



Final Report

Future Governance Structure Study of Modjo Logistics Hub

5th of January 2019



ETHIOPIAN MARITIME AFFAIRS AUTHORITY
የኢትዮጵያ ማሪታይም ጉዳይ ባለስልጣን



Maritime & Transport Business Solutions

address	Wijnhaven 3 ^E P.O. BOX 601 3011 WG Rotterdam The Netherlands
telephone	+31 (0)10 286 59 40
e-mail	info@mtbs.nl
internet	www.mtbs.nl
document title	Final Report: “Future Governance Structure Study of Modjo Logistics Hub”
document status	Final
date	5th of January 2019
project name	Analysis of Future Governance Structure Study of Modjo Logistics Hub
MTBS reference	826179
client	Ethiopian Maritime Affairs Authority (EMAA)
client reference	ET-EMAA-56665-CQS-CS

COPYRIGHT NOTICE AND CONFIDENTIALITY

This report is for the sole use of the Client and is not to be copied or distributed outside of the Client organisation. The report contains confidential information that should not be made publicly available. Publication might harm the interests of individual parties.

DISCLAIMER

This document is intended only for use by the Client. It may contain confidential or privileged information. Maritime & Transport Business Solutions B.V. (MTBS) makes no representations or warranties about the accuracy or suitability of this document and its information for any purpose. Errors and omissions may occur. Therefore, MTBS disclaims any warranty, whether express or implied, as to any matter relating to this service and all information provided, including but not limited to the fitness for any particular purpose. In no event shall MTBS be liable for any indirect, special, incidental, or consequential damages arising out of any use of reliance of any information contained herein. Nor does MTBS assume any responsibility for failure or delay in updating or removing the information contained herein.

Index

List of Acronyms	4
1 Introduction to the Final Report	6
1.1 The Assignment	6
1.2 Background of the Assignment	6
1.3 Objectives of the Assignment	7
1.4 Approach to the Assignment	8
1.5 Deliverables & Visits	10
1.6 Report Status & Reading Guide	11
1.7 Update on the Study Progress	13
2 Analysis of Djibouti Port Developments and other Competing Ports and Corridors	14
2.1 Introduction	16
2.2 Port of Djibouti and Djibouti Corridor	17
2.3 Port of Berbera and Berbera Corridor	23
2.4 Port of Assab and Massawa	27
2.5 Conclusion	28
3 Outline Market Analysis	30
3.1 Introduction	32
3.2 Ethiopian Macro-Economic Overview	32
3.3 Operational Review Modjo Dry Port	55
3.4 Cargo Demand Forecast	60
3.5 Land Demand Forecast Modjo Logistics Hub	88
3.6 Value Chain Analysis	102
4 Identification of Alternative Governance Models	118
4.1 Introduction	122
4.2 Overview of Major Governmental Stakeholders involved in Modjo Logistics Hub	122
4.3 Benchmark of International Best Practice Logistics Hubs Examples	126
4.4 Identification of Alternative Governance Models for the Modjo Logistics Hub	145
4.5 Institutional Framework, Scenario Thinking and Sensitivities	165
5 Financial Analysis of Modjo Logistics Hub	188
5.1 Introduction	191
5.2 General Assumptions	192
5.3 Revenue Projection	193
5.4 OPEX Projection	196
5.5 CAPEX Projection	198
5.6 Business Case – Financial Outcomes	202
5.7 Affordability Analysis	206
5.8 Value for Money Analysis on the Governance Structures	207
6 Needs Assessment – Private Sector Involvement and Capabilities	216
6.1 The Ethiopian Private Sector Capabilities	216
6.2 The Private Sector Involvement and Chain Integration with Djibouti Port	217
6.3 The FOB Directive and the Effect of Lifting the FOB Directive	219
7 Implementation Plan	224
7.1 Introduction	224
7.2 Implementation Plan	225
7.3 Project Implementation Timeline	227

7.4	Monitoring and Evaluation of the Implementation Plan	228
Appendix I	Weighted Average Cost of Capital	230
Appendix II	Data Sources	231

List of Acronyms

B	Billion
BOT	Built Operate Transfer
CAPEX	Capital Expenditures
CCCC	China Communications Construction Company
CCECC	China Civil Engineering Construction Corporation
CFS	Container Freight Station
CMHI	China Merchant Holdings International
CRG	China Railway Group
DCT	Djibouti Container Terminal
DDID	Djibouti Damerjog Industrial Development
DIFTZ	Djibouti International Free Trade Zone
DMPSA	Doraleh Multipurpose Port S.A.
DPFZA	Djibouti Ports & Free Zone Authority
DWT	Deadweight Tonnage
ECX	Ethiopian Commodity Exchange
EDR	Ethio-Djibouti Standard Railway Share Company
EHPEA	Ethiopian Horticulture Producer Exporters Association
EMAA	Ethiopian Maritime Affairs Authority
EMLHA	Ethiopian Maritime and Logistics Hub Authority
ESLSE	Ethiopian Shipping and Logistics Services Enterprise
EPOSPEA	Ethiopian Pulses, Oilseeds & Spices Processors – Exporters Association
ETB	Ethiopian Birr
ETLP	Ethiopia Trade Logistics Project
FCF	Free Cash Flow
FMHACA	Food, Medicine and Health Care Administration and Control Authority
FOB	Free on Board
FTZ	Free Trade Zone
CAGR	Compound Annual Growth Rate
GDP	Gross Domestic Product
GoE	Government of Ethiopia
HoA	Horn of Africa
ICD	Inland Container Depot
IMF	International Monetary Fund
IRR	Internal Rate of Return
JV	Joint-Venture
LAPSSET	Lamu Port South Sudan Ethiopia Transport
LCDA	LAPSSET Corridor Development Authority
LC	Logistics Centre
LCL	Less than Container Load
M	Million
MTBS	Maritime & Transport Business Solutions

NPV	Net Present Value
OPEX	Operational Expenditures
PAID	Port Autonome de Djibouti
PCS	Port Community System
PDSA	Port de Djibouti S.A.
PPP	Public Private Partnership
PSC	Public Sector Comparator
RF	Risk -Free
RTG	Rubber Tyred Gantry
TEU	Twenty-foot Equivalent Unit
TOS	Terminal Operating System
UNECA	United Nations Economic Commission for Africa
USD	United States Dollar
USDA	United States Department of Agriculture
VfM	Value for Money
WACC	Weighted Average Cost of Capital
WBG	World Bank Group
WEO	IMF World Economic Outlook

1 Introduction to the Final Report

1.1 The Assignment

On the 4th September 2018, the Ethiopian Maritime Affairs Authority (hereinafter called the “EMAA”) and Maritime & Transport Business Solutions (MTBS, Netherlands) signed the Service Contract for the Ethiopia Trade Logistics Project (ETLP) named the ‘Analysis of Future Governance Structure Study of Modjo Logistics Hub’, Contract No ET-EMAA-56665-CQS-CS.

This assignment is part of the Ethiopia Trade Logistics Project (ETLP), a USD 150 M project financed by the World Bank Group. The development objective of the ETLP is to enhance the performance of the Ethio-Djibouti corridor through improvements in operational capacity, efficiency and a range of logistics services at Modjo Dry Port. The project comprises the following three components:

- Improvement of infrastructure at Modjo;
- Enhancing coordination through investments in IT systems; and
- Regulatory and institutional capacity support.

The modernization of the logistics sector in Ethiopia has implications for both state-owned enterprises and the private sector. This project will contribute carefully to the ongoing dialogue between the government and stakeholders. It will support EMAA in defining an appropriate ownership structure for the Modjo facility and in developing business and commercial model that will enable private sector firms to provide services at Modjo. This component will also mitigate the risk that the returns to the infrastructure investments are not undermined by the continuation or entrenchment of existing monopolies of service provision in the logistics sector.

1.2 Background of the Assignment

The Government of Ethiopia (hereinafter called the “GOE”) is working with the support of the World Bank Group to improve trade logistics along the Ethiopia-Djibouti Corridor. After years of investments in road- and rail infrastructure, the main focus of the GOE is now on the improvement of its key logistics nodes, in particular the Modjo Logistics Hub. To develop a modern logistics sector with its centre at Modjo, it is required to address constraints arising from the current regulatory and institutional framework that governs the operation of the Modjo Dry Port. The current governance structure is characterized by, among others:

- the free on Board (FOB) directive;
- the uni- and multimodal system;
- the vertically integrated operation by the Ethiopian Shipping and Logistics Services Enterprise (ESLSE);
- the single user set-up of Modjo; and,
- the absence of national and international private operators in Modjo.

Yet, private logistics service providers in Ethiopia are characterized by limited operational capabilities, and hence offer a narrow range of standard logistics services. The limited functionality of Modjo and narrow range and low quality of services provided by the private sector are key constraint and challenges on the development of modern logistics services to serve an export sector based on manufacturing- and higher value agricultural products. This system, in which the functionality of Modjo is primarily driven by the ‘customs clearance function’, was assumed to be ‘fit for purpose’ to manage the main problems of the recent past congestion in Djibouti port, and the associated detention and demurrage cost.

Recent developments related to the development of the Ethiopian logistics sector include:

- the recently completed Ethiopia-Djibouti rail infrastructure;
- the involvement of the Ethiopian Railway Corporation as a new potential player in the Ethiopian logistics sector;
- the new Djibouti deep-sea terminal development and possible ‘competition’ in Djibouti port; and,
- the 19% stake of the Ethiopian government in Berbera port;
- the new integrated international logistical demands coming from the new industrial parks that pose a completely new challenge.

Due to the current changing environment, a new institutional framework (Governance Structure) needs to be in place to facilitate the transformation of Modjo Dry Port to a multipurpose and multiservice logistics hub. This hub is foreseen to serve bulk commodities as well as containerized traffic and to provide for an efficient intermodal connectivity. Moreover, the hub should support a wide range of logistics services including warehousing, consolidation of export commodities, deconsolidation of imports, the stuffing and stripping of containers, packaging and other value-added services. This transformation requires the participation of a variety of small firms and specialized logistics services providers, whereby Modjo needs to evolve to become a national facility whose development is overseen by the regulator “the Ethiopian Maritime Affairs Authority (EMAA)”.

1.3 Objectives of the Assignment

Overall Objectives

The main objectives of this assignment as mentioned within the Terms of Reference are presented in the box below.

Objectives

- To provide advisory support to the Ethiopian Maritime Affairs Authority (EMAA) and trade logistics project;
- To put in place the legal framework that supports the transformation of Modjo into a logistics hub that will meet the increasing demand for specialized and value-added logistics services; and,
- To evolve from being a single user Dry Port that focuses on customs clearance to a multi-user multipurpose logistics facility that serves private logistics service providers.

Specific Study Objectives

Additionally, other specific objectives for this assignment that are mentioned in the Terms of Reference include, among others:

- The need to capture the strategic importance of Modjo in the broader economic and institutional context and challenges of Ethiopia;
- To address the need for an efficient inter-modal transfer facility for the new railway line linked to Modjo Dry Port;
- To take into account the current and future market demand for specific logistics services based on an analysis of different commodity flows;
- To analyse the capacity and level of different Ethiopian and international private sector players in the relevant logistics sectors;
- To create an effective collaboration between relevant public bodies and different private sector players in the context of a multi-user facility;
- To assess the services private operators could potentially provide under the FOB directive, which reserves the sea transport and the multimodal operation exclusively to the ESLSE;
- To assess the services private operators could provide in the absence of the FOB directive under free competition;
- To state ways to facilitate port-hinterland connectivity;
- Focuses on the essential elements of logistics facilities, enhancing logistics efficiency in line with international best practice; and,
- To outline a Business Model in which necessary investments in public and private infrastructures can be handled in an economically sustainable basis.

The Consultant appreciates the objectives in the light of the project background to enable Modjo to meet the increasing cargo demand and facilitate for a range of value-added logistics services that are increasingly required for Ethiopia to fully integrate into global value chains.

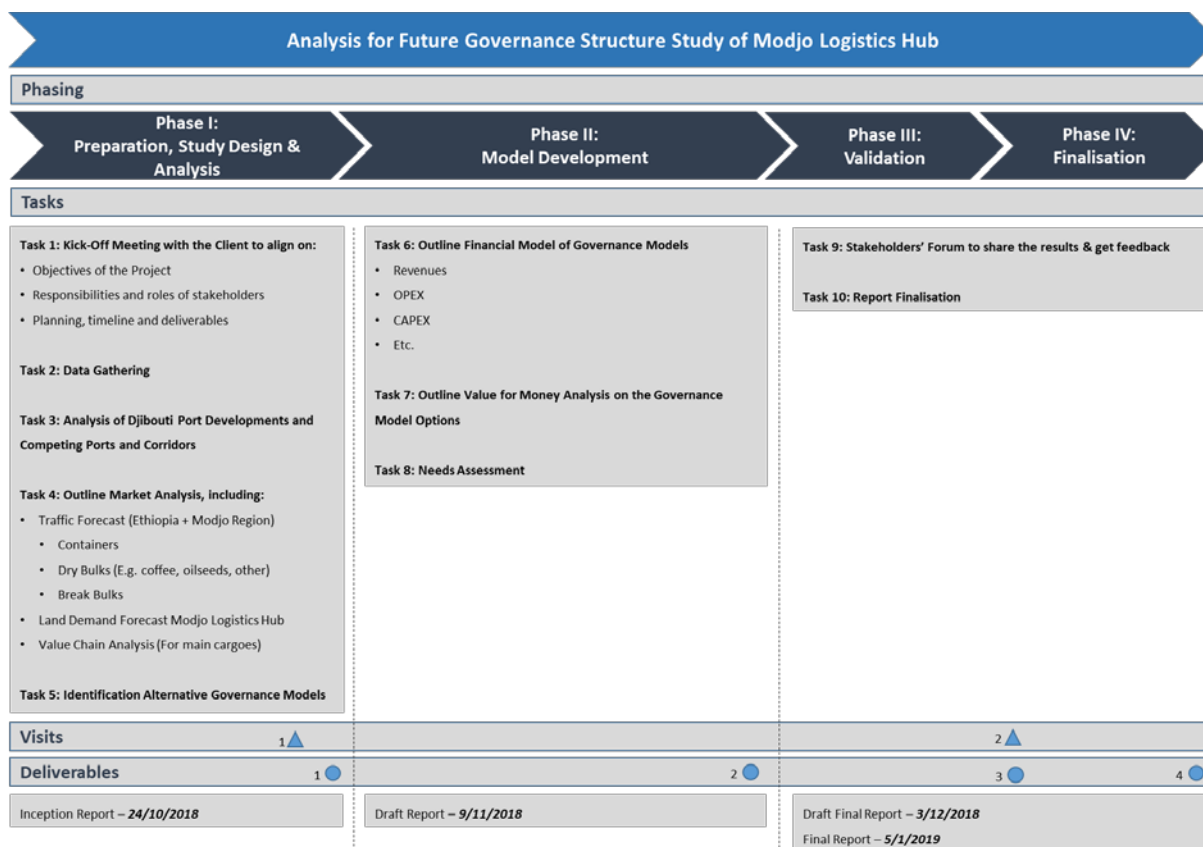
1.4 Approach to the Assignment

To reach the identified objectives, ten tasks are to be completed within the scope of service of the Client in order to sufficiently conduct the assignment, including:

1. Kick-off meeting with the Client;
2. Data gathering;
3. Identification alternative governance models;
4. Analysis of Djibouti Port developments and competing ports and corridors (high-level);
5. Outline traffic forecast and land demand forecast, including the value chain analysis;
6. Outline financial model of the governance model options;
7. Outline value for money analysis on the governance model options;
8. Needs assessment;
9. Stakeholders' forum to share the results and get feedback; and,
10. Report finalisation.

The tasks as described in the list above are structured in the proposed project approach presented in Figure 1-1.

Figure 1-1 Project Approach & Timeline



Source: MTBS

The Consultant is aware of the need to implement this project in an efficient and effective way, mainly due to the limited time available for the completion of this important assignment. Hence, this carefully prepared approach as visualised in the figure above should enable the Consultant to deliver the required reports and complete the assignment within the foreseen time schedule.

The main goals of the kick-off meeting with the client is to align the following aspects:

- Objectives of the project;
- Organisation and approach of the project;
- Responsibilities and roles of stakeholders;
- Planning and timeline; and,
- Deliverables.

1.5 Deliverables & Visits

Deliverables

The first draft of the market assessment has already been included within the inception report, submitted on the 24th of October, of which a revised version was submitted on the 6th of November. This was mainly done to speed up the assignment due to the tight time schedule and to enable a detailed discussion on this important subject early in the process. This approach is foreseen to enhance efficiency and create synergies for the execution of the remaining tasks of the assignment. Moreover, the deadlines of the deliverables are set as follows:

- Inception Report: 24th of October, of which a revised version was successfully submitted on the 6th of November;
- Draft Report: 9th of November;
- Draft Final Report: 3rd December; and,
- Final Report: 5th of January 2019.

Visits

The visits related to this assignment were planned in line with the Workplan as presented in this chapter. Moreover, the visits include:

- Inception Mission: Conducted during the 14th and 19th of October;
- Stakeholders' Forum – Presentation of the Final Draft Report: Conducted on the 22nd of November in Addis Ababa.

The final assignment deliverable concerns this Final Report, of which the content includes all topics that were already presented within the Final Draft Report and Inception Report. Moreover, this report presents the main findings, conclusions and recommendations on the Governance Structure for Modjo Logistics Hub based on the financial analyses, needs assessment performed, stakeholders' feedback from the validation Workshop, implementation plan and the Client's comments on the Draft Final Report.

1.6 Report Status & Reading Guide

This report concerns the Final Report for the Future Governance Structure Study for Modjo Logistics Hub. Based on the comments received by EMAA on the Draft Final Report this Final Report is prepared by the Consultant. A separate file is submitted to the Client including the Consultant's reply to all comments on the Draft Final Report.

The reading guide is presented in Table 1-1.

Table 1-1 Reading Guide of the Final Report

#	Chapter
1	Introduction to the Final Report
2	Analysis of Djibouti Port Developments and other Competing Ports and Corridors
3	Outline Market Analysis
4	Identification of Alternative Governance Models
5	Financial Analysis of Modjo Logistics Hub
6	Needs Assessment – Private Sector Capabilities
7	Implementation Plan
Appendix	Including Data Sources and WACC Approach

Scope of Services

The Consultant is well aware of the Scope of Service as described in the Terms of Reference of the Assignment. For this reason, the Final Report is prepared taken into account, among others:

- **A value-based approach**, in which the fundamental value drivers of Modjo Logistics Hub are Identified;
- **A business case driven approach**, in which the value drivers are well quantified in terms of volumes as well as value;
- **An approach looking beyond the “standard” pros and cons of the governance structure models**, that offers a tailor-made solution for Modjo Logistics Hub and evaluates the possibilities and opportunities from the Ethiopian context;
- **A value chain analysis**, which is used to forecast the potential demand for the value-added functionalities in Modjo;
- **The opportunities for further chain integration** with Djibouti Port developments;
- **A scenario thinking approach**, in which multiple scenarios are prepared to result in pros and cons in respect to the characteristics of each of the scenarios that are tested and weighed based on various criteria; and,
- **The contextual sensitivity**, taking into account the context in which the new model has to be implemented, including the risks related to possible major adjustments to existing regulations and its effects on the different stakeholders (e.g. lifting of the FOB directive and its potential effect on ESLSE).

Compliance of the Deliverables and Specific Outputs with the Terms of Reference

During the Inception Mission and Validation Workshop of the Draft Final Report, the Client indicated the importance of the Terms of Reference (ToR) for this specific assignment. Therefore, a clear overview of the content of the Final Report in respect to the corresponding deliverables and specific outputs as per ToR is provided within Table 1-2.

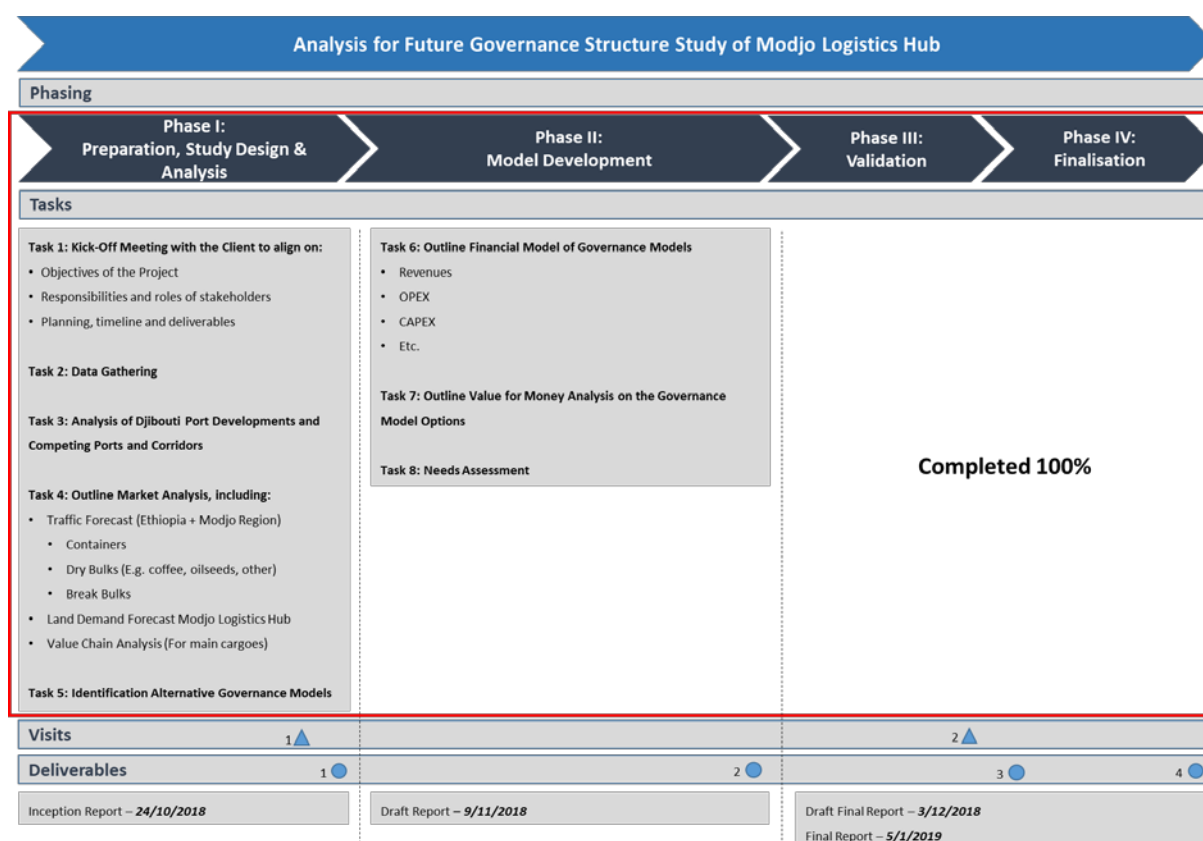
Table 1-2 Compliance of deliverables and specific outputs as per the Terms of Reference

#	Description of the Specific outputs presented in the Terms of Reference	Chapter
1	Proposals for a viable governance model at Modjo and its evolution to a multipurpose and multi-user facility that recognizes the role of ESLSE as the owner of the Modjo Dry Port and which enables the private operators to use the facilities in line with international best practice.	4
2	A comprehensive needs assessment of the private sector capabilities in the logistics sector in Ethiopia, with the aim of establishing the missing links for reinvigorating capabilities of private companies and creating a new sphere of business opportunities.	6
3	Guidelines, based on experiences elsewhere and the specific development objectives of Ethiopia, on ways to facilitate port-hinterland connectivity.	2
4	An overview of the essential elements of a modern logistics policy framework that facilitates the introduction of a new governance model at the Modjo Logistics Hub, which improves logistics efficiency in the country in line with international best practice.	4
5	Reviews of Modjo development master plan in the context of the proposals for a new governance model and provides guidance on future development at the Port in terms of both public and private operators involvement and allows new services to be provided. These services include, for example, facilities for cold-chain storage and processing, warehousing, packaging and other value-added operations.	3

1.7 Update on the Study Progress

Based on the work schedule of the assignment as presented in this chapter, an overview of the study progress is visualised in the figure below. It can be concluded that all requirements as per ToR are completed. Thereby, 100% of the assignment is now completed.

