry ports to obtain documents for foreign exchange declarations, overseas capital transfers, and purchasing foreign exchange on the black market to finance import businesses, all of which contribute to illegal cash flows. It has been determined that, in order of importance, lax regulatory frameworks, a lack of foreign currency, national security considerations, and the greedy nature of the traders are the primary drivers of enterprises engaging in such unlawful cash flow-related actions.

Most remittance recipients revealed that they received transfers from abroad through illegal money transfer operators as well as travelers coming home, which are common methods for the diaspora to send money home. The findings also show that the amounts of both foreign currencies exchanging and illicit remittances are highly increasing during the past two years. In addition, USA, Middle East countries, Canada and Europe are identified to be the major sources of incoming remittances; whereas China, Dubai and Turkey are the major destinations of outgoing illegal cash transfers from the country. The Ethiopian diaspora remits small amounts of money with high number of transfers in a year, usually to members of their close family as regular support or holiday gift. They mostly use the illegal money transfer service providers or the parallel market, which offers much higher exchange rates over the bank rates. The diaspora community also don't seem to be interested in using the diaspora account, which was aimed at attracting forex deposits in local banks.

Illegal cash flows in the country are caused by the combination of multiple factors including forex shortage, prevalence of informal businesses and corruption, lack of peace and security and the like. Some policy instruments such as the diaspora account, franco valuta import and customs pricing issues are also identified as factors that contributed towards illegal cash inflows and outflows in Ethiopia. The most common consequences of illegal cash flows in Ethiopia are found out to be loss of foreign exchange resources and tax revenues, prevalence of lawlessness as well as unintended legalizing of illicit monies.

The trend of formal remittance inflow is increasing, outweighing other major sources of forex to the country. But the amount diverted away from the legal channels is significant. This shows that the country could harness this potential by making some policy adjustments to convince the diaspora community to use the legal channels for sending remittances back home.

It is estimated that Ethiopia has over three million Diasporas scattered throughout the world, with fair economic and knowledge base. However, they claim to have government-related issues including government accountability, fraud or corruption, government attention, political instability, capital transfer, and personal Safety and security concerns. These are obstacles for the diaspora to be engaged in the country's affairs and contribute towards their choice of informal channels for sending remittances.

The NBE has broad powers to regulate the financial environment of the country as well as issue necessary directives to conduct its businesses. There are proclamations such as the prevention and suppression of money laundering and financing of terrorism that address the issue of illicit cash flows and illegal remittances, but not directly. Investment proclamation, forex surrender and retention as well as non-resident forex saving accounts as well as franco valuta directives also are somehow related and contribute to the control and regulation of illegal cash and remittance flows.

Ethiopia continues to face significant challenges in addressing illegal cash inflows and outflows, money laundering and capital flight. While the government has made some progress, more needs to be done to strengthen regulatory frameworks, improve law enforcement, and increase international cooperation to effectively combat this issue.

In addition, weak governance and institutional capacity have also been identified as contributing factors to the country's challenges in addressing illegal cash flows. The government has acknowledged these issues and has made efforts to improve governance and build institutional capacity through various initiatives, including capacity-building programs and institutional reforms.

In conclusion, illegal cash inflows and outflows continue to pose significant challenges to Ethiopia's economy and development. While the government has made some progress in addressing the issue, more needs to be done to strengthen governance, regulatory frameworks, and institutional capacity, as well as increase international cooperation, to effectively combat this problem.

4.2 Recommendations

The following recommendations are made in order to address the issue of Ethiopia's illicit financial flows:

- ☛ ***Governance, policy and regulatory framework related issues:*** Invest in building capacity of NBE and other regulatory and law enforcement agencies in order to improve quality of governance, implementation capabilities, reduce risks of

corruption and improve transparency. This includes updating existing laws and regulations, investing in training, resources and technology to improve regulatory, investigative and forensic capabilities.

Improve coordination among regulatory agencies to ensure they are working together effectively to address illicit cash flows and illegal remittances. Relevant agencies shall establish mechanisms for sharing information and coordinating investigations to tackle the problem.

Strengthen customs and tax administration practices by improving data collection and analysis related to trade flows and global price indices in order to make better decisions about detection and prevention of trade mis-invoicing investing. This also includes investment in training, resources, and technology to improve monitoring and detection of trade mis-invoicing.

☛ **International cooperation:** Ethiopia should continue to cooperate with international partners to share information, build capacity, and coordinate efforts to combat illicit financial flows.

Promote international transparency to promote transparency in key economic sectors and reduce the risks of corruption and illicit financial flows.

Establishing partnerships with international organizations to leverage their expertise and resources in addressing the challenges of informal remittances.

Increasing international cooperation by working with other countries to share information and coordinate efforts to combat trade mis-invoicing.

☛ **Enhance public awareness and diaspora engagement:** Improve awareness of the public and business community in the efforts to combat informal remittances, trade-based malpractices and hence illicit financial flows. This includes public education campaigns about the benefits of using legally licensed operators including the diaspora, engaging civil society organizations, and empowering citizens to report illegal activities.

Provide financial literacy training to overseas travelers and job seekers, particularly those from rural areas, who are likely to use informal remittance channels due to lack of awareness. This empowers individuals with knowledge about benefits of using formal channels and increase their capacity to make informed financial decisions.

Maintain positive partnerships with the diaspora communities to promote the use of formal channels for remittances. This can include working with diaspora organizations to provide information and education about formal channels and developing targeted marketing campaigns to promote the benefits of using formal remittance channels. The NBE shall also devise a mechanism to identify, register and reward each individual in the diaspora for sending forex through the formal remittance channel.

- ***Address the parallel forex market and informal economy issues:*** The government should implement policies and programs aimed at controlling and even formalizing the informal economy, which can help reduce cash-based transactions and make it easier to monitor financial flows.

Solving the foreign exchange shortage in Ethiopia, which requires a comprehensive approach including diversifying exports, encouraging foreign investment, increasing remittances, promoting tourism, strengthening export financing, managing imports, and increasing foreign aid. By implementing these measures, Ethiopia can increase its foreign exchange earnings, as well as its supply for the business community.

The NBE shall promote, encourage and recognize the use of formal channels for remittances, such as banks and legal money transfer operators, by providing competitive value for the forex sent, due recognition for the forex received and reducing the costs associated with formal remittances.

The NBE can promote the use of technology for regular business cash flows including remittances, such as mobile money transfers and online platforms, which can provide a safe and convenient alternative to informal remittances.

The NBE can promote competition among licensed operators by encouraging the entry of new players into the remittance market. This can increase the availability of formal channels and reduce the costs associated with formal remittances.

Addressing illicit financial flows in Ethiopia requires a comprehensive and multi-faceted approach that includes strengthening governance and regulatory frameworks, increasing international cooperation, improving data collection and analysis, enhancing public awareness and engagement, address the root causes of corruption and promoting responsible investment. By implementing these measures, Ethiopia can reduce the risks of corruption and promote sustainable economic development.

It is also important to acknowledge that reducing illegal remittances is not a task that can be accomplished overnight. It will require sustained effort and collaboration from the government, relevant authorities, the general public and international partners. By taking a comprehensive approach and working together, it is possible to reduce the level of illegal remittances in Ethiopia and promote a more stable and sustainable economy.

In conclusion, illegal remittances to Ethiopia pose a significant challenge to the country's economic stability and development. Addressing this issue requires a multi-faceted approach, including improved regulations and enforcement, increased transparency and accountability, public education and awareness, international cooperation, investment in technological solutions, and sustained effort and collaboration. By working together, it is possible to reduce the negative effects of illegal remittances on Ethiopia's economy and promote a brighter future for the country.

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Situation Analysis of Plastic Waste Management in Addis Ababa and Feasible Alternative Solutions*

ABSTRACT

The major purpose of this study is to investigate and analyze the situation of plastic waste management and recycling companies' status and problems in Addis Ababa and forward feasible alternative solutions. The study used quantitative and qualitative approaches, mainly relying on qualitative techniques through information generated by document analysis, key informant interview, focus group discussion, and field observations. Quantitative data gathered by survey questionnaire, from secondary data sources, and various studies and reports.

Plastic recycling industry in Ethiopia is at infant stage and have faced several challenges. The major challenges are, limited separation of wastes, expensive plastic waste, low priority given for the sector, absence of specialized department in universities for education and skill development, absence of university and industry linkages, limited awareness in plastic recycling, shortage of plastic waste, and shortage of forex.

Several plastic manufacturing factories have started to produce various plastic products such as water bottles, various household items, and thin plastic bags that all shops give free to their customers to carry their groceries. More consumer products made of plastic will enter the market due to the strong substitution effects that plastic materials have compared to other materials, such as less energy consumption and low cost linked to the production. However, the share of plastic waste also constitutes a significant share of the total waste disposed in the city of Addis Ababa. As a result, plastic wastes effects on the environment will be very serious unless proper plastic waste management (by way of collection, recycling, innovative substitution, awareness, enforcement measures etc.) are put in place.

The current waste collection capacity and disposal system are not keeping pace with the rapid expansion of the city and its corresponding plastic waste generation. The people have not yet given proper attention to Solid Waste Management (SWM) and they dump wastes along the roads and in open spaces. SWM status in Addis Ababa can be explained by the weak enforcement of rules and the lack of the strength of stakeholders' integration.

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The absence of standardized final waste disposal, poor handling of municipal wastes, poor dump site management, lack of manpower and technical skill remains the most important bottleneck in addressing waste collection in Addis Ababa.

The study recommends to prepare policy and regulatory framework for integrated solid waste (including plastic waste) management; set clear targets regarding plastics reduction, reuse, and recycling; develop robust waste monitoring and data management systems to gather, record and report on plastics data to encourage source separation of plastic waste; promote a circular economy to increase reuse and recycling of plastic waste by local businesses in the city; and provide financial support packages for businesses to adapt to policy and legal requirements for circular economy and new green markets.

Key Words: Circular Economy, Plastic Recycling, Plastic Waste, Solid Waste Management, Sustainability

1. INTRODUCTION

1.1 Background of the Study

The use of plastics has increased in areas that were previously the domain of metals due to the development of durable and lighter materials, along with improvements made in manufacturing techniques. The growing use of plastics for technically challenging applications, that have demanding dimensional tolerances, has meant that over the past few years, many plastic component manufacturers have invested in this sector.

The use of plastic materials in packaging, transport, construction, and medical devices is growing. Plastics are lightweight, resource efficient and offer excellent barrier properties. Due to these properties, packaging items in plastics significantly reduce waste and saves energy. Due to its lightweight, plastic use in vehicles has reduced carbon dioxide emissions from transport. Use of plastic in pipes facilitates clean drinking water supplies, while plastic enables life-saving medical devices such as surgical equipment and drips. Furthermore, plastic has lower carbon emission over its life cycle.

In Ethiopia, most plastics are thermoplastic and plastics products highly consumed for packaging and construction materials. Plastics consumption in the country is growing and the current consumption is three kilogram per person; ten times lower than in Europe.

However, as the use of plastic in modern society has increased, so too have the environmental impacts associated with its production and disposal. According to Trucost research for United Nations Environmental Protection in 2014, the environmental costs of plastic use in consumer products include emissions of greenhouse gases, air, land and water pollutants, depletion of water and the production of marine wreckage in the global oceans. These environmental costs have provoked some to argue that plastics should be replaced with alternative materials, which may present fewer environmental challenges. However, recent studies by Franklin Associates (2013) and Denkstatt (2011), which modeled the substitution of plastic with alternative materials (such as paper, steel, aluminum and glass), suggest that a move away from plastics may come at an even higher net environmental cost.

Replacing plastics with alternative materials increases footprint 3.8 times. Although alternative materials such as glass, tin, aluminum and paper are viable alternatives to plastic in many consumer goods applications, they have higher environmental costs in the quantities needed to replace plastic. Trucost estimates that substituting plastic in consumer products and packaging with alternatives that perform the same function would increase environmental costs from \$139 billion to a total of \$533 billion. Production of plastic materials and their transport are the largest sources of environmental costs.

Moving to circularity is the best option to reduce environmental cost, specifically, to make plastic part of circular economy to reduce environmental costs. The circular economy is an alternative to the traditional linear make-use-dispose economic model, which prioritizes the extension of product life cycles, extracting maximum value from resources in use, and then recovering materials at the end of their service life. An important principle of the circular economy is increasing the capture and recovery of materials in waste streams so that they can be recycled and reused in new products.

In order for a product or material to be truly described as sustainable it must be environmentally, economically and socially sustainable. These aspects have become known as the three pillars of sustainability. In a number of studies, plastics make a positive contribution to all three pillars of sustainability. In addition, investments in extending waste collection services and improving waste management practices are critical to addressing the challenge of plastic debris. Increase in the recycling of post-consumer plastic waste, along with energy recovery, can have a major impact on the environmental costs of consumer plastics use.

In the same fashion, to reduce environmental costs of plastics, Ethiopia needs recycling infrastructure to move from linear model to circular model. Currently, there are above 10 companies engaged in recycling in the country, created 20,000 employment opportunity. Countries, such as, Turkey is doing exceptional in plastic recycling, there are around 1,300 companies engaged in circular economy. These companies import plastic and other wastes from abroad for recycling.

Plastic recycling industry in Ethiopia is at infant stage and have faced several challenges. The major challenges are, limited separation of wastes, expensive plastic wastes (3 to 4 birr per kilogram and 30 birr per kilogram for HDP plastic), low priority given for the sector, absence of specialized department in universities for education and skill development, absence of university and industry linkages, limited awareness in plastic recycling, shortage of plastic waste, and shortage of forex.

1.2. The Rationales of the Study

With the expansion of cities and urbanizations in Africa, the management of solid waste became a growing problem in many cities. For the last decades, due to rapid population growth and high rates of migration from rural to urban areas, rapid urbanization is observed. Most cities in Africa including Addis Ababa with fast expansion of urban areas are characterized by lack of resources, weak institutional organization and the capacity to provide basic infrastructure to properly manage solid wastes. Moreover, the lack of proper land use planning has resulted in the creation of informal settlements, and narrow streets that make it difficult for waste collection trucks reaching many areas of the cities. As a result, a large portion of the population in the cities remains without any access to solid waste services.

In Addis Ababa, it is common to see people disposing wastes illegally in open fields, rivers, streets, and ditches partly due to limited capacity of the city to manage the increasing volumes of waste, limited efforts made to introduce innovative waste management systems, low awareness and limited enforcement measures. As a result, about 40 to 50% of the waste remains uncollected in most streets and many of the landfills are almost full. The insufficient handling of solid waste results in water, land and air pollution affecting the urban environment and the health of the people living in the city and hence found to be one of the most critical environmental problems.

Another factor adding to the seriousness of waste management is the number of plastic products which has increased rapidly in Addis Ababa during the last decade. Several plastic manufacturing factories have started to produce various plastic products such as

water bottles, various household items, and thin plastic bags that all shops give free to their customers to carry their groceries. More consumer products made of plastic will enter the market due to the strong substitution effects plastic materials have compared to other materials, such as less energy consumption and low cost linked to the production. However, the share of plastic waste also constitutes a significant share of the total waste disposed in the city of Addis Ababa. As a result, plastic wastes effects on the environment will be very serious unless proper plastic waste management (by way of collection, recycling, innovative substitution, awareness, enforcement measures etc.) are put in place.

Acquainted of the above, the study examined plastic waste management system, in order to be able to handle the increasing generation of plastic waste and to manage it in a sustainable way thereby benefiting the society as a whole.

1.3. Objectives of the Study

The major purpose of the study is to investigate and analyze the situation of plastic waste management and recycling companies' status and problems in Addis Ababa and forward feasible alternative solutions. As this prime objective, the study further aims to contribute to overall solid waste management measures in Addis Ababa through coming-up with innovative ideas as well as alternative solutions that address the challenges of respective companies to be more competitive, efficient and operate in sustainable and responsible manner.

2. ASSESSMENT METHODS

2.1. Data Source and Type

To achieve the study purpose, that is, to investigate and analyze the situation of plastic waste management and recycling companies' status and problems in Addis Ababa and forward feasible alternative solutions, the study undertaken based on robust and scientifically proven research methodology.

Required primary and secondary data and information collected from both primary and secondary sources. Key stakeholders in the study major millstones areas participated and consulted. These are plastic waste management and plastic waste processors (formal and informal recyclers), government organizations; business enterprises that are engaged in plastic recycling in and around Addis Ababa, plastic users and plastic waste generators; and non-government organizations.

2.2. Method of Data Collection and Analysis

The research methods comprised of both quantitative and qualitative approaches, mainly relying on qualitative techniques through information generated by document analysis, key informant interview, focus group discussion, and field observations. Detail qualitative information gathered from key stakeholders of plastic waste management and plastic waste processors (formal and informal plastic recycling companies), plastic waste generators, and government regulators through in-depth interview and group discussion. Quantitative data gathered by survey questionnaire and from secondary data sources and various studies and reports. Once primary and secondary data collected, data and information carefully recorded, organized, transcribed, processed, analyzed and interpreted to achieve the objectives of the study. In this study, data were analyzed by applying quantitative and qualitative analysis techniques.

3. ASSESSMENT FINDINGS

3.1. Review of Policies, Laws and Regulations in Waste Management

In order to fully understand current waste management practices and their resulting effects it is important to examine the legal system that governs waste. Ethiopia follows a civil law pattern where laws are written by legislators instead of mandated by judges. The Constitution of the Federal Democratic Republic of Ethiopia is the supreme law of the land with proclamations, regulations, and directives at all levels. The constitution guarantees every person in Ethiopia the right to a clean and healthy environment (Article 92.1, Article 92.2 of the Constitution).

- Article 92.1: “Government shall endeavor to ensure that all Ethiopians live in a clean and healthy environment”;
- Article 92.2: “Government and citizens shall have the duty to protect the environment”

The government issues environmental proclamations that are aimed at various sectors of the environment (land, biodiversity, etc.). The major environmental body in Ethiopia is the Environmental Protection Authority (EPA). The EPA is responsible for federal level environmental protection by formulating the national environmental policy.

The EPA issued the Environmental Policy of Ethiopia which refers to waste management in three different articles, either directly or indirectly:

- Article 3.7 addresses issues related to human settlement, urban environment and environmental health;

- Article 3.8 addresses issues related to the control of hazardous Materials and pollution from industrial waste; and
- Article 3.9 addresses atmospheric pollution and climate change.

The Solid Waste Management Proclamation (Proc. No. 513/2007) is the federal law that binds the management of solid wastes in Ethiopia.

According to the SWM Proclamation (No. 513/2007) of Ethiopia, promotion of ‘Solid Waste’ implies anything that is neither liquid nor gas and is discarded as unwanted and “solid waste management” means the collection, transportation, storage, recycling or disposal of solid waste or the subsequent use of a disposal site that is no longer operational. Sources of solid waste include households, commercial and manufacturing industries, shops, hotels, garages, agricultural activities, institutions such as schools, hospital care homes, prisons, public spaces such as streets, bus stops, parks and gardens. This proclamation aims to prevent environmental damage from solid waste while harnessing its potential economic benefits. The proclamation indicates the need for involvement of the private sector for effective management and describes the safe transport of solid waste including hazardous waste.