Figure 1-2 Assignment Progress – 100% Completed



Source: MTBS

Based on the last comments of the Client on the Draft Final Report received on January the 4th of 2019, this Final version of the report is prepared and submitted shortly after receiving the comments on the Draft Final Version.

2 Analysis of Djibouti Port Developments and other Competing Ports and Corridors

Summary

Ethiopia's main transport corridor is the Djibouti corridor, as the Port of Djibouti handles over 95% of Ethiopia's trade. Djibouti is expanding its port and increasing the port's efficiency through the following developments:

- Doraleh Multipurpose Port – inaugurated in 2017;
- Port Community System (PCS) – 1st phase completed in July 2018, entire project expected to be completed end of 2019;
- Damerjog Multi-Purpose Port and Industrial Zone – no indicated timeline published;
- Djibouti International Free Trade Zone – Pilot zone opened in 2018, project run by DPFZA and three Chinese companies;
- Djibouti International Container Terminal – construction will take 24 months, not clear when construction will start.

The most significant development for Ethiopia this year has been the inauguration of the railway from Djibouti to Ethiopia, which is also connected to Modjo Dry Port. The new railway cuts transport time from Djibouti to Addis Ababa from 2 to 3 days to just 12 hours. Developments in the Djibouti Corridor and Port strengthen the market position of Modjo Logistics Hub relative to other dry ports in Ethiopia. Moreover, Modjo Logistics Hub is strategically located on the new railway network between Addis Ababa and Djibouti, as well as located in the proximity of the main consumption centres.

Other corridor developments to Ethiopia include the Berbera Corridor, the LAPSSET corridor, the Eritrean Corridors via the Ports in Assab and Massawa and the Sudanese Corridor via the Port of Sudan. The distance from the Port of Berbera to Addis Ababa is comparable to the distance of the Port of Djibouti to Addis Ababa. However, the Port of Berbera requires further development in order to compete with the Port of Djibouti. Additionally, the quality in terms of road capacity require improvement as well. The 'Berbera Corridor Program' aims to improve the just-named bottlenecks. In October 2018, DP World started to expand the Berbera Port, in which the Ethiopian Government has a 19% stake. It is expected that the construction of a new 400-meter quay is completed by the end of 2020. The new developments strengthen the market position of Modjo Logistics Hub, mainly because the Modjo Hub is also strategically located along the Berbera Corridor.

The Kenyan Ports, especially the proposed Port of Lamu, are able to compete for cargo destined for the southern and south-eastern parts of Ethiopia. The LAPSSET corridor connects the Port of Lamu with Ethiopia and Sudan. Besides the Port of Lamu, the corridor is expected to include a standard gauge railway from Lamu to Addis Ababa, improved roads and an oil and products pipeline. The first berth of Lamu Port is expected to be inaugurated in 2019. Various industrial parks have been or are planned to be constructed along the corridor in Ethiopia.

However, the development of the LAPSET corridor is expected to have a minimal effect on Modjo Logistics Hub on the short- to medium-term due to the limited geographic contestable area and the required development time.

The declaration signed by Ethiopia and Eritrea mention that the 'political dispute' between the countries ended. This raises the possibility for the Port of Assab and Massawa to serve Ethiopia again. The developments in the ports on the short-term are expected to slightly strengthen the position of Modjo Logistics Hub, since the Logistics Hub well is located on the Eritrean corridor. The Port of Sudan is considered too distant (1,777 km) in order to compete for cargo destined to the main Ethiopian consumption centre of Addis Ababa. However, the distance disadvantage is less substantial for the particular destinations in northern Ethiopia. In January 2018, the Sudanese president announced that there are plans to build a railway system linking Sudan to Ethiopia and South Sudan. Despite, the development in this corridor is expected to have a minimal effect on the short- to medium-term.

Conclusion Modjo Logistics Hub

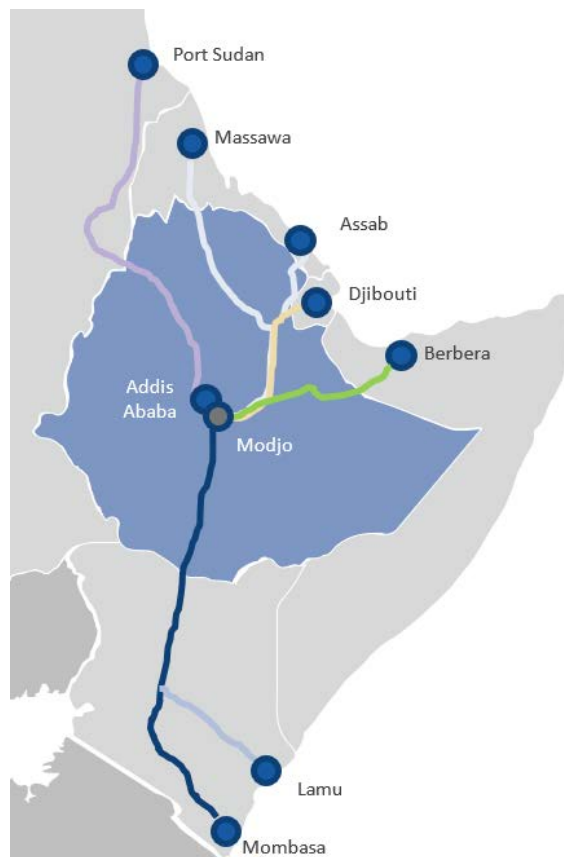
The strong market position of Modjo Dry Port can be best explained due to its strategic location along the Djibouti corridor. Moreover, future developments in the Port of Djibouti are expected to further strengthen this position. The Port of Berbera also provides an alternative opportunity to serve for future import and export cargo destined to or from Ethiopia, for which Modjo is also well located along the Berbera Corridor. The same applies to the Ports of Massawa and Assab, which are able to handle cargo for Ethiopia on the medium-term after reintroducing the cargo flows via these corridors. Finally, the competing corridor developments of the LAPSET and the Sudan corridors are expected to have a minimal effect on the short to medium-term but could cause volumes shifts to other logistics regions in the future.

2.1 Introduction

This chapter presents the analysis of Djibouti Port developments and other competing ports and corridors in relation to Ethiopian cargoes and logistics activities. Thereby, the following ports and related corridors presented in this chapter that are analysed include:

- Port of Djibouti, Djibouti;
- Port of Berbera, Somaliland;
- Ports of Lamu and Mombasa, Kenya;
- Ports of Assab and Massawa, Eritrea; and
- Port of Sudan, Sudan.

Figure 2-1: Overview Competing Ports and Corridors



Source: Google Maps, Adjusted by MTBS

2.2 Port of Djibouti and Djibouti Corridor

This paragraph presents information on the Port of Djibouti, the Djibouti Corridor and the ongoing and planned developments. Ethiopia depends on Djibouti for over 95% of the import and export of maritime cargo. Since Modjo Dry Port handles most of the cargo destined for Ethiopia, developments in this port and corridor have a major impact on Modjo Dry Port.

2.2.1 Port of Djibouti

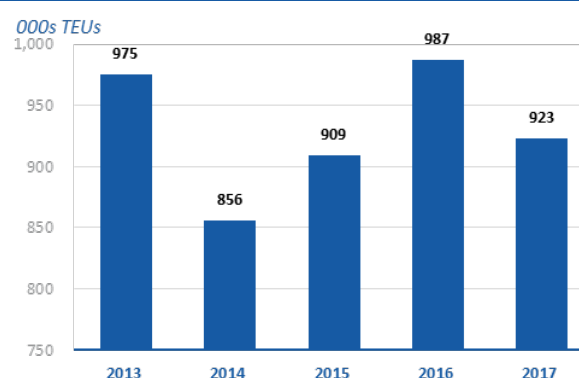
Port of Djibouti - Djibouti

Introduction

The port of Djibouti is located at the southern entrance to the Red Sea, at a minimal deviation from the principal East-West shipping route; as such, it is well situated as a regional hub for transshipment. Since 1998, the port has handled most of landlocked Ethiopia's maritime traffic, which moves to and from Addis Ababa by truck and rail. Serving Ethiopia gives the port of Djibouti a vast hinterland, as Ethiopia is the second-most populated country of Africa, with 108 M inhabitants. As the country of Djibouti itself is rather small, the port focuses on the transit traffic for Ethiopia, as well as on providing transshipment activities for containers destined for eastern and southern Africa. It is estimated that approximately 85% of the total throughput in the port of Djibouti comprises cargo destined for or coming from Ethiopia.

Management and Ownership

The Djibouti Ports & Free Zones Authority (DPFZA) is the governing authority that sets the rules, directives, and overarching principles for the smooth and efficient running of the current and future ports and free zones in Djibouti. Port Autonome de Djibouti (PAID) was originally established as a public company, managing and regulating the port of Djibouti. In 2012, PAID was transformed into a private company with shares, named the Port de Djibouti S.A. (PDSA). China Merchants Holdings International (CMHI) thereafter acquired 23.5% of the shares in PDSA. The remaining shares are owned by the Djibouti Ports and Free Zones Authority, which is an entity of the Government of Djibouti. The Doraleh Multipurpose Port is operated by a 100% subsidiary of PDSA, named DMPSA. Furthermore, as of May 2018, Ethiopia has taken a stake in the Port of Djibouti. The agreement involves the development of facilities.



	2013	2014	2015	2016	2017
Containers (TEU '000)	975	856	909	987	923
Containers (tons)*	7,947	8,561	9,094	9,872	9,232
General Cargo (tons)	1,512	1,584	2,057	2,022	1,663
Dry Bulk (tons)	2,422	2,527	2,904	4,295	3,261
Liquid Bulk (tons)	2,970	3,892	3,818	3,767	4,231
Vehicles (tons)	199	165	216	208	233
Total	15,050	16,729	18,089	20,164	18,620

Source: DPFZA; Unit: 000s; *estimated

Distance to Modjo Dry Port: 830 km

Road Condition to Modjo Dry Port: The road condition in the Djiboutian part of the corridor is not sufficient. There are plans to improve the road.

2.2.2 Djibouti Corridor

Since the end of the Ethiopia-Eritrean war (1998-2000) the Port of Djibouti has become the main gateway port to Ethiopia as Eritrean Port of Assab was no longer an option. Djibouti, like Ethiopia, is a stable country in the Horn of Africa with other countries like Somalia, Sudan and Eritrea being subject to instability, political upheaval, piracy and social unrests. Djibouti gained independence from France in 1977 and became since early 2000 a strategic military hub in the region for several countries including the USA, France, Japan and China. As a result of the military presence, Djibouti is regarded to be a safe place for cargo handling. Ethiopia is the most important trade partner and its trade has triggered several port -related investments lately, such as the Doraleh Multipurpose Port, the Port of Tadjourah, the Port of Goubet and earlier investments such as the Doraleh Container Terminal and the Horizon Oil Terminal. Next to these port developments, a new railway line has been constructed between Ethiopia and Djibouti, which opened in January 2018. The port developments are presented in section 2.2.3 in more detail.

Djibouti – Addis Ababa Railway

The Djibouti - Addis Ababa Railway is a new standard gauge international railway that serves as the backbone of the new Ethiopian National Railway Network. The railway track is the first completely electrified line in Africa. The 759km railway started commercial operations on the first of January 2018¹. Total investments amounted to USD 4.0 B, with constructions performed by the China Railway Group (CRG) and the China Civil Engineering Construction Corporation (CCECC). The new railway cuts transport time from Djibouti to Addis Ababa from 3 to 5 days to just 10 hours. However, due to camels walking on the rail the average time from Djibouti to Addis Ababa is about 12 hours. Shareholders are the Governments of Ethiopia (75%) and Djibouti (25%). The Ethio-Djibouti Standard Gauge Railway Share Company (EDR) operates the railway. The total length of the track between the terminal in Djibouti and the terminal of Sebeta in Addis Ababa is 754km. The remaining five km are used for shunting operations. A total of 666km of the railway line is situated in Ethiopia, with 93km being located in Djibouti. Certain sections linking the railway to the terminals in Djibouti still have to be completed, leading to double handling at Djibouti Port from truck to rail. The railway has a double track between Addis Ababa and Adama and a single track between Adama and Djibouti. The plan is to build more stations to increase the capacity of the railway. Other railway plans include 3,000km of tracks from Addis Ababa to other parts in Ethiopia.

Figure 2-2: Location Djibouti-Addis



Source: The Economist

Due to the upgraded rail connections, it is expected that Ethiopia will enjoy a notable economic development in the future. This is based on its agricultural exports, mainly coffee, dried beans and seed oils, having attracted Chinese, Singaporean and Indian investors to construct processing plants.

¹ Global Rail News, January 2018

A railhead is constructed at Modjo Dry Port, to connect the port to the new Djibouti-Addis Ababa Railway Network. The railhead at Modjo Logistics Hub is divided into four parts of each 250 m. It was co-financed by ERC and the operator of Modjo Dry Port, ESLSE. The former contributed USD 10 M, while the later contributed USD 27 M. This development has caused a substantial shift from truck transport towards rail transport. Currently, two trains arrive at Modjo Dry Port each day, carrying 212 TEU in total. This is approximately half of the total inbound cargo. At the moment, the train is operating at full capacity inbound. The capacity is expected to increase to 7 trains by 2025 and 14 trains by 2035. It is expected that the share of rail in the modal split of Modjo increases in the future, since the capacity of the railway increases. Each locomotive is able to carry 3,500 ton and 106 TEU on 53 wagons. Advantages of the railway include time savings, increased security and the reduced chance of damages.

Given the advantages of the Djibouti – Addis Ababa railway and the current position of Djibouti Port for Ethiopian trade, Modjo Logistics Hub is expected to continue to play an important role for Ethiopian import and export. Therefore, the market share of Modjo Logistics hub for Ethiopian trade is expected to remain stable in the coming years.

Usually, the breakeven point in transport costs between road and rail is reached at a distance of 350 km. Since Modjo Dry Port is located at least twice as far from this breakeven point, this would mean that the costs to transport to Modjo Dry Port by rail are lower than by road. However, the current train tariff from Djibouti to Modjo is more or less similar to the trucking costs of USD 1,600-1,800 per container². Besides, transporting a container by train requires double handling which increases the costs by about USD 212 per container. On the short-term, it is not expected that the rail tariff will drop, because the USD 4.0 B loan has to be paid back to the Chinese Government.

2.2.3 Djibouti Port Developments

Over the last few years, several developments have taken place at Djibouti Port to increase capacity and efficiency at the port. In 2017, several port projects in Djibouti were completed:

- Doraleh Multipurpose Port;
- Port of Tadjourah;
- Port of Ghoubet.

Besides, the following port developments are currently taking place in Djibouti:

- Djibouti Port Community System;
- Damerjog Multi-Purpose Port and Industrial Zone;
- Djibouti International Free Trade Zone;
- Djibouti International Container Terminal.

The projects are described in more detail below.

² Champion Shipping meeting

Doraleh Multi-Purpose Port

The Doraleh Multi-Purpose Port commenced its operations in 2017 and handles containers, general cargo, dry bulk and RoRo. The terminal handled in its first year of operations (April 2017-April 2018) 2.2 M tons of cargo. The terminal is jointly financed by Djibouti Port and Free Zones Authority (DPFZA) and China Merchant Holding (CMHI) through PDSA, with a total investment of USD 580 M. The container terminal has handling capacities of 220,000 TEU, 6.0 M tons of breakbulk and general cargo, 2.0 M tons of dry bulk and 40,000 vehicles. Besides, the terminal can accommodate vessels up to a size of 100,000 DWT, offers a quay length of 1,200 meters and a depth between CD -16.0 m and CD -18.0 m³.

Port of Tadjourah

The Port of Tadjourah commenced its operations in June 2017 and provides a capacity of 4.0 M tons of cargo. The port is designed to handle the export of potash from Ethiopia, that is used in the production of fertilizer. In the next 30 years, the port is planned to have a capacity of 8.0 M tons of cargo annually. The port will be connected to Weldiya in Ethiopia by rail, for which the contractor has not yet been secured. Total investments of the port amount USD 78 M and the sole shareholder is DPFZA⁴.

Port of Ghoubet

The Port of Ghoubet is located 40 km south to the Gulf of Ghoubet and was inaugurated in 2017. The port handles the export of salt from Lake Assal in Djibouti, of around 5.0 M tons a year. Total investments amount USD 64 M and the sole shareholder is DPFZA⁵.

Djibouti Port Community System

The Port of Djibouti developed a Port Community System (PCS), of which the first phase came into service in July 2018. A Port Community System integrates multiple systems operated by various organisations in the port. Information can be exchanged between all stakeholders in the port, which improves the efficiency and competitive position of the port as a result. Through the connection between transport and logistics chains, the logistics processes are optimised and automated. The features of the Djibouti Port Community System are the following:

- Electronic single point of entry for import/export community (air, sea, land, rail);
- Increased transparency;
- Paper documentation, regulatory and operations documentation, cargo manifest submission etc. will be done electronically;
- Aligned with WCO and WTO Recommendation; and,
- Integrated container track & trace⁶.

³ Port de Djibouti– Doraleh Multi-Purpose Port

⁴ Port de Djibouti – Port of Tadjourah

⁵ Port of Djibouti – Port of Ghoubet

⁶ DPFZA 2018

The Singapore digital solutions company CrimsonLogic is selected to implement the Djibouti Port Community System (“PCS”). The project is planned over three phases and is expected to be completed at the end of 2019. The PCS will increase efficiency at the Port of Djibouti and will reduce the time it takes for cargo to reach the end consumer⁷. The PCS is expected to increase the efficiency at the Djibouti Customs. Currently, it takes six to eight hours to complete all documentation for clearance of a transit cargo, and two days to clear local cargo. Once PCS is implemented, online clearance for all cargo is expected to take only one hour. The system will be beneficial to Ethiopian importers through reduced time to clear cargo. Furthermore, PCS plans to integrate the system with the Ethiopian Customs and Single window systems. The total investment amounts USD 5.0 M and the sole shareholder is DPFZA.

Damerjog Multi-Purpose Port and Industrial Zone

The Djibouti Damerjog Industrial Development Free Trade Zone (DDID FTZ) is designed to consist of the following features:

- LNG terminal;
- Refined and crude oil jetty;
- Tank farms;
- Refineries;
- Damerjog Multi-Purpose Port;
- Dry dock;
- Livestock terminal; and
- Connection to Djibouti – Addis Ababa Railway.

Figure 2-3: Damerjog Industrial Development Free Trade Zone



Source: DPFZA

The zone is located close to the border with Somalia and comprises an area of 30 km². The investment of the livestock terminal is expected to be USD 70 M. The project is designed to have a 655 m long quay, a collection area of 50 hectares with a capacity of 150,000 head, a veterinary, animal standing shed, quarantine area, storage equipment and a barn. The total capacity is expected to be 10 M heads of livestock per year. The sole shareholder of the project is the DPFZA.

⁷ The Reporter Ethiopia, July 2018

Djibouti International Free Trade Zone

The Djibouti International Free Trade Zone (DIFTZ) is a free zone comprising a total of 48.2 km² and is part of the national “Belt and Road” strategy of the Central Government of China. Total investments are planned to amount up to USD 3.5 B. The DIFTZ Project Preparatory Group is running the project and consists of Djibouti Ports and Free Zones Authority (DPFZA) together with three major Chinese partners: China Merchants Group, Dalian Port Authority (PDA) and IZP. The shareholders are DPFZA (60%), CMHI (30%) and PDA (10%). Once complete, it will be Africa’s largest free trade zone. The first phase of the DIFTZ consists of a 600-ha land area, of which 240 ha is known as the “Pilot Zone”. Construction on the USD 3.5 M Pilot Zone started on the 16th of January 2017 and the zone was opened in July 2018. The pilot zone consists of the following four industrial clusters:

- Logistics Industry Cluster: trade, transportation, distribution;
- Business Industry Cluster: duty-free merchandise, display;
- Business Support Cluster: financial services, information services, offices, hotels; and
- Procession Manufacturing Cluster: packaging, food processing, assembly.

The free zone is located next to Doraleh Multipurpose Port and Doraleh Container Terminal, and to the Djibouti – Addis Ababa Railway⁸.

Djibouti International Container Terminal

Djibouti plans to construct a new container terminal at the cost of USD 660 M⁹. In March 2018, DPFZA planned to award the concession in July 2018. However, no announcements regarding the concession have been made yet. The new container terminal is planned to be constructed between the Doraleh Container Terminal and the Doraleh Multi-Purpose Port. Annual capacity is stated to be 2.5 M TEU, which can be increased up to 4.0 M TEU. The plan is to find a concession partner that provides 15% of equity, whereas the DPFZA will contribute 85%. Construction of the new container terminal is expected to take 24 months.

2.2.4 Conclusion

The developments in the Port of Djibouti increase capacity and efficiency of the port. Hence, these developments support the growth of the economies of both Djibouti and Ethiopia and provide opportunities to increase the Ethiopian trade. Modjo Logistics Hub is strategically located to serve the largest part of trade coming from Djibouti. Especially the railway is a beneficial development to Modjo as it decreases transport time, increases security and reduces damages to goods. In conclusion, the developments in the Djibouti corridor strengthen the position of Modjo Logistics Hub to compete for cargo from Djibouti.

⁸ DPFZA

⁹ Reuters – Djibouti plans new container terminal to bolster transport hub aspirations

2.3 Port of Berbera and Berbera Corridor

This paragraph presents information on the Port of Berbera and the Berbera Corridor. Developments in this port and corridor are important to Modjo Dry Port, as the dry port is located only 50 km further away from Berbera Port than Djibouti Port.