The proclamation has explicitly described how integrated solid waste management should be put in place. In its Article 11.1, it has described that “Household shall ensure that recyclable solid wastes are segregated.” Collection and storage have been addressed in the proclamation with Articles 5.2.b and 5.2.c and Article 11.2 in that “Urban administration shall ensure that adequate household solid waste collection facilities are in place ensure the installation of marked waste bins by streets and in other public places ensuring the collection of solid waste from waste bins with sufficient frequency.” Transportation has been addressed under Article 13.2 in that “Urban administration shall set standards to determine the skills of drivers and equipment operators and prevent overloads of solid waste.” Disposal/landfill has been addressed under Article 14 related to construction of solid waste disposal sites, and Article 15 with auditing the existing solid waste disposal site. Recycling and reuse have been addressed under Article 7.1 in that “Manufacturer or importer of glass container or tin cans shall...collect and recycle used glass or tins.” Construction and demolition have been addressed under Article 12 concerning construction debris and demolition wastes.

The Solid Waste Management Proclamation works hand in hand with the Environmental Pollution Control Proclamation No. 300/2002 which mandates that all urban governments are obligated to devise and implement safe and effective mechanisms

to handle, transport, and store municipal waste. It also states that any transporting or treatment of municipal waste can only be done with a permit from the Ethiopian Environmental Protection Agency.

The summary of the SWM and Environmental Pollution Control Proclamations is indicated in Table below. Although this proclamation can apply to solid waste management at all federal states, Addis Ababa can also enact its specific laws and regulations.

Table 1: Summary on the SWM and Environmental Pollution Control Proclamations

Solid waste management Activity	Law or Act	Description
Source reduction/segregation -households	Solid Waste Management Proclamation, Article 11.1	Households shall ensure that recyclable solid wastes are segregated
Collection and storage	Solid Waste Management proclamation, Article 11.2	Urban administration shall ensure that adequate HH solid waste collection facilities are in place to ensure the installation of marked waste bins by streets and in other public places guaranteeing the collections of solid waste from bins with sufficient frequency
Transportation	Solid Waste Management proclamation, Article 13.2	Urban administration shall set the standards to determine the skills of drivers and equipment operators and prevent overloads of solid waste
Treatment	Environmental Pollution Control Proclamation, Article 5.1	All urban administrations shall ensure the collections, transportation, and, as appropriate, the recycling, treatments or safe disposal of municipal waste through the institution of an integrated municipal waste management system.
Disposal/Landfill	Solid Waste Management proclamation, Article 14,15	Construction of solid waste disposal sites and auditing existing solid waste disposal waste.
Recycling and reuse	Solid Waste Management proclamation, Article 7.1	Manufacturer or importer of glass container or tin cans shall ...collect and recycle glass or tins.
Hazardous waste	Environmental Pollution Control Proclamation, Article 4.2	Any person engaged in the collection, recycling, transportation, treatment or disposal of any hazardous waste shall take appropriate precaution to prevent any damage to the environment or to human health or well-being.

The National Health Policy has given priority to the development of environmental health, promotion of intersectoral collaboration in developing safe disposal of human, household, agricultural and industrial wastes, encouragement of recycling, attention for healthy environment and prevention of environmental pollution from hazardous chemical wastes. At federal level, the Public Health Proclamation No 200/2000 has provisions on waste handling and disposal.

Although all federal and regional laws and regulations can apply for solid waste management at the local level, the Addis Ababa city administration has enacted its specific regulation for waste management. Some of the published regulations and proclamations related to the solid waste management system in Addis Ababa includes Addis Ababa solid waste management Regulation No.13/2004, Addis Ababa solid waste management policy 1995 and Addis Ababa City Administration building permit directive No.1/1997. So far availability of various governing legislations, no one of them underline and give attentions for hierarchical solid waste management system chains such as source reduction, separation, reuse and recycling.

International Waste Conventions

Ethiopia has ratified two important International Conventions in hopes of reducing the amount and severity of solid waste in the country (See Table below). The Basel Convention is an international treaty whose goal is to decrease the movement of solid waste and hazardous waste between countries. The specific aim of the treaty is to prevent developed countries from transferring hazardous waste to less developed countries. Less developed countries often take the waste of others in return for monetary compensation. The Rotterdam Convention stipulates that hazardous waste importers must use full disclosure when dealing with potential importers. This transparency includes “proper labeling, the inclusion of directions on safe handling, and informing purchasers of any known restrictions or bans.”

Table 2: Solid waste international conventions ratified by Ethiopia

Proclamation Number	Convention
Proclamation No. 192/2000	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
Proclamation No. 278/2002	Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

The new Ethiopian Investment Proclamation no. 1180/2020, this is the new investment proclamation that increasing the role of private sector investment in all sectors of the economy include in productive and enabling sectors has become necessary to accelerate the economic development of the country, ensure its sustainability, strengthen domestic production capacity and thereby improve the living standards of its people.

KEY FINDINGS: -

Identified challenges and Gaps

The study identifies the investment proclamation has a gap or limitation related solid waste management and its actors. Because there is no special attention or incentive given to the sectors. Because the plastic waste collector needs to have access for duty free privileges like plastic recycle companies. More investment is required in transport and logistic of plastic wastes and other supports apart from the ordinary investment.

The study also identified regulatory gab in segregation of wastes, intermediaries/broker involvement in the sectors and awareness creation.

3.2. Overview of Solid Waste Management in Addis Ababa

3.2.1. Solid Waste Generation and Disposal

Currently, Addis Ababa is one of the rapidly urbanizing cities among developing countries. However, the provision of solid waste management services has not increased to the level demanded in line with the expansion of the city and the growth of the city's population.

Cities and urban areas in Ethiopia contribute to approximately 70% of the total SW generated in the country (Tassie et al., 2019). As AA now hosts about 21% of Ethiopia's total urban population and produces over 11.49% of the national GDP, the city is the most significant MSW producer in Ethiopia. Addis Ababa MSW sources include households and small (mostly family-owned) businesses, streets and public spaces, commercial areas, institutions, large business entities, industries, hospitals and other health clinics, and construction sites.

There are few recent and reliable studies on per-capita waste generation in Ethiopia and Addis Ababa. The estimates available in literature often contradict each other. According to the recent estimation of AACMA with a field survey of 375 households in ten sub-cities on their per-capita waste generation and waste composition. It estimates that Addis Ababa generates a daily average of 3,200 tons of MSW. As a considerable

amount of MSW goes uncollected and unreported, the average per capita household solid waste generation rate in Addis Ababa was about 0.48 kg/capita/day and it seems plausible, so was used in this report's analysis. The solid waste generation and storage status in the city are shown in Table.

Table 3: The Current Status of Solid Waste Generation and Storage, Addis Ababa

Waste generation and storage	Year 2020
Per Capita waste generation rate (kg/cap/day)	0.3-0.4
Total daily generation (ton/day)	3200
Sources of waste	<ul style="list-style-type: none"> • 76% households • 18% institutions (commercial, factories, hotels, and health facilities) • 6% street sweeping
Physical composition	<ul style="list-style-type: none"> • Organic 60% • Recyclables 15 % • Others 25% (vegetable, paper, rubber/plastics, wood, bone, textiles, metals, glass, combustible leaves, noncombustible stone)
Collection systems	<ul style="list-style-type: none"> • Three modes of collection systems (communal container collection, institutional collection and door-to-door collection system) • Daily street sweeping is also provided. Pre-collection is also provided by micro and small enterprises
Collected and transported landfill annually	7.92x106 tonnes per year
Recycled and reused	35,725m ³ /day (5%)

Source: AACMA, 2020

International comparison

After reviewing the current status of municipal SWM in Addis Ababa, it is necessary to compare it with some peer cities to understand how the city is positioned regionally and even globally. The following table summarizes the municipal SWM situation of Addis Ababa and a few representative cities, especially capitals or same-sized cities in East Africa.

Table 4: Comparison of the municipal SWM situation of Addis Ababa with other representative cities

City	Population (million persons)	Daily MSW generated (tons/day)	MSW generation per capita per day (kg/capita/day)	Collection rate (%)	Recycling rate (%)	Sanitary landfill for MSW (Y/N)	WtE or incinerator for MSW (Y/N)
AA	4.8 (2020)	3,200 (2020)	0.67 (2020)	70 (2020)	4 (2020)	No	Yes
Nairobi	4.4 (2019)	2,273 (2013)	0.75 (2013)	50 (2013)	5 (2013)	No	No
Kampala	1.7 (2019)	2,301 (2015)	1.19 (2015)	65 (2015)	n/a (2015)	Yes	No
Dar es Salaam	6.4 (2020)	4,252 (2018)*	0.80 (2019) [§]	51 (2018) ^l	Very limited (2018)	No	No
Kigali ⁶	1.6 (2020)	1,015 (2020)	0.63	52 (2016/17)	10-12	No	No
Mombasa k	1.2 (2021)	708 (2021)	0.59 (2021)	56.5 (2021)	5 (2021)	No	No
Cape Town ^η	4.4 (2020)	4,733	1.08	99.997 (2018/19)	21	Yes	No
Cairo	9.5 (2017)	15,000 (2014)	1.67 (2014)	65 (2014)	n/a (2014)	n/a (2014)	n/a (2014)
Bahir Dar, Ethiopia ⁸	0.28 (2019)	159 (2021)	0.56 (2021)	85 (2021)	2 (2021)	No	No

Note: The year of data shown in parentheses.

Sources: # Dar es Salaam Department of Chemical and Mining Engineering and University of Dar es Salaam (2018); * Kazuva, Emmanuel and Zhang, J. (2019); k UN-HABITAT (2021a); § UN-HABITAT (2021b); 6 Pegasys (2021); η Data managed by the City of Cape Town; and the AA data is from this report and the rest of the data in the table is from the World Bank's "What A Waste" database.

The above table shows that Addis Ababa's MSW generation rate of 0.67 kg/per capita/day is below that of its peer cities Nairobi, Kampala, and Dar es Salaam. Its rate is understandably higher than Sub-Saharan Africans average but lower than the world average of 0.74 kilogram/per capita/day and the average of the Middle East and North Africa region according to the World Bank study (Kaza, et al., 2018).

In terms of collection rate, Addis Ababa's 70% is doing relatively well compared to its peer cities and is much above the average amount of waste collected in cities in low-income countries, which is 48 percent. As most of cities in Africa are having very low recycling rate, Addis Ababa's 4% shows little difference.

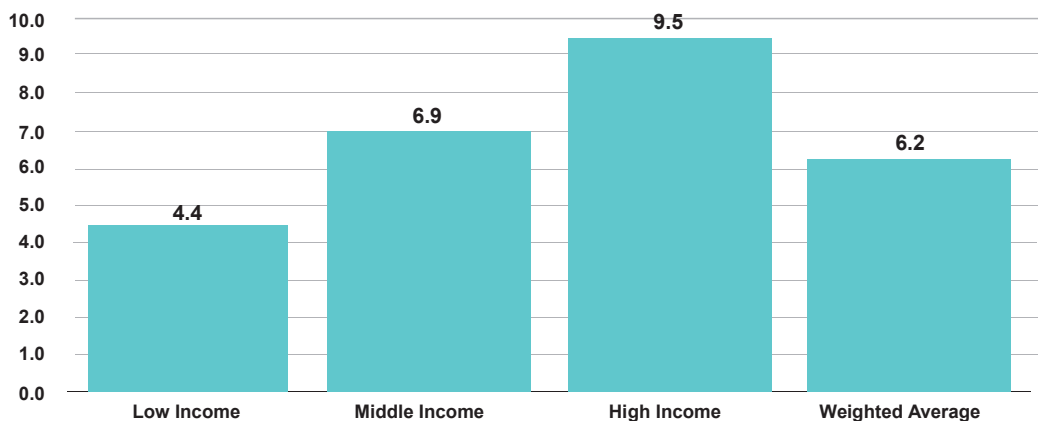
According to a World Bank study, waste management can be the single highest budget item for many local administrations in low-income countries, comprising nearly 20 percent of municipal budgets on average (Kaza, et al., 2018). Addis Ababa's SWM is significantly underbudgeted, as its annual SWM budget was only about 5% of municipal government expenditures in 2019, excluding the costs of Waste to Energy (WtE) Entity that belong to a federal government entity.

Overall, AA is on par with its peer cities as its per-capita daily waste generation rate is positioned in the middle, and the city shows a relatively better waste collection rate and features a brand new WtE facility. However, its SWM is under-budgeted and facing an aged landfill. Additional efforts are necessary for the city to modernize its SWM system.

3.2.1.1. Plastic Waste Generation and Rate

As per AACMA estimation about 10 % of the total waste generated, is plastic at both household and non-household (such as street sweeping, markets, hotels, restaurants, offices, hospitals, industries, construction sites) in Addis Ababa. The rate varied across sub-cities, for instance, at household level, people with a higher income generally use (and dispose) more plastic than their lower earning peers, with the former also using more different sorts of plastic as shown in Figure below.

Figure 1. Per capita plastic waste generation rate in Addis Ababa (in kg/year).

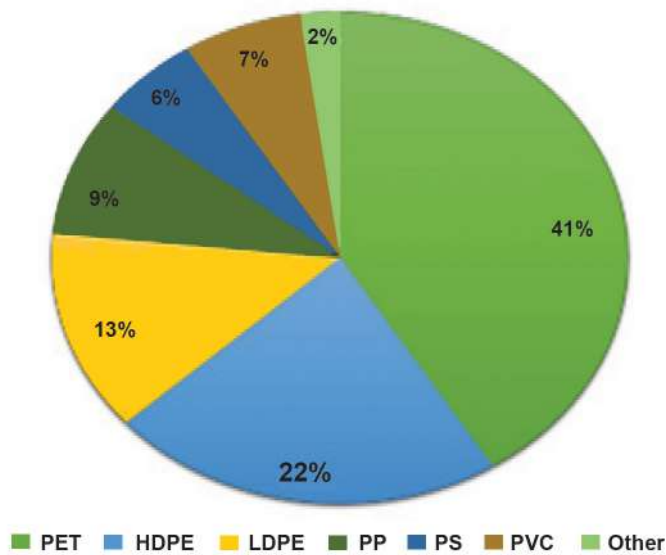


Source: GIZ_NatuRes

As shown in Figure 2, PET plastic waste (about 41%) is by far the most popular plastic waste in Addis Ababa and ever present, followed by HDPE and LDPE. Where, PET is used for plastic bottles (e.g., water, cola). HDPE is often used for shower gel holders,

shopping bags, and even water pipes, but also for jerrycans, which are used to collect water from collective water points – this explains the relatively high share of HDPE in the ‘plastic mix’ of people with a lower income. While PET and HDPE account for almost two-thirds of the total plastic waste consumption, LDPE, used mainly in agriculture for irrigation tubing and mulch films – covering and protecting crops – as well as for garbage bags, and PP, which is used as packaging boxes for warm meal takeaways, are also popular plastics.

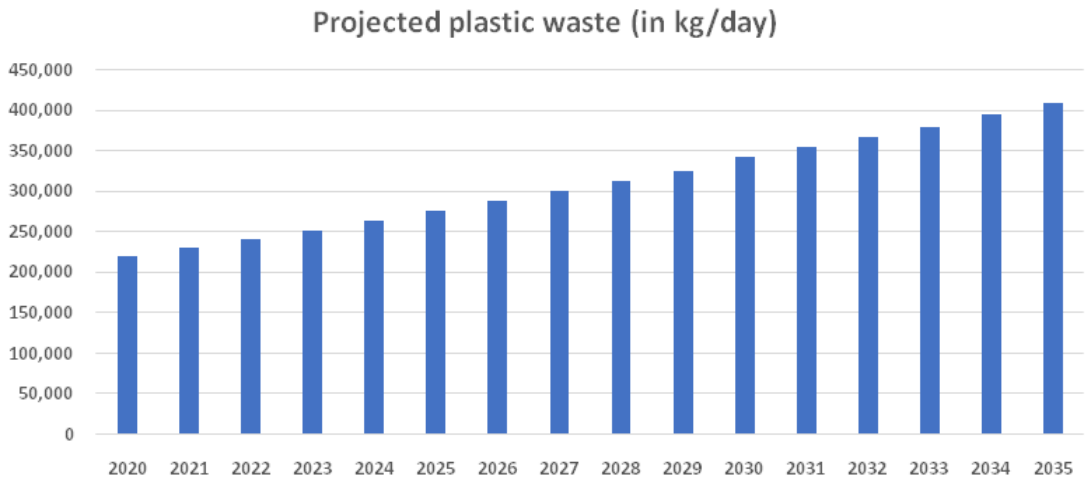
Figure 2: Plastic waste composition in Addis Ababa



Source: GIZ_NatuRes

3.2.1.2. Future Projections of Plastic Waste Generation

According to (AACMA,2020) the household plastic waste generation rate was projected based on the population growth trends. However, the level of GDP growth, income level solid waste generation trends and solid waste composition dynamics were considered in the Stella model simulation. The solid waste generation rate input variables considered the Ethiopian GTP strategic goal of achieving lower and upper middle-income counties with these 30 years. And the table below shows projections of housed level plastic waste generations.

Figure 3: Projected household plastic waste composition (in kg/day)

Source: AACMA, 2020

3.2.2. Waste Collection

Waste collection service is one of the chief components of municipal solid waste management. There were three modes of collection systems, namely communal container collection, institutional collection and door-to-door collection system. In most parts of the city, the households and other waste-generating sources were delivering their waste to containers placed at various collection points by the municipality. Out of the total generated waste, about 65% also had been collected up before through container, door-to-door and institutional collection systems using skips located at different collection points in the city. In most parts of the city, the communal collection points have been located at roadsides and vacant plots. Of the total generated waste, 25 % is still dumped in riverbanks, empty sites, drainage channels, ditches, etc.

The ever-increasing economic, social and administrative activities in cities generate various types of solid wastes that need to be properly managed. In Addis Ababa, it is estimated that 3,200 tons of solid waste are generated per day. Yet, only 65% of solid waste reaches the city's open dump site. Currently, the collection of these wastes in the city is also carried out in three different types of collection systems: primary, secondary and street sweeping.

The primary collection system is the one that is carried out by Micro and Small Enterprises (MSEs) from door-to-door in households. It is estimated that there are about 707,817 households at present in the city. The secondary collection system is the

block (container) collection that is carried out by private companies in hotels, hospitals, schools and other service delivery and manufacturing organizations. The third is the street sweeping system that is conducted by the sub-city.

About 25% of the solid waste generated in Addis Ababa is still indiscriminately dumped within residential neighborhoods as before, while the remaining 65% is collected but disposed of in an unsanitary manner at Reppi/Koshe controlled dumping site. Currently 95% of the city's solid waste is collected through the door-to-door collection system by MSEs and the remaining is collected by private companies. The number of employees engaged in SWM from Agency to District level in 2020 is shown in Table below.

Table 5: Number of employees engaged in SWM from Agency to District level in 2020

	Agency	Sub-City	District Offices	Street Cleaning	No. of MSEs (No. of members)
Agency	11	-	-	-	-
Arada	-	38	29	487	3 (319)
Akaki	-	76	47	449	7 (559)
Addis Ketema	-	43	150	370	10 (497)
Bole	-	65	47	862	13 (825)
Lideta	-	27	22	355	3 (264)
Gulele	-	43	29	297	5 (483)
Kirkos	-	40	30	713	3 (400)
Kolfe	-	77	269	629	15 (813)
Nefas Silk	-	69	29	652	10 (854)
Yeka	-	73	50	804	10 (680)
Total	11	551	702	5,612	78 (5,694)

Source: (Hayal, 2022)

3.2.3. Hazardous, Special and Industrial Wastes

Municipal solid wastes are not supposed to be disposed of together with hazardous wastes. But there have been no effective institutional system and specific regulations dealing specifically with hazardous and industrial wastes for their proper collection. Thus, they are ending up with municipal wastes at Koshe open disposal site. They also are discharged into the nearby watercourses from the industries and hospitals without any form of prior treatment and special consideration in conjunction with the urban non-hazardous wastes. On top of this, there are no specialized facilities and institutions for such wastes in the city. There is also no competent, well-staffed regulatory department that deals with such wastes. Studies, inventories and records have not been made of the generators of these wastes as well. At the household level, there is also no segregation of household hazardous waste at the source in a separate bin. Producers are not fully responsible to prepare facilities for such wastes.

3.2.4. Transfer Stations

A transfer station is an intermediate place at which waste is deposited and stored before being transported to the final disposal site. Because the dump site for waste disposal was and still is within the city, there has been no transfer station materialized for long. In a waste management scenario, transfer stations must be considered in the planning approach. However, transfer stations were uncovered in the plan component of the former development plan of Addis Ababa. With the plan to move the disposal site to another far area, there was a plan to construct appropriate transfer stations in different parts of the city per the existing development plan. However, there is still improper storage of solid wastes in open spaces until they are transported to the disposal site.

3.2.5 Waste Processing and Separation

Various concepts and principles need to be used in developing sustainable waste management. Sustainable SWM is the guiding principle to improve the poor waste management services and environmental quality of a city. The concept of sustainable solid waste management recognizes waste as a resource and makes use of a hierarchy of options. The most preferred waste management option is prevention and minimization followed by reuse, recycling and resource recovery. However, the dominant waste management practice employed in the city of Addis Ababa is the least preferred option, i.e., only collection and disposal.

As per the Cleaning Management Agency, 84,643,000 Birr and 99,267,299 Birr were generated in 2019 and 2020 respectively from waste processing activities. The solid waste generated contained items such as bottles, papers, plastics and metals that can be directly reused or used after some recycling processes (Table 6).

Table 6: Wastes processed for recycling and reusing (in tons) in 2020

Types	2020
Plastics	26,887
Glass	196
Chronopost	591
Paper	1,856
Metals	5,912
Electronics	286
Total	35,725

Source: (Hayal, 2022)

Moreover, a large part of the solid waste is composed of organic matter that can be transformed into composts. Successful implementation of sustainable solid waste management, however, requires the separation of waste at the source and the active involvement of the public in the process. Proper implementation of such a strategy creates job opportunities and minimizes burdens on the natural environment. However, very little has been done so far at the waste generating sources to reduce the volumes of waste through efficient sorting, recycling and composting activities. Most of the sorting and recycling of waste at the moment have still been done by the informal sector as before.

Table 7: Job opportunities created by waste processing (recycling and reusing)

Sub-cities	Area in km ²	Job opportunities	
		Reuse and recycled	Collection
Akaki	118.08	642	77
Gulele	30.18	119	*
Yeka	85.98	40	17
Bole	122.08	187	19
Kirkos	14.62	85	4
Lideta	9.18	184	*
Arada	9.91	73	29
Addis Ketema	7.41	295	*
Nifas-Silk	68.30	165	37
Kolfe Keranio	61.25	111	53
Sub-total	526.99	1,901	236

* Data not available

Source: (Hayal, 2022)

Recycling and Reuse

As indicated in above sections that the recyclable portion of the total generated waste was 15% in the city. Yet, the practice of waste separation at source is only 10% of the solid waste is reused/recycled, including organic waste that is composted. However, only 5% of the waste was recycled informally. Recyclable materials with direct commercial value were widely separated from the waste stream, especially at the household level. The collection of recoverable waste was highly organized with its huge network of dealers and wholesalers throughout the city. The amount of solid waste used for recycling and reusing for the years 2016 to 2020 and the money generated are shown in Table below.

Table 8: The Amount of Solid Waste Used for Recycling and Reusing and Money Generated

Year	Amount of solid waste used for recycling and reusing (in tonnes)	Money generated (in Birr)
2016	3,057	8,239,460
2017	14,584	36,066,200
2018	23,365	61,869,000
2019	30,321	84,643,000
2020	35,727	99,267,299

Source: (Hayal, 2022)

An extensive network of actors' pick, collect and transport salvaged materials, and then sell separated and selected materials to small recyclers. It employed a great many workforces. The recyclable items were metal products, some types of glass products, bottles, paper, plastics, rubber products and clothes. The items were sold to the informal sector of recyclable collectors moving around the city known as "Koraleos". Koraleos are informal itinerant buyers going from door to door to collect recyclable and reusable materials such as pieces of metals, plastics, glasses, corrugated iron sheets, tins, car batteries and others. They buy these materials and sell them to one of the collectors, who in turn sell them to recycling companies in Addis Ababa. These collectors are registered at the Bureau of Trade and Industry, thus have a license for trading materials and need to pay taxes. In the poorest families, this recycling formed part of the actual family subsistence. Sorting of valuable recyclables in commercial and institutional facilities also was widely practiced and the items were sold directly to informal or formal sector dealers of recyclable materials to whom also Koraleos (recyclable materials collectors) sold their collections.

Recyclable materials without direct commercial value and/or immediate reuse were usually not separated from the waste stream. Some craftsmen recycled metal, wood, rubber tire, clay, etc. to provide essential goods including usable spareparts to a great number of customers. The nucleus of these activities was and still are Merkato areas in Addis Ketema sub-city. Although there were no formally organized Western type of recycling centers and big enterprises, there were informal recycling activities.

3.2.6. Composting

Very little has been done at the waste-generating sources to reduce the volumes of waste disposal through the processing of domestic waste into compost as there have been no well-organized and formal type composting centres. Earlier studies indicated that 60% of the wastes generated were organic and degradable materials. Sorting of compostables from the waste stream was practiced but only by a small minority of the households and other waste-generating sources.

The city administration was encouraging small-scale composting by organizing income generation and selling it to farmers for urban agriculture and encouraging communities and private sectors in composting through various incentive mechanisms. In 2020, about 1,015 tons of solid wastes were used for composting purposes across all sub-cities in the city. The cleaning management also has prepared a procedure, manual and standard for recycling and reuse of solid wastes in the city. In all sub-cities, 1,066 households are currently working on composting.

3.2.7. Street Sweeping

Street waste is directly related to the aesthetic appearance of the city. However, special attention has not been given to street cleaning services in the Development Plan. Yet, streets requiring cleaning have increased; the service delivery also has been expanded along with the expansion of urban areas to address the street sanitation problems in the city. Sub-cities are responsible for urban cleaning, concentrating mainly on street sweeping. They are doing the cleaning mostly manually using a wheelbarrow, metal or straw brooms and shovels. This is undertaken by sweeping teams on strategic roads only. The sweepers are working with simple manual equipment and dispose of the sweepings in communal containers in their respective areas. Street sweepings are about 6% of the total waste generated.

3.2.8. Landfill

There has been one open dumpsite, named “Reppi” or “Koshe”, which has been giving service since 1964. The site has served beyond its design period and has been a source of serious public and environmental health threats. It has a surface area of 25 hectares. The site is located in the southwestern part of the city in Kolfe Keraniyo sub-city, some 13 km away from the city center. Until 2002, the estimated disposal of solid waste in the landfill was more than 9.5 million cubic meters. The past method of disposal was unsanitary open dumping: hauling the wastes by truck, spreading and leveling, and compacting by compactor or bulldozer. After four decades since its establishment, the

disposal site was faced with major problems such as getting full, surrounded by housing areas, creating nuisance and health hazard for people living nearby, absence of daily cover with soil, absence of leachate containment or treatment, absence of odor or vector control, etc. About 200 to 300 human scavengers per day were working continuously and interfering with the operation of the work for the collection of salvageable materials such as wood, scrap metals, discarded food, etc. in the year 2000. Currently, however, some improvements have been made such as burning waste to generate heat and energy, establishing a weighbridge for accurate weighing of waste, record keeping, venting gas (methane) emissions to prevent the occurrence of fires, and preparing proper and adequate road access to the site. The solid waste disposal service at the disposal site and power plant are shown in Table.

Table 9: Solid waste disposal service at the disposal site and power plant

Activities	Waste in tonnes
Solid waste supplied for power generation	513,968.56
Solid waste disposed at the disposal site	230,616
Fly ash removed at the disposal site	12,729
Sludge ash removed at the disposal site	86,886

Source: (Hayal, 2022)

3.2.9. Adverse Impacts of Plastic Waste

Plastics are very handy, lightweight, flexible, cheap and versatile. What is the problem? Plastic is a polymeric material, that is, a material whose molecules are very large, often resembling long chains made up of a seemingly endless series of interconnected links. Natural polymers such as rubber and silk exist in abundance, but nature's "plastics" have not been implicated in environmental pollution, because they do not persist in the environment. Today, however, the average consumer comes into daily contact with all kinds of plastic materials that have been developed specifically to defeat natural decay processes, materials derived mainly from petroleum that can be molded, cast, spun, or applied as a coating. Since synthetic plastics are largely nonbiodegradable, they tend to persist in natural environments.

Dropped on the ground, thrown out of a car window, heaped onto an already full trash bin, or inadvertently carried off by a gust of wind, they immediately begin to pollute the environment. Where, drainage systems become clogged with plastic bags, films, and other items, causing flooding and urban farmers in Addis Ababa have started noticing their livestock eating plastic waste increasingly often. Apart from this possibly leading

to the animals suffocating, consumption of urban livestock might become less appealing knowing their full diet.

Moreover, many lightweight single-use plastic products and packaging materials, which account for most of all plastics produced, are not deposited in containers for subsequent removal to landfills, recycling centers, or incinerators. Instead, they are improperly disposed of at or near the location where they end their usefulness to the consumer. The mass of plastic is not greater than that of other major components of waste, but it takes up a disproportionately large volume. As waste dumps expand in residential areas, the scavenging poor are often found living near or even on piles of residual plastics.

But also, (Tassie et al., 2019) studies 36,845 incidents of parasitic infection due to indiscriminate SW collection and disposal were reported in the year 2012 at Addis Ababa. Other impacts of poor MSW management include air and water pollution, land contamination, social and economic inequality, and community resettlement. These impacts disproportionately fall on the poor, who are often underserved in proper MSW management and have little influence over formal and informal SW disposal near their homes and places of work. Poor MSW management also significantly contributes to climate change and ozone depletion. In Addis Ababa, these negative impacts are exacerbated by continuous increases in generated waste.

3.3. Actors involved in SWM

Improved solid waste management means making waste collection and disposal systems more efficient, raising public awareness and enforcing solid waste management laws. These interventions could be achieved through a well-operating institutional framework that is capable of generating the financial resources required and technical skills to meet operating, maintenance and investment costs. Hence, enhancing inter-organizational integration is very important to improve SWM through creating functional interdependences such as experience sharing and supportive activities.

The management of solid waste in Addis Ababa was being undertaken by the city council until it was transferred in July 1993 to the solid waste management team of the Environmental Hygiene Department under the region's Health Bureau. In 2003, the draft comprehensive Solid Waste Management Regulations was in the process of endorsement. Then, Solid Waste Management Policy has been endorsed by the City Government of Addis Ababa. The policy has such main issues as policy goals and objectives, principles, type and sources of solid waste, solid waste transportation, solid waste disposal, solid waste recycling, management information system, NGOs and civic

societies participation, community participation and the role of research institutions. Later it was restructured to be managed by the then sanitation, Beautification and Parks Development Agency (SBPDA) in 2004.

As of 2011, it has been run by the City Government of Addis Ababa Cleaning Management Agency (AACMA). Currently, the solid waste management service provider has been structurally stretched into three layers at the city level. The AACMA at the top, 11 sub-city administrations in the middle, and 120 Woredas/districts at the bottom are in place to provide solid waste management services. With the current development/structural plan of the city, the solid waste management system has been decentralized to the lower level of administration in the city level with the main intention of improving the solid waste collection and transport system in the city. Sub-cities are empowered with full responsibilities and authority about SWM. While ensuring a consistent approach within the city, effective decentralization has been developed to sub cities in respect to operational solid waste management, but the AACMA is dealing with cross-cutting issues, regulatory function and facilitation at the city level. Other organizations working to address SWM issues include research and academic institutions, NGOs, Business Associations and international development agencies. Figure 4 attempts to map these various stakeholders in Addis Ababa's SWM value chain.

Recently, the regulatory role of solid waste management has been given to AACMA and the mandate of service provision has been given to sub city solid waste management divisions. The reorganization of solid waste management has been envisaged to improve the solid waste management problems of the city. It is understood that the mandates of the AACMA to implement a wide range of activities in the area of solid waste management such as collection and transportation, controlling and monitoring, coordinating sub-cities, capacity building, awareness-raising and undertaking studies while AARDO is responsible for recycling and composting the collected solid wastes and managing solid waste disposal sites. It is found out that an enormous quantity of municipal solid waste (MSW) in the city is produced from three major sources such as households (76%), institutions (18%) such as commercial, hotels, factories, etc. and street sweeping (6%) (AACMA).

Per the city's decentralization power delegation, a solid waste management team has been established in all 11 sub-cities. The sub-cities deal with the day-to-day operational activities such as solid waste collection, transportation and street cleansing; cleanse illegal dumping sites; conduct sanitation campaigns; undertake composting and

recycling; carry out community-based activities; respond to public complaints and provide emergency services. In sub cities, areas for door-to-door collection points have now been identified and collection schedules have been set in each village in the districts (Woreda).

Various stakeholders play a role in MSW generation and management in AA. The key actors involved in the management of Solid Waste in Addis Ababa City include:

- Addis Ababa Cleaning Management Agency
- Environment Protection Authority
- Addis Ababa Health Bureau
- Private sectors, including formal recyclers and informal recyclers
- NGO's and CBO's.

3.3.1 Informal Recycling Actors

The key role in the informal waste recycling process is played by a market place named Minalesh Tera. Minalesh Tera is located in Merkato in Addis Ababa; one of the biggest open markets in Africa. Minalesh Tera is the block where all the useful waste comes to be sold and recycled again. The informal recycling system in Addis consists of different actors who are involved in activities related to the collection, trade, reuse, and recycling of waste. The system consists of households, foragers, scavengers, Qorqoroalleh, pre-collectors, wholesalers, collectors, small-scale craftsmen, and local industries. At the bottom of the hierarchy there are the scavengers who collect waste materials from the municipal landfill. It is estimated that today there are 500–600 on-site scavengers who make a living from collecting waste materials for their own consumption or for reuse or recycling. Most of the scavengers are individuals who live in the village nearby. The materials collected for reuse and recycling are stored either at the site or in the village nearby. The most common practice is to store the materials until there is a large enough amount to sell to collectors or to rent a truck and transport the waste to Minalesh Tera. At the next level, one finds the Qorqoroalleh, who buy materials mainly from households and to a limited extent from the foragers, pre-collectors. The Qorqoroalleh differ from the foragers and the scavengers because they buy materials before they enter the waste stream. The quality of the materials they collect is therefore higher than that collected by foragers and scavengers. Moreover, the Qorqoroalleh have a strong upward link in the system to the wholesalers who operate in Minalesh Tera. Waste materials collected in other cities are transported to MinaleshTera, and traders from rural areas travel to MinaleshTera to buy materials wholesale for further sale in rural areas. Ranked above

the wholesalers are the small-scale craftsmen, who are mainly located in MinaleshTera and make use of waste materials to produce local items such as electrical stoves, large metal plates used to wash clothes, shoes, and cooking equipment, and to repair broken items such as luggage, old toys, and old shoes. In addition, there are rural traders and industries who buy waste for recycling (Camilia, 2013).

KEY FINDING: *The study team try to observe and undertook KII NGOs experience of Soil and More Ethiopian Companies working on waste management since 2013.*

Lesson Learned

This NGO got waste convert to compost project since 2019 and AA city administration got international award from Latin countries in 2022 because the project brought SWM improvement by converting solid waste to compost.

Currently, the company is working 121 waste collection associations in the city.