2.3.1 Port of Berbera

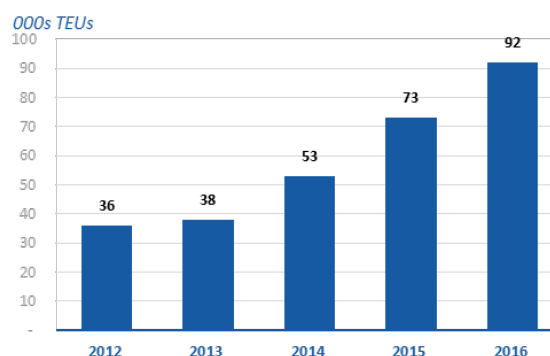
Port of Berbera – Somalia (Somaliland)

Introduction

The port of Berbera is strategically located in the north-western region of Somalia, on the Gulf of Aden. The Berbera Port Authority (BPA) and the Somaliland Government have been in discussions with private partners regarding a large-scale infrastructure development project expanding the port of Berbera and constructing roads (“The Berbera Corridor”) that would connect the port with Ethiopia. This project has a high priority for Berbera, which would derive substantial revenue, as well as for Ethiopia, which seeks improved access to the port to meet its domestic requirements.

Management and Ownership

The port of Berbera is owned and operated by the Somaliland Administration through an autonomous (parastatal) body: the Berbera Port Authority. This parastatal organisation has an autonomous status where the management and operation of the port is concerned. Consequently, the BPA is free to order or execute works to the port infrastructure, to procure services for its own needs and to hire and resign its own employees. In late 2016, UAE based port operator Dubai Ports World announced that it would set up a joint venture with 65% control together with the Government of Somaliland to manage and invest in the port of Berbera. The investment of up to USD 442 M will include the first phase of operational improvements and acquisition of terminal equipment, and a second phase with a 400 m quay and 250,000 m² yard extension. The construction has started in October 2018.



Unit: 000s	2012	2013	2014	2015	2016
Containers (TEU)	36	38	53	73	92
Containers (tons)*	359	377	525	730	916
General Cargo (tons)	443	394	450	394	404
Dry Bulk (tons)	702	679	700	1,020	1,436
Liquid Bulk (tons)	93	102	152	233	218
Vehicles (tons)	11	15	18	24	19
Total	1,609	1,567	1,846	2,402	2,993

Source: Berbera Port Authority; *estimated

Distance to Modjo Dry Port: 850 km

Road Condition to Modjo Dry Port: The road connection between the Ethiopian border and Berbera Port is not in a good condition. As part of the Berbera Corridor Program, the road is expected to be improved.

2.3.2 Berbera Corridor

The Djibouti corridor currently handles more than 95% of Ethiopian cargo. However, if the criteria such as the total distance, the status of the physical infrastructure and the level of certainty of the improvement plans are taken into account, the Port of Berbera and its corresponding corridor offer great potential to increase its market share and serve Ethiopia, especially the Dire Dawa region and Northeast Ethiopian region. Due to the location of Modjo Dry Port relative to Berbera, the developments in the Berbera corridor are expected to increase the market share of Berbera for Modjo Dry port.

For Ethiopia, it is beneficial to have a viable alternative to the Djibouti corridor. Ethiopia envisions increasing use of the Berbera port and its corridor (Berbera – Addis Ababa Corridor). At a total distance of 934 km over road, this corridor is only slightly longer than the current Djibouti – Addis Ababa Corridor, which measures 885 km, making it more attractive than increasing volumes over the existing corridors to Port Sudan or Mombasa (1,900 km and 2,030 km, respectively). Major challenges regarding intensifying the use of the Berbera Corridor include the limited Berbera port infrastructure and capacity, the road conditions, and inadequate regional cooperation, specifically as it relates to customs procedures, insurance and credit¹⁰.

When serving the greater Addis Ababa region, both the Berbera Corridor and Djibouti Corridor could be used, since the hinterland distance is approximately 900 kilometres for both corridors. However, the new railway between Djibouti and Addis Ababa decreases the duration and distance for the Djibouti Corridor.

Figure 2-4: Berbera Corridor versus Djibouti Corridor



Source: MTBS

¹⁰ MTBS projects

Given the recent developments in the Port of Berbera, the port is able to grow and to serve a larger part of Ethiopia. However, the Berbera corridor has no rail connection yet from Berbera to Ethiopia, in contrast to the Djibouti Corridor.

Berbera Corridor Program

The proposed Berbera Corridor Program is a component of the USD 1.8 billion Horn of Africa (HoA) Initiative launched in October 2014 during a high-level visit to the region by the World Bank Group (WBG) in partnership with the Intergovernmental Authority on Development (IGAD), African Union, United Nations, Islamic Development Bank (IsDB), European Union (EU) and African Development Bank (AfDB).

The Port of Berbera is located approximately 240 km southwest of the Port of Djibouti. Once successfully developed, the Berbera corridor could provide Ethiopia with an alternative transport corridor for imports and exports. However, the current status of the performance and handling capacity within the Port of Berbera and of the corridor to Ethiopia is limited. Therefore, substantial investments are required in order to improve both the port as well as the corridor.

In the light of the required investments to make the Berbera corridor a success, DP World signed a USD 442 M contract with the Government of Somaliland in 2016. Thereby, DP World agreed to develop and operate a regional trade and logistics hub at the Berbera Port. This project also includes the setting up of a free zone support the development of the Berbera trade corridor. The investment is planned to be phased over time and depends on the volumes generated at the port.¹¹ The first phase consists of the extension of the quay with 400 m and a 250,000 m² yard. In March 2018, Ethiopia signed an agreement with DP World and the Somaliland Port Authority to become a shareholder of the Port of Berbera. The Government of Ethiopia will invest in infrastructure as well to develop the Berbera Corridor. The Government of Ethiopia will hold a 19% stake in the project, Somaliland 30% and DP World 51%. A few months later, in May 2018, DP World announced that it plans to commence the first expansion of the port of 400 m² in October 2018, which is expected to take 24 months^{12,13}. The construction is expected to cost USD 232 M. The current port can handle 128,000 TEU annually and 2.0 M tons of general and bulk cargo. Expansion of the port will add around 400,000 TEU of annual capacity and allows for berthing the largest vessels, eliminating the sea-leg cost disadvantage.

The existing road between Somalia and Ethiopia was constructed between 1972 and 1982 and has reached the end of its design life. The existing road is proposed to be rehabilitated to a 7.0 m wide single carriageway standard with 50 mm asphalt concrete surfacing and 1.5 m shoulders with double surface dressing and a foreseen design life of the pavement layer of 20 years. The road connection between the Port of Berbera and the Ethiopian border at Tog-Wajaale is approximately 270 km. The detailed design is completed for all sections. UAE will support the construction of the road, as part of the military base deal between the Government of the Republic of Somaliland and the Government of UAE. The road between Tog-Wajaale at the border with Somaliland and Addis Ababa is paved and in good condition.

¹¹ Dredging Today, 30th May 2016

¹² Arabian Business, 27th July 2018

¹³ All Africa, 'Berbera Port Construction Set to Commence' 29th September 2018

2.3.3 Conclusion

The developments in the Berbera Corridor and the expansion of Berbera Port are expected to increase the amount of Ethiopian cargo handled by Berbera. Modjo Logistics Hub is strategically located on the Berbera – Addis Ababa corridor. Consequently, this strengthens the position of Modjo Logistics Hub and the developments are expected to lead to an increase in market share for Ethiopian cargo in the long-term.

Visualization of the Port of Berbera



Source: Dhaka Tribune

2.4 Port of Assab and Massawa

In July 2018, Ethiopia and Eritrea signed a declaration saying that the ‘political dispute’ between the countries is over¹⁴. For the last 20 years, the ports of Massawa and Assab were not able to serve Ethiopia due to the political situation in Ethiopia and Eritrea. The re-opening of the crossing points on the border between the countries in September 2018¹⁵ raise the possibility for the Port of Assab and Massawa to serve the Ethiopian hinterland.

Ethiopia and UAE have agreed to conduct a study to construct an oil pipeline from the Port of Assab to Addis Ababa, funded by UAE¹⁶. Besides, Ethiopia has started repairing the road to the port of Assab while Eritrea is working on the road to the ports in Eritrea¹⁷. Furthermore, Eritrea is considering a new port to export potash from mines being developed in Eritrea and from Ethiopia. The port is to be located at the Bay of Anfile, 75 km east of a Colluli potash project being operated by Dankali Limited of Australia. The construction is to begin five years after the mine starts operating. The USD 320 M mine is expected to be constructed at the end of 2018 and will take two years to complete. The new port for potash is located only about 100 km away from the potash projects in Ethiopia, compared to 790 km from the new potash port, the Port of Tadjourah in Djibouti¹⁸.

In October 2018, Ethiopia completed a study specifying port usage rates and logistics service providers that will be available when it begins using Eritrean ports. Eritrea is conducting its own study as well regarding the port tariffs and works are underway to equip port of Massawa with the necessary facilities¹⁹. The developments in the port of Assab and Massawa on the short-term are expected to strengthen the position of Modjo, as Modjo is strategically located on the Eritrean corridor.

Visualization Port of Assab



Source: Google Earth

Distance to Modjo Dry Port: 810 km

Road Condition: Ethiopia and Eritrea have started to improve the roads from Ethiopia to the port.

Visualization Port of Massawa



Source: Eritrea-Chat.com

Distance to Modjo Dry Port: 1245 km

¹⁴ BBC July 2018

¹⁵ Reuters, September 2018

¹⁶ The Reporter Ethiopia, August 2018

¹⁷ Reuters, July 2018

¹⁸ Bloomberg, August 2018

¹⁹ The Reporter Ethiopia, October 2018

2.5 Conclusion

Developments in the Djibouti Corridor and Port strengthen the market position of Modjo Logistics Hub relative to other dry ports in Ethiopia. Modjo Logistics Hub is strategically located on the new railway network between Addis Ababa and Djibouti, as well as located near the main consumption centres. Developments in the Berbera Corridor and Berbera Port also strengthen Modjo's market position, due to its location on the Berbera Corridor. The opening of the Port of Assab and Massawa for the Ethiopian market is expected to slightly strengthen the position of Modjo on the short-term. Developments in the LAPSET corridor and the Port of Sudan are expected to be non-substantial to Modjo's market position, because of the time that is required to fully develop these corridors. Consequently, developments in deep-sea port operations in the Port of Djibouti and the Port of Berbera and Eritrean Ports provide an opportunity for more chain-integrated governance for Modjo Logistics Hub. The summary of the expected effect on Modjo is presented in the following table.

Table 2-1: Expected effect of developments on Modjo Logistics Hub

Expected Developments	Expected effect on Modjo Logistics Hub
Djibouti Port Developments: expansion and increased efficiency	Strengthens the position of Modjo, as Modjo is strategically well located on the Djibouti Corridor.
Berbera Port and Corridor Developments: expansion of the port and improvement of roads	Strengthens the position of Modjo, as Modjo is strategically well located on the Berbera Corridor. Besides, the Port of Berbera is a good alternative to the Port of Djibouti, because it reduces Ethiopia's dependency on one single port. Consequently, this is expected to attract new flows of trade.
LAPSET Corridor and Lamu Port	The effect on the short-term and medium-term are expected to be non-substantial, due to the time required to develop the corridor. On the long-term, the LAPSET corridor could serve parts of southern Ethiopia.
Assab and Massawa Port and Corridor improvements	The developments in the ports on the short- to medium term are expected to strengthen the position of Modjo. Similar to the Berbera Port and Corridor development, the ports are a good alternative to Djibouti and can attract new flows of trade.
Port of Sudan Corridor Development: railway between Sudan and Ethiopia	Substantial investments and time required to develop the railway. Not expected to have a substantial effect on Modjo within the timeline of this project.

Page intentionally left blank

3 Outline Market Analysis

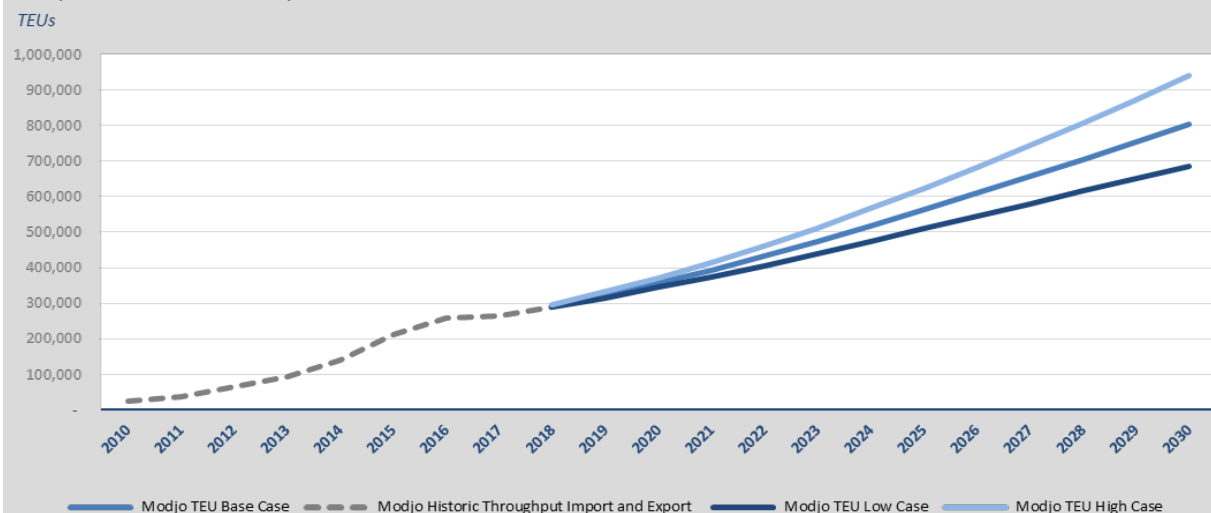
Summary

Ethiopian Macro-Economic Overview

After the substantial Ethiopian GDP growth of over 10% in 2017, the GDP growth is expected to be in the range of 8.5% for 2018, where after the growth will slightly slow down to 8% per annum in 2023 (IMF). Thereby, Ethiopia will remain one of the fastest growing economies in the world. GDP growth indicates that the import of cargo increases as well. Furthermore, the population is expected to grow from 108 M in 2018 to 140 M in 2030 which further increases the imports. Ethiopia's main import products in terms of volume concern mineral fuels, cereals, iron and steel, whereas the major export products include vegetables, oil seeds, coffee, fruits and meat. Modjo is well positioned to obtain an important role within the value chain of these particular import and export products, which is further strengthened through the further development of Modjo into a Logistics Hub and the efficient integration with the railway to Djibouti.

Ethiopia and Modjo Demand Forecasts

The historic TEU figures of Ethiopia are based on import and export traffic at Djibouti Port, of which about 85%²⁰ is destined to Ethiopia. The demand forecast is derived from the historic relation between GDP growth and container growth, which is converted into a GDP multiplier and subsequently applied on the future GDP growth expectation of Ethiopia. Based on a statistical analysis it is estimated that Modjo Dry Port currently handles about 44% of all TEU cargo destined to Ethiopia. The TEU forecast for Modjo Logistics Hub is presented in the following figure, which shows that Modjo's container throughput is expected to be between 700,000 TEU and 950,000 TEU in 2030.



²⁰ Oxford Business Group

The future Modjo Logistics Hub is not only expected to handle import containers, which is its main function today, but will also support the consolidation function of export products. These export products include, among others, coffee, vegetables, oil seeds, meat and fruits since the hub is located in the vicinity of the respective production areas. In total, Modjo Logistics Hub is expected to handle 585,065 ton export in 2030. The export products are expected to be transported in containers to Djibouti or other ports, reducing the number of return-leg empty containers. Furthermore, by handling a sufficient amount of cold chain export products such as edible fruits and meat, Modjo Logistics Hub can facilitate synergies between the today's flow of full import reefers and future flow of full export reefers. Moreover, transporting fruits and meat by sea instead of air reduces the transport costs and improves the logistics chain efficiency.

Land demand forecast Modjo Logistics Hub

The land demand forecast is based on the amount of container import and export, non-containerized cargo and the value-added activities that are foreseen to take place within the Modjo Logistics Hub. Based on the analyses performed, it is estimated that an area of 169 ha is required by 2030. The size of the dry port area reserved for containerised activities is envisaged to be 111 ha in 2030. As container demand is expected to substantially increase over the next decade, a second ICD operator could be attracted to the Modjo Logistics Hub. This second player is able to perform similar activities adjacent to the initial dry port area, which results into private sector involvement and introduces competition that should improve the overall efficiency within the Modjo Logistics Hub. The size of the logistics centre for warehousing and other value-added activities is expected to reach 58 ha in 2030. Modjo Dry Port is to be transformed into a Logistics Hub. This will be mainly done by attracting new players related to value added activities that should develop their business on new plots of land around the existing Modjo Dry Port.

Next to the ICD operations, small private logistics service providers can be attracted to the Logistics Hub to carry out CFS/warehousing activities within the existing warehouses on the dry port premises. Additionally, different value-added activities are to take place outside the current boundaries of today's dry port, which concerns the foreseen Logistics Centre activities. For example, the larger private sector logistics service providers should be able to invest in their own facilities. Other value-added activities that could take place in the Logistics Centre located in the proximity of the existing dry port include cold-storage warehousing, (de)consolidation of cargoes, packaging, labelling, bagging, inspections, light-assembly, testing etc.

Value Chain Analysis

Modjo Logistics Hub is expected to facilitate for new export industries and import related value-added activities in the near future. The value chain of both import and export products are described and indicate the type of players that could be approached and attracted to the Hub. These players will provide not only new activities but are also expected to generate additional jobs and foreign investments to Ethiopia and the Modjo region specifically.

3.1 Introduction

This chapter presents the outline Market Analysis, including the following sections:

- Ethiopian macro-economic overview;
- Demand forecasts on an Ethiopian level and Modjo level:
 - Containers;
 - Dry Bulks (Coffee, Oilseeds, Cereals);
 - Breakbulk (only on Ethiopian level);
 - Vehicles;
 - Liquid bulk (only on Ethiopian level);
- Land demand forecast Modjo Logistics Hub; and,
- Value Chain Analysis.

3.2 Ethiopian Macro-Economic Overview

This paragraph presents the Ethiopian GDP and population development, as well as the Ethiopian trade patterns. The main import and export products of Ethiopia are described that add the most value to the economy. For Modjo Logistics Hub, the main export and import products influence the desired direction of the logistics hub.

3.2.1 Ethiopian GDP Development

Typical drivers for trade are the regional GDP and evolution of population for the imports, and industrial, commodity and SME production for exports. Important therefore is to understand the developments in/around the East African and Red-Sea regions and the development of the Ethiopian economy and urbanisation in general. The Ethiopian economy concerned world wide's fastest growing economy in terms of GDP in 2017. The IMF World Economic Outlook (WEO) also projects a healthy growth pattern for the coming years. The table below provides an overview of the projected GDP growth of Ethiopia and regional countries.

Table 3-1: IMF GDP Historic and Outlook Regional Economies

Country	2013	2014	2015	2016	2017	2018*	2019*	2020*	2021*	2022*	2023*
Djibouti	5.00	6.00	6.50	6.50	6.70	6.70	6.70	6.00	6.00	6.00	6.00
Eritrea	4.65	2.87	2.59	1.85	5.01	4.19	3.78	4.03	4.18	4.18	4.30
Ethiopia	9.90	10.30	10.40	8.00	10.86	8.55	8.34	8.05	7.98	8.04	8.04
Kenya	5.88	5.35	5.71	5.85	4.81	5.48	6.01	6.18	6.49	6.49	6.04
Somalia	1.86	2.36	2.45	2.42	1.85	2.54	2.84	3.14	3.52	3.52	3.52
South	29.33	2.92									
Sudan	2.15	3.21	3.00	3.53	3.20	3.70	3.50	3.20	3.09	3.04	3.04

Source: IMF: World Economic Outlook, April 2018. * Forecast.

After the substantial Ethiopian GDP growth of over 10% in 2017, the GDP growth for 2018 is expected (by the IMF) to be approximately 8.5%, where after a growth is expected of approximately 8%. Thereby, Ethiopia will remain one of the fastest growing economies in the world.

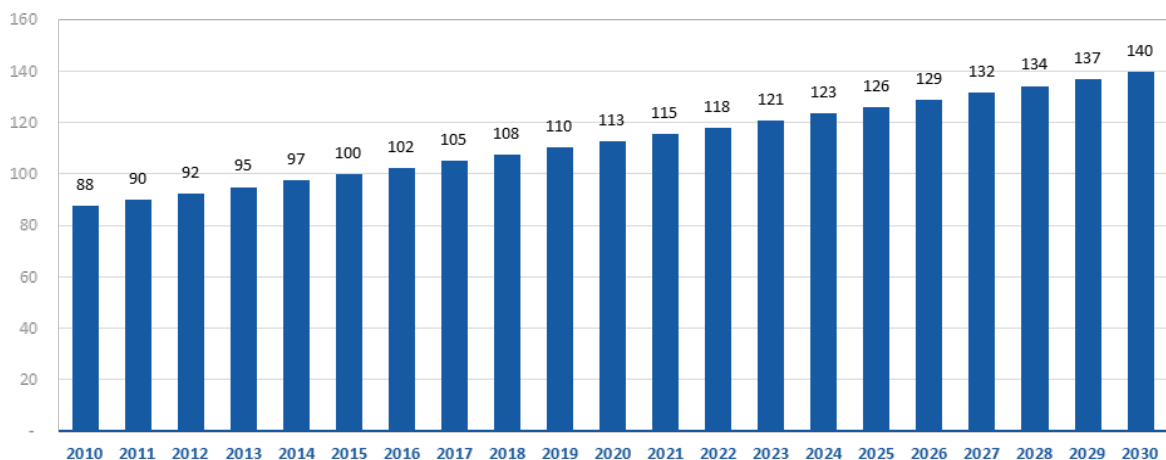
The Ethiopian GDP is expected to increase from 57.7 B (Constant 2010 USD) in 2017 to 92.4 B in 2023. The main drivers of the expected GDP growth are the country's industry and agricultural sectors mainly due to low labour costs, expanding irrigation networks and government schemes to spread best farming practices. Especially the manufacturing and industrial sectors are expected to substantially grow over the next decade and are foreseen by the Ethiopian Government as the future main pillars of Ethiopian economic development.

3.2.2 Ethiopian Population Development

The Ethiopian population constantly grew over the last decade up to 105 M people reached in 2017 and concerns Africa's second largest population after Nigeria. Ethiopia is the largest country in terms of population compared to its region, in which Kenya (50 M), Uganda (43 M) and Sudan (41 M) are the most populous surrounding countries. The United Nations expects that the population will grow to 140 M people in 2030. The following figure presents the Ethiopian Population Development till 2030.