Area of Support

- *Training*
- *Technical support*
- *Market linkage*
- *Container providing for waste storage*

Now, they are creating linkage for plastic film bag customarily/locally known as “Festal” which was disposed to the environment and no market demand for these products. Currently, the company working with plastic bricks factory that changed this plastic film bag to plastic bricks. They are on the way to connect to this factory and provide training for the association. They said solid was management in Addis improving but need further endeavors are required

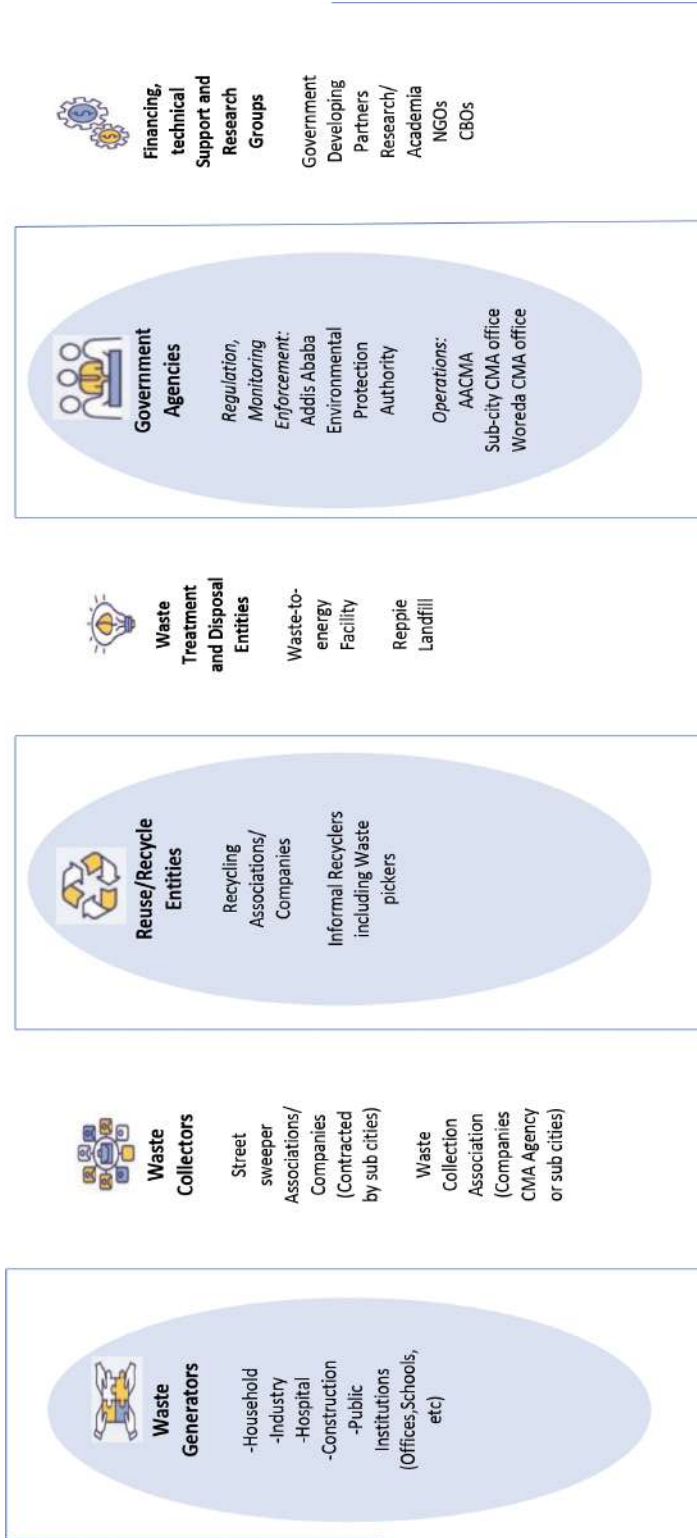
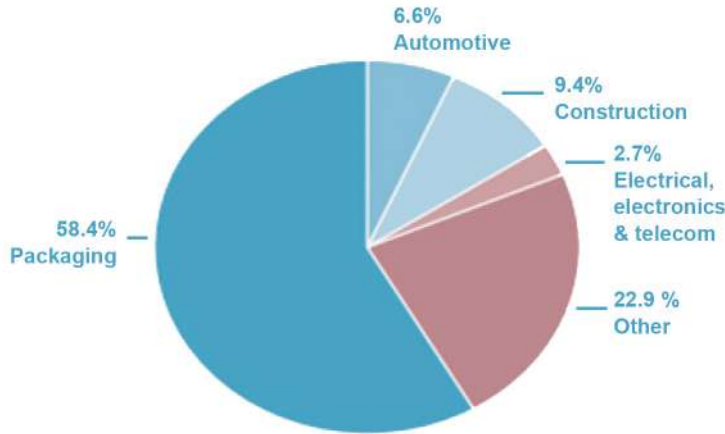


Figure 4: SWM Stakeholder mapping in Addis Ababa

3.4. Existing Situation of Plastic and Plastic Recycling Industry

3.4.1. Plastic Industry

The plastic industry in Ethiopia is growing fast. The consumption of plastic products is increasing in double digits annually since 2011 and has more than tripled in total since then. The main business segments are the packaging industry (58,4%), the construction (9,4 %) and automotive industry (6,6%). The numbers are estimated from 2016 onwards



Source: GIZ , Partnership Ready Ethiopia: Recycling Sector

The lack of domestic resources and technology leads to Ethiopia being East and Central Africa’s second largest importer of plastic raw materials, packaging machines and printing machines. Saudi Arabia is by far the largest importer of plastic raw materials, followed by China and the United Arab Emirates. The total sum of imported plastic raw materials from the top twelve supplier countries was around 270.000t in 2016.

Table 10: Top 5 suppliers of plastic raw materials in Ethiopia and their net import in 2016.

Import Partner	Netweight (tons)
Saudi Arabia	136.900
China	34.100
United Arab Emirates	28.333
Thailand	26.712
India	11.233

Source: GIZ, Partnership Ready Ethiopia: Recycling Sector

3.4.2. Plastic Recycling

‘Plastics’ is an umbrella term for a wide range of different materials with very different properties. They can originate from both fossil-based as well as bio-based sources. Generally, all plastics consist of polymer chains, which vary in their composition and structure. There are two major groups: the thermoplastics that can be reversibly heated, melted and cooled down, and the thermosets which cannot be re-melted once they have cooled down. This distinction has important implications for the recycling of plastics.

Plastic recycling can be classified into two categories: PET recycling and recycling of other mixed thermoplastics, mostly polyethylene (PE), polypropylene (PP) and Polyvinylchloride (PVC). According to AACMA estimation, the quantity of recycled plastics stands at 26887 tons per in the year 2020.

a) Pricing of Plastic Waste: -

In most cases the type of plastic waste disposed from residential areas is related with food items. Jerry cans, plastic bottles, PP bags for collecting grain and shipping bags come with food and drinking items. On the other hand, these materials are seriously needed by the collectors. The materials are sold as regrinds for around 25–30 Birr/kg gross (0,88–1,05 USD/kg). Virgin material prices for all kind of polymers are around 60–65 Birr/kg gross. Prices strongly depend on the forex situation and can vary greatly within short time spans. E.g., in early 2018, prices for virgin materials were estimated around 45 Birr/kg. Shortly after that they increased up to around 70 Birr/kg during the tightening of the forex situation in Ethiopia in early and mid-2018, falling back to the current level at the end of the year. The following table illustrates their demand and value.

Table 11: Type of Plastic waste collected from residential quarters

Types of plastic waste	Unit price
5 lit. Size Plastic Jerry cans /HDPE/	5 lit. 2 ETB
Plastic home appliances /HDPE/	negotiable
1 kg of Plastic bottles for mineral water /PET/	6-7 ETB
Plastics shopping bags /LDPE/	negotiable
One piece Plastic bags for cement and cereals /PP/	1.10 ETB

Source: Yohannes, 2017

According to the (Yohannes,2017) the price of items depends up on the type or the quality of the material. In this connection, emptied jerry cans imported from abroad with edible oil are sold according to their size. The small ones fetch 2 ETB while those with a capacity of 20 liter could be sold for 40 ETB if they are kept in a good condition. A small damage may cause a reduction of some amount. Plastic bottles and plastic bags are not usually available at a household level because there is no interest to store the materials due to the small amount paid to these types of plastic waste. Plastic cement bag relatively has better advantage because even though the amount paid for one piece is small (1 Birr) since residents can use big amount of cement during expansion work or renovation they can keep and sell the material. In all the above cases residents are encouraged to keep the plastic waste that may be disposed after giving service; hence this contributes in protecting the environment. The activities performed at this stage are serving as a transfer station until the materials reach their final destination: the recyclers. In all cases they are operating on open fields which are not totally convenient for security and the safety of the materials they collect. The collectors stationed near the ring road at LEBU said they have the capacity of purchasing up to 10,000 pieces of cement bags every day while those at the Bole Bulbula site could collect up to 8,000 Pieces. During their transaction they pay 1.10ETB for one piece. According to the information the middle men provided in anonymity due to tax issues, they earn 7,000-10,000 ETB monthly after covering all costs. Those who collect plastic bottle and shopping bags compact these wastes in larger plastic bags which originally served to contain cereals or sugar and deliver to the buyers. The measurement of transaction in this case is usually in Kg. Therefore, the collectors offer 6 ETB for one kg.

In the process of transferring the collected materials from the source to the informal collectors, several residents ranging from young school boys to older women are participating. They support their livelihood with the money they receive by scavenging walking from one locality for long hours. Above all, the commencement of the recycling of plastic bags, bottles and shopping bags has changed the previous trend of disposing these materials together with construction and household wastes. This on the other hand, has contributed a lot in protecting the environment from a serious damage since the bigger size of the bags could cover larger areas of land where it would be disposed.

b) Plastic Consumption

As per (Yohannes, 2017) shows the steady growth of supply of different types of plastic waste to meet the demands of the recycling factories (See table below). Weidong Jia Plastic Recycling Company, which starts with 40 tons in 2012, has reached to a capacity of consuming 1213 tons annually. Great Wall Packing Materials Plc., which

also commences work in the same year has started with 105 tons and reached to the capacity of consuming 2030 tons.

Table 12: Annual plastic waste consumption of recycling factories

Year	Name of Companies			
	Weidong Jia Plastic Recycling Co.	Aisai Chemical Fiber PLC.	Great Wall Packing Materials Plc.	AISAI recycled plastic manufacturing Plc.
2012	40 tons	-----	105 tons	-----
2013	84 tons	-----	170 tons	-----
2014	1078 tons	175 tons	2010 tons	-----
2015	1112 tons	178 tons	2030 tons	240 tons
2016	1213 tons	930 tons	2080 tons	360 tons

Source: (Yohannes, 2017)

c) Innovations and Challenges

Currently, there are around 10 recyclers establishments that are recognized by AACMA in Ethiopia. See Annex for List of Plastic recycling factories. Though, the plastic recycling factories are well organized and mostly owned by foreign investors who came up with technology which can convert various types of plastic waste into raw materials like granules which could be consumed by other factories to produce appliances for household consumptions or other services. Aside from the recycling of post-consumer waste, the reuse of industrial waste in the production of plastic items is very common. Most production sites have grinders to process the production offcut into reusable regranulate that is utilized for production and mostly exported to gain foreign currency.

While PET can be collected in good qualities, all other thermoplastic materials are collected from landfills. Most common scraps are from high density PE (HDPE) and PP, but also PVC and PS are picked. Unfortunately, the types of materials can only be separated on a basic level through a swim/sink procedure, as there is a lack of technology. There are no near infrared (NIR) sorting systems available in Ethiopia, yet. Other than PET-flakes, the mixed regrinds cannot be exported due to a lack of quality. The regrinds are used domestically in the production of household wares. Limitations of use are due to color, quality and material history. It is very difficult to obtain colorless or white regrinds in sufficient qualities and quantities. More common is the coloration of mixed scraps with carbon black (CB). The main reason for this is the technology gap, which prevents the pre-treated feedstock (e.g., PET-flakes, paper pulp) to be processed into raw materials that can be used in the production.

3.5. Issues and Challenges of Plastic Recycling Sector

The relevance of the recycling sector in Ethiopia is twofold: on the one hand, there is a lack of raw material, on the other an informal recycling system takes place. Ethiopia has a general shortage of raw materials like plastic, metal or paper – due to the lack of resources within the country (e.g., Ethiopia only recently began crude oil production) and due to a widespread technology gap. The high dependence on the import of raw materials in combination with the foreign exchange crunch and high transportation costs lead to prices that are two to three times higher than those on the international market. As a result, the importance of the reuse and recycling as a source for domestic raw material is high.

As for environmental effects, the use of plastic waste in the production instead of virgin materials saves the environment from the extraction of raw materials, conserves natural resources such as oil, and requires less energy than virgin materials, reducing emissions of substances such as carbon dioxide (CO₂) into the atmosphere. In addition, if these materials were not collected, they would end up as landfill. Leaking chemical substances would then pollute the underlying soil, the groundwater and the air. All of these potential effects are avoided because almost all of the plastic materials are collected for reuse and recycling.

The plastic recycling sector currently faces several challenges that affect the sector. The following are the major challenges observed by the study.

1. Land/Work Space and Supportive Facilities

Recycling activities have difficulties to acquire land to establish recycling facilities. Most of the waste collector enterprises do not have enough space or land to store plastic wastes. As the Addis Ababa cleansing agency waste recycle department witnessed “Even a legally formed waste collector associations/enterprises that took training could not get land”.

2. Limited Access to Finance

Various financial barriers also exist to purchase equipment and facilities, and limited access to finance.

3. Knowledge and Technology

Financial, technological and human capacity constraints further prevent local recycling companies from participating in the entire recycling value chain. Adding value to plastic waste can higher the value as well as reduce transport cost like baling machine to compress the waste that also reduce transport.

4. Low Quality

Although recyclers source from formal associations, the bulk of their raw resources are procured from informal waste pickers. One key challenge plastic recycler's face is the low quality of the collected plastic, which is often too dirty for further use and needs to be disposed of.

Ethiopia currently does not have any full circle recycling, and most recycling companies only flake plastic for export. Those that do recycle, produce PET preforms and plastic bags. Large potential customers for packaging products, like water bottlers, supermarkets, and food producers, are currently only working with new, virgin material, out of fear of losing customers, who they feel would not trust the quality of packaging made out of recycled plastics.

Quality standard is required for plastic waste recycle materials.

5. Increase of Price

Although plastic waste production increases the price constantly increase that affect the competitiveness of the sector. Currently, Average price increase from 5 birr to 20-24 birr depending on quality.

6. Involvement of Brokers/Black Market

Even though informal waste collector, create job opportunity and contribute for waste reduce (waste mange) they are creating problem. Especially Black market and broker (Intermediaries) involvement in the sector creates shortage and high price.

As the government agency witnessed about the broker

"They have work place and car so, they can increase the price and hoarding the waste and creates problems in factories by create shortage and inflating the price. It is difficult to trace."

7. Logistic/Transport Problem

Logistics or waste collect truck shortage actually both government and private can involve in waste management. So, the private sector investors can participate in waste transport sector or totally owned by them. The government should totally outsource or jointly work with private. The government should focus on regulations and supervisions. To solve the shortage of trucks shortage of car duty free car and facility loan to buy a car.

Some association have a car or rent to collect from the household then transport vehicle to Repi. Some association have trucks but not enough. Government trucks is not enough sometimes maintenance problem also occurred.

8. Scattered location and Absence Coalition

On production-the recycle companies' production capacity is performing 30 to 40% percent because of decentralization or scattering. There should be one center. There is no association of plastic recycle companies.

9. Awareness /Education

Awareness and Education are identified as one of the key hurdles for better waste management in Addis Ababa. Littering in public at a small scale or the irregular disposal of waste on a larger scale is still practiced widely and spans multiple generations. Some programmes and activities in schools and the general public are undertaken; drivers of those are non-profit organizations, private companies including those in the recycling value chain as well as the public sector. Despite these numerous efforts, education on waste management lacks a clear base in the school curricula.

Nevertheless, the current lack of a proper recycling infrastructure also creates limits for better education on managing waste; despite some behavioral changes when it comes to littering, polluting water bodies and similar related activities, by and large there are just no best practices in place that can possibly be undertaken currently.

Still not enough waste collected. Exhaustively awareness to household and institution on sorting waste disposal. There is awareness but it is not enough.

10. Lack of Safety Equipments and Health insurance

As the study team observed the working environment in solid waste collectors and plastic recycle companies are not enough. Even in some areas, there is no protective safety equipment is not in place. So, there is a need for equipping safety equipment for the worker and health insurance is necessary.

11. Loose Regulation

The regulations and policies related to solid waste management are outlined in above sections. As they are generally loose, the currently biggest hurdle for the recycling value chain as per the study.

3.6. SWOT Analysis of the Plastics Recycling

The following Strengths-Weaknesses-Opportunities-Threats analysis evaluates the status quo of the plastics recycling value chain.

Strengths

- Relatively well working individual recycling value chains for certain fractions, e.g., HDPE, PP, paper, etc.
- Plastic value chain does exist in Ethiopia and can take joint action/product design decisions which can be affected within the country

Weaknesses

- Spread of plastic packaging throughout the country/ limited local recycling infrastructure at point of consumption paired with high cost of transport/ logistics
- Lack of awareness and culture on proper waste management practices among citizens and especially in the part of the lower income class living above the poverty line
- Practically no tradition of waste segregation especially in households
- Little experience in formalized waste collection systems
- Insufficient general waste management infrastructure: lack of waste bins, formal dumpsites and organised collection; poor roads etc.
- Little legislation concerning waste management/ many relevant areas not sufficiently covered by current legislation
- Enforcement of existing waste management regulations partly deficient
- Lack of clear definitions, responsibilities, roles, etc., leading to different interpretations and waste management practices across the country

Weaknesses

- Growing industry of local consumer goods manufacturers with continuing need for packaging
- Lack of alternatives to plastic packaging for a range of applications/ banning certain plastics would cause more problems than solutions
- Rising awareness of some parts of the population with regards to better waste management
- Low cost of labour/ high demand for employment enables business models for collecting, sorting and recycling
- Raising the value of disposed plastics even marginally is a viable mechanism to increase collection/ recycling rates due to high need for even marginally paid employment/ income generation

- Adaptation of circular economy concepts can create “green jobs” while increasing Ethiopia’s recycling rate from currently low rates.
- Waste management is a devolved responsibility, hence allowing pilot projects in certain parts of the country through local decision making

Threats

- Unpredictable regulatory frameworks and risky environment for investment due to uncertainty of coming legislation
- Fragmented opinions within industry on the way forward

3.7. Feasible Solutions to Problems with Plastic Recycling

An obvious solution to plastic-related challenges would be recycling. Although this might sound like a no-brainer, there are several factors in Addis Ababa that impede the efficiency of recycling or hinder it altogether.

Household level waste sorting

Pre-collection waste sorting at household level can greatly benefit the further value chain of different kinds of waste: by not throwing all waste in just one bin or bag, waste collectors not only save time, disposed materials are also of higher quality. Think of organic waste that has less pollutants like plastic particles – which cannot be composted – or plastics that are not disposed at the same place as diapers, which pollute the plastics and make more thorough cleaning – which comes at a cost – necessary. According to GIZ baseline studies, it is estimated that only around 60% of household sort in any way; a survey conducted showed that around 58% of households sort their waste. In most cases however, the sorting is limited to separating plastics from non-plastic waste. While this is merely anecdotal evidence, it does show the huge potential that household sorting still holds.

Waste collection

Household level waste collection in Addis Ababa is carried out by formal associations that each have several Kebeles (sub-districts) they serve – as opposed to waste pickers that roam the streets, and commercial companies that collect waste at large institutions like hotels and hospitals. Collected waste is brought to a hub, from where the household waste is transported to the Reppi Landfill, or further sorted and sold. Sorting of waste however needs space, which the associations lack. The official associations also mostly lack access to water and electricity on their site. While water would improve working conditions, electricity would allow collectors to potentially scale up their business using on-site machinery like baling/pressing machines. By baling plastic, transport costs can be reduced significantly, while the price per kilogram increases.

If adequately supported, the recycling sector could help address the city's long-standing solid waste management problem while at the same time creating jobs and helping the city shift towards a more circular economy.

3.8. Business Potential of Plastic Waste Recycling Sector

The plastic industry in Ethiopia is growing fast. The consumption of plastic products is increasing in double digits annually since 2011 and has more than tripled in total since then. The relevance of the recycling sector in Ethiopia is twofold: on the one hand, there is a lack of raw material, on the other an informal recycling system takes place.

Ethiopia has a general shortage of raw materials like plastic, metal or paper – due to the lack of resources within the country (e.g., Ethiopia only recently began crude oil production) and due to a widespread technology gap. The high dependence on the import of raw materials in combination with the foreign exchange crunch and high transportation costs lead to prices, that are two to three times higher than those on the international market. As a result, the importance of the reuse and recycling as a source for domestic raw material is high.

The usage and disposal process of plastic materials starts at the household level and with the help of different actors it reaches the recycling plants passing through various stages. One of the major benefits that every participant acquires is the economic benefit which varies from employment opportunities and exporting the plastic raw materials and products.

The economic benefit of the system is that the high degree of labour intensity of certain reclamation processes enables numerous people to earn some kind of income. Therefore, the informal plastic recovery system provides significant employment opportunities for a large number of individuals such as the collectors and wholesalers who would otherwise be jobless. As a result of the limited job opportunities in the formal sector, the informal waste sector generates employment for several thousands of people.

The formal plastic industries in Addis Ababa benefit from the informal plastic recovery activities by obtaining raw materials at low cost. Plastic recovery reduces the demand of raw materials needed to be imported from abroad. The reuse and recycling of plastic therefore reduces the dependence on imported raw materials. In addition, the informal sector benefits from an expanded market and an increased demand for recovered plastic materials. Since the production costs of plastic materials are lowered in the formal sector, the final products can be sold on the market at lower prices, and they can reach a larger consumer group, which is significant considering that the majority of the population.

3.9. Countries Best Practices in Plastic Waste Recycling

The global manufacture of plastics continues to increase rapidly, and at a relatively low cost. However, the effort to collect and treat plastic waste is costly, and as a result the implementation of solutions to reduce plastic waste has not kept pace with the amount of waste generated. Globally, plastic pollution is now a major challenge.

Plastic pollution has a wide range of impacts on public health, economies, ecosystems, and biodiversity and can occur during each stage of the plastic lifecycle—from extraction of raw materials, production, and use, through to end-of-life. Exposure to the chemicals and pathogens associated with plastics and microplastics, as well as the burning of plastics, have direct impacts on human health (Hermabessiere et al., 2017).

So far worldwide, several countries have initiated shifts towards a circular economy to address their waste situation. While their approaches have several similarities, they also exhibit noticeable differences due to the different conditions present in the respective country. To push circular economy also on a global scale, there are several global commitments driven by both governments as well as private sector initiatives to transit to a waste-free circular plastics economy. More detail on these global practices is presented in below sections.

3.9.1. Rwanda

Rwanda's SWM and end-of-life Plastic Waste Management

SWM in Rwanda remains preliminary. Until recently, there has been no harmonized national policy or regulatory framework for integrated SWM in Rwanda. In 2011 the National Industrial Policy highlighted the need for industry specific waste management and suggested centralized systems as a means for cost reduction (Ministry of Trade and Industry, 2011). District authorities, households, community associations, NGOs, and the private sector have since undertaken SWM activities with limited financial and technical resources. As of May 2022, the Rwanda Integrated SWM Strategy has been prepared and validated by government agencies. It is expected to soon be approved by the Government of Rwanda.

To date, Rwanda's MSW information remains limited. Rajashekar, et al. (2019) reviewed data from 7 studies on Kigali between 2012 and 2018, where waste generation was reported in the range of 408-808 tons per day. Kabera, et al. (2019) estimated 638 tons, with 0.57 kg per capita per day, in Kigali. A study of GGGI (2019) on secondary cities shows about 50 tons per day in Huye and about 20 tons per day in Muhanga. No reliable national total is available.

Trash collection services are provided by private companies and cooperatives across the country, though coverage is clearly bifurcated between Kigali and the rest of the country. In Kigali, Kabera et al. (2019) estimate city waste collection coverage at some 88% while Rajashekar, et al. (2019) estimates real coverage, measured as households that actually receive a service, at approximately 50%. Access to trash collection service is much lower in secondary cities and rural areas.

Household waste collection services consist of door-to-door collections (predominantly in areas with sufficient road networks) and communal collection points in low-income areas or areas with limited road networks (Mucyo, 2020). The services are provided by private companies through service contracts with local governments. Households pay a collection fee for these solid waste collection services.

Sorting and recycling of MSW at collection and disposal sites is carried out by waste collection and management companies. A small fraction of recyclable plastics is also collected from households and business properties by informal collectors, then transported to neighboring countries, or sold to local markets, by collectors (Mucyo, 2020). However, data on recycling are scarce, fragmented, and varied. The national recycle rate was estimated between two percent (Rwanda Environment Management Authority, 2018) and 10 percent (in cities such as Kigali) of MSW (Rajashekar et al, 2019).

Open dumps are a common final disposal solution in Rwanda. In Kigali, MSW collected by the city was predominantly disposed of at Nyanza landfill which, was closed in 2011, and Nduba landfills, which is currently Kigali's only landfill site, and began to receive MSW starting in 1983 (Rajashekar et al. 2019).

Plastic waste data are poor by city. Available SWM studies on Kigali suggest that plastics account for 1.5 to 7 percent of the total solid waste generated in the city. The city of Muhanga generates 4.38 kg of plastic per capita per year whilst Huye City generates 20.44 of kg plastic per capita per year (Global Green Growth Institute, 2019). The big variation between the two secondary cities is hard to justify. The average plastic waste per capita per year in the neighboring countries of Tanzania and Kenya is reported at 6-7 kg5 which seems more realistic for Rwanda. If 6 kg per capita per year were assumed as the national average of Rwanda, the annual total of plastic waste produced in the country would be about 75,000 tonnes.

PET bottles are collected in Rwanda; however, no domestic recycling facility exists for PET bottles. Collected PET bottles (estimated to be in the region of 100,000 bottles used daily), are crushed and sold to recyclers in Uganda, Kenya, Tanzania and, until recently, China (Rajashekar et al, 2019), which would be considered a significant loss of a valuable recycled material. According to stakeholder input to the study, the government has recently taken action to eradicate the use of PET bottles entirely, through the Law No. 17/2019 Plastic bag and single use plastic ban. The country's low recycling rates are in contrast with government targets to recycle 30 percent of non-organic solid waste by 2019/2020 (Rajashekar et al, 2019). As Rwanda has banned various plastic products, the volume of recyclable plastics (and therefore the share of plastic) will decline. This 30 percent target should not be the only measure of success. Elimination of plastic waste would be even better. The National Strategy for Transformation (2018-2024) envisions waste management through a lifecycle perspective that will see a rise of "the resource management contracting" business model; a model that seeks to incentivize innovation in the redesign of product and service combinations between businesses and their suppliers, thus driving the circular economy (Mucyo, 2020).

This best experience also proved by the government participant who visited Rwanda for lesson learning.

3.9.2. Tunisia

In 2004, Tunisia set up several systems for the collection, treatment and valorization of certain categories of waste, such as ECO-Lef. To foster the development of the sector, the Tunisian government encouraged the creation of microenterprises by awarding contracts together with the municipalities.

The system was financed by an eco-tax, although it was labelled as an EPR system. A fee of 5 % on the net added value has to be paid for imported plastic, including empty packaging and raw materials. For the import of already packaged goods, no tax needed to be paid.

The funds collected via the eco-taxes were (partially) used to;

- Finance the ECO-Lef system,
- Cover part of the operational fees of the municipal and hazardous waste infrastructures, and
- Cover part of the functional costs of the National Agency for Waste Management.

ECO-Lef is a public system for the recovery and recycling of packaging waste, implemented in partnership with local authorities. It includes the collection of packaging waste and recycling of plastic waste according to the conditions set by the National Agency for Waste Management. The Eco-Lef system covers only specific packaging types, namely PET bottles, milk bottles made of HDPE, plastic films and bags made of PP as well as metal cans – cardboard packaging is excluded.

The collection of recyclable materials is done by approved and authorized companies. These usually small companies can also buy material from informal collectors, which play a major role in the recovery of recyclables in Tunisia. In turn, the collections companies (can) sell their collected quantities to ECO-Lef; however, this is not mandatory. Eventually, the material is sold to recyclers. Despite their great importance in the recycling system, the informal sector is not visible in the ECO-Lef system.

After an initial success, which peaked in 2008 with collection of 15,700 mt of packaging, collection and recycling gradually but significantly decreased to 5,400 mt of collected packaging waste in 2017. The reason of this significant decline was rooted in the mismatch between funds generated from the eco-taxes and the actual packaging waste quantities and the lack of adequate steering function of taxes on the actual collection and recycling infrastructure. This was exacerbated by further structural weaknesses, as the decrease of the profitability of certain parts of the system was diminished due to the decrease in collection activity. Further causes for the poor outcomes include a lack proper control, complaints over the quality of the recyclers and proliferation of non-approved recycling companies, long transport distances connected to relatively high costs, and, last but not least, limited domestic recycling value chains. To improve their system, the National Agency for Waste Management is currently making revisions to transform it into an actual EPR system.

3.9.3. Belgium

In Belgium, waste management is a devolved responsibility which is organized at the regional level, putting the three regions Flanders, Wallonia, and Brussels-Capital in charge. In 1996, to ensure a comprehensive packaging waste collection system and a respective EPR system, the three regions jointly agreed on a nationwide packaging law to establish a strong, legal basis. Since then, Belgium has developed an extensive collection system across the country, which is reflected in the high recycling and recovery rates of Belgium, among the highest in the whole European Union (EU) [Eurostat, 2019].

Additionally, to increase recycling rates, Belgium is addressing the issue of a better waste prevention by developing comprehensive plastics waste strategies that contain dedicated policy instruments for waste prevention [EEA, 2019].

The Producer Responsibility Organization (PRO) of the Belgian EPR system is called Fost Plus; it operates as a non-profit organization. Fost Plus was founded in Belgium as a voluntary initiative of the private sector. Although there are no competitive restrictions, only one PRO has been created so far. Thus, Fost Plus enjoys an operational monopoly. It comprises approximately 5,000 members, each paying participation fees. Today, there is a packaging law that compels every company putting more than 300 kg of household packaging annually on to the Belgian market (for consumption in Belgium) effectively to become members of Fost Plus. Each of these companies is obliged to pay for the collection, sorting, and recycling of packaging that is brought into the market. Fost Plus is responsible for all packaging sales according to specific definitions and publishes a respective criteria catalogue. Fast food packaging and packaging from online sales also fall under this. Aside from the funding of waste management, Fost Plus uses 10 % of its annual budget for education and awareness campaigns focusing on litter.

The results of this system are good in terms of collection, sorting and recycling. However, mixed plastics and foils are not collected within this system throughout most of Belgium. From 2022 onwards, it is planned to expand the system to cover all other packaging materials. By 2022, 90 % of beverage packaging waste generated in the region of Flanders is meant to be collected and recycled. As the next step, by 2023, 65 % of all plastic packaging waste is set to be recycled. By 2030, the government aims to raise the recycling rate to 70 % of all plastics packaging waste. These quantitative targets are laid down in the agreement with the sector [EEA, 2019].

3.9.4. Chile

Pushed by an OECD report of 2016 that listed Chile alongside Turkey at the lowest end of OECD member states with regard to recycling quotas, the country has initiated a change towards a circular economy through several measures. One of the key factors driving this change is the establishment of a sound legal basis: in 2016, a long awaited waste management law entered the congress and has been officially passed as the ‘Waste Management, Extended Producer Responsibility and Recycling Incentives Bill’ [Ley N°20.920, 2016]. This bill defined clear goals and requirements for several circular economy-based measures. As a central part of the law, Extended Producer Responsibility (EPR) systems for six product categories are defined: tires, packaging,

lubricant oils, waste electrical and electronic equipment (WEEE), automotive batteries, and portable batteries. Through this law, an instrument for producer responsibility was created, obliging the producers of these product categories to create Producer Responsibility Organizations (PROs) or deliver proof of take-back. A corresponding producer register has already been established. This law will gradually start to come into effect, as the specific regulations and targets (collection and recovery rates) are defined and published in the present and coming years [dated June 2019] to tailor them to local conditions. Moreover, most of the Chilean population lives in urban areas, while vast parts of the rural areas are only scarcely populated. As a response to this, waste segregation and collection of the recyclables will first be introduced in urban centers and then gradually expanded to other areas. The advantage of this approach is that the first quantities will already be collected while the necessary infrastructure, like accessible roads, will be built later. As another key factor, the law considers the inclusion of the informal recycling sector, mainly waste pickers, through a formalization as accredited waste operators once they obtain the corresponding certification [Ley N°20.920, 2016]. Collection and recycling have to be tendered separately and informal recyclers and municipalities are treated with preference by the PRO. Through including and formalising the informal sector, Chile chose an inclusive approach rather than taking away the livelihood of the workers, which reflects the social dimension of the circular economy approach [Ministerio del Medio Ambiente, 2019].

4. CONCLUSIONS AND RECOMMENDATIONS

4.1. Conclusions

Waste generation is the result of the production and consumption of resources. However, proper management of wastes is not an easy task in cities of developing countries where rapid population growth and financial scarcity are the major challenges to urban environmental management. This is typically the case in Addis Ababa where urban environmental problems are the results of factors such as unplanned settlements and unplanned location of manufacturing industries. In Addis Ababa, the generated wastes are not all collected by the existing collection systems; there still exists the dumping of wastes in open drains, rivers, open spaces, marketplaces, etc. Effective and efficient waste management is therefore important to bring good quality to the urban environment.

Currently, the collection of solid waste is carried out in Addis Ababa by Micro and Small Enterprises and some private companies for transporting wastes to the disposal site. Although the performance level has shown some improvements, the practice of

waste management in Addis Ababa is not still sufficient to address and satisfy the city-wide needs. This is mainly because the efficiency of the waste collection system is not yet established to the level demanded because of the shortage of capacity to address the problem in the city.

In this regard, based on the evaluation of the existing situation of Addis Ababa SWM practices particular to Plastic waste management and recycling issues; the following recommendations are suggested in terms of public policy, public participation, conceptual evaluation of the environmental plan component of the city and implementation of planned proposals. In general, the current waste collection capacity and disposal system are not keeping pace with the rapid expansion of the city and its corresponding plastic waste generation. The people have not yet given proper attention to SWM and they dump wastes along the roads and in open spaces. SWM status in Addis Ababa can be explained by the weak enforcement of rules and the lack of the strength of stakeholders' integration. The absence of standardized final waste disposal, poor handling of municipal wastes, poor dumpsite management, lack of manpower and technical skill remains the most important bottleneck in addressing waste collection in Addis Ababa.

4.2. Recommendations

Recommendations for Plastic Waste management and Recycling

- Prepare the policy and regulatory framework for integrated SW (including plastic waste) management. A comprehensive and complete policy framework is fundamental for introducing and implementing policy instruments for plastic waste control.
- Set clear targets regarding plastics reduction, reuse, and recycling. Clear targets help develop a path to reduce plastic pollution, assess financial needs, and promote behavioral changes and investments in plastic waste management.
- Duty free privilege for waste collectors' machineries and equipment.
- There should be association or union for plastic recycle factories.
- Strong implementation of the regulations.
- There should be quality standard for plastic recycle materials.
- Develop robust waste monitoring and data management systems to gather, record and report on plastics data. Such a system is essential to facilitating policy performance measurement and improvement. It will allow the nation to track waste accumulation, movements, and end destinations (e.g., tonnages recycled, recovered, or disposed) including public behavioral changes towards plastic waste management practices, enable the government to identify and assess opportunities for future interventions.

- Encourage source separation of plastic waste. The government needs to step up its support to separate waste at source and to handle separated waste during its collection and transportation with the right financial incentives. Gradually increasing landfill tipping fees, fines of illegal dumping, deposit refund schemes, and other financial incentives according to society's increasing affluence will help encourage both households and entities to separate recyclable plastics from other wastes, reduce landfill disposal and curb illegal dumping in Addis Ababa.
- Promote a circular economy to increase reuse and recycling of plastic waste by local businesses in the city. The government needs to develop effective mechanisms to support local industries – such as the construction and manufacturing sector – to incorporate recycled materials into their manufacturing processes and products. Existing incentives, such as business rate cuts, can be supplemented through grants to support the incorporation of secondary materials into manufacturing or introduce cleaner materials to substitute for plastics.
- Provide financial support packages for businesses to adapt to policy, and legal requirements for circular economy and new green markets. These could include greater accessibility to grants, subsidies, loans, or blended funding streams (partnerships and direct investments from both the private and public sector) for new investments by manufacturers, retailers, and waste management companies that manufacture, separate, and recycle plastics.

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SYSTEMATIC BARRIERS TO DRIED PAPAYA PROCESSING AND MARKETING IN ETHIOPIA*

ABSTRACT

This study presents critical assessment of the major systematic barriers that business enterprises in dried papaya processing and marketing could face in Ethiopia. Given the absence of dry papaya processing business in the country, the study considered business enterprises engaged in production and marketing of dried food/fruit products such as enriched snacks and fruit juices. Using the actual business experiences of those companies, key lessons were drawn and assessments made on conditions necessary for creating a viable business for dried papaya processing and marketing in Ethiopia.

The study found that enterprises encounter different challenges across the three main stages in the fruit/food processing value chain, namely sourcing raw materials, processing and distribution, as well as marketing. The major constraints of sourcing quality raw materials are shortage of raw materials, poor quality/food safety standards, and increasing costs. Shortage of raw materials is rooted to seasonality and political instability in growing areas. Those constraints also include lack of forex, high import tariffs, and inadequate access to loan. With respect to processing, the major constraints are trade restrictions associated to high import tariffs on ingredients/micro-nutrients, and packaging as well as problems of customs clearance. Regarding marketing constraints, high competition from imported fruit products, poor infrastructure and high transportation cost, and limited capacity are found to be the main challenges.

Addressing these constraints to effectively leverage the food processing business in managing malnutrition, reducing post-harvest losses and driving inclusive growth in Ethiopia, is crucial. Among others, the key strategies should also focus on increasing quality and uninterrupted raw material supplies; reducing production costs and designing mechanisms to substitute imports of ingredients and packaging; and increasing demand and markets for nutritious foods.

Equally, Public-private Partnership (PPP) framework with donor support is a key intervention to provide preferential support for enterprises supplying nutritious foods to access quality raw materials and auxiliary ingredients; to process technologies, product diversification and fortification; to stimulate innovative access to finance/credit; and to develop markets and distribution models to reach consumers at the Bottom of the Pyramid.

Key Words: *Dried Papaya, Marketing, Processing, SMEs, Trade Barriers*

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1. Introduction

1.1. Background to the Study

Ethiopia is one of the top five papaya producer countries in Africa. According to the Central Statistical Agency, papaya came in third in fruit production (720,077.70 tons) during the 2020/21 cropping season, with area coverage of more than 3,109.52 hectares. Papaya is a popular fresh fruit in all of Ethiopia and about 15,572,313 farmers are engaged in papaya cultivation. Despite its being popular and the widespread malnutrition in the country, over 30 percent of the fruit is lost each year for lack of market, low consumption, lack of appropriate storage facilities, lack of transportation, poor post-harvest management, and undeveloped systems for alternative use of the product.