Figure 3-1: Ethiopian Population Development

Population in M



Source: MTBS based on United Nations

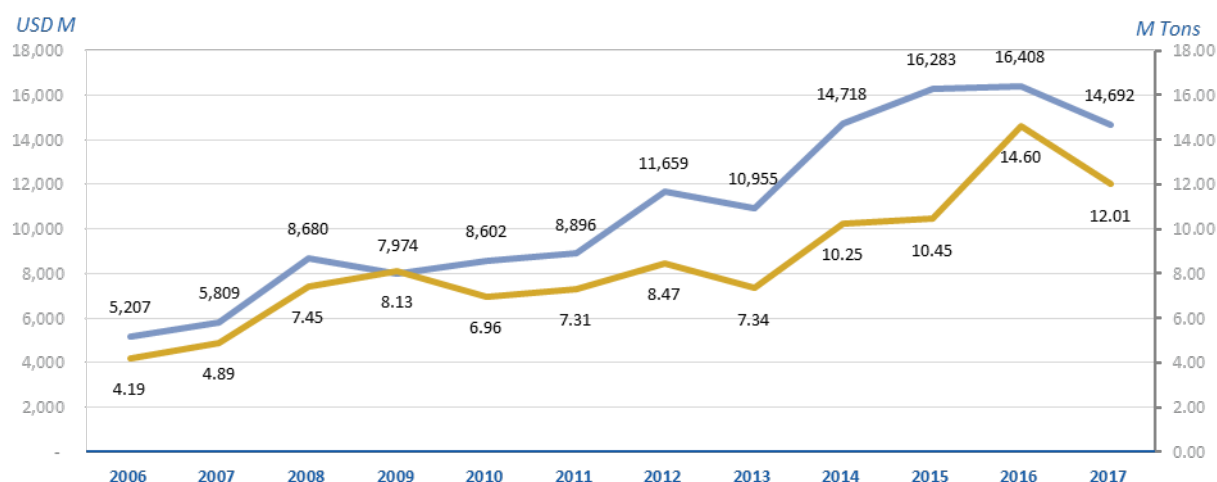
3.2.3 Trade Patterns

This section presents an overview of Ethiopia's main import and export trade products and trading partners in terms of value and volume. The total trade value of Ethiopia is equal to USD 17.6 B in 2017, of which 14.7 B concerns import, and USD 2.9 B export.

Import Products

In 2017, Ethiopia was the 65th largest import economy in the world, with an import tonnage of 12.0 M tons and a value of USD 14.7 B. This was an average annual growth rate of 10.1% in tonnages and 9.9% in value over the past decade. The imports of Ethiopia have declined in 2017 due to the scarcity of hard currency and lower drought-related food imports. Table 3-2 presents the Ethiopian import value and volume from 2006 till 2017.

Table 3-2: Ethiopia Import value (Blue Left) and Import tonnage (Orange Right)



Source: MTBS based on ITC, Ethiopian Revenue & Customs Authority

Top-imports in 2017 in terms of value are industrial machinery, vehicles, electrical machinery, oil and mineral fuels and iron and steel. The top-10 import products account for 70% of the total value imported. The top-import products in value and volume are presented in Table 3-3.

The import products in terms of volume are for the larger part in line with the import products in terms of value. The Ethiopian top-10 imported products accumulate to 81.9% of the total import volume. The most substantial import product in terms of volume concerns mineral fuels, mineral oils and products of their distillation and accounts for 30.7% of the total Ethiopian import volume. The second and third most imported products in terms of volume are cereals and iron & steel products that respectively account for 14.5% and 10.8% of the total import volumes.

Due to the substantial volume, these products are the most interesting import products to gain a logistics position in. Especially the import of cereals is interesting to Modjo Logistics Hub.

Table 3-3: Ethiopian top-import products 2017 in value and volume

#	Product	Value USD	Share	#	Product	Volume	Share
1	Machinery	2,664,905	16.1%	1	Mineral fuels,	3,685,515	30.7%
2	Vehicles	1,406,333	10.7%	2	Cereals	1,737,478	14.5%
3	Electrical machinery	1,297,245	8.8%	3	Iron and steel	1,300,748	10.8%
4	Mineral fuels, mineral	1,236,827	8.5%	4	Fertilisers	1,056,920	8.8%
5	Iron and steel	799,280	5.9%	5	Animal or	532,979	4.4%
6	Cereals	639,877	5.4%	6	Plastics and	362,941	3.0%
7	Plastics and articles	634,225	4.9%	7	Sugars	372,038	3.1%
8	Articles of iron or steel	569,498	4.0%	8	Vehicles	317,769	2.6%
9	Animal or vegetable	539,890	3.4%	9	Nuclear reactors,	234,323	2.0%
10	Pharmaceutical	536,110	3.1%	10	Articles of iron and	234,529	2.0%
Total		14,692,000	70.3%	Total		12,005,027	81.9%

Source: MTBS based on ITC and Ethiopian Revenues and Customs Authority

Import Partners

The top-5 countries in 2017 from which goods were imported in terms of value are China, the United States, India, Japan and Italy. The top-10 export partners account for 73% of the total value imported. China is the largest import partner in terms of volume, followed by Kuwait and India. South Africa and Romania joined the top-10 in terms of volume compared to value, while Japan and Italy did not reach the top-10 in terms of volume. The top-10 import partners in terms of value and volume are presented in Table 3-4.

Table 3-4: Ethiopian top-10 import partners 2017 in terms of value and volume

#	Country	Import value USD	Share	Country	Import volume	Share
1	China	4,858,471,000	33.1%	China	2,023,568	16.86%
2	USA	1,211,235,000	8.2%	Kuwait	1,691,789	14.09%
3	India	1,090,717,000	7.4%	India	1,003,366	8.36%
4	Japan	680,158,000	4.6%	South Africa	962,329	8.02%
5	Italy	645,182,000	4.4%	Saudi Arabia	847,557	7.06%
6	Turkey	599,027,000	4.1%	Morocco	776,924	6.47%
7	Kuwait	565,457,000	3.8%	USA	569,892	4.75%
8	Saudi Arabia	452,866,000	3.1%	Turkey	466,381	3.88%
9	Malaysia	340,706,000	2.3%	Romania	352,284	2.93%
10	Morocco	286,425,000	1.9%	Malaysia	338,907	2.82%
	Total	14,692,000	73.03%	Total	12,005,027	75.24%

Source: MTBS based on ITC and Ethiopian Revenues and Customs Authority

The main import products in terms of value in 2017 of the top-5 import partners as indicated above are presented in Table 3-5.

Table 3-5: Ethiopian top-5 import partners and main import products in value – 2017

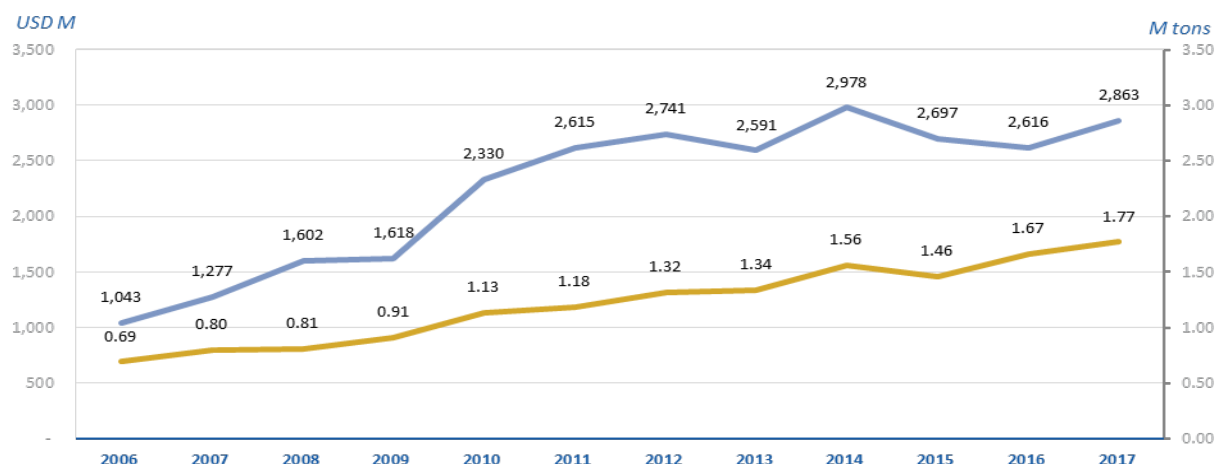
Country	Rank	Products	Value in USD M	Value %	Product	Volume in tons	Volume %
China	1	Machinery	1,105,278	22.7%	Iron and steel	398,403	19.7%
	2	Electrical machinery	880,430	18.1%	Articles of iron and steel	165,317	8.2%
	3	Vehicles	403,304	8.3%	Fertilisers	153,946	7.6%
	Total		4,858,471	49.2%		2,023,568	35.5%
USA	1	Machinery	494,489	40.8%	Cereals	429,558	75.38%
	2	Aircraft, spacecraft	279,286	23.1%	Edible vegetables	57,773	10.14%
	3	Cereals	161,376	13.3%	Mineral products	55,015	9.65%
	Total		1,211,235	77.2%		569,892	95.2%
India	1	Cereals	176,281	16.2%	Cereals	362,687	36.1%
	2	Iron and steel	162,332	14.9%	Iron and steel	241,247	24.0%
	3	Pharmaceutical pro.	124,836	11.4%	Sugar	105,932	10.6%
	Total		1,090,717	42.5%		709,866	70.7%
Japan	1	Vehicles	530,757	78.0%	Vehicles	149,586	75.5%
	2	Machinery	72,633	10.7%	Iron and steel	29,699	15.0%
	3	Rubber	26,364	3.9%	Nuclear reactors	9,660	4.9%
	Total		680,158	92.6%		188,945	95.4%
Italy	1	Machinery	153,586	23.8%	Cereals	134,813	48.8%
	2	Vehicles	93,144	14.4%	Preparation of cereals	37,200	13.5%
	3	Cereals	81,213	12.6%	Iron and steel	18,840	6.8%
	Total		645,182	50.8%		190,853	69.1%

Source: MTBS based on MTBS based on ITC and Ethiopian Revenues and Customs Authority

Export Products

In 2017, Ethiopia was the 105th largest export economy in the world with an export tonnage of 1.8 M tons and a total value of USD 2.9 B, presented in Table 3-6. This represented a CAGR of 8.9% in tonnage and 9.6% in value over the past decade. In 2017, there was a substantial volume growth as global agricultural commodity prices remained low. However, export value growth was limited due to delays in key export-oriented projects which are now completed or near completion.

Table 3-6: Ethiopia Export value (Blue Left) and Export tonnage (Orange Right)



Source: MTBS based on ITC, Ethiopian Revenue & Customs Authority

Top exports in terms of value are coffee, vegetables, oilseeds, live trees and other plants, precious stones and metals, and meat. The top-10 export products account for 94% of the total exported products. Table 3-7 presents the top-10 export products in terms of value.

The export products in terms of volume are more or less in line with the export products in terms of value. The Ethiopian top-10 export products accumulate to 94% of the total export volume. The most substantial export product in terms of volume concerns vegetables and accounts for 30.5% of the total Ethiopian export volume (of which only dried beans & peas together with potatoes account for over 70% of the total vegetable exports in terms of volumes). The second and third most exported products in terms of volume are oilseeds and coffee that respectively account for 24.2% and 14.8% of the total export volumes. Due to the substantial volume, these three products are the most interesting export products to gain a logistics position in.

Table 3-7: Ethiopian top-export products 2017 in terms of value and volume

#	Product	Value USD '000	Share	#	Product	Volume in tons	Share
1	Coffee and spices	963,031	28.9%	1	Edible vegetables	538,778	30.5%
2	Edible vegetables	538,365	20.1%	2	Oilseeds	428,137	24.2%
3	Oilseeds	446,273	19.8%	3	Coffee and spices	262,480	14.8%
4	Live trees and other plants	221,928	8.3%	4	Salt, Sulphur, stone etc.	162,209	9.2%
5	Natural or cultured pearls, stones	125,685	4.5%	5	Cereals	76,440	4.3%
6	Meat	97,090	3.6%	6	Sugar	69,440	3.9%
7	Raw hides and skins and leather	74,766	3.5%	7	Live trees and other plants	51,230	2.9%
8	Live animals	61,918	2.6%	8	Live animals	32,790	1.9%
9	Electrical	56,202	1.4%	9	Fruit and nuts	20,427	1.2%
10	Footwear, gaiters	45,485	1.2%	10	Meat	18,872	1.1%
Total		2,863,000	93.9%	Total		1,770,000	94%

Source: MTBS based on ITC and Ethiopian Revenues and Customs Authority

The top-3 vegetables that are exported in terms of volume are dried kidney beans, potatoes and dried chickpeas. These vegetables account for 60% of the total vegetables. The top-3 oilseeds are sesame seeds, Niger seed and soybean. Top-3 coffee and spices products are coffee (not roasted or decaffeinated), turmeric and dried pepper. Salt and sulphur comprise of cement clinkers, white cement and pebbles, gravel, shingle and flint. Cereals export includes mainly maize seed and others.

Export Partners

The top-5 countries to which the goods were exported in 2017 in terms of value are China, Somalia, USA, Saudi Arabia and Germany. The top-10 export partners account for 62% of the total export value. Djibouti is the largest export partner of Ethiopia in terms of volume, followed by China and Somalia. The top-10 accounts for 69% of the total export volume. The top-10 export partners in terms of value and volume are presented in the following table.

Table 3-8: Ethiopian top-10 export partners 2017 in terms of value and volume

#	Country	Export value in USD	Share	#	Country	Export volume tons	Share
1	China	288,164,000	10.1%	1	Djibouti	250,009	14.14%
2	Somalia	243,590,000	8.5%	2	China	216,237	12.23%
3	USA	227,292,000	7.9%	3	Somalia	195,488	11.06%
4	Saudi Arabia	206,154,000	7.2%	4	Kenya	173,896	9.84%
5	Germany	195,085,000	6.8%	5	Vietnam	79,634	4.50%
6	Netherlands	188,862,000	6.6%	6	UAE	72,686	4.11%
7	UAE	127,638,000	4.5%	7	Israel	62,168	3.52%
8	Switzerland	111,567,000	3.9%	8	Saudi Arabia	60,851	3.44%
9	Japan	101,134,000	3.5%	9	Sudan	58,223	3.29%
10	Djibouti	95,996,000	3.4%	10	India	56,385	3.19%
Total		2,863,000	62.4%	Total		1,770,000	69.32%

Source: MTBS based on ITC and Ethiopian Revenues and Customs Authority

For the top-5 export partners as indicated in Table 3-8, the main export products in terms of value in 2017 are presented in Table 3-9. For the top-5 export countries, it is shown that the top-3 export products of each country in terms of value account for a percentage between 79% and 98% of total export value. Oilseeds and coffee are the export products which are for three out of five countries in the top-3 export products. In terms of volume, the percentage of top-3 export products is between 88% and 93% of the total value.

Table 3-9: Ethiopian top-5 export partners and main export products in value 2017

Country	#	Products	Value USD M	Value %	Product	Volume in tons	Volume %
China	1	Oilseeds	209,563	72.7%	Oilseeds	187,228	86.6%
	2	Raw hides, leather etc.	29,660	10.3%	Ores, slag and ash	8,683	4.0%
	3	Ores, slag and ash	6,333	2.2%	Plastics	3,299	1.5%
Total			288,164	85.2%		216,237	92.1%
Somalia	1	Edible vegetables	216,540	88.9%	Edible vegetables	148,034	75.7%
	2	Live animals	19,008	7.8%	Salt, sulphur etc.	19,622	10.0%
	3	Preparations of vegetables	2,626	1.1%	Live animals	10,738	5.5%
Total			243,590	97.8%		195,488	91.3%
USA	1	Coffee, tea, spices etc.	134,349	59.1%	Coffee, tea, etc.	25,303	46.5%
	2	Footwear etc.	28,617	12.6%	Oilseeds	19,469	35.8%
	3	Oilseeds	16,686	7.3%	Articles of apparel	2,878	5.3%
Total			227,292	79.0%		54,410	87.6%
Saudi Arabia	1	Coffee, tea, spices etc.	140,652	68.2%	Coffee, tea, etc.	39,062	64.2%
	2	Meat and edible meat	35,976	17.5%	Oilseeds	8,799	14.5%
	3	Oilseeds	11,559	5.6%	Meat	6,377	10.5%
Total			206,154	91.3%		60,851	89.1%
Germany	1	Coffee, tea, spices etc.	155,141	79.5%	Coffee, tea etc.	46,968	85.1%
	2	Articles of apparel knitted	15,184	7.8%	Oilseeds	2,221	4.0%
	3	Articles of app. non-knitted	10,529	5.4%	Edible vegetables	2,170	3.9%
Total			195,085	92.7%	1,767,963	55,181	93.1%

Source: MTBS based on ITC and Ethiopian Revenues and Customs Authority

3.2.4 Key Commodities Traded

In this section the Ethiopian historic trade pattern is analysed for various cargo types, making a distinction between:

- Containers;
- Break-bulk & general cargo;
- Dry Bulk;
- Vehicles;
- Livestock; and
- Liquid Bulk.

The historical development of the commodities is visualized in Table 3-10. There is no detailed information available of Ethiopian trade split per commodity. For this reason, the consultant used its best estimate in order to calculate the amount of trade per commodity destined to and originating from Ethiopia.

More than 95% of today's Ethiopian import and export cargo is transported via the Port of Djibouti²¹. About 2% of this cargo, largely of food aid, comes through the Port of Berbera which offers only five berths, compared to Doraleh's 15, Djibouti Multipurpose Port's 12 berths and Djibouti's 18 berths. An even smaller part of 1% of the trade is transported via the Port of Sudan towards Ethiopia²².

It is known that approximately 85% of all trade through the Port of Djibouti is currently destined to or originating from Ethiopia²³. The Ethiopian Minister of Transport mentioned the long-term goal to increase the country's imports via the Port of Berbera up to 10%.²⁴ This goal of 10% is, however, lower compared to the goal of 30% via Berbera and 10% via Sudan mentioned within the GTP I programme. Besides, Ethiopia has recently bought a share in the Port of Berbera.

²¹ Reuters, May 2018

²² Ethiopian Herald, March 2018

²³ Mail Guardian Africa, April 2016 – 86%; Sudan Tribune, May 2009 – 83%

²⁴ Business Daily, September 2015

Table 3-10: Historic Development Ethiopian Commodities Traded between 2012 and 2017

Commodities*	2012	2013	2014	2015***	2016***	2017***
Containers (TEU)	346,634	370,394	428,091	495,909	583,600	596,452
Imports (TEU)	175,763	192,804	214,577	252,049	295,476	304,338
Exports (TEU)	170,871	177,591	213,515	243,860	288,124	292,114
Breakbulk (tons)	1,323,306	1,229,135	1,285,460	1,700,709	1,683,255	1,413,169
Sugar (tons)	158,486	220,491	136,896	181,118	179,259	150,496
Steel (tons)	708,621	781,050	962,269	1,273,116	1,260,050	1,057,869
Cement (tons)	310,213	71,495	14,864	19,666	19,464	16,341
General Cargo (tons)	145,986	156,099	171,431	226,809	224,482	188,462
Dry Bulk (tons)	2,021,693	2,058,448	2,148,364	2,468,796	3,650,351	2,772,247
Dry Bulk - Wheat (tons)	874,596	1,211,581	723,060	830,906	1,228,573	933,036
Dry Bulk - Other Grains (tons)	44,978	42,837	262,581	301,745	446,159	338,834
Dry Bulk - Fertilizer (tons)	783,974	446,702	740,224	850,630	1,257,737	955,184
Dry Bulk - Clinker (tons)	52,641	35,567	96,050	110,376	163,201	123,943
Dry Bulk - Coal (tons)	265,504	321,762	326,448	375,138	554,678	421,248
Vehicles	165,014	169,533	140,066	183,458	177,029	198,113
Livestock	64,701	55,653	61,071	47,614	35,395	40,693
Liquid Bulk**	2,336,449	2,524,861	3,308,129	3,245,253	3,200,418	3,581,591

Source: MTBS based on Djibouti Port Authority

*Based on multiple sources stating that Ethiopia is responsible for approximately 85% of commodity trade through the Port of Djibouti²⁵

** Only includes liquid bulk volumes of the Horizon Terminals

*** Detailed break bulk and dry bulk figures are based on historical shares.

Containerised cargo volumes are based on the assumption that 85% of the container terminals volume in Djibouti concern Ethiopian volumes. For all other commodities, it is assumed that 85% of the commodities traded through the Port of Djibouti concerns cargo destined to or originating from Ethiopia. For the top-3 most traded import and export products the key trading partners in 2017 are indicated. As indicated in the previous section of this report the top-3 most traded import products in terms of volumes are:

- mineral fuels;
- cereals; and,
- iron and steel.

²⁵ Mail Guardian Africa, April 2016 – 86%; Sudan Tribune, May 2009 – 83%

For the most traded import products, the key trading partners of 2017 are indicated in Table 3-11.

Table 3-11: Most Imported Products by Largest Trading Partners – Volumes – 2017

Commodity	Import Volume (tons)	Trade in % of Total Volume
Mineral Fuels & Oils	3,685,515	100.00%
Kuwait	1,690,165	45.9%
South Africa	943,291	25.6%
Saudi Arabia	629,805	17.1%
Cereals	1,737,478	100.00%
United States	429,558	24.7%
India	362,687	20.9%
Romania	351,128	20.2%
Iron & Steel	1,300,748	100.00%
China	398,403	30.6%
Turkey	288,668	22.2%
India	241,247	18.5%

Source: MTBS based on Ethiopian Revenue & Customs Authority

The most important trading partners for the top – 3 import commodities occupy a substantial share of the total trade of these individual products:

- mineral fuels & oils = 89%;
- cereals = 66%; and,
- iron & steel = 71%.

In the previous section of this report the export products are discussed of which the top – 3 most traded export products in terms of volumes are:

- vegetables;
- oilseeds; and,
- coffee.

For the most traded export products, the key trading partners of 2017 are indicated in Table 3-12.

Table 3-12: Top – 3 Most Exported Products by Largest Trading Partners – Volumes – 2017

Commodity	Export Volume (tons)	Trade in % of Total Volume
Vegetables	538,778	100.00%
Somalia	148,034	27.5%
Djibouti	61,464	11.4%
Kenya	60,752	11.3%
Oilseeds	428,137	100.00%
China	187,228	43.7%
Israel	57,078	13.3%
Vietnam	35,846	8.4%
Coffee, Tea, Mate & Spices	262,480	100.00%
Germany	46,968	17.9%
Saudi Arabia	39,062	14.9%
Japan	27,751	10.6%

Source: MTBS based on Ethiopian Revenue & Customs Authority

The most important trading partners for the top – 3 export commodities occupy a substantial share of the total trade of these individual products:

- vegetables = 50%;
- oilseeds = 65%; and,
- coffee (tea, mate & spices) = 43%.