The Addis Ababa Chamber of Commerce and Sectoral Associations (AACCSA) believes that networking with relevant actors in finding the root causes of the problem is one important area of intervention to improve the processing of papaya with value addition. In this regard, AACCSA, together with DI and Global Alliance for Improved Nutrition (GAIN), has agreed to work in converting papaya waste to nutritious fruit bars and dried papaya for the low-income population. Thus, the realization of the project is very important in reducing malnutrition in Ethiopia --- the second most populous country in Africa, by improving supply of nutritious fruit bars and dried papaya, and creating new jobs in the papaya value chain.

For this reason, AACCSA and its partners DI and GAIN have agreed to focus on reducing trade barriers and improving the enabling environment for the fruit-processing sector in Ethiopia. Specifically, the project aims to unleash the potential of Ethiopia's papaya value chain by developing, testing, and demonstrating a model for a new value chain for fruit processing.

1.2. Objective of the Study

The main objective of this study is to identify the systematic barriers (mostly related to business environment and trade) to processing companies/SMEs for dried papaya processing and marketing in Ethiopia, and forward solutions that eliminate the barriers and improve the capacity of SMEs for processing and marketing a healthy and safe dried papaya product.

1.3. Scope of the Study

The study is focused on identifying the systematic barriers for enterprises such as small, medium and large enterprises working in processing fresh papaya fruits into different papaya products for marketing in Ethiopia. However, as there are no enterprises working in dry/fresh papaya processing and marketing, the study attempted to assess the experience of enterprises providing dried nutritious foods to indirectly infer insights for dried papaya processing business.

1.4 Method and Approach of the Study

1.4.1 Study Design and Source

The study adopted a cross-sectional research design with a case study approach, and it involved a mixed research methods involving both quantitative and qualitative data analysis. It is based on both secondary and primary data collections. The literature review involved extensive document analysis of scientific articles, reports, guidelines for value chain analysis as well as national policy related documents.

1.4.2 Data Collection and Analysis

The study employed a purposive non-probability sampling technique mostly snowball sampling approach to select sample participants of this study. In consultation with GAIN and AACCSA, enterprises engaged in processing nutritious foods such as snacks as well as fruit processing were purposefully selected. A total of 18 enterprises participated in providing data 6 in the Key Informant interviews (KIIs) and 12 in Focus Group Discussion. Furthermore, physical observation was made to food processing plants to get first hand information.

A value chain approach is adopted as a key analytical framework to examine the food/fruit processing value chain by focusing on three main stages: Sourcing raw materials; processing and distribution, and marketing processed food/fruit products. The qualitative data collected through KIIs and FGDs was transcribed and properly coded by main themes in line with the objectives of the study and focused on the three stages in the value chain processing. Thematic framework/content analysis approach was used to analyse qualitative data. The primary data collected through interviews was triangulated by observations as well as review of related literature and secondary data analysis. The official websites of interviewed enterprises were also reviewed to enrich the KIIs. Within the value chain framework, the major bottlenecks the enterprises face in each stage of food/fruit processing value chain were analysed and solutions proposed to overcome the barriers.

2. Papaya Fruit Production, Consumption, and Export

2.1 Production

Papaya is one of the important fruits grown in Ethiopia. It is produced in gardens, at semi-commercial levels, and commercial levels. Papaya has many nutritional (carbohydrate, fibre, vitamin C, magnesium, folate, vitamin A) and medicinal values against many diseases such as intestinal worms and different kinds of wounds (Etissa, 2017; Shafi et al., 2014).

Globally, the total production of papaya has doubled and jumped over 59,000 tons between 2014 and 2019. Compared to Brazil, India and Nigeria, Ethiopia produces way small volume of papaya. India dominates papaya production in the world market. Papaya has gained importance owing to its high palatability, early fruiting, highest productivity per unit area, multifarious uses like food, medicine and industrial input.

Papaya production in Ethiopia is characterized by use of local varieties and poor management practices. Similar to other fruits, productivity is low due to poor local variety (high yielding hermaphrodite papaya varieties are still at trial stage), poor farm management, limited extension service etc. (Lemma et al., 2020). In addition, papaya suffers great loss due to various biotic factors (diseases) such as anthracnose, phytophthora, powdery mildew, black spot and papaya ring spot virus that are seriously affecting the production and productivity of papaya (Gabrekiristos et al, 2021). Despite the challenges, production has been increasing and commercially cultivated land reached 3484.46 hectares with annual production of about 54,355.024 tons (CSA, 2018).

2.2 Consumption

Papaya is a delicious tropical fruit with many nutritional and medicinal properties. The fruit contains 85 percent water, 10-13 percent sugar, 0.6 % percent protein, vitamin A, B1, B2 and C (Samson, 1986). The fruit may be consumed fresh, used as meat tenderizer, raw material for soft drinks, jams and various preserves as well as medicinal purposes by health and cosmetic industries. Food canning industries also use ripe fruits as filler to manufacture many products.

Due to nutritional and health benefits, the demand for papaya consumption has been increasing. Coupled with the growing population, urbanization, rising purchasing power, the demand for the fruit is expected to double or triple over the next decades.

The processed fruit market in Ethiopia was equal to 80 million USD (calculated in retail prices) in 2015 and is expected to reach 593.56 million USD (in retail prices) by 2025,

increasing at a compound annual growth rate (CAGR) of 18.9 percent per annum for the period 2020-2025, which is lower than 27.6 percent per year registered in 2015-2019. Nevertheless, the demand is increasing over the years due to improvement in income and changing life style, pushing consumers to shop readymade food such as juice.

2.3 Export

Ethiopia has a comparative advantage in papaya production, processing and export due to its favourable climate, proximity to European and Middle Eastern markets and cheap labour. However, this opportunity was not exploited enough due to mainly minimal production of commercial varieties, under developed packaging and cold chain, high cost of freight, competing products from other countries. Yet the export volume and value of papaya has been increasing.

3. Papaya Processing and Malnutrition in Ethiopia

3.1 Papaya Processing

Even if the Government of Ethiopia has embarked on constructing Integrated Agro Industrial Parks (IAIP) by prioritizing high potential areas in four regions, there are only 30 large and medium scale fruits and vegetables processing plants in the country, producing limited number of products like tomato paste, orange marmalade, vegetable soup, frozen vegetables and wine (MoTI & MoA, 2015; Zegeye et al, 2014). The plants operate below capacity due to supply constraint.

Out of the 30 large and medium scale fruits and vegetables processing plants in the country, only 2, i.e Africa Juice and Cado process papaya juice. Africa Juice SC was established in 2009 as a joint venture between Africa JUICE BV of the Netherlands and the Ethiopian government. The share company, which took operational control of Tibila Farm in the Upper Awash Valley, has built state-of-the-art fruit-processing facility with processing, sterilization, and packaging equipment. The processed papaya juice is exported to markets in Europe and the Middle East. The company has 2,400 employees and its goal is to develop over 1,200 hectares by organizing cooperatives (EIC).

The most common papaya fruit processing in Ethiopia is juice making which is carried out by small juice shops littered all over the country. As a result, there is huge post-harvest loss. The fruit processing industry in Ethiopia is also very weak due to the cheap price of imported juice or other processed products that create competitive barrier to domestically processed products.

3.2 Malnutrition and Dried Papaya

Despite significant achievements in tackling malnutrition in Ethiopia, the problem still remains a challenge to the country. According to a recent report, over 6 million children under-5 are stunted where 1 in 14 suffer from wasting, and increasing trends of overweight and obesity have prevailed among children and adults (EC, 2021). Among others, the key drivers of such malnutrition in children and women are associated with poor quality of diets.

There is a growing consensus that inadequate dietary intake of micronutrients and macro-nutrients required for metabolism, growth and cognition are the primary immediate causes of malnutrition. Although the definition of a healthy diet depends on the environment, there are many studies that show eating a varied diet that includes nutrient-dense foods such whole grains, legumes, nuts, fruits, and vegetables is linked to improved results. In spite of this, the fruit consumption on low- and middle-income countries, including Ethiopia, is very low.

Cognizant of this, development partners and scholars have been increasing call for leveraging the food processing sector to ensure safe, adequate and affordable sources of healthy and nutritious foods, and combat malnutrition. Among others, increasing the availability and affordability of dried food or fruit products in the forms of snacks is believed to be highly supportive to manage malnutrition. With regard to this, the Danida Green Business Partnerships has been promoting dried papaya processing in Ethiopia to support the country's effort in combating malnutrition, apart from increasing job creation and reducing post-harvest losses for papaya.

4. Country Experiences: Dried Papaya Fruits and Packaging

4.1 Country Experiences

The following is a brief summary of some selected country experiences in processed dried papaya fruit products and ranges of drying technologies.

Uganda: In Uganda, the private sector is involved in processing, packaging, and marketing of dried fruits, including papaya (Temu et al., 2016). Fresh papaya comes from contracted farmers who grow fruits organically, and supplies fresh fruits to companies. The companies are vertically integrated to the upstream to ensure safe and quality raw material supplies. Growers are also trained by the companies on organic farming and certified in order to ensure food safety and meet quality control standards. Production capacity is 30-40 tons per month of fresh produce, and 1 ton per month

of dried products. The processors use different technologies to dry fruits such as papaya. They started with solar dryers and then shifted to using other dryers such as combined solar bio-mass supplementing heating, fuel and electrical dryers (Temu et al., 2016). The weather conditions that influence drying patterns and quality of dried fruits were key factor for shifting from solar dryer to electrical/mechanical dryers. Perhaps, this suggests that solar dryer needs to be used in combination with other dryers with other energy sources such as bio-mass, fuel, and electricity so as to supplement bad weather conditions and ensure production all the time. The major critical control conditions observed during drying are temperature, humidity and airflow. The optimum temperatures to dry fruits to safe moisture content are 60-70°C, which takes 2 days.

India: Experiences from India show that dried papaya fruit powders are frequently used in nutritional supplements. They can be used as a high-density vitamin supplement for fortification of household recipes to overcome vitamin A deficiency diseases. Pandey and Singh (2014) compared two drying technologies for processing dried papaya powder: Oven vs. freeze drying technology. The study found that fresh papaya (1kg) yielded 150g of freeze-dried papaya powder and 190g of oven dried papaya powder. It further stated that freeze dried papaya powder is rich in ascorbic acid and total carotenoid content when compared to oven dried papaya powder. The study thus indicated the superiority in the use of freeze-dried papaya powder and nutritional foods fortified when compared with oven dried papaya powder.

The Indian experiences also show that papaya fruit can be used to produce nutritional enriched food products such as fruit bar by mixing/blending it with other fruits such as guava. In India, the most popular area of processed food is ready-to-eat food sector where papaya-cereal flakes can niche market as it can meet nutritional demands (Dhiman et al., 2019). The papaya-cereal flake can be used as a ready to eat snack food and can be easily reconstituted in hot milk to relish morning breakfast like any commercial cereal flakes.

Moreover, the country also produces dried papaya fruit bars from ripe fresh papaya fruits using hot air dryer which encourages small-scale processing units in rural areas. Papaya fruit bar preparation is a simple process involving operations like selection of ripe fruits, cleaning, washing, extraction of pulp, and preservation of pulp as well as mixing of pulp with sugar and citric acid and drying in hot air drier. However, the papaya fruit bar develops cracks and may not form sheet. Hence a process was developed to reduce water content in pulp and use the same for bar making with very good appearance and taste. The product is safe and meets the dehydrated fruit requirements standards of FSSAI. Ten kg of fruit pulp yields 2.5 kg of fruit bar.

Fiji: In Fiji, different dried papaya fruit products are produced from fresh papaya fruits using solar dryers. These are dried papaya dices and papaya fruit leathers, among others. Tropical dried fruit medley could also be produced and sold in diced form for ready incorporation to breakfast cereals and for baking. Fruit leather is a nutritious treat for people of all ages. Fruit leather can be made using either fresh, canned or dried fruits. Dried papaya can be used to prepare papaya fruit leather. Moreover, many fruits can be used for fruit leather, including mangos, bananas, pineapples, oranges, tomatoes etc.

4.2 Packaging for Dried Papaya Fruits

The use of appropriate packaging and labelling is considered key aspect of marketing strategy to effectively promote the product as well as create, maintain, protect and enhance brands. A nicely and properly designed packaging provides convenience and promotional value. Innovative packaging can bring large benefits to consumers and profits to producers. Design and size of packages also influence product acceptability of dried fruit products.

Similar to packaging, appropriate labelling is a key factor that influences customer's choice of dried fruit products. Export markets strongly demand proper labelling of dried fruit products. Processing industries are required to include nutritional labelling with clear mention of the amount of proteins, fats, carbohydrates, and calories contained in the products, as well as their vitamins and mineral contents as a percentage of the recommended daily allowance. Therefore, dried fruit processor needs to be wary of labelling requirements prior to designing labels for the packages if they want to penetrate the export markets.

A brief review of some country experiences regarding the use of dried fruit/papaya packages is presented below.

Uganda: The common packaging materials for dried fruits such as dried papaya used in Uganda are polythene bags and boxes (Temu et al., 2016). These packaging materials are preferred because of their protective role against moisture, oxygen, micro-organisms and insects. There is no manufacturing industry in Uganda that produces the packages. Therefore, processors rely on costly imported packages. The local processors have two options: importing the packages directly from South Africa, Egypt and Hong Kong, or receive the labeled packaging materials from their buyers in Europe and Asia (Temu et al., 2016).

Fiji: Plastic freezer bags or tightly sealed containers are used to pack dried papaya fruit products such as papaya fruit leathers in Fiji (Brown, 2021). The export market for dried fruits/papaya demands different packaging sizes ranging from 50g to 500g. Although similar package sizes can be used for the domestic markets in Fiji, some school canteens prefer smaller package sizes of around 10g so that students would be in a position to buy them as snacks during morning recess or lunch break.

5. Findings from Food/Fruit Processing Companies

Under this title, the main findings of the case studies from selected enterprises in the food/fruit processing and marketing are discussed and analysed.

5.1 Profile of the Processing Enterprises

The business operation experience of the food/fruit enterprise ranges from 17 years (Guts Agro Industry) to 3 years (Ethio-Gabana Trading). The enterprises operate at different size such as small-scale (Nutridense), medium-scale (Theday) and large-scale (Guts). Two of the enterprises, Guts and Theday, have already obtained ISO 22000 certification in 2005 and 2018 respectively. This certification has enabled them to develop their own brand such as Lembo snack for Guts and THEDAY Fruit Jams for Theday. As a result, both enterprises have been able to expand their commercial markets in the domestic and international markets.

5.2 Ranges of Nutritious Foods Produced by the Enterprises

In the absence of dried papaya fruit processing business (papaya powder, dried papaya, dried papaya bars) in Ethiopia, a closer look into the existing dried food processing business can provide very useful insights to understand and set conditions relevant for fitting a nutrition-dense dried papaya snack processing business in the country. All of the processors have produced diversified food products ranging from 2 products (Nutridense) to 5 products (Guts). Theday has also diversified its product portfolios into 3 different fruit jams. In all the three processing enterprises, the diversified food products have different nutritional contents.

Table 1: Ranges of nutritious foods produced and business model pursued by the interviewed enterprises

Name of enterprises	Ranges of nutritious food products	Ways to produce nutritious foods through mixing varieties or fortification	Nature/motive of the business — Business Model
Guts	<i>Lembo Snacks</i>	Mixing different foods rich in nutrition	Guts is a renowned nutritious-food-processing company in Ethiopia, targeting both commercial markets as well as nutrition for managing malnutrition through programs related to relief, aid, and school feeding. The company produced nutritious food through mixing different foods and fortifying the food with vitamins and minerals.
	Supermom	a fortified food supplement targeting children from six months, and lactating and pregnant women	
	Corn-soya-blend foods (CSB)	Fortified food supplements for relief food aid through WFP for managing malnutrition.	
	Yanet Shiro powder	Nutrition-enriched foods fortified with vitamins and minerals	
	Libdel baby cereal	Nutrition-enriched foods fortified with vitamins and minerals	
Theday	<i>Strawberry fruit jam</i>	The firm is in the process to produce nutritious fruit jams by	Providing high quality fruit jams, mostly for commercial markets.
	Mango fruit Jam	fortifying the jams with vitamins and minerals, with supports from Technoserve.	The company has also a plan to produce nutrition-enriched jams through fortifying the jams with vitamins and minerals to reach a health-conscious urban population.
	Passion fruit jam		
Nutri-Dense	<i>Granola</i>	Nutri-dense food by mixing different foods with different nutrition contents/values	Nutri-Dense is a social enterprise established to process and provide nutri-dense or nutrition-enriched food products, targeting both commercial markets for a growing health-conscious urban population as well as school children for managing malnutrition. Nutritious food is produced by mixing different food varieties with different nutrients.
	Oatmeal	Oatmeal such as oat porridge is made tastier and nutritious by adding cinnamon, fruits, nuts, yoghurt.	
Ethio Gabana	Whole egg powder	It contains supplementary fortification with minerals and vitamins.	Supplying safe, supplementary food for children, lactating mothers and pregnant women to improve daily nutritional intake, thus, focus on both consumer markets and nutrition for managing malnutrition.
Cado	Fruit jams		Providing high quality fruit jam products mainly for consumer markets
Tru luv	Granola snacks	Nutritious snacks packed with oats, teff, and safflower seed, and flavoured by white honey.	Improving nutrition while supporting environmental sustainability, it targets health-conscious urban people in Addis Ababa as well as children and women through food donation model.
	Granola bite peanut butter	Packed with teff, dry roasted peanuts, safflower, red honey	

Source: Own survey, 2022 (KIIs and Internet search)

Despite the differences in the processed food products among enterprises, they have one thing in common. In one way or the other, the enterprises seemed to have focused on processing, producing and providing high-value food products with improved nutritional values targeting both commercial markets as well as nutrition-assisted programs to reach low-income population for managing the problem of malnutrition. This implies that there is growing interest among private enterprises for developing a broader business motive that goes beyond the traditional market-based approach to do business solely for maximizing profit towards a business model promoting nutritious foods both for making business (profit) and managing the problem of malnutrition through nutrition assisted programs.

Based on the ranges of nutritious food products, one can clearly observe that the enterprises have been trying to incorporate nutrition issues into their food processing value chain/business model. Regarding the nutrition importance during food processing, interviewed product manager at Guts stated that “gluten free and calorie” is the most important aspects of nutrition consideration during processing food products.

To realize their business motive/objective, the enterprises have been trying to develop efficient food processing value chain for strengthening the supply base for sourcing quality raw crop/fruit materials, efficient processing technology as well as innovative distribution and marketing channels.

5.3 Analysis of the Food/Fruit Processing Value Chain

To guide the following discussion, the food processing value chain is organized into 3 main stages focusing on the post-harvest middle-stream activities of the food value chain. These are: (i) sourcing raw materials/supply; (ii) processing and packaging; and (iii) distribution and marketing channels for processed food products.

5.3.1 Sourcing raw materials/supply

The enterprises said that they sourced raw material supplies from locally produced crop/fruit products. Main suppliers of raw materials are found in different geographical areas of the country, depending on the type of food processed. It seems that the type of food to be processed tends to determine the type and geographical location of raw material suppliers.

The processing enterprises have also reported that they have sourced the raw materials from local farmers, non-commercial farmers, or commercial farmers, or both.

Regarding procurement methods, the enterprises, except Africa Juice, have been engaged with suppliers through contract farming. This means that contract farming agreement is concluded between processing enterprises and raw materials suppliers such as and Nutridense and smallholder farmers; Guts and farmers’ cooperative unions; and Theday and commercial farmers. Some of the contract agreements between Guts and suppliers/cooperative unions involved working together to plan sourcing activities, make time calculation and conclude a price deal as well as agreement about the delivery time and Gut’s requirement for product quality. While Guts implemented product quality requirements consistent with the national and WFP standards to ensure quality raw material supply, Africa Juice used its own farm as its main supply base for required raw materials for juice processing.

Overall, participants of this study have underscored that capacitating this stage (supply base for raw materials) of the food processing value chain is critical to ensure the production and supply of safe and quality raw materials for enterprises to process and provide healthy and nutritious food products. This requires providing the relevant support towards strengthening the capacity of producers/farmers to produce and supply safe and quality raw materials in an uninterrupted manner.

5.3.2 Food/Fruit Processing

5.3.2.1 Types of processing technology and capacity

Given the different types of food products they processed, the enterprises used different types of processing technologies and machines/equipment. Put differently, the choice of processing technology depends on the type of food products to be processed. Thus, the other enterprises, except fruit processing firms (Theday & Cado), utilized drying technology to produce dried food products such as snacks (Guts), Granola (Nutridense & Truluv), and whole egg powder (Ethio-Gabana). Drying technology is the main processing method for the production of Granola using electric oven dryer and whole egg powder using spray. On the other hand, Guts uses extrusion technology where drying methods involved in the process during snack production. Guts installed its own electric power station with 630kwh power capacity to tackle power interruptions and ensure constant power supply for continuous food production. Moreover, the enterprise has a standby generator to operate using fuel in case of a complete power off. All of the enterprises rely on imported drying machine. As they have noted, the drying machine is not produced/manufactured locally because of lack of knowledge and the technology is capital intensive.

Surprisingly, although solar drying appears to be cost-saving, none of the interviewed enterprises have adopted such drying technology so far. In the eyes of Gut's product manager, "solar drying technology has zero-cost, can be produced locally, slow drying, and doesn't damage the nutrition contents of the food to be processed." However, the manager pointed out his doubt that solar drying method may not be feasible for mass production due to limited power compared to electric power. He noted that solar drying technology may not function throughout the year due to bad weather conditions and limited sun energy availability. In this case, there may be a need to think of using electric power in the event when solar drying performs under capacity. Hence, Guts opts for using electric power for drying food processing rather than solar drying.

As a matter of fact, it should also be stated that food processing involves value addition through different ways. One way of doing this is by increasing the shelf-life of the food products. This is particularly critical in fruit processing where fruits (mostly papaya) are highly perishable and experiences high degree of post-harvest losses as compared to other agricultural crops such as cereals. As a result, fruit processing such as papaya is viewed as important business to improve the shelf-life and reduce food losses. This is what was singled out during the KII and the FGDs. Indeed, one of the FGD participants went further and underscored that “the average 3-4 days shelf-life for fresh fruits is substantially improved to over many months, thanks to processing.” The experience of Theday and Cado reveal that fruit jam processing has improved and the shelf-life of fresh fruits is 24 months or two years. The findings have also ascertained that dry food processing increases the shelf-life of Granola and snack food products by 2 years and 1 year respectively. Therefore, if done efficiently with relevant technology, food/fruit processing is a very useful business endeavour not only to extend shelf-life but also remove the seasonality of food/fruit supply thereby increasing the supply of processed foods throughout the year.

5.3.2.2 Inputs/ingredients and packaging materials

(i) Types and sources of food ingredients

The types of food ingredients used by an enterprise depend on the type of food processed. Regarding the sources of ingredients, information from interviewed enterprises demonstrated that some of them used only locally produced food products while others used both locally produced and imported ingredients.

In the first case, we have Nutridense where the company obtained all of the ingredients required for producing nutritious Granola foods from smallholder farmers. Put differently, Nutridense doesn't import any ingredients for processing, and it relies on 100 percent on locally grown sources from smallholder farmers. In relation to this, the CEO of Nutridense, who said the company has developed unique and exclusive supply chain networks with the smallholder farmers in Debrebirhan area, noted that this enables the company to receive reliably very fresh ingredients. The use of local ingredients also increases the freshness of its Granola product as key product attributes in the eyes of the consumers/customers. Moreover, using locally produced ingredients encourages local production and avoids the problem associated with obtaining forex to import them. Although it uses imported citric acid (minimal ingredient), Theday also uses locally grown sugar as its main ingredient to produce high quality strawberry fruit jams. Similar to Nutridense, Theday does not use preservative, artificial flavours, and colours in processing its fruit jams.

Guts and Theday enterprises use both locally produced and imported ingredients. Guts uses imported food flavours and colours to produce nutritious snack foods. It also relies on imported flavours and colours as they are not available in the local markets. Also, the company relies on imported micro-ingredients (i.e., vitamins and minerals) to fortify its food products and improve nutritional values. This is typically the case for food products of nutrition-assisted projects supported by WFP as the main market outlets. However, the manager of the company stated that while improving nutritional values of food through fortifying with vitamins and minerals is a useful thing, relying on imported ingredients may ultimately end up increasing production costs.

(ii) Types and sources of food packaging materials

Food packaging is the enclosing of food to protect it from damage, contamination, spoilage, pest attacks, and tampering, during transport, storage, and retail sale. Thus, the type, design, size and quality of packaging materials used as well as the labelling influences the acceptability and affordability of nutritious food products. The selected enterprises pointed out that consumers tend to be highly sensitive to the types, design, and quality of packaging. According to the findings of this study, the type and design of packaging differ by the type of processed food products. Fruit processing enterprises tend to prefer either bottle (Theday) or plastic jar (Cado); and dried food products such as snacks and granola are packed with cartons or plastics.

The enterprises source their packages either by directly importing them or buying them from local suppliers. Theday and Nutridense import their packaging materials directly while Guts and Cado sourced packaging materials from local suppliers that either imported them from abroad (mostly China) or manufactured them locally using imported raw materials. One way or the other, the enterprises agree that locally manufactured package materials are of poor quality and inadequately supplied. The informants stated that locally available packages are more costly than imported packages because local manufacturers use imported raw materials to manufacture the packages. In this regard, some of the informants claim that the share of packaging cost (due to high tax) to total processing costs may be substantial to the level it could not be ignored.

Theday and Nutri-dense have stressed that better options in terms of quality, types, sizes and designs are the main factors why they prefer imported packages over locally produced packages. Among other things, both sides agree that these quality packages have increased customers' preference for their food products. This suggests that local package manufacturing businesses should be strengthened to improve the quality, type, size and design of packaging to compete with imported packages.

5.4 Marketing and Distribution Channels

Distribution and marketing channels constitute a very important activity in the food processing value chain. This activity basically involves post-factory gate business engagements by the food processing enterprise. Understanding this aspect of the processing value chain is critical to demonstrate the availability of a viable business for the private sector investment or participation in the food processing sector.

5.4.1 Market outlets

There are two main market outlets/segments for nutritious food products: Commercial markets and nutrition-assisted programs.

The first market segment, commercial market, is highly concentrated in the major regional urban areas and Addis Ababa. This market segment targets mostly the rapidly growing health-conscious urban population who have the education and income to afford consumption of highly nutritious foods. Supermarkets in major cities constitute the dominant market outlet food processors have managed to sell their high quality and nutritious food products. Almost all contacted processors have used this market channel. Additional outlets include small retail shops, groceries, hotels, universities, and even major open/outdoor markets in Addis Ababa and its surroundings.

The second market is the government procurement channel. This market segment uses mainly nutrition-assisted programs targeting low-income population for managing malnutrition. Through the national nutrition program, the government with donors such as WFP support tries to leverage the food processing value chain for managing the problem of malnutrition in the country. A typical example includes the donor supported national School Feeding Program, relief aid and Productive Safety Net Program (PSNP). Guts uses this market segment to sell its nutritional products such as snacks and other fortified food products. Since 2008, Guts has concluded contract with WFP to supply nutritional foods for school feeding and relief aid programs. WFP is therefore a well-established customer base which offers a sustainable market for its nutritious foods. However, this requires a large-scale processing capacity to meet the demand.

Other interviewed enterprises have also shown high interest to participate in donor supported nutrition-assisted programs through government procurement channels. For instance, Nutri-dense has already developed some experience and plans to expand its processing capacity and build a well-established customer base through WFP for managing malnutrition.

Moreover, Guts, Theday, Cado and Africa Juice have been exporting their products. In the views of Guts and Theday, the ISO 22000 certification they secured has enabled them to access foreign markets for their brand products.

5.4. 2 Distribution channels

Almost all of the processors have diversified their product portfolios and market segments and none of them depends on a single product, market and revenue flow. Besides, Guts has diversified its distributional channels/networks to deliver its diversified food products to the different market segments. While Theday and Nutri-dense used own distributional channel, Guts used a combination of distributional channels involving own transportation, wholesaler/ALLE, and Likie (a micro-franchise distribution network). By and large, diversification of products and markets are critical for creating multiple sources of revenue flows and enhancing enterprise business growth and development.

5.5 Marketing Strategies and Competition in Food Processing Businesses

5.5.1 Selling strategies used by the food processors

The food processing enterprises which participated in this study have adopted different marketing strategies to increase revenues and maintain competitiveness. Some of the processors have used pre-purchase orders to sell their foods while others did not. For instance, Theday received pre-purchase orders from its retail markets, mostly supermarkets and universities. Based on agreed quantity and delivery time, Theday directly delivers its jams to these market segments. For other small shops and open markets, the company goes door-to-door to sell its jam products. The selling strategy pursued by Nutri-dense involves no pre-purchase orders but actual product delivery to its customers. Guts adopts a combination of selling methods, including selling based on pre-purchase orders as well as using Likie (i.e., sales agents) who make door-to-door sales for BoP consumers.

Similarly, the payment or sales cash collection terms vary by market segments. According to some interviewed processors, there are two main methods to collect payments from sales: Sales on credit and sales on cash upon delivery. Experience from Guts and Theday reveals that sales on credit seems to be the most preferred approach when bulky or large quantities are supplied mostly to supermarkets and institutions. This is done through credit agreement concluded between the processor and buyers. On the other hand, sales on cash upon delivery tends to be common payment method for selling small quantities to small retailers such as groceries, small retail shops, outdoor/

open markets, etc. All of the three processors have used this cash collection method for selling their food products.

5.5.2 Competition

The interviewed processors have revealed that they face competition from both local and imported food products. Theday faces strong competition from imported fruit jams. Surprisingly, Theday further pointed out that imported fruit jams are sold at lower price than its locally produced fruit jams. The factory price of its strawberry fruit jam is higher than imported jams because of high import tariffs/tax on packaging as well as increasing costs of packaging materials/bottles due to the difficulty of obtaining forex to import jam bottles. Fortunately for Theday, the newly adopted tax regulation banning importing fruit jams offers a good opportunity to enjoy the domestic markets without competition. While this opportunity eliminates its major competitors, shortage of sugar still remains a challenge for Theday to expand its jam production and reach the wider consumer markets. Similar to Theday, Cado also faced competition from imported fruit jams. Nonetheless, the company claims that a relatively lower price of locally available raw materials along with market proximity for its jams enables the company to compete with imported jams. Guts faces competition for its brand Lembo snacks from local snack foods. However, a well-established nutrition-assisted market through WFP offers the company to maintain the competition it faces on the commercial markets.

6. Key Lessons: Conditions Necessary for Viable Dry Papaya Processing and Marketing Business

6.1 Business Model Benchmark for Dried Papaya Processing and Marketing

Information obtained from food processors confirms that market for nutrition foods does exist in Ethiopia. Two key issues have emerged here. First, the experience of the processors has indicated that commercial markets for nutritious foods predominantly target the educated and health-conscious consumers in urban areas. Put differently, processors have stated that demand for nutritious foods is higher among the urban population that have the income to pay as well as the awareness about the health benefits of nutritious foods. This implies that demand for nutritious foods is limited among the low-income population and rural consumers due mainly to its affordability and low nutrition awareness. As a result, the commercial business model is not viable for the BoP market segments. Second, the experience of Guts, an ISO certified nutritious food processing enterprise with commercial motive (profit-oriented) and social enterprise, has demonstrated that expanding markets for nutritious foods to the low-income and rural consumers should leverage the government procurement channels through

nutrition-assisted programs. Since 2008, Guts has established customer markets through WFP to reach school feeding programs in Hawassa and relief aid programs in different parts of the country. According to Guts, a combination of commercial markets (profit) and nutrition-assisted programs offers the company to develop a viable business case for its nutritious food processing enterprise. Such a business model enables the company to make economic returns (profit) and at the same time contribute towards combating the problem of malnutrition in the country.

Based on this study, we can conclude that there is high potential for a viable business for dried papaya processing and marketing in Ethiopia. To build a viable business model, however, processors should diversify market segments for commercial consumers and for BoP consumers. This means a highly nutritious dried papaya bar needs to target commercial markets for the educated and health-conscious urban consumers and government procurement offices for nutrition-assisted programs, Productive Safety Net Program (PSNP) and relief aid programs through WFP, UNICEF, USAID, and other donors. Integrating dried papaya bars into government procurements is key to addressing malnutrition among BoP consumers and strengthening the capacity of the processors to maintain market competition.

Overall, both the commercial and nutrition/social enterprise motives of Guts can provide a benchmark for a viable business model for dry papaya processing and marketing. The key issues considered in assessing Guts as a benchmark are summarized below.

Table 2: Business model benchmark for dried papaya processing and marketing

Key issue considered in benchmarking	Explanation
Nature/motive of the business	Guts, an enterprise with both commercial and social motives, has been promoting nutrition to alleviate malnutrition in the country. This suits the business motive to be advocated by a new dry papaya project.
Raw material supply base	Guts has built sustainable and diversified raw material supply bases in different regions for sourcing quality and uninterrupted raw materials for processing nutrition-enriched snacks, among others. This was a result of strong partnership established between Guts and farmers unions through donors such as USAID, 2SCALE, etc.
Dry technology	Guts has installed electric oven drying technology suitable for large-scale dried food processing capacity of 260 MT. The company also installed a transformer with a capacity of 630kwh to manage erratic power interruptions. In the event of absolute power shut-off, the power source shifts to diesel/fuel. By and large, this technology is preferred because it is convenient for mass food production and supports mass food distributions to different market segments. "Solar drying technology is cost-zero and eco-friendly, but not suitable for large-scale food production. Solar drying technology is also sensitive to weather conditions and cannot be operational throughout the year," according to a manager.
Product diversification and fortification	Guts promotes product diversification and fortification as a means to improve the nutritional values of food products. The company has managed to process diversified nutritious foods with locally produced ingredients as well as fortifying foods with imported ingredients --- vitamins and minerals. Guts has managed this through strong donor support.
Post-factory gate business: Diversification of market segments & distribution channels	<p>Guts post-factory gate business endeavor proved to be a success story for the company to grow and be competent in the nutrition market in Ethiopia. Through strong supports from donors (PPP), Guts has expanded its commercial markets to major urban areas (supermarkets, marts, etc) as well as peri-urban and rural BoP markets in different parts of the country. It also extended its non-commercial markets for managing malnutrition through well-established institutional customers such as WFP.</p> <p>Guts reaches all the diversified market segments through different distribution channels, using own transportation and <i>Likie</i>. Guts offers free delivery to retailers and institutional buyers for bulk sales and wholesale markets -- ALLE, a government-owned distributor. Above all, Guts has devised an innovative micro-franchise distribution model, <i>Likie</i>, to reach wider consumers in the BoP markets. This model uses female sales agents from local areas that collect nutritious foods below factory gate price and sell them at a factory gate price to BoP consumers through door-to-door delivery. In short, Guts has managed to reach retailers, wholesalers and consumers, and BoP. This has enabled the company to remove brokers and control final price and make nutritious foods affordable and competitive in nutrition markets.</p>
Consumer insights on nutrition-enriched snacks	<p>The company strongly believes that the distribution model through <i>Likie</i> has been effective to ensure availability and affordability of its nutrition foods to the BoP consumers. <i>Likie</i> delivers to consumers with factory gate price, and this makes snacks cheaper to consumers.</p> <p>Furthermore, a recent study has assessed preference and willingness to pay for nutrition-enriched snacks in Hawassa and Shashemene towns (Ahmed et al, 2020) within Guts market ranges. The study found evidence that consumers have shown interest and willingness to pay, depending on the different attributes and traits of nutrition-enriched snacks</p>

Source: Own compilations (KIIs, Guts website and related project documents)

While the availability of a potential market for dried papaya nutritious foods is a stylized fact, creating a viable business model for this nutritious food product requires building on the conditions for success stories of food processors and addressing the key barriers these enterprises have been facing.

6.2 Creating Viable Dry Papaya Processing and Marketing Business

The main conditions that are essential to create a viable business for dried papaya snacks are briefly presented in three stages of the food/fruit processing value chain: Sourcing raw materials, processing, distribution and marketing.

6.2.1 Sourcing raw material (fresh papaya fruit) for processing

Both KIIs and FGDs have stated clearly the great need for creating a strong linkages and collaborations between processors and raw material suppliers. A strong partnership between processors and suppliers provides the opportunity for secure access to uninterrupted supply base for safe and high quality raw materials, easily trace and manage safety and quality issues during growing and harvesting of raw materials, improve post-harvest management, and offer technical and financial supports to the suppliers/farmers to build their capacity. Taking note of this, Nutri-dense and Truluv have promoted a strong network and partnership with smallholder farmers, while Guts has created a strong linkage mainly with farmers' cooperatives. In all cases, the processors have underscored that the success of this linkage rests on the critical role of financial and technical supports obtained from donors/partners.

Therefore, the key lesson for a new dried papaya processing business is to recognize the criticalness of cooperation and strong linkage between processors and papaya fruit growers/farmers in order to secure quality and uninterrupted fresh papaya fruits source, improve traceability, and reduce post-harvest loss.

6.2.2 Processing dried papaya snacks

The key insight from both KIIs and FGDs is that a viable business for dry fruit processing shall adopt the state of technology which is convenient for processing different commodities instead of only a single crop/fruit. On the basis of this reflection, the study suggests that the solar drying technology which has been proposed for dried papaya fruit bars takes into account at least three things: Seasonality of papaya supply, weather conditions, and capacity for mass production. Firstly, the solar drying technology should consider the seasonality of papaya fruit supply where there may be a possibility for the machine to sit idle for a while. To ensure efficient utilization, there is a need to design solar dryer to process other fruits or similar commodities at times of shortage in papaya supply. Secondly, the solar drying technology should consider weather conditions that limit availability of sunlight. In such a case, the solar dryer should be able to use electric power or other power sources to ensure all-year production. Thirdly, some argue that solar drying technology may not be feasible for

mass production. This is typically the case for incorporating dried papaya fruit bars into institutional markets that basically target many consumers across the country. In sum, solar drying technology should consider capacity utilization during its design and development stage.