The top-5 export products account for 83% of Ethiopia's total export volume. Therefore, Ethiopia is making efforts to diversify its export portfolio. The Ethiopian Highland Leather (EHL) has been created through a technical co-operation project between Ethiopia's Ministry of Trade, the Ethiopian Leather Development Institute (LIDI), the Ethiopian Leather Industry Association (ELIA) and the Japan International Cooperation Agency (JICA). The project promotes exports from Ethiopia by adding value to local hide and skin raw materials. The companies engaged in the project manufacture leather and finished leather products and will be supported to improve business and technical skills.

Population Distribution & Density

An overview of Ethiopia and its sub-regions is provided in Figure 3-2. The population density is indicated by the colours within this figure illustrating large cities like Addis Ababa have the highest population density.

Figure 3-2: Ethiopian Regions and Population Density



Source: City Population

In addition to the figure above, the population distribution and density within the sub-regions are indicated in Table 3-13. The Oromia and Amhara regions are the most populous in Ethiopia.

Table 3-13: Ethiopian Population Distribution and Density within the Sub-Regions

#	Region	Area in km ²	Population (2017)	Inhabitants per
1	Oromia	284,538	39,505,513	125
2	Amhara	154,709	23,541,561	137
3	YeDebub (SNNPR)	105,476	21,352,834	182
4	Somali	279,252	6,403,618	21
5	Tigray	84,722	5,844,464	62
6	Addis Ababa (city)	527	3,825,018	6,516
7	Afar	72,053	2,018,329	25
8	Benishangul-Gumuz	50,699	1,187,383	21
9	Dire Dawa (city)	1,559	519,062	299
10	Gambela	29,783	485,645	15
11	Harari (city)	334	274,011	737
Total	-	1,063,652	104,957,438	89

Source: MTBS based on Ethiovisit

3.2.5 Import & Export Regions

The import and export distribution within Ethiopia is partly determined by its population distribution. Earlier studies performed on the distribution of Ethiopian import cargo and generation of export cargo show a slightly different pattern compared to the country's population distribution. A study performed by the United Nations Economic Commission for Africa (UNECA) on cargo distribution and dry ports in Ethiopia divides the cargo over multiple zonal centres which are split into eight different regions, presented in the following table.

Table 3-14: Hinterland Distribution of Import and Exports

Region	Zonal Centre	Import	Export
Central	Addis Ababa; Adama, Kaliti, Ambo, Zwai	50.00%	25.00%
Northern	Mekelle, Dese/Kombolcha, Shire, Adwa/Axum	10.00%	10.00%
North Western	Bahirdar, Gonder, D/Tabor	10.00%	10.00%
North Eastern	Semera, Mille, Logiya, Tendaho, Asaita	3.00%	3.00%
Eastern	Dire Dawa, Harar, Jijiga	10.00%	10.00%
Southern	Hawasa, Shashemene, Dilla, Moyale	7.00%	20.00%
South Western	Jimma, Bedele, Mizan	5.00%	10.00%
Western	Nekemte, Asosa, Gambela	5.00%	12.00%

Source: MTBS based on UNECA, African Trade Policy Centre (ATPC), Dry Port Service Enterprise

It is assumed that Modjo Dry Port serves almost all import cargo for central Ethiopia, which is 50% of the total import cargo for Ethiopia. The following sections present detailed information about the production areas of the following export products:

- Oilseeds;
- Pulses;
- Coffee;
- Fruit; and
- Meat.

The last section presents the location of industrial areas in Ethiopia.

Oilseeds

The oilseeds export in Ethiopia comprises sesame seed, Niger seed and soybeans²⁶. It is expected that oilseeds production increases to meet the growing demand for cooking oil and livestock feed. In Amhara, a park is planned with a processing capacity of 2 M tons of oilseeds, more than double the volume of oilseeds currently produced in Ethiopia.

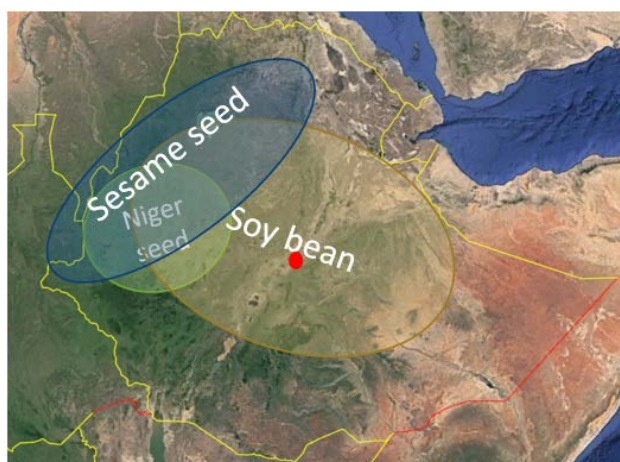
²⁶ USDA Foreign Agricultural Service, June 2018

The production areas of the three most exported seeds are the following:

- Sesame: northern and northwestern lowlands bordering Sudan and Eritrea including Tigray and Amhara Regional State. The production areas are branded as:
 - Humera Sesame: stored at Gondar, Humera, Metema;
 - Wollega Sesame: stored at Assosa and Nekenmte;
- Niger seed: more than 95% of production takes place in the highlands of Oromia and Amhara regions;
- Soybeans: western part of Ethiopia in Oromia and Benishangul Gumus and little in the Amhara region.

The production areas are presented in the following figure.

Figure 3-3: Map Production Areas Oilseeds



This production of sesame seed is located 400-700 km west of Addis Ababa and exporters of Wollega sesame are expected to use Modjo Logistics Hub for future export activities. The Humera Sesame is located in the North West, about 1000 km away from Modjo Logistics Hub. For these oilseeds, Port Sudan is the most convenient port to export. However, for adding value to the sesame seeds, customs regulation facilities in Modjo and the ECX trading centre in Addis Ababa can be used. In this way, the Humera Sesame seeds can also be exported through Modjo.

Production and export of the three largest oilseeds are presented in the following table. The export of sesame seed is expected to grow in 2018/19, while the export of Niger seed and soybean remain stable after years of notable growth.

Table 3-15: Production and Export oilseeds in tons

Crop	Production 2017/18	Production 2018/19	Export 2016/17	Export 2017/18	Export 2018/19
Sesame seed	390,000	415,000 (+6%)	292,088	340,000 (+17%)	360,000 (+6%)
Niger seed	300,000	300,000 (-)	29,862	31,000 (+4%)	31,000 (-)
Soybean	115,000	120,000 (+4%)	44,767	78,000 (+74%)	78,000 (-)
Total	805,000	835,000 (+4%)	366,717	449,000 (+22%)	469,000 (+4%)

Source: MTBS based on USDA Foreign Agricultural Service Ethiopia's Oilseed Sector to Expand, June 2018

Ethiopia is the world's fourth -largest sesame producer, behind India, China and Myanmar. Approximately 85% of the production is destined for export. It is expected that sesame production and export increases in the future, because of the following reasons:

- There is a strong demand for Ethiopian sesame seed in the world market;
- The land is suitable for sesame production;
- China has outstripped its domestic sesame seed production capacity;
- Production of bio -energy increases the demand for oils and fats; and
- There is a growing amount of research and development.

However, sesame production faces various challenges such as low productivity, inconsistent quality, insufficient warehousing facilities and poor infrastructure. Top-export countries include China, Israel, Turkey, Vietnam and UAE²⁶.

Ethiopia is the world's largest producer of Niger seed, followed by India, Myanmar and Nepal. Over the last few years, the production of Niger seed showed a steady growth, to around 300,000 ton in 2017/18. Almost one million farmers produce Niger seed and more than 95% of production takes place in the highlands of Oromia and Amhara. Ethiopia exports approximately 10% of its Niger seed production. The top importers of Ethiopian Niger seed include the United States, United Kingdom, Germany, India and Singapore. The soybean production in Ethiopia is expected to increase by 4% to 120,000 tons in 2018/19.

Future production is also expected to grow, due to rising consumer demand, particularly in India. Top destinations include next to India, Vietnam, China, Canada and Pakistan. The soybean production experienced a large increase from 35,000 ton in 2011/12 to 115,000 in 2017/18 following the increase in planted area, especially at large commercial firms.

Pulses

Ethiopia is one of the world's biggest producers and exporters of pulses. Faba beans account for nearly one-third of the pulse production, followed by red kidney beans, field peas, chickpeas, grass peas, lentils and white pea beans. Dried kidney beans account for half the export volume of pulses, and chickpea beans account for 25%. Pulses are mainly produced in the regions Amhara, Oromia, SNNP, Tigray and Benishangul Gumuz, presented in Figure 3-4. The major export markets for pulses

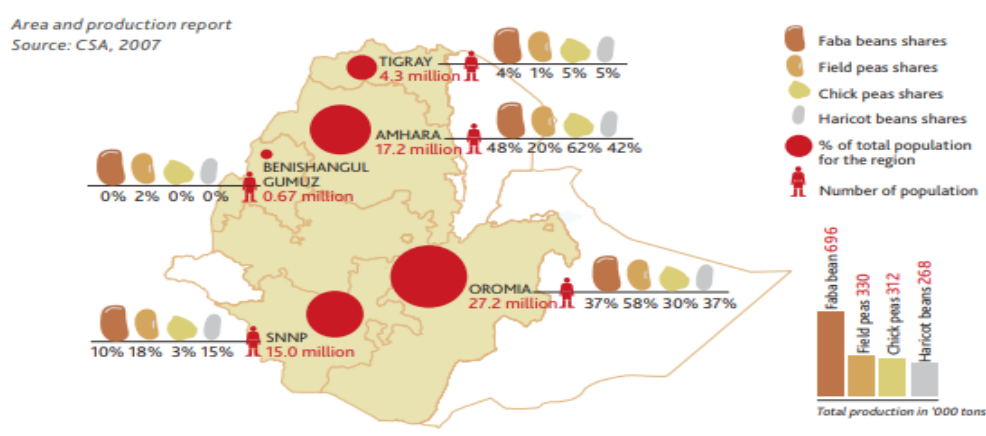
include Pakistan, Kenya, Vietnam, Indonesia and UAE. However, in 2017 Pakistani government banned the imports of haricot beans (red kidney beans, speckled beans, pinto beans due to plant health concerns). The production and export figures for pulses are presented in the following table. The export of pulses showed a growth in 2016/17 compared to 2015/16.

Table 3-16: Production and Export pulses in tons

	2014/15	2015/16	2016/17
Production	2,600,000	2,700,000	2,500,000
Export	315,000	308,000	340,000

Source: MTBS based on USDA Foreign Agricultural Service Pulse Crop Market Update, May 2018

Figure 3-4: Map of Production Areas Pulses



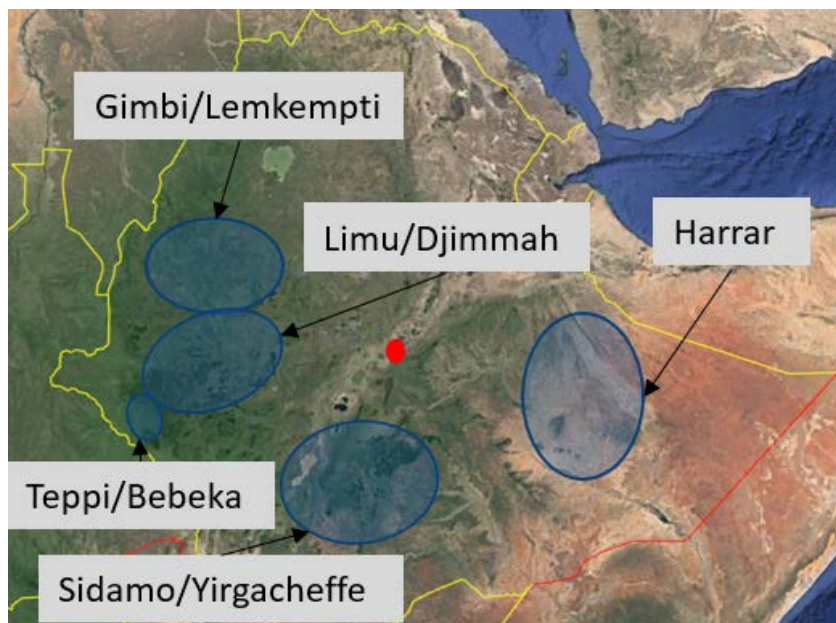
Source: RVO - Investment Opportunities in the Ethiopian oilseeds and pulses sub-sector

Coffee

Ethiopia is the sixth largest coffee producer in the world, accounting for four percent of total production and 40 percent of African production. The Ethiopian coffee is grown by over four million smallholder farmers and employs 15 million people (15% of the Ethiopian population) at different points along the value chain²⁷. The highest-graded coffee is solely reserved for export, while lower grades are for local consumption. Coffee production in Ethiopia is mainly located in Oromia, and Southern Nation and Nationalities People regional states, presented in the following figure.

²⁷ USDA Foreign Agricultural Service, May 2018

Figure 3-5: Map of Ethiopia's coffee-growing regions



Source: MTBS based on Oxford University Press

The Ethiopian Coffee and Tea Development and Marketing Authority has taken measures to increase the export of coffee. The Authority has created different opportunities for farmers, suppliers, exporters and industries by avoiding the usual farmer to broker market chain to receive a fair price for the products²⁸. Besides, the Government has been working to get branding for various types of coffee beans in Ethiopia²⁹. Coffee investors have been attracted through incentives of the Government such as providing land for a low price, facilitating bank loans with low interest, offering 10 years tax holidays, allowing tax-free machinery imports, the introduction of coffee traceability, a new marketing system to reduce transaction costs amongst others. Despite, several bottlenecks and challenges exist in the Ethiopian coffee export market, such as illegal coffee trading, lack of value creation, poor tree management practices, low-yielding older trees, degraded soil conditions, coffee prices, decentralisation of coffee institutes and the promotion of coffee³⁰.

Farmers start planting coffee in higher elevations, which was unsuitable before. Furthermore, there is a growing concern that rising temperatures could negatively impact the country's coffee production capacity. Access to groundwater to irrigate and process coffee could become a challenge, because of increasingly unpredictable rainfall conditions. Because of all challenges to produce coffee, Khat (plant chewed by humans for its stimulating effect) is competing for farmland with coffee, because the Khat plant yields more revenue and can withstand drought and diseases³¹. Table 3-17 presents the target export of coffee in Ethiopia of the Coffee and Tea Development Marketing Authority. The authority targets a growth of 20% annually in 2017, 2018 and 2019 to a total of 390,000 tons.

²⁸ The Ethiopian Herald, April 2018

²⁹ The Ethiopian Herald, July 2017

³⁰ Ethiopian News Agency, August 2018

³¹ UNCTAD – National Green Export Review of Ethiopia: Leather and Sesame Seeds 2018

Table 3-17: Production and Export Coffee

	2016	2017 target	2018 target	2019 target
Coffee exported in tons	225,390	270,840	325,010	390,010
Increase		20.1%	20%	20%

Source: MTBS based on Coffee and Tea Development and Marketing Authority

Fruit

Nearly five million farmers are participating in Ethiopia's fruit productions and exports. The fruit sector is one of the priority strategic sectors recognised by the Government for the potential of private sector involvement in investments and exports. The aim is to increase the production of fruit crops nearly by half. The government provides an incentive package to foreign and local companies, to attract private sector investments in fruits production, processing, packaging and exports. The regions SNNP, Oromia and Amhara are the major growing areas of edible fruits. These regions use rain-fed and irrigated commercial farming systems.

The main fruit crops produced and exported are bananas, mangos, avocados, citrus, pineapples, papayas and strawberries. Bananas, mangos and avocados contribute to 91% of the total production of fresh fruits in Ethiopia. Avocados are mainly produced in the southwestern part of Ethiopia, bananas in the SNNP region and mangos in the Benshangul Gumuz, SNNP, Oromia and Amhara regions. In 2017, export of fresh fruits accounted for 20,000 tons while production was around 800,000 tons. It is expected that production will grow in the future because Ethiopia has abundant land suitable for investment on fruits and vegetables. However, the export of fruits is currently retained because of the high transport costs for reefer containers and the absence of cold storage facilities. The production and expected export are presented in Table 3-18. The expectation is that in 2017/18 22,000 tons of fruits is exported.

Table 3-18: Production and Export Edible Fruits

Edible Fruits '000 tons	2014/15	2015/16	2016/17	2017/18*
Production	707	680	792	777
Export	19	20	21	22

Source: MTBS based on Ethiopia Fresh Fruits Market Update Report, September 2018.

* 2017/18 is a projection.

The fruit production is mainly located south of Modjo Logistics Hub, in the Rift Valley and the Arbaminch areas. This implies that Modjo is strategically located for the export of fruits. Modjo can add value to these products by providing reefer containers, cold chain storage and other cold chain facilities.

Meat

Ethiopia has one of the largest livestock inventories in the world. However, Ethiopia's current share in the export market is rather small: about 1%. Chilled goat meat is the main type of meat that is being exported, followed by sheep meat³². The minor share of Ethiopia in the global export of meat is amongst others due to the lack of cold chain warehousing and lack of refrigerated containers (reefers). By using reefers, meat can be exported by sea, reducing transport costs relative to air freight transport. The majority of abattoirs is located within the Modjo region, making Modjo Logistics Hub a convenient port for exporting meat and providing value-added activities. The historic meat export figures are presented in the following table.

	2013	2014	2015	2016	2017
Meat Export in tons	14,597	16,476	18,377	18,219	18,872

Source: MTBS based on market consultation

Industrial Areas

Ethiopia has planned to increase its number of industrial parks from 8 to 15 in the next few years. Table 3-19 presents the existing and planned industrial parks in Ethiopia. Ethiopia's aim is to enable the manufacturing sector to contribute to 50% of export volume by 2025.

Chinese companies contribute largely to the construction of industrial parks. Mekella, Jimma and Arerti industrial parks were or are being constructed by China Communications Construction Company (CCCC). Dire Dawa, Bahir Dar, Kombolcha, Hawassa and Adama Industrial Parks are constructed by China Civil Engineering Construction Corporation (CCECC). CGC Overseas Construction with the South Korean company Dohwa Engineering supervising, has constructed Bole Lemi 2. China Tiesiju Civil Engineering Group constructed the industrial park in Kilinto.

New industrial parks close to Modjo Logistics Hub, e.g. Adama and Kilinto Industrial Park, are expected to strengthen Modjo's market potential for exports, amongst others.

³² Journal of Nutritional Health & Food Engineering, 2018

Table 3-19: Existing and Planned Industrial Parks in Ethiopia

Industrial Park	Region	Km to Modjo	Km to Djibouti port	Land Area in Ha.	Start Operations	Cargo Focus
Addis Industrial Village	Addis Ababa	80	863	8.7	1980	Textile & garments
Bole-Lemi	Addis Ababa	75	863	175.2	2014	Agro-processing, pharmaceuticals and textiles
Hawassa Industrial Park	Hawassa, SNNP, South of Modjo	200	998	337	2016	Textile & garments
Mekelle Industrial Park	Mekelle, Tigray, north Ethiopia	865	750	1,000	2017	Textile & garments, footwear & leather products
Kombolcha Industrial Park	Amhara, north Ethiopia	440	480	700	2017	Textile & garments, footwear & leather products
Bahir Dar	North-West	570	985	1000	2018	Textile and apparel, food processing
Kilinto Industrial Park	Addis Ababa	60	863	337	2018	Agro-processing and pharmaceuticals
Bole Lemi 2	Addis Ababa	75	863	186	2018	Textile and apparel
Adama Industrial Park	Oromia	15	678	2,000	2018	Equipment, manufacturing, textile and Vehicle assembly
Dire Dawa Ind. Park	Dire Dawa	380	380	1,500	2018	Heavy industries & Vehicle assembly
Jimma	South-West	415	1098	500	>2018	Textile and apparel, food processing
Arerti	Addis Ababa	60	760		>2018	Construction materials and household appliance manufacturing.
Air Lines Logistics park	Addis Ababa	80	863	200	2019	Logistics service
Aysha	East	n/a	n/a	n/a	>2019	n/a
Semera	East	n/a	n/a	n/a	>2019	n/a
Assosa	West	n/a	n/a	n/a	>2019	n/a

Source: MTBS based on Industrial Parks Development Corporation

The industrial parks that are being developed will mainly focus on textile and apparel. Looking at the main export products of Ethiopia, textile is not yet part of the top-10 export products in terms of volume and value. The textile volumes are therefore much smaller than coffee, vegetables, oil seeds, fruits and meat. This indicates that textile has less potential to be a large component in the total export at Modjo Logistics Hub.

For this reason and based on conservative assumptions, the export of textile is not taken into account in the export forecast of Modjo yet. However, on the long term, the export of textile is expected to increase from Ethiopia, especially due to the further development of the industrial parks. Therefore, Modjo is foreseen to cooperate with and serve as export node for the industrial parks in its proximity (e.g. Adama Industrial Park) in the future once volumes increase.



3.3 Operational Review Modjo Dry Port

This section presents an overview of the Consultant's observations during the field visit to Modjo Dry Port on the 16th of October 2018. First, a summary of the observations will be provided, in which a comparison is made between the study MTBS performed for ESLSE in 2012 and the current situation observed.

3.3.1 Summary

The following table summarizes the topics which have been observed during the site visit 16th of October 2018. Thereby, a comparison is made between the current observations in relation to the visit performed during the study for ESLSE in 2012.

Figure 3-6: Summary Observations

Item	2018	2012
Security	Similar, still quite poor conditions	Poor and subject for improvement
Safety	Still poor conditions, but slight improvements such as covers that are placed over the put holes in the container yard	Poor and subject for improvement
Operations	Mildly improved, but mainly supported by enlarged areas. Dwell time high, unclear stack descriptions. Dwell resulting in many cargoes to be auctioned	Poor and subject for improvements, times unacceptable high
Equipment	Decreased situation. Expected new orders but the current situation is characterized by a shortage of equipment	Insufficient equipment, expecting new orders
Systems	Better organized but still based on paper flow. TOS not implemented yet. No port community system present	Not digitalized and (too) many procedures. Locations software (TOS) absent.
Warehouses	Available, but not used for the right purpose of storage for commercial goods (deconsolidation)	Not available in 2012
Customs / CFS	Improved, but too much space assigned for customs activities	Poor and inadequate
Railhead/rail terminal	Good new asset, currently in use	Not available in 2012
Gate complex	Expansion under construction. Gate-in very congested due to low operational performances in the stacks	Gate very poor and congested (gate-out)
Administration buildings	Improved facilities. Two warehouse sheds have been assigned for the paper works and paper administration. A new building (multiple levels) is under construction for both the terminal operator as well as for Customs	Poor facilities. Too limited space for the paper works and paper procedures

Source: MTBS based on Field Visit and former assignments

Based on the topics as indicated in the summary table above, each topic is discussed in more detail in the next sections.

3.3.2 Security

The security is not in line with international port practice. The visit has been done without any checks on the vehicle, luggage or person IDs on board. Access to the total premises was organized via a phone call. Free access was possible to the customs area without any check, gate or observations. There was no fence between administration offices and the clearing areas nor with the terminal yard or the warehouses which were occupied by customs. The ISPS code has neither adhered.

Observations compared to the last visit in 2012

The security procedures were more or less similar to the poor situation in 2012, no real improvements made. Too poor for international standards.

3.3.3 Safety

Free movement on the terminal was possible without informing the group on the safety and security guidelines. During the trip no safety jackets or helmet were available due to “circumstances”. The guiding person did have a safety jacket and was in contact with walkie-talkie with the management.

The terminal had several locations in which containers were improperly stacked and did not indicate the areas where dangerous goods were in place. Proper exit signs and safety groupage areas not visible. Some of the put holes in the terminal area were well covered with plates, but unfortunately, also others were still open.

Observations compared to the last visit in 2012

The safety procedures were in similar poor quality as in 2012, no real improvements made. Another safety aspect was noted on the open holes due to lack of coverage of drainage put holes. Similar observations were made in 2012.

3.3.4 Operations

Some operations were observed during the stay at the terminal. One reach stacker was broken down in the middle of the main lane. This caused an obstacle for the free drive of reach stackers carrying full or empty containers.

The reach stackers working the stack have sufficient space to manoeuvre, which was considered good. The general stacking height (tiers) was three or four containers in bay blocks (width) of four containers wide. An area in which 20ft containers were stacked was observed, as well as an area in which 40ft containers were stacked. The container rows were poorly aligned and showed a bending curve along the width of the terminal. One light pole was knocked down and lay on the floor. In total 10,800 containers were in the stack that day.

The average dwell time was understood to be 60 days for the entire terminal on average. However, dwell time for containers below 60 days has an average of between 25 to 30 days. Containers which are on the terminal for more than 60 days are subject for detention by customs and shall be auctioned.

Observations compared to the last visit in 2012

The stack was better organized compared to 2012 with container stacking blocks neater positioned. Yet, several blocks were not straight and curved across the terminal. Some light-poles were still standing in the runway instead of positioned in the middle of the block. The row blocks were better indicated compared to the situation in 2012, with clear Letters. The row numbers were not visual. Additionally, the Bay numbers were not clearly visual either.

3.3.5 Equipment

The terminal has seven reach stackers of which only five were operable. This means that there is too little equipment available to handle the various simultaneous tasks, such as:

- Pick-up from truck to the stack;
- Lift-on to the truck for collection;
- Container delivery to the customs area;
- Container pick-up from the customs area to the stack;
- Railhead discharge from rail wagons;
- Railhead lift-on to rail wagons;
- Container delivery to CFS;
- Container pick-up from CFS; and,
- Empty stack operations.

Note that the first eight tasks have to be carried out by reach stackers. So at least eight have to be available during the day. In order to be able to assign multiple equipments to each operation and allow for maintenance and repair, two reach stackers should be assigned for each task and two spare reach stackers should be available in case of breakdowns, maintenance and repair. This results in a minimal reach stacker equipment fleet of about 18.

Observations compared to the last visit in 2012

The amount of equipment was too limited in 2012 (there were 7 in order and 11 in the fleet of which 6 out of order). Today the 7 relatively new reach stackers are in operations. The 11 pieces of old equipment are not operational. Hence the amount of available equipment has been reduced below acceptable levels. Since the number of tasks has been increased (new railhead plus new warehouses) the shortage of equipment is worse compared to 2012. It was understood during the visit that about 11 pieces of equipment are on order.

3.3.6 Systems

The terminal improved the situation for administration and documentation for the clearing agents, forwarders and consignees. A range of counters is currently available to perform the documentation, all located in one warehouse. About ten lines were available, which would be considered a “one-stop-shop for your documentation”. Although this was a clear improvement compared to last visit (the clearing agents and cargo agents are not lined-up anymore in the open air), still it should be noted that only the paper process was better organized but not reduced through means of proper IT systems.

Observations compared to the last visit in 2012

Limited improvements have been realized on the IT systems. There is still no TOS system for Modjo Dry Port and the location of boxes is manually registered. Thereby, the situation is more or less similar to 2012, but basically now better organized. The same Excel sheets on administration were noted. It is still questionable whether the administration of the location is done well, mainly explained by the unclear signalling of rows.

3.3.7 Warehouses

There are four large warehouses erected when the site was expanded in 2013-2014. The four warehouses, 5400 m² each, are occupied by customs today.

The intention is that these warehouses are used by consignees for stripping and stuffing. However, meanwhile, the customs warehouse was converted to create clearing administration counters. The warehouses are rather empty. Only the ground space is used, leaving the majority of the space non-utilized. The intention is to have these warehouses assigned as logistics warehouses for deconsolidation and consolidation of cargoes, well equipped with racks and levelled storage.

Observations compared to the last visit in 2012

The new four warehouses were under construction at that stage, intended for transit warehouses on breakbulk and LCL activities. Today, they are mainly occupied by Customs for clearing activities only.

3.3.8 Customs CFS

The customs open space CFS is more or less similar compared to the situation in 2012. Containers are opened by customs for inspection and closed again after. Containers can be cleared in about 1.5 hours. On average, the container is moved back into the stack within half a day. Several cargoes cannot be inspected in the open air and they are inspected in the new warehouses. The customs currently only use the ground space of these warehouses as racking is not a logical type of operations during customs inspection. Racking systems could be efficiently used only for detained cargo. It should, however, be noted that detained/be to auctioned cargo should not be stored at the dry port preferably since it occupies valuable transit space.

Observations compared to the last visit in 2012

The customs open spaces are similar to 2012. The covered space by customs is increased, as the mega warehouses of 5400 m² are now used as well. Customs procedures and efficiencies seem not to be improved over time. However, the administrative procedures for clearance have been improved as the old warehouse are now specifically assigned for these procedures.

3.3.9 The railhead/rail terminal

As from January 2018, a railhead was implemented. The railhead was developed by ERC and handed over to EDR. ESLSE co-invested into the railhead with USD 27 M, whereas ERC paid for another USD 10 M. The total railhead investment accumulates to about USD 37 M and consists of four 250 m tracks. Two stretches are overarched by an RMG crane and the two other tracks can only be operated by reach stackers. The initial design was to create 4 x 1000 m of track, able to simultaneously store four trains. But due to budget constraints, only the first 250 m was established.

One or two trains per day arrive (one in the morning and one in the afternoon). Each train pulls 53 wagons with 1 x 40ft or 2 x 20ft containers when fully loaded. In total, each train brings 206 TEU imports which are divided along the four railhead tracks of 13 wagons each (one of 14 wagons). The train transports 206 TEU of exports back to Djibouti. Based on one train a day and 360 days a year, the annual throughput reaches about 75,000 TEU p.a. This is about 50% of the Modjo throughput already, which was understood to be the rough model split of the Modjo Dry Port today.

As such, the rail modality is a success due to the significantly reduced transit time, from about 3 days with the truck to just 12 hours with the train modality. The train travels at speed of about 70 km per hour. Today, the train cannot reach the average of 80 km per hour design speed for cargo transportation, as many livestock casualties occur, and signalling is not yet well organized. The capacity of the railway can be increased when more by-pass locations are created along the single track between Adama and Djibouti. The track from Adama to Addis Ababa concerns a double track.

Observations compared to the last visit in 2012

The railhead was absent in 2012 but concerns a real gamechanger as the transit times from Djibouti is reduced from about 3 days to just 12 hours. In the situation that more trains are operated, the modal shift for the train may increase up to 75% and will change the focus of the operations at Modjo terminal.

3.3.10 Gate complex

A new gate complex is under construction, having eight aligned gates in total (four gates out and four gates in). The gates should be interchangeable between in and out. During the visit to Modjo Dry Port, a different in-gate (at the left of the complex) was used as many trucks were parked in the terminal waiting for their directions. A separate exit gate is often used on the righthand side of the complex. The delegation noted that two gates outs were now in operation (of the eight new) during that day.

Observations compared to the last visit in 2012

A new gate complex is under construction. The delays on gate-out noticed in 2012 were reduced. However, today there are many trucks waiting a considerable time before they receive their container. This is mainly due to the lack of operational equipment on the terminal.

3.3.11 Administration building

A brand-new administration building is under construction. This building is meant to replace the administration counters, which are currently located in the two separate older warehouses. One of the warehouses is reserved for clearance and the other for general administration/finance purposes. It was noted that limited queues were present at the counters during the visit. The new building is expected to ease the space for administration and will cover all activities (one-stop-shop).

Observations compared to the last visit in 2012

The administration facilities were considered poor in 2012 and the queues for the counters were outside. The conditions for clearing agents and forwarders were also poor. By having two warehouses relocated for administrative purposes, the conditions for administration works improved considerably. The new building is expected to ease this further and clears the two old warehouses for other purposes again. These can be re-utilized for customs clearance for example. In that way, the new warehouses can be allocated to customer CFS stations.

3.4 Cargo Demand Forecast

This paragraph presents the projection of cargo volumes for Ethiopia and Modjo specifically and aims to specify the future trades for Ethiopia and Modjo as a whole. The Ethiopian macro-economic review and the Ethiopian market review of section 3.2 both illustrated a positive market outlook for Ethiopian growth in terms of GDP, population, and expected cargo throughput due to increasing import and export volumes. Local Ethiopian consumption is expected to increase over time. In addition, the production of main export commodities such as coffee and oilseeds as well as the upcoming manufacturing industry due to the development of industrial parks is expected to boost the number of export volumes in the near future.

Methodology

The forecast is based on a regression analysis of historical trade volumes, GDP, merchandise trade and GDP per capita. The Ethiopian historic cargo development analysis is presented first. A traffic forecast is made for the major type of commodities destined to or originating from Ethiopia:

- Containers;
- Breakbulk;
- Dry bulk;
- Vehicles; and
- Liquid Bulk.

3.4.1 Ethiopian Demand Forecast

Historical Trade

The methodology applied to the traffic forecast is based on the regression analysis of Ethiopia's historical trade. Table 3-20 contains the total volume of imports and export, GDP, Merchandise Trade and GDP per capita for the period 2008-2017. A strong relationship between historic cargo development and the development pattern of the three indicators improves the predictive power of the indicators used in the traffic forecast.

Table 3-20: Historic Ethiopian Trade Volumes in relation to GDP, GDP per Capita and Merchandise Trade Developments

Years	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	CAGR
Imports (x 1,000 tons)*	7,445	8,133	6,959	7,310	8,465	7,343	10,247	10,445	14,596	12,005	5.5%
Exports (x 1,000 tons)*	809	909	1,130	1,183	1,319	1,339	1,560	1,463	1,665	1,768	9.1%
GDP (Con. 2010 USD B)**	24.4	26.6	29.9	33.3	36.2	40.0	44.1	48.7	52.3	57.7	10.0%
GDP per Capita (Con. 2010 USD)**	294	311	341	370	391	421	453	487	511	550	7.2%
Merchandise Trade (Con. 2010 USD B)**	8.9	7.6	10.9	12.3	12.8	12.9	15.0	15.1	14.3	13.9	5.1%

* Data obtained from Ethiopian Revenue & Customs Authority

** Data obtained from World Bank & IMF

The growth patterns above do not visualize structural changes over time but show healthy growth with Compound Average Growth Rates (CAGRs) between 5% and 10% over the last 10 years for each of the individual economic indicators. A correlation analysis has been applied between the various indicators between 2000 and 2017, the results of which can be found in Table 3-21. Data has been obtained from Ethiopian resources as much as possible; however, the World Bank and IMF provide more comprehensive data, which is better for statistical analysis.

Table 3-21: Correlations Import, Export versus GDP, GDP per Capita and Merchandise Trade

Correlations 2000-2017	Factor
Correlation Import - GDP (Constant 2010 USD)	0.938
Correlation Import - GDP per Capita (Constant 2010 USD)	0.935
Correlation Import - Merchandise Trade (Constant 2010 USD)	0.876
Correlation Export - GDP (Constant 2010 USD)	0.979
Correlation Export - GDP per Capita (Constant 2010 USD)	0.982
Correlation Export - Merchandise Trade (Constant 2010 USD)	0.966

Source: MTBS based on World Bank, IMF, and Ethiopian Revenue & Customs Authority information

Both for import volumes and export volumes, the highest correlation is with GDP (in constant 2010 USD) and GDP per capita. GDP can, therefore, be seen as the best indicator for future import and export volume predictions and is hence used as the main predicting indicator in the traffic forecast.

Since the Port of Djibouti handles more than 95% of Ethiopian trade, it is assumed that all Ethiopian containers are handled by the Port of Djibouti. Furthermore, it is estimated that around 85% of cargo in the Port of Djibouti is destined to or originating from Ethiopia³³. It is assumed that 85% of all import and export containers (full and empties), i.e. no transshipment, in Djibouti concerns Ethiopian container trade. DPFZA provides full and empty container statistics. Based on the assumption that 85% of all import and export containers concerns Ethiopian trade, the number of full and empty containers for the Port of Ethiopia are presented in the following table.

Table 3-22: Ethiopian Import & Export Containers

Containers	2012	2013	2014	2015	2016	2017
Import - Full - TEU	175,216	191,554	213,519	251,831	295,396	304,042
Import - Empty - TEU	547	1,250	1,058	217	81	296
Export - Full - TEU	37,053	38,259	42,694	38,484	49,993	49,207
Export - Empty - TEU	133,818	139,332	170,821	205,376	238,131	242,906
Total Ethiopian TEU	346,634	370,394	428,091	495,909	583,600	596,452

Source: DPFZA; MTBS

As can be seen, the majority of the import containers (> 99%) are full containers. This can be mainly explained by the Ethiopian net importing balance. After stripping the full import container, the majority of containers are transferred back empty towards the Port of Djibouti. Only a small share is temporarily stored within the dry ports for export purposes. This simultaneously explains the distribution of full and empty export containers, which respectively account for approximately 20% and 80%.

The container distribution within Ethiopia is based on the earlier cargo distribution within Ethiopia mentioned in section 3.2 of this report. This regional distribution of containers is visualized in Table 3-23.

³³ Oxford Business Group

Table 3-23: Regional Distribution Import Containers (2017)

Region	Import %	Export %	Full Import TEU to Region	Full Export TEU from Region	Return-Leg Empty Containers*
Central	50.00%	25.00%	152,169	12,302	139,867
Northern	10.00%	10.00%	30,434	4,921	25,513
North	10.00%	10.00%	30,434	4,921	25,513
Western					
North	3.00%	3.00%	9,130	1,476	7,654
Eastern					
Eastern	10.00%	10.00%	30,434	4,921	25,513
Southern	7.00%	20.00%	21,304	9,841	11,462
South	5.00%	10.00%	15,217	4,921	10,296
Western					
Western	5.00%	12.00%	15,217	5,905	9,312
Total	100%	100%	304,338	49,207	255,131**

Source: DPFZA; UNECA, African Trade Policy Centre (ATPC), Dry Port Service Enterprise; Adjusted by MTBS.

* Small deviations can occur due to rounding differences.

** Amount of estimated return-leg empty containers is higher than actual return-leg empty containers since a small % remains within the hinterland.

The full import TEU for the central region amounts about 150,000 TEU. Modjo handles an amount of approximately 130,000 TEU full import. Consequently, it can be concluded that Modjo mainly serves the central region of Ethiopia.

Based on the statistics above it can be concluded that within every region the amount of full import containers exceeds the number of full export containers. This implicates that every region has ample empty containers to use for full export purposes. As a result, every region will have a return leg of empty containers from their respective dry ports toward the Port of Djibouti.

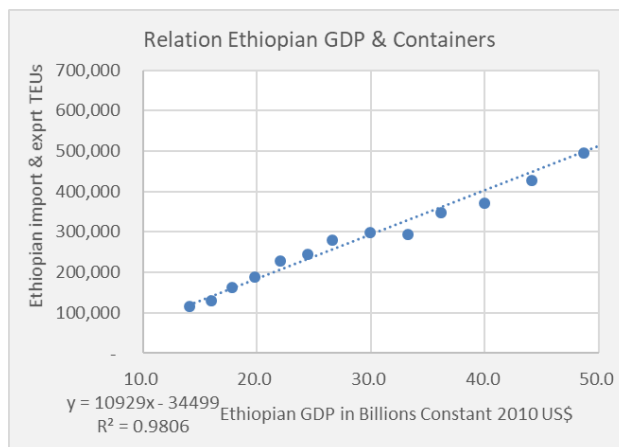
Ethiopian Container Forecast

A regression between the Ethiopian GDP development and historic container throughput is performed to guarantee that GDP development is a good predicting factor for Ethiopian container growth. The higher the correlation between these two variables the better GDP is as predicting variable for future container growth.

Regression

The relation between the Ethiopian GDP (constant 2010 USD) development and Ethiopian container throughput is illustrated in Table 3-24.

Table 3-24: Regression on Ethiopian GDP & Container Development (2002-2017)



Source: Djibouti Port Authority; IMF; MTBS

This analysis is used to indicate the strong relationship between Ethiopian GDP development and container throughput growth. These two variables are strongly correlated and have an R^2 of 0.9806, which indicates that the explanatory value of GDP for container growth is high and thereby is a good predictor for future Ethiopian container growth.

GDP Multiplier

The container projection is drafted on the basis of a multiplier method. On basis of historical data, the most statistically significant multiplier was found for the relation between GDP (constant prices, 2010 USD) and total container demand destined to Ethiopia. The multiplier for TEU growth in comparison to GDP growth was approximately 1.25 for the period 2004 – 2017. This implies that for a 1%-increase of GDP, TEU growth was approximately 1.25%.

For the projection of future domestic container demand, a stable TEU multiplier is applied of 1.25 for 2018, which gradually decreases to a value of 1.1 reached in 2025 and a value of 1.0 in 2030. For a landlocked country based on real GDP, this is assumed to be in the line of expectation. In addition, the containerization rate (% of containerized tons out of the total general cargo tons existing of containers and breakbulk cargo) slightly increased over a 10-year period from 74.5% in 2005 to 80.9% in 2017. This implicates that the containerization rate is reaching a “mature” status, which is typically stated for values above 80%. It is expected that the containerization rate in Ethiopia will stay at approximately 80% in the coming years and therefore the effect on the multiplier will be nihil. The GDP forecast used to complement the TEU multiplier is obtained from and largely based on the most recent update of the IMF’s World Economic Outlook (April 2018). The IMF’s projects an 8.5% GDP growth in 2018, to a value of 8.0% annually in 2023.

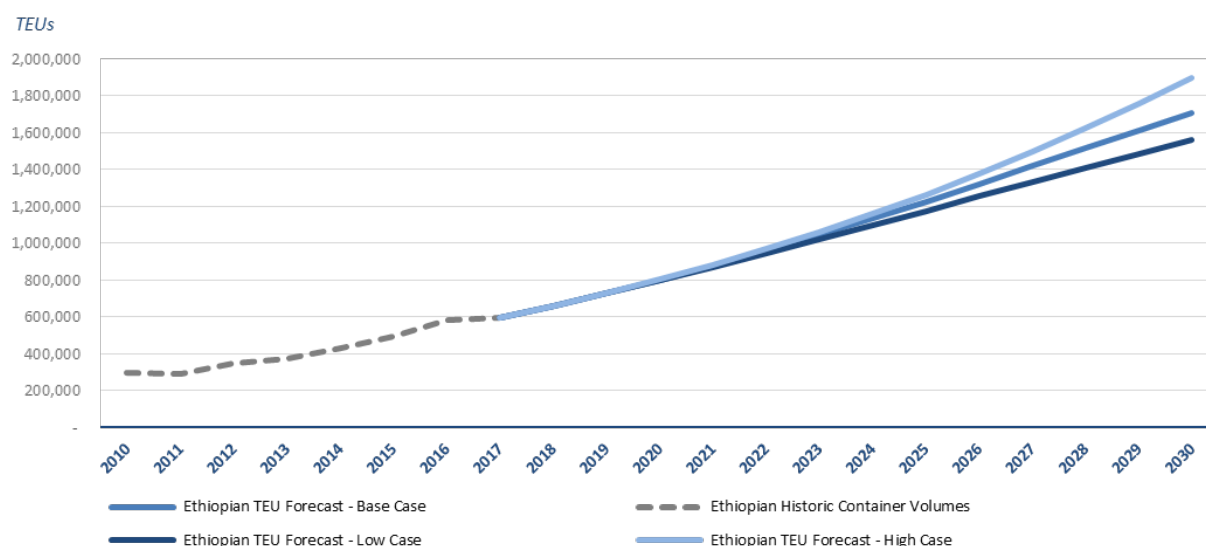
Container Projections

The Ethiopian container projection is visualised in Figure 3-7. The following assumptions have been applied:

- Low case – The low case assumes the IMF GDP projection for 2018. Thereafter, the GDP growth is gradually decreased to 5.0% annually in 2030.
- Base case – The base case assumes the IMF GDP projection for 2018 up until 2023, after which the GDP growth is gradually decreased to 6.0% annually in 2030.
- High case – The high case assumes the IMF GDP projection for 2018. Thereafter, the GDP growth is gradually decreased to 8.0% annually in 2030.

It is expected the Ethiopian domestic container throughput increases from approximately 596,000 TEU in 2017 to an amount between 1.6 M and 1.9 M TEU in 2030. The Compound Average Growth Rate (CAGR) between 2018 and 2030 is thereby equal to 8.3%. The analyses further performed are all based on the Ethiopian base case container projection.

Figure 3-7: Ethiopian Container Forecast 2018-2030



Source: DPFZA; MTBS

Import & Export Container Projection in Full and Empty Containers

The amount of import and export containers distributed in full and empty containers is provided by DPFZA. Based on these figures and together with the IMF export volume growth expectation, the future distribution of full and empty import and export containers is derived and illustrated in Table 3-25.