The study highly recommends that solar drying technology adoption evaluates success stories and best experiences from other countries that have successfully implemented this technology for producing dried papaya fruit bars as well as targeting both commercial markets as well as government procurement channels.

Besides, a new product development project should think of diversifying dried papaya food products such as dried papaya protein snacks, papaya powder, dried papaya fruit, etc., for building diversified market segments and revenue source flows, either by using locally produced ingredients or through fortifying the food with vitamins and minerals. This in fact depends on which one is feasible in the current business climate where finding forex for importing micro-ingredients is challenging. In this regard, the interest of the new project to fortify dried papaya with imported whey ingredient would be challenging due to unfavourable import tariffs as well as limited access to forex.

Indeed, a recent report has disclosed that shortage of ingredients (vitamins and minerals) hindered Theday's effort to expand its fortified fruit jams to the BoP markets (AINFP, 2021). Therefore, the new project should explore the potential for strengthening an inclusive multi-level public-private partnership scheme for dry papaya processing business. This partnership can provide a preferential support for processors to have access to adequate and affordable supply of ingredients such as whey and other inputs necessary for producing diversified nutritious dried papaya food products: Dried papaya snacks, powder, dried papaya, etc.

6.2.3 Distribution and marketing channels

Market diversification is crucial in creating a viable business model for nutrition foods. One of the key success factors for Guts nutritious food processing business relies on its capacity to diversify market segments and multiple sources of revenues for its products. Specifically, Guts has successfully leveraged strong partnership with donors such as 2SCALE and public-private partnership with stakeholders to build different market outlets for its diverse products. Through time, Guts has managed to expand its market segments by targeting commercial retail and wholesale markets for urban consumers as well as the BoP low-income consumers through Likie and government/institutional markets, mostly for nutrition-assisted programs --- school feeding and relief aid programs through WFP.

The experience from Guts suggests that its food products have a leverage to target both commercial markets for urban population as well as government/institutional markets through WFP for managing malnutrition. On the commercial markets, retailers (supermarkets, marts, groceries, food corners, hotels, health centres, etc.), wholesalers and other private/public institutions (health centres, universities, airports, military, etc.) could provide a viable business for dried papaya snacks.

Inclusive public-private partnerships play a key role in helping processors develop diversified markets and distribution networks to reach different customer lines, including the BoP market segment. There are also different national policies, strategies, programs, and initiatives that could provide key entry points for a new dry papaya project to be integrated with nutrition-sensitive programs for providing nutrition-enriched papaya snacks. In this respect, the main institutional markets, among others, include PSNP food supports (through WFP), nutrition-assisted food aid for children and women (through UNICEF, EU), humanitarian/relief/emergency food aid programs through WFP, vulnerable people and pastoral communities (through FF and USAID).

In addition, leveraging government procurement greatly improves market competition for nutritious dried papaya food products. Based on retail market observation in Addis Ababa (Gra Mart supermarket), this study found that the major competitor for dried papaya fruit bar is imported apricot dried fruit from Italy. However, the price of imported apricot dried fruit appears to be expensive (1,780 ETB/half kg). Dried apricot fruit has high demand among mainly high-income consumers (foreign residents in Valnero village) near the supermarket. In this regard, locally processed dried papaya fruit bar is expected to be cheaper and build price competitive advantage over imported dried apricot fruit. Above all, dried papaya snack is a fortified food that is more nutrient than dried apricot and a better choice for high income consumers.

Different attributes and traits of nutritious foods strongly influence consumer positions towards dry papaya fruit bar. The attributes, among others, include freshness, taste, flavor as well as nutritional values, etc. Apart from nutritious food attributes, processors have also adopted different customer/consumer services to increase the acceptability of their products by customer. For instance, Guts uses additional customer service packages, including free delivery, refund in case of product defects, and recall procedures; while Nutridense provides free delivery for its customers.

7. Multi-level Support for Processing and Marketing Dried Papaya Snacks

7.1 PPP support for processing and marketing

Multi-level cooperation and partnership among different stakeholders (public, donors, NGOs, universities, etc.) has been a key success factor for producing and marketing nutritious foods. For instance, a public-private partnership has proved effective for supporting Guts to produce diversified fortified nutritious foods and expand its markets to different lines, including the BoP consumers. This partnership enables Guts to develop an innovative distribution model using micro-franchise female sales agents to serve door-to-door delivery to the BoP consumers. Moreover, Guts has partnered with USAID for PPP support to help it create a strong linkage with suppliers/cooperative and unions to source quality raw materials for producing nutritious snacks. Although not typical of PPP, experiences from other processors also demonstrate that financial and technical supports have been critical success factors for product development and marketing of nutritious food products of food processors. Financial support through working capital was a key success factor for processors to expand business as well as revive in times of business lock-down. Besides, technical support through training was key supportive condition for food processors to fortification, contact farming, and business skills etc. Furthermore, a recent report by USAID (2021) provides some examples of PPP approach in supporting enterprises for producing and marketing nutritious foods. Through supports from Feed the Future (FF), USAID has established PPP with 3 enterprises providing nutritious foods.

Overall, leveraging donors support for PPP needs to be a critical consideration for a new dry papaya project to create a strong business case for sourcing quality raw materials, producing and selling nutrition dense papaya snacks.

7.2 Strengthening Fruit Processing Value Chain through PPP Framework

Given that governments in developing countries persistently encounter budget constraints to promote agriculture transformation, innovative partnerships that bring together different stakeholders from business, government and civil society are increasingly being promoted as a mechanism for improving productivity and driving growth in the agriculture and food sectors (FAO, 2016). A critical review of success stories from most developing countries show that country-owned agricultural development strategies through a multi-stakeholder PPP approach involving supports from multilateral, regional and bilateral donors, the private sector, other development partners and civil society has been instrumental for transforming agriculture value chain (FAO, 2016; WTO/OECD, 2013). These partnerships provide multi-stakeholder platforms to align public-sector,

private-sector and civil-society investments and programs, leveraging stakeholder capacities to accelerate progress around agreed priorities within the framework of country-led plans for agricultural development. In the context of agribusiness and agro-processing, a multi-sectoral PPP approach helps design a set of market incentives to encourage private-sector participation in activities that would otherwise be considered of marginal commercial value and/or high risk.

A brief recap of recent literature on some country practices reveals that a multi-stakeholders PPP approach can be considered as a vital strategy to promote fruit processing value chain development in developing countries. According to FAO (2016), Value Chain Development (VCD) PPPs were dominant in Africa. Thus, the potential role of PPP in enhancing capacity of production, processing and marketing of dried papaya fruit products in Ethiopia cannot be ignored.

7.3 Role of Major Supporting Institutions

Apart from the policy incentive schemes, Ministry of Agriculture, Ethiopian Investment Commission, Development Bank of Ethiopia, and National Bank of Ethiopia are the major supporting institutions which facilitate investment in agro-processing in Ethiopia.

Despite the huge potential market and attractive investment incentives provided by the government for investors, the number of fruit juice processors in Ethiopia is few. Moreover, the fruit processing industry in the country is very weak, considering the substantial amount of fruit that is grown in the country. This is attributed to various reasons. One of the reasons for this is the highly developed processing industries in other countries which are able to export into countries like Ethiopia and sell the final product at low price. Apart from the very high competition from importers, long customs procedure, low domestic market demand for some fruit juices, credit constraint, lack of packaging industries, and seasonal shortage of some fruits as well as out-dated technology are the main challenges for the established fruit processing industries in Ethiopia.

Sustained and strong support of the aforementioned major support institutions is, therefore, crucial to the development of the sector in the country.

7.4 Creating Enabling Environment and Providing Support

7.4.1 Policy environment supportive to nutrition-dense food markets

A quick wrap up on the existing policy environment suggests that the government has high focus on improving nutrition to end malnutrition by 2030. Within such a grand goal, the government, in collaboration with donors, has put in place a number of strategies, programs, projects and initiatives aimed at combating malnutrition in Ethiopia.

With regard to a new dry papaya project, the most relevant enabling policy environment includes national policy priority, inclusion of papaya into the 6 food groups of National Dietary Guideline 2022, inclusion of vulnerable people as target group for nutrition dense food in the National Dietary Guideline, and increasing donors support for nutrition dense food supply via food aid/emergency situations.

More specifically, the guideline is very important to promote nutrition for people 2 years and above. As noted by FAO (2022) the dietary guideline proposed 6 food groups to ensure a sustainable health and nutrition dense dietary practice in a family of 2 years old and above. Among these is included the fruits and vegetables food group, i.e., fruits and vegetables of different colours such as bananas, papayas, kale, carrots, and tomatoes. Thus, the main implication here is that there is a policy enabling environment for new dry papaya projects to promote the production and marketing of nutrition-enriched dried papaya snacks in the country.

7.4.2 Enabling environment for investment

Experiences of KIIs and FGDs indicate that trade restrictions and policy barriers have been challenging the food processing business. In order to create a strong viable business for food processing, a favourable policy environment, mostly a supportive tax system that reduces import tax on micro-ingredients (vitamins, minerals, whey, etc.) necessary for fortification and packaging materials; and which excludes nutritious foods from the list of VAT registered commodities, and improves custom procedures that make starting up and doing business easy is required. Therefore, a new dry papaya project needs to take into account these enabling/inhibiting factors during product development.

It is also to be noted that the Ethiopian government is implementing an ambitious program to make manufacturing a significant component of economic activity; and as a result, is moving toward economic deregulation in an effort to draw international investment.

In summary, for both domestic and international investors, exemptions from income tax and customs duty are typically offered. In addition to fostering the entry of international cash and technology, this is done to boost private investment throughout Ethiopia. Food processing enterprises are also eligible to benefit from such types of incentive packages made available by the Government of Ethiopia.

Among the many incentives the government offers include income tax exemption for expansion or upgrading of an existing enterprise. Any investor who expands or upgrades his current business in relation to the increased income generated by the expansion or upgrading is eligible to income tax exemption for a duration that will be determined based on the investor's particular activity and location.

Income tax exemption for investors exporting products and services: Investors who export goods and services are eligible for a two-year income tax exemption. Anyone who contributes goods or services that make up at least 60 percent of another person's product to an exporter is likewise eligible for the same kind of exemption. Additionally, with a few exceptions, Ethiopian goods and services intended for export are exempt from paying any export taxes.

Exemption from customs duty: Investors may import all investment capital items without having to pay any customs duties. These comprise construction supplies, building materials, and spare parts for up to 15 percent of the entire value of the capital goods within five years of the project's commissioning date. However, in this case, there is an exception because such commodities are not manufactured locally in a comparable volume, quality, or price. For raw materials required for the manufacture of goods, exemptions from customs duties or other taxes paid on imports are also provided. An investor who has been granted a customs duty exemption and purchases construction materials or capital goods from a local manufacturing company will be reimbursed for the customs duty paid on the raw materials or components used as inputs for the production of such goods.

8. Conclusion and Recommendations

The key findings of this study ascertain that there are markets for nutritious foods, implying a potentially viable business case for a new nutrition dense dried papaya snack. A viable business model for producing and marketing nutritious dry papaya snack depends on two main market channels. First, nutrition-enriched dried papaya snack has a viable business for commercial markets (supermarkets, marts, hotels, universities, airports, etc.) for the growing urban educated and health-conscious

consumer. Second, given that dried papaya snack is nutrition-enriched food, it has a viable business for targeted low-income consumers/BoP markets using institutional/government procurement channels through WFP, UNICEF, USAID, etc.

These potential market segments include nutrition-assisted programs, relief aid programs, national School Feeding Programs, PSNP, etc. Moreover, business enterprises contacted for this study have shown increasing interest to participate in dry papaya processing, provided key constraints hindering production and marketing of nutrition foods are addressed. The study found that the major constraints and challenges hindering the capacity of enterprises to produce and market nutritious foods include unfavourable tax system/trade policy barriers, shortage of forex, raw materials and input-micro-ingredients, high competition from imported food products, and limited capacity.

Therefore, the government should quickly address the constraints to effectively leverage the food processing business and manage malnutrition, reduce post-harvest loss, create more jobs, and derive inclusive growth in Ethiopia. By and large, reviewed country experiences of Fiji, India, Kenya, Uganda, etc., in this study reveal that effective value chain development (VCD) of the fruit processing industry has come from strong multi-stakeholder PPP interventions with strong donor support.

Recommendations

The following main recommendations are made to overcome the major constraints of enterprises providing nutritious foods and enable them to play key role in reducing post-harvest losses, create jobs, combat malnutrition, and derive inclusive growth. A brief summary of key constraints and proposed recommendations along with potential responsible government offices are presented below.

Table 3: Summary of constraints and recommendations

Value chain stage	Constraints	Recommendations	Responsibilities
Upstream: Sourcing quality raw materials	Shortage of raw materials	*Support agricultural productivity and quality raw material supply for processing. *Facilitate the formation of a strong partnership between processors and supplier smallholder farmers/cooperative/commercial farmers to: (i) secure safe and quality uninterrupted raw materials supply; (ii) ensure traceability; and (iii) minimize post-harvest losses. * Encourage out-grower/contract farming, improve land policy. * Promote participation of processors in fruit production- PPP.	MoA, FDA
	Food safety and quality standards, losses	* Provide technical support for suppliers through training on contract farming, post-harvest management, market linkages, and food safety standards, among others. *Support farmers/cooperatives for organic certification; * Set up post-harvest infrastructure.	Also donors support for PPP
	Seasonality of fruits	*Provide access to cold storage in transportation and distribution. *Support development of diversification strategy and implementation.	
Middlestream: Processing & Packaging	Inappropriate/ obsolete dry processing equipment	*Encourage adoption of dry technology that is: (i) cost-effective; (ii) environment-friendly; (iii) post-harvest loss and nutrition loss reducing; (iv) convenient for mass production-BoP markets; and (v) multi-purpose to allow processing different crops/fruits to accommodate seasonality of raw materials supply. *Extend agricultural supports/subsidies beyond farmers to processors by providing nutrition-enriched foods.	MoA MoI
	Lack of appropriate packaging and ingredients	*Provide policy support for adequate and affordable supply of quality ingredients to support product diversification and fortification as well as proper packaging materials supply; *Explore the ways for promotion of local manufacturing of quality packaging materials for dried fruits/foods.	
	Inadequate, uncertain and costly power supply	Encourage processors to access alternative energy sources such as bio-mass, fuel and solar for dry processing and packaging.	
Downstream: Marketing & Distribution	High competition from imported food products	*Provide protection against cheap imported foods. *Facilitate diversification of market segments for enterprises producing nutritious foods by incorporating nutrition foods into government procurement channels for nutrition-assisted programs, relief aid, PSNP, school feeding programs, etc., through WFP, UNICEF.	MoA, MoI, MoT Donors
	Low market	*Support processors in compliance with global market certifications through capacity building on food safety knowledge and international certification standards. *Encourage PPP with donors support such as International Trade Center (ITC), Global Food Safety Initiative. *Promote local processed food consumption.	MoI, FDA, with donor supports, ITC.
Support	Unfavourable	Make the tax system more supportive for enterprises producing and marketing nutrition foods by (i) reducing import tax on micro-ingredients (vitamins, minerals, whey, etc.) necessary for fortification and packaging; (ii) excluding nutritious foods from the list of VAT registered commodities; and (iii) improving custom procedures.	MoA, MoI
	policy/taxation/ tariff/forex systems	Provide a comprehensive national legal framework for food safety and quality standards complying with commonly used international standards.	FDA
	Limited infrastructure and high transportation cost	Improve infrastructure facilities: power supply, cold chain, transportation, etc.	MoA MoF
	Limited R & D in value addition and marketing	Provide state-led research effort on dried fruit processing and marketing, both domestic and export markets.	MoA
	Lack of adequate finance to establish appropriate drying technology and packaging.	Provide subsidized loans for processors to establish state-of-the-art drying processing technology, facilities and packaging.	with support from donors

A Way Forward: Multi-Stakeholder PPP

The overall development of papaya processing value chain requires the processing industry/company to manage the whole supply chain that includes organizing, training, and enabling farmers to access resources and technology, managing processing, packaging and marketing. The country experiences in this study indicate that effective value chain development (VCD) of the fruit processing industry came from strong multi-stakeholder PPP interventions with strong donor support. Therefore, the study highly recommends the leveraging of a multi-stakeholder PPP approach to effectively develop dry papaya processing industry in Ethiopia. A PPP framework with donor support is a key intervention in providing preferential support for enterprises providing nutritious foods to access quality raw materials and auxiliary ingredients, processing technologies, product diversification and fortification, stimulating innovative access to finance/credit, and developing markets and distribution models to reach the BoP consumers. This kind of PPP intervention involves a holistic approach to address the systemic constraints under each stage of the papaya dry processing value chain: Upstream, middle-stream, and downstream stages as well as supporting services for the whole value chain.

- **Upstream stage --- sourcing raw materials:** The PPP promotes the establishment of uninterrupted raw material supply and traceability, increase productivity and minimize seasonality, set up proper post-harvest infrastructural facilities, promote formation of farmer cooperation, facilitate outgrower schemes and create favorable market linkages, capacity building on organic production and organic certification as well as food safety and quality standards; and encourage participation of processors in papaya fruit production along with outgrower lines.
- **Middle-stream stage --- processing and packaging stage:** The PPP facilitates establishment of state-of-the-art dry papaya processing facilities, technologies and packaging. It also promotes diversification of processed papaya fruits through blending or fortifications adhering to required food safety and quality standards. Besides, it facilitates transfer of fruit processing skills and know-how. And in the long-run, adoption and localization of drying technology, packaging, and ingredients.
- **Downstream stage --- marketing:** The PPP framework is critical for supporting market diversification for dry papaya processed products, both locally and globally. It supports processors to develop brands and certifications to penetrate export markets. It also supports the government to develop a comprehensive national legal framework for food safety and quality control standards.

- **Supporting services for the value chain:** A multi-stakeholder PPP framework provides different innovative finance access for growers/cooperatives and for processors to improve business growth and competitiveness. It also supports the government to put in place enabling business environment (policies, supports/incentives) in support of dry papaya processing and marketing in the country.

The country experiences reviewed above with regard to PPP implementations can provide lessons for benchmarking specific best practices and when (short-, medium-, long-term); and how to implement them in each stage of the fruit processing value chain. In this case, AACCSA, partners (GAIN/DI) and stakeholders are required to come together and identify relevant country experiences for guidance and designing intervention areas to enhance the capacity of local processors/LSMEs in dry papaya processing and marketing in Ethiopia. AACCSA and partners GAIN/DI can take these recommendations to lobby policy makers to make appropriate policy changes that overcome the underlying constraints of food/fruit processing and marketing in Ethiopia.

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