Table 3-25: Ethiopian Import & Export TEU Projection in Full and Empties

Container Type	2013	2014	2015	2016	2017	2020	2025	2030
Container Distribution in %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Import - Full	51.72%	49.88%	50.78%	50.62%	50.98%	50.00%	50.00%	50.00%
Import - Empty	0.34%	0.25%	0.04%	0.01%	0.05%	0.05%	0.05%	0.05%
Export - Full	10.33%	9.97%	7.76%	8.57%	8.25%	12.00%	16.00%	20.00%
Export - Empty	37.62%	39.90%	41.41%	40.80%	40.73%	37.95%	33.95%	29.95%
Containers in TEU								
Import - Full	191,554	213,519	251,831	295,396	304,042	399,281	613,733	855,017
Import - Empty	1,250	1,058	217	81	296	399	614	855
Export - Full	38,259	42,694	38,484	49,993	49,207	95,827	196,394	342,007
Export - Empty	139,332	170,821	205,376	238,131	242,906	303,054	416,724	512,155

Source: DPFZA; MTBS

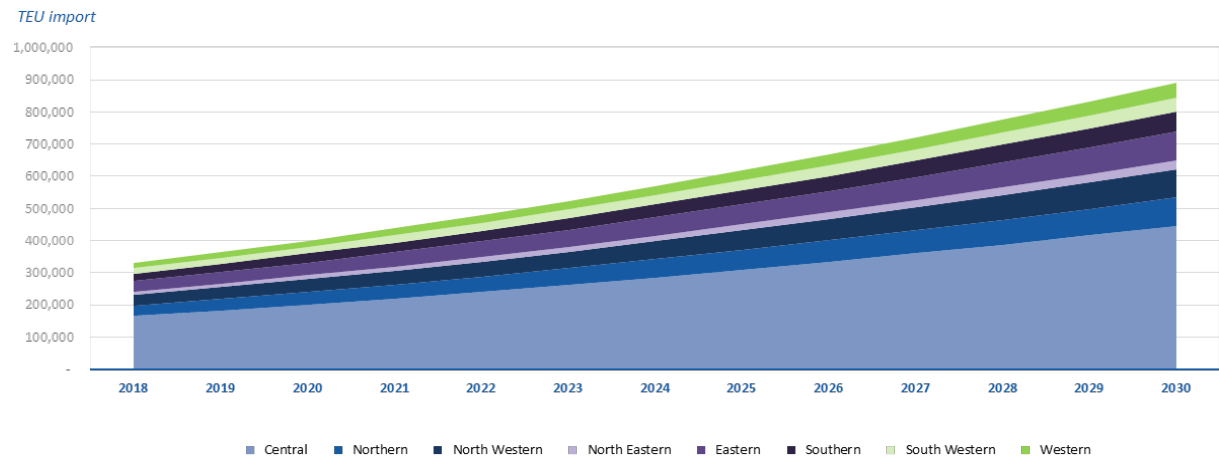
As shown in the table above the amount of import and export containers is not fully in balance in all years. The amount of import containers is on average higher compared to export containers. This can be explained by the fact that some containers remain within the hinterland or are fully depreciated and not used for shipping/transport purposes anymore. For this reason, it is assumed that the future amount of import containers is slightly higher compared to export containers, with a stable percentage of 50.0% for import full containers and 0.05% for import empties.

Regarding export containers, it is expected that the percentage and amount of full export containers increases over time. This is mainly due to the projected growth of export volumes. The full export containers are assumed to increase from roughly 8.3% in 2017 to 12.0% in 2020, to 16.0% in 2025 and to 20.0% in 2030. This increasing percentage of full export containers is also in line with the IMF expectation of increasing Ethiopian export volumes.

Container Distribution per Region

For the container projection per region, the same distribution of import and export goods is used which is presented in section 3.2 of this report. The Ethiopian import TEU distribution per region is illustrated in the following figure.

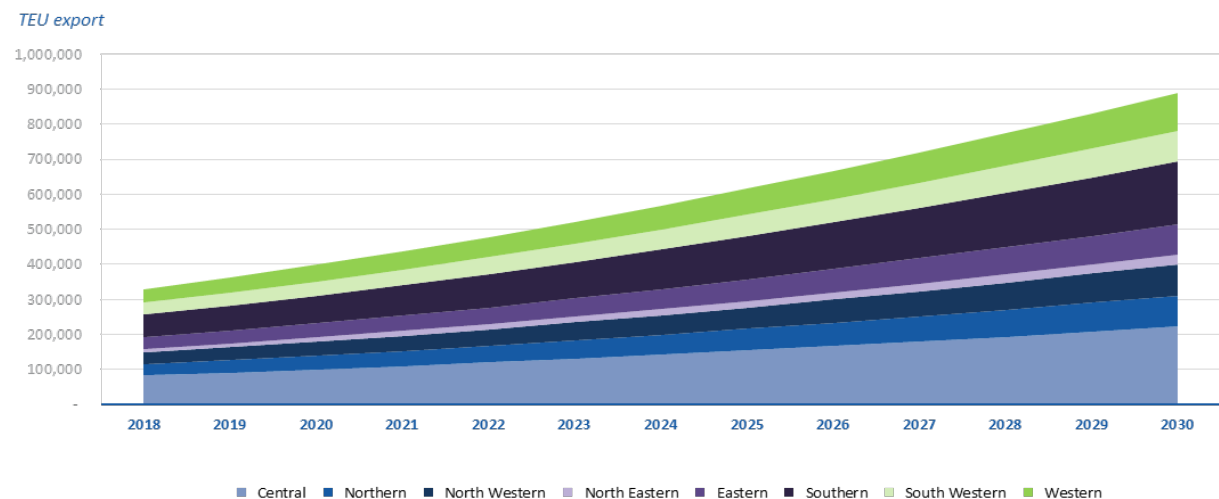
Figure 3-8: Ethiopian Import TEU Distribution per Region



Source: MTBS

The Ethiopian export TEU distribution per region is illustrated in Figure 3-9.

Figure 3-9: Ethiopian Export TEU Distribution per Region



Source: MTBS

Ethiopian Non-Containerized Dry Cargo Forecast

The non-containerized dry cargo types are:

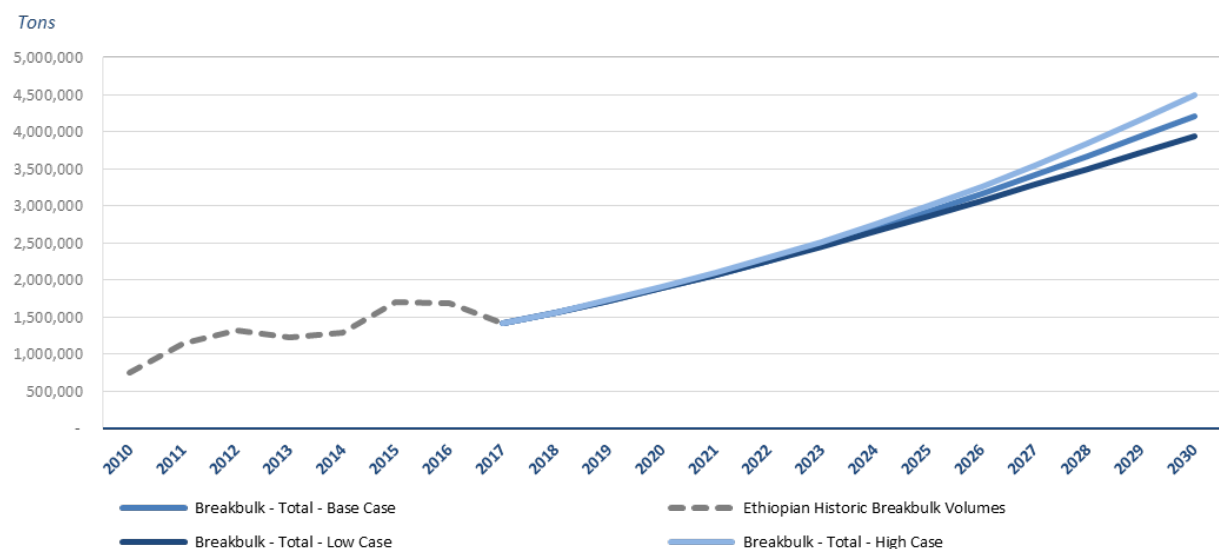
- Breakbulk;
- Dry bulk; and
- Vehicles.

A regression between the Ethiopian GDP development and historic non-containerized dry cargo throughput was not able to be performed because of the lack of adequate data. Thereby, the outcome of the regression on a limited amount of data points was not significant. However, since the type of non-containerized dry cargo mostly concern import products consumed by the inhabitants or related to construction and infrastructural developments, the forecast of these cargo types are also linked to the GDP development of Ethiopia. For this reason, a similar growth development of non-containerized dry cargo is assumed as containerized cargo.

Breakbulk Projections

The Ethiopian breakbulk projection is visualized in Figure 3-10. It is expected the Ethiopian breakbulk throughput increases from approximately 1.4 M tons in 2017 to between 3.9 and 4.5 M tons in 2030. The Compound Average Growth Rate (CAGR) between 2018 and 2030 is similar to the CAGR of containerised trade, which is 8.6%.

Figure 3-10: Ethiopian Breakbulk Projections

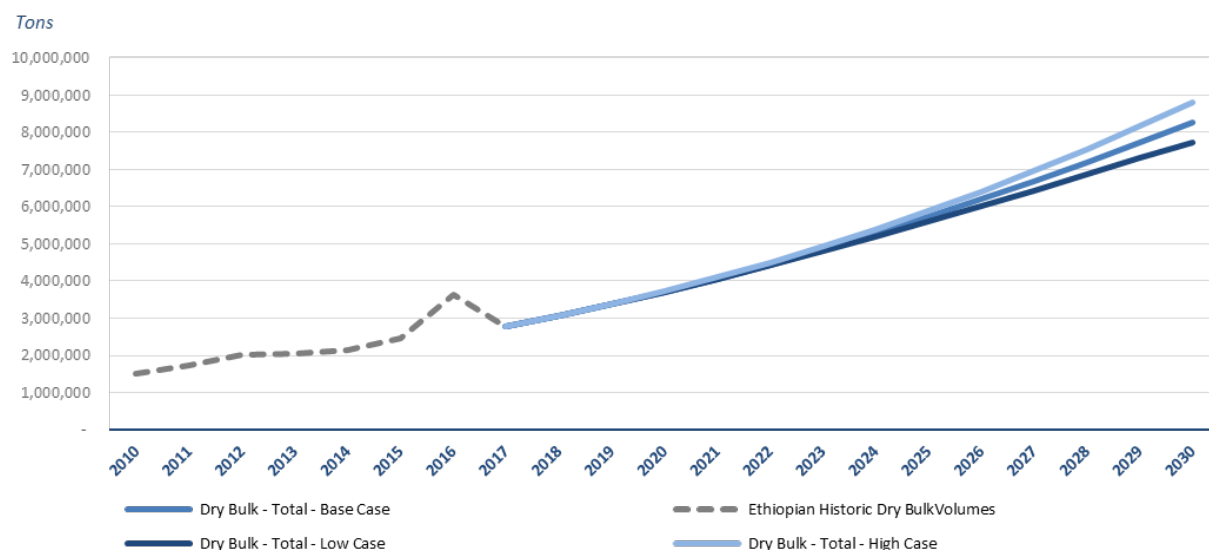


Source: Djibouti Port Authority; MTBS

Dry Bulk Projections

The Ethiopian dry bulk projection is visualized in Figure 3-11. The figure visualizes that the Ethiopian dry bulk throughput is expected to increase from 2.7 M tons in 2017 to between 7.7 M and 8.8 M tons in 2030. Just like the breakbulk and containerized cargo, the Compound Average Growth Rates (CAGRs) of dry bulk cargo are similar to the containerized trade and breakbulk CAGRs.

Figure 3-11: Ethiopian Dry Bulk Projections



Source: MTBS based on Djibouti Port Authority

Two dry bulk products, wheat and fertilisers, are forecasted in more detail.

Wheat:

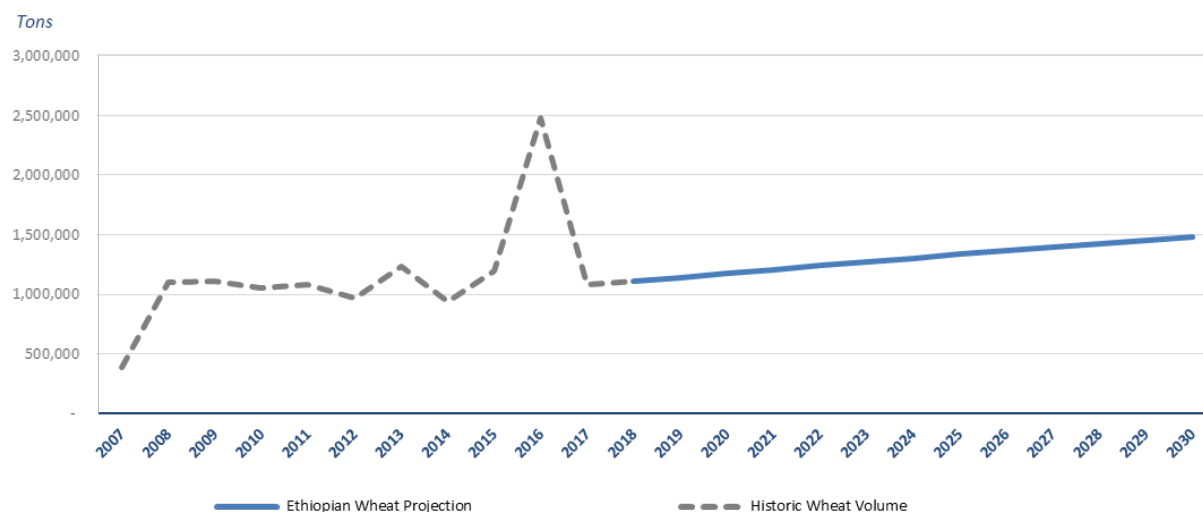
The import of wheat has remained stable over the last years: between 1 M and 1.1 M tons, with the exception of 2016. In 2016, Ethiopia experienced a severe drought, leading to a decrease in wheat production. The import of wheat increased by more than 100% in 2016 to 2.5 M tons.

The government procures wheat for the bread subsidy program, food assistance, and the Productive Safety Net Program. The amount of wheat import is related to the amount of the Ethiopian population and the wheat production in Ethiopia. The Population of Ethiopia is expected to grow further in the future, as well as Ethiopia's own wheat production. Wheat production increases because of expanded access to improved seed, mechanization, minimal pest and disease pressure and the opening of commercial farms. USDA expects that wheat import will increase from about 1.2 M tons in 2016/17, to 1.5 M tons in 2017/18 and 1.7 M tons in 2018/19. The following assumption is made by the consultant for the wheat import forecast, which is more conservative than the USDA projection:

- The import is expected to grow by 2.0% annually in 2018. The growth percentage gradually decreases to 1.5% in 2030.

It is expected that the import of wheat will increase from 1.1 M tons in 2017 to 1.5 M tons in 2030.

Figure 3-12 : Ethiopian Wheat Import Projection



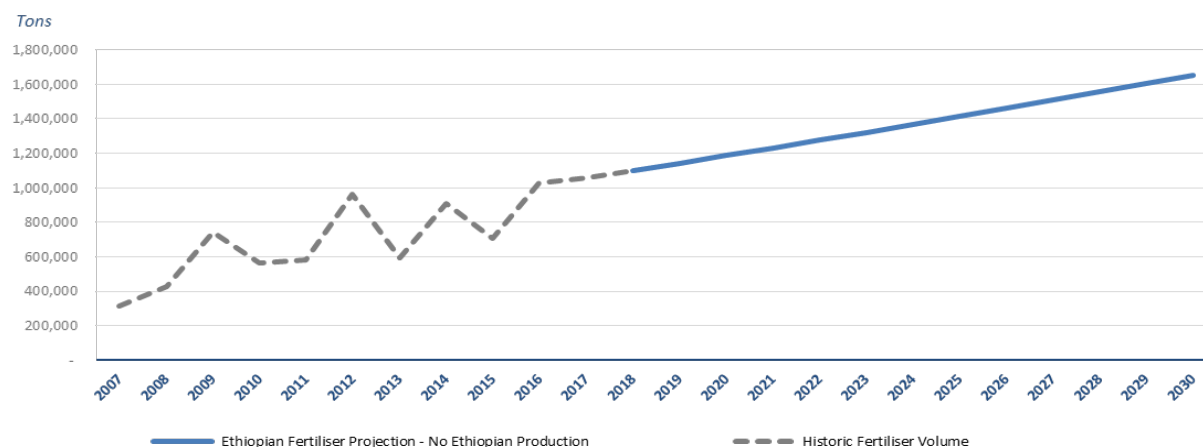
Source: MTBS based on Ethiopian Revenue & Customs Authority

Fertilizers

Over the last 10 years, the import of fertilisers has increased from 300,000 tons to 1.1 M tons. Since fertilizers are deemed a crucial product used in the agricultural sector, the consumption of fertilizers is expected to increase over the next decades. However, recent announcements were made by OCP Group, a Moroccan fertilizer producer, to invest in a 2.5 M tons fertilizer production plant in the region of Dire Dawa. Recent studies were completed to establish a USD 3.7 B fertilizer production plant, which is planned to start operations mid-2022. However, although the plans exist to build this fertilizer production plant, the actual development is often extended or not implemented at all. For this reason, the following two scenarios are made regarding to the projection of fertilizer imports:

- **No Ethiopian fertilizer production:** The import of fertilisers is expected to increase by 4.0% in 2018, in line with historic growth rates. The growth rate will gradually decrease to 3.0% in 2030;
- **Ethiopian fertilizer production:** The import of fertilizers increases up to 2021 in line with the no-production case, but decreases by 50% in 2022 due to the own production and to 0 by 2023.

Figure 3-13 : Ethiopian Fertiliser Import Projection – No Ethiopian Fertilizer Production Scenario

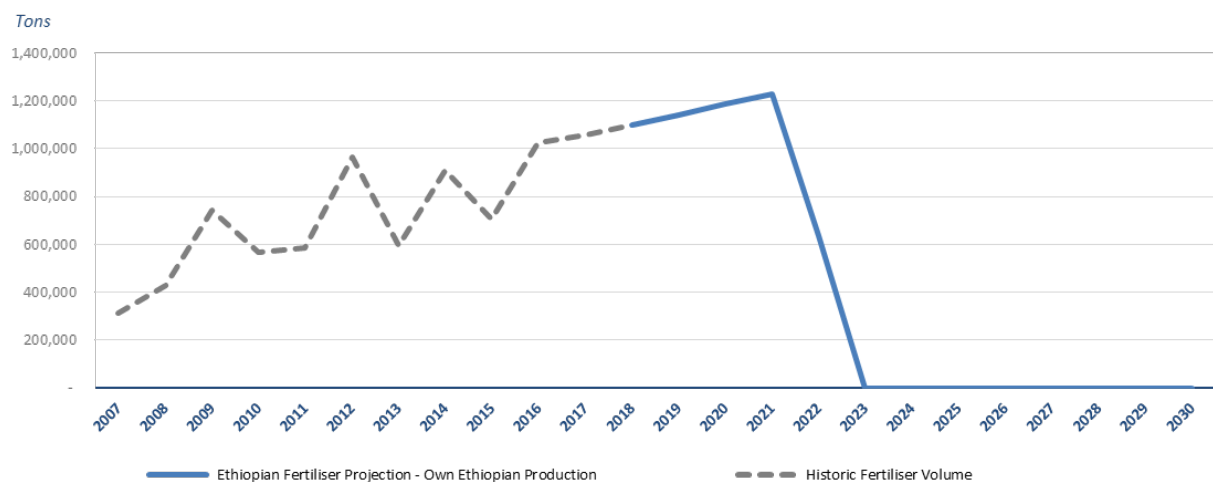


Source: MTBS based on Ethiopian Revenue & Customs Authority

The fertiliser import is expected to grow from 1.1 M tons in 2017 to 1.6 M tons in 2030 in the situation the production plant is not developed.

On the other hand, in case the fertilizer production plant is actually implemented according to the recent articles, the production would start in mid-2022. Thereby, Ethiopia would turn into a net fertilizer exporting country, instead of being a fertilizer import country. The fertilizer imports in Ethiopia in the scenario in which the fertilizer production plant in Dire Dawa is built is visualized in Figure 3-14. As can be seen, the fertilizer import is expected to drop to zero in 2023.

Figure 3-14: Ethiopian Fertiliser Import Projection – Ethiopian Fertilizer Production Scenario



Source: MTBS based on Ethiopian Revenue & Customs Authority; OCP Group

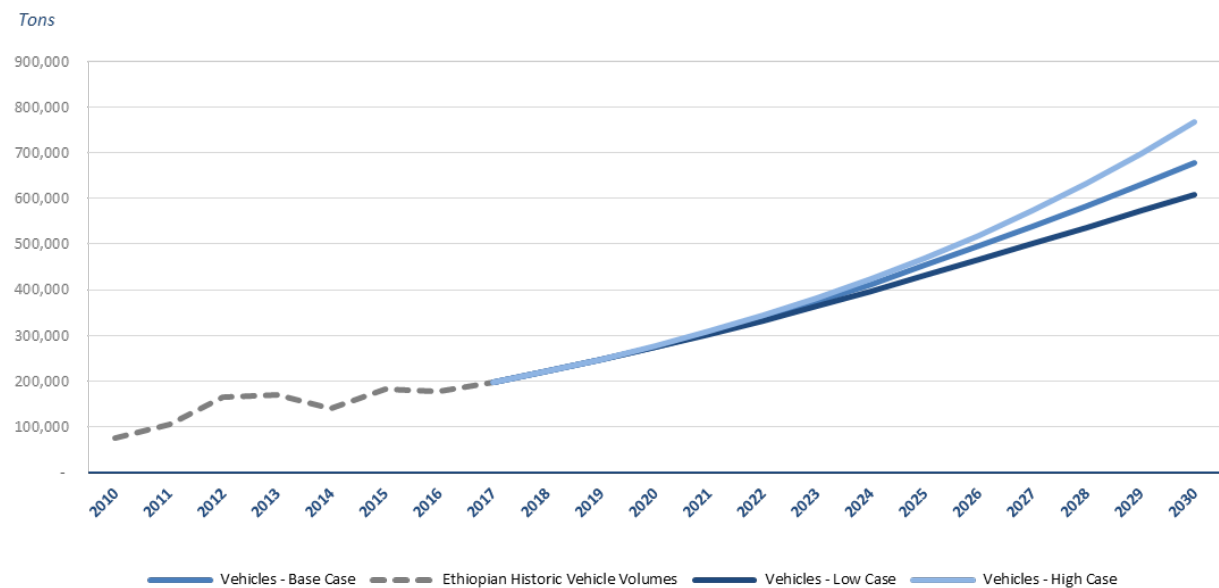
It should be mentioned that the actual development of this potential fertilizer plan has its effect on the potential for Modjo Logistics Hub to handle fertilizer imports as well. For this reason, both scenarios will be taken into account within the Modjo cargo forecast, land demand forecast, as well as the financial analysis.

Vehicle Projections: GDP Multiplier Method

Just like the container projection, the vehicle projection is drafted on the basis of a multiplier method. On basis of historical data, the most statistically significant multiplier was found for the relation between GDP (constant prices, 2010 USD) and vehicle demand destined to Ethiopia (85% of Djibouti vehicle volumes). The multiplier for vehicle growth in comparison to GDP growth was approximately 1.6 for the period 2002 – 2017. This implies that for a 1%-increase of GDP, the vehicle growth was approximately 1.6%. For the projection of future domestic vehicle demand, a multiplier is applied of 1.4, which gradually decreases to 1.25 in 2030. The GDP forecast that is used to complement this multiplier is equal to the GDP forecast of containers: a low, base and high case.

The Ethiopian vehicle projection is visualized in Figure 3-15. It is expected the Ethiopian vehicle throughput increases from approximately 200,000 tons in 2017 to between 660,000 and 760,000 tons in 2030. The CAGR is 10.2% in the base case.

Figure 3-15: Ethiopian Vehicle Projections



Source: MTBS based on Djibouti Port Authority

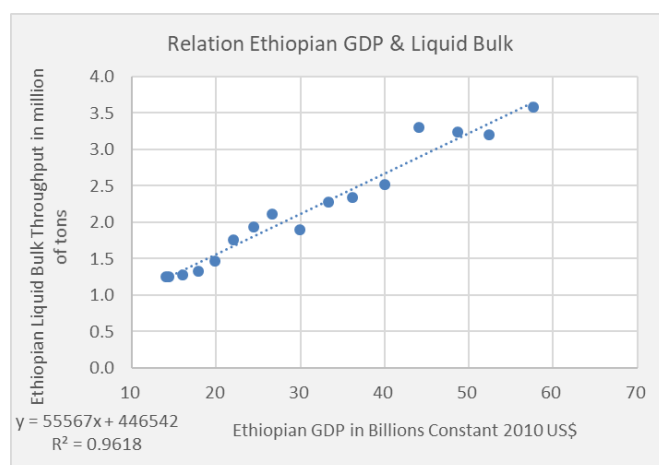
Ethiopian Liquid Bulk Forecast

A regression between the Ethiopian GDP development and historic liquid bulk throughput is performed to verify whether GDP development is a good predicting factor for the Ethiopian liquid bulk growth. The higher the correlation between these two variables the better GDP is as predicting variable for future liquid bulk growth.

Regression

The relation between the Ethiopian GDP (constant 2010 USD) development and Ethiopian liquid bulk throughput is illustrated by Figure 3-16.

Figure 3-16: Regression on Ethiopian GDP & Liquid Bulk Development (2002 – 2017)



Source: Djibouti Port Authority; MTBS

A strong relationship exists between the Ethiopian GDP development and liquid bulk throughput growth. These two variables are strongly correlated and have an R^2 of 0.9618, which indicates that the explanatory value of GDP for liquid bulk growth is high.

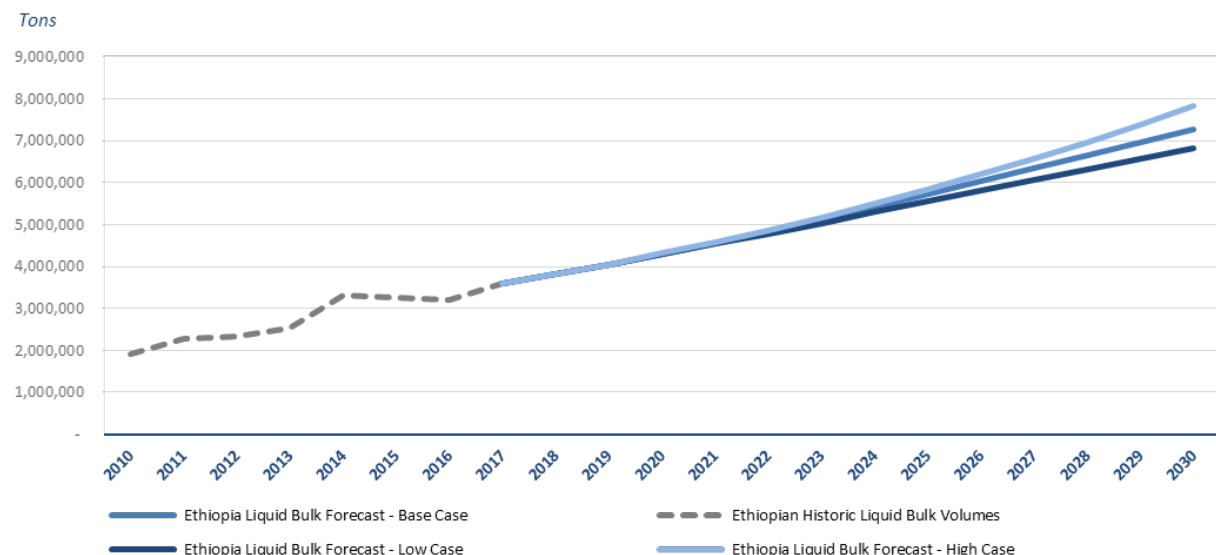
GDP Multiplier

Just like the container projection, the liquid bulk projection is drafted on the basis of a multiplier method. On basis of historical data, the most statistically significant multiplier was found for the relation between GDP (constant prices, 2010 USD) and total liquid bulk demand destined to Ethiopia (85% of Djibouti liquid bulk volumes). The multiplier for liquid bulk growth in comparison to GDP growth was approximately 0.75 for the period 2002 – 2017. This implies that for a 1%-increase of GDP, the liquid bulk growth was approximately 0.75%. For the projection of future domestic liquid bulk demand, a similar multiplier is applied of 0.75. The GDP forecast that is used to complement this multiplier is equal to the GDP low case, base case and high case as used in the other projections.

Liquid Bulk Projections

The majority of Ethiopian liquid bulk throughput concerns imports of mineral fuels such as gasoline and diesel mainly destined for the fuel consumption of motor vehicles. It is estimated that over 95% of the total liquid bulk throughput destined to Ethiopia concern mineral fuels. An exact distribution of the amount of import and export liquid bulk is not available. The Ethiopian liquid bulk projection is visualized in Figure 3-17. It is expected the Ethiopian liquid bulk throughput increases from approximately 3.6 M tons in 2017 to an amount between 7.1 M and 7.8 M tons in 2030. The Compound Average Growth Rate (CAGR) of the base case between 2018 and 2030 is 6.3%.

Figure 3-17: Ethiopian Liquid Bulk Projection



Source: MTBS based on Djibouti Port Authority

3.4.2 Ethiopian Export Demand Forecast

The following sections describe the export demand of the main export products in Ethiopia. Eventually, this forecast is used to calculate the export demand for Modjo Logistics Hub. The following products are forecasted:

- Coffee;
- Vegetables including pulses;
- Oilseeds including soybeans;
- Edible fruits; and
- Meat.

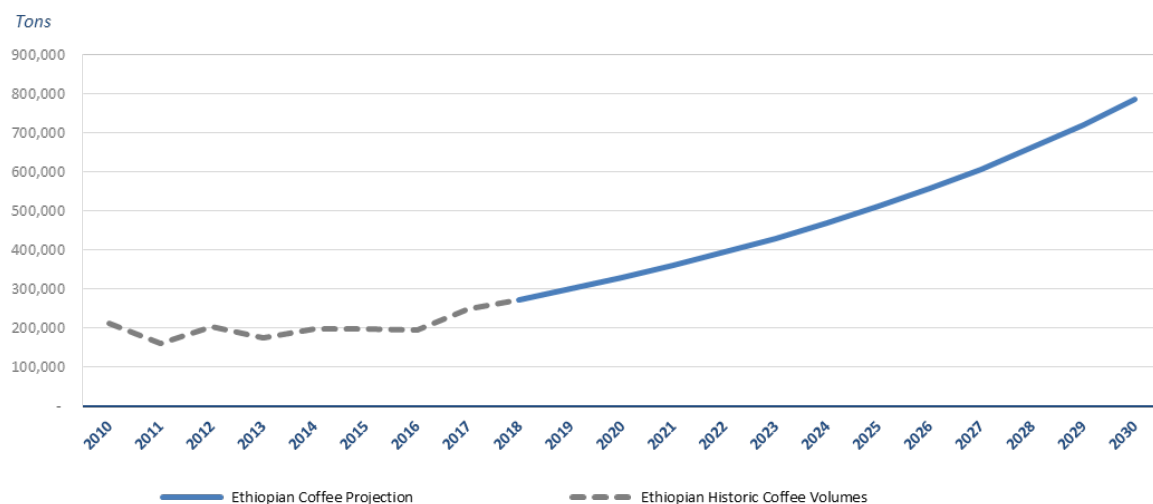
Coffee Export Projections

Coffee is one of the largest commodities exported by Ethiopia. Taken into account the coffee export targets in section 3.2.5 and the historical growth figures, the following assumption is made:

- Export is expected to increase by 10% in 2018, after which the growth percentage gradually decreases to 8% annually by 2025. A growth percentage of 8% per annum is assumed for 2025-2030.

The assumption is derived from the historical growth of coffee export. Between 2013-2017, the export of coffee increased by 9% per annum. Taken into account the recent growth of coffee export in Ethiopia and the measures that will be taken by the government to increase coffee export, the export is expected to increase by 10% per annum. The coffee projection is visualised in Figure 3-18. It is expected that coffee export will increase from approximately 250,000 ton in 2017 to 800,000 ton in 2030.

Figure 3-18: Ethiopian Coffee Export Projection



Source: MTBS based on Ethiopian Revenue & Customs Authority

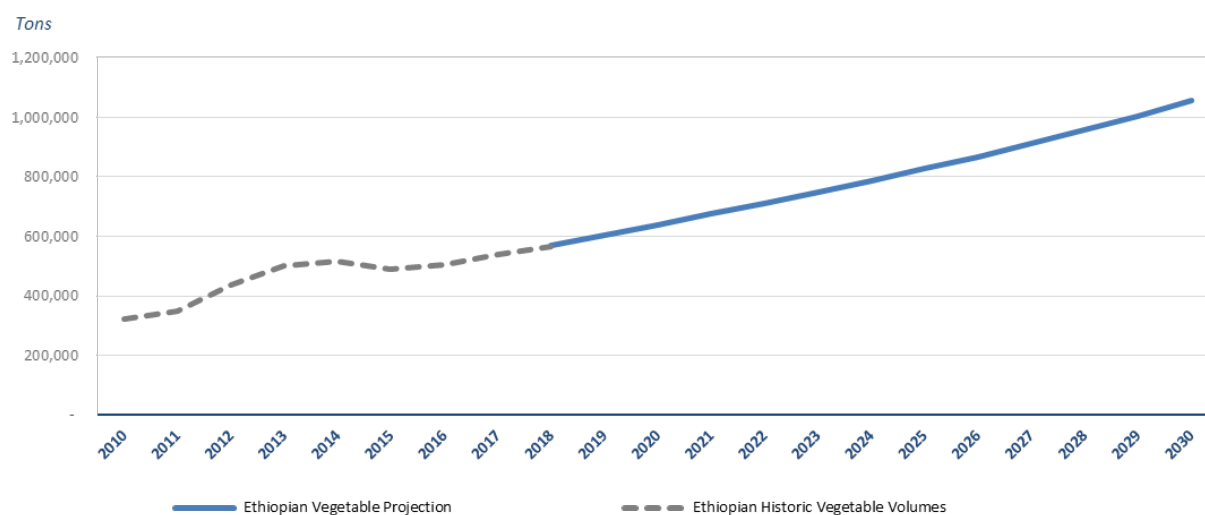
Vegetables Export Projections

Vegetables are the largest export commodity in Ethiopia. Of the total vegetables export, pulses account for approximately 70% in terms of volume. The vegetable export is projected taken into account the historic pulses export figures in section 3.2.5 and the historical growth figures. The projection is visualised in Figure 3-19. The following assumption is made:

- Export will increase by 6% in 2018, after which the growth rate gradually decreases to 5% by 2025. The growth rate from 2025-2030 is 5% per annum.

The assumption is derived from the historical growth of vegetable export. From 2012-2017, average vegetable export growth was about 6.0%. Taken into account the recent and expected growth of pulses export, the export is expected to increase by 6% annually in 2018. The vegetables export is projected to increase from 540,000 tons in 2017 to approximately 1.0 M tons in 2030.

Figure 3-19: Ethiopian Vegetable Export Projection



Source: MTBS based on Ethiopian Revenue & Customs Authority

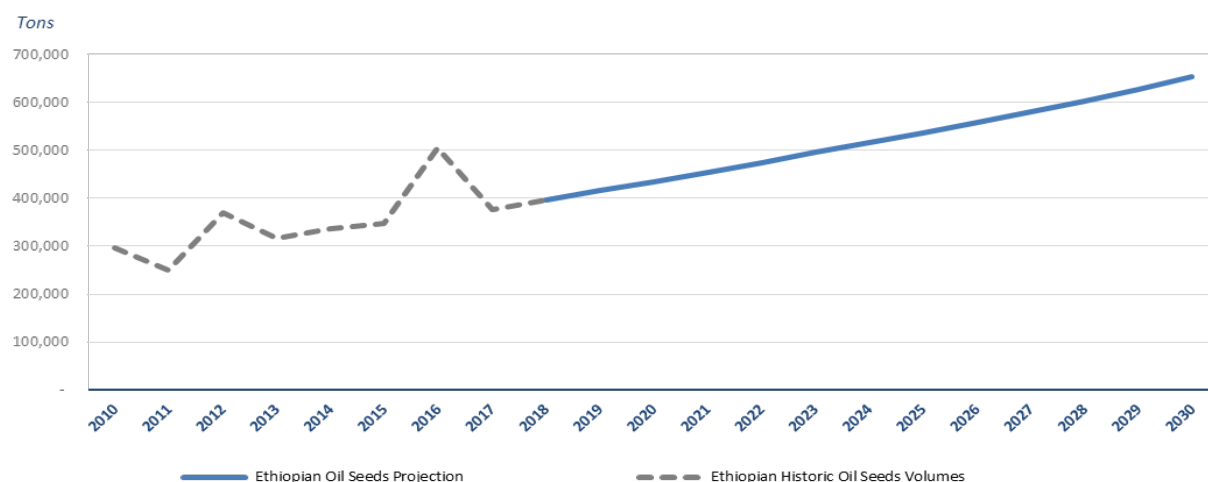
Oilseeds Export Projections

Oilseeds export is expected to increase by 4%-5% annually in the coming years, as described in section 3.2.5. In addition, the historical figures show a growth of 5% annually in the last five years. The following assumption is made regarding the oilseeds export:

- The growth rate is projected at 5% in 2018, after which the growth rate gradually decreases to 4% by 2025. From 2025-2030 the growth rate is expected to be equal to 4% per annum.

The oilseeds export is expected to increase from 378,000 tons in 2017 to 653,000 tons in 2030, visualised in Figure 3-20.

Figure 3-20: Ethiopian Oilseeds Export Projections



Source: MTBS based on Ethiopian Revenue & Customs Authority (Including soybeans)

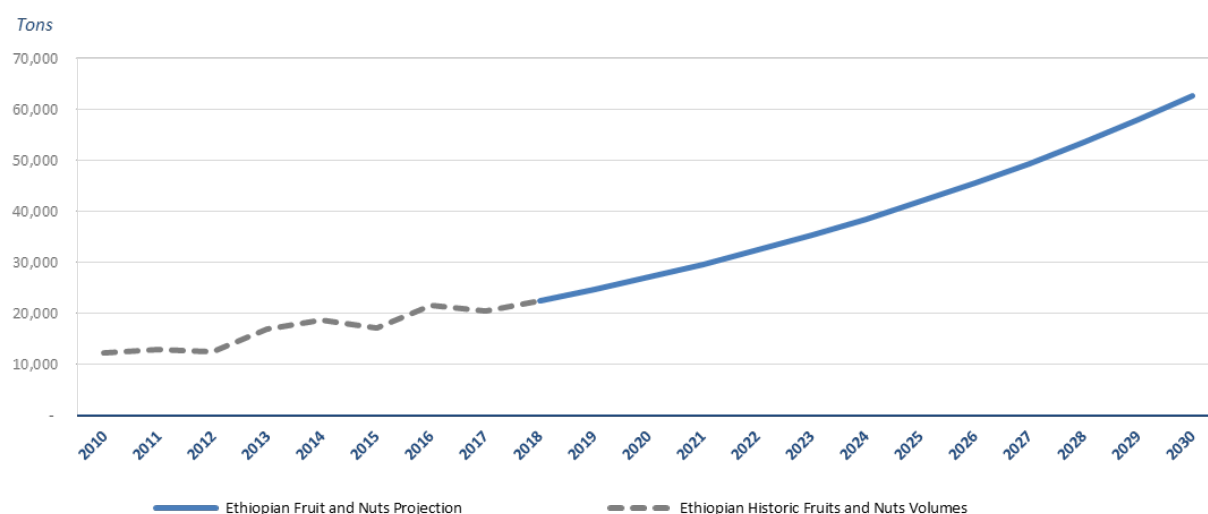
Fruits Export Projections

Edible fruits are the ninth largest export product of Ethiopia, with a volume of 20,000 tons in 2017. The fruit sector is regarded by the Government as a potential sector for foreign investment. The government provides incentives to farmers to support the production and export of edible fruits. Moreover, Ethiopia has abundant land suitable for growing fruits and has ideal environmental conditions to grow fruit. Over the last six years, fruit export has increased by more than 9% annually. The fruit export is projected taken into account the market potential of fruits described in section 3.2.5 and the historical growth figures. The projection is visualised in Figure 3-30. The following assumption is made:

- Export will increase by 10% in 2018, after which the growth rate gradually decreases to 8% annually by 2030.

The export of fruits is expected to grow from 20,000 tons in 2017 to over 60,000 tons in 2030.

Table 3-26: Ethiopian Fruits Export Projection



Source: MTBS based on Ethiopian Revenue & Customs Authority

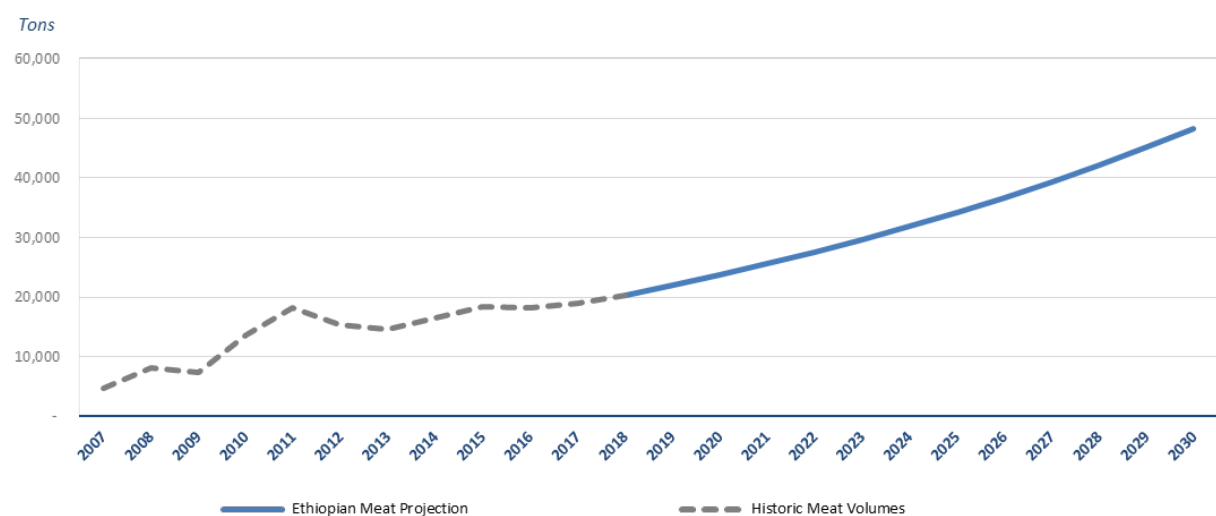
Meat Export Projections

In the last five years, the export of meat has increased by 3% to 4% annually. The meat export sector in Ethiopia is growing due to new players in the market. For example, the company Verde Beef aims to export meat for a value of USD 100 M in 2021³⁴, while Ethiopia's current meat export value is only USD 97 M. The following assumption is made:

- Export will increase by 8% in 2018, after which the growth rate gradually decreases to 6% annually by 2030.

It is expected that the export of meat will grow from 19,000 tons in 2017 to 48,000 tons in 2030.

Table 3-27: Ethiopian Meat Export Projections



Source: MTBS based on Ethiopian Revenue & Customs Authority

³⁴ PRNewswire, March 2017

Summary Export Demand Forecast

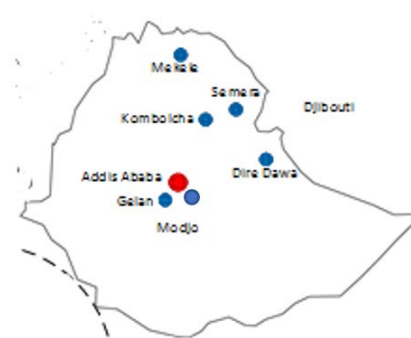
The export products forecast for Ethiopia from 2018 to 2030 are summarised in Table 3-31.

Table 3-28: Summary Export Demand Ethiopia

In Ton	2018	2022	2025	2030
Coffee Export Growth Rate	10%	9%	8%	8%
Coffee Export	271,790	327,373	507,561	757,345
Vegetables Export Growth Rate	6%	5%	5%	5%
Vegetables Export	571,105	711,335	826,823	1,055,260
Oilseeds Export Growth Rate	5%	4%	4%	4%
Oilseeds Export	449,544	539,025	608,831	740,736
Fruits Export Growth Rate	10%	9%	9%	8%
Fruits Export	22,470	32,402	41,962	62,613
Meat Export Growth Rate	8%	7%	7%	6%
Meat Export	20,382	27,516	34,184	48,319

3.4.3 Modjo Demand Forecast

This section presents the demand forecast for Modjo Logistics Hub. At present, Modjo Dry Port handles most of all maritime cargo destined for Ethiopia. The Ethiopian Government has constructed several dry ports over the years. The served region, capacity, throughput and market share of these dry ports are presented in Table 3-29. Modjo Dry Port is the largest dry port in terms of TEU capacity: 17,539 TEU. Besides, it is expected that Mekele Dry Port increases its capacity to 14,500 TEU after the expansion in 2018.



Modjo Dry Port handled 133,070 import TEU in 2016/17. The assumption is made that TEU export is equal to TEU import. The throughput of the other dry ports is presented in the following table as well. The dry ports in Ethiopia handled 339,248 TEU in 2016/17, which is 56% of total TEU for Ethiopia. The other 44% of TEU is assumed to be handled by other logistics service providers.

Table 3-29: Dry Ports Ethiopia and Capacity

Dry Port	Region	Capacity TEU	Throughput TEU 2016/17	Market Share 2016/17
Modjo	Central – Addis Ababa	17,539	266,140	78.45%
Comet	Central – Addis Ababa	1,241	40,371	11.90%
Gelan	West of Addis Ababa	1,697	-	-
Kombolcha	North of Addis Ababa (370 km), 500 km Port of Djibouti	1,888	6,751	1.99%
Mekele	North, 780 km Port of Djibouti	1,440*	14,214	4.19%
Dire Dawa	East, 320 km Port of Djibouti	368	9,702	2.86%
Semera	North, 300 km Port of Djibouti	1,180	2,069	0.61%
Total	Dry Ports Ethiopia	25,353	339,248	100%

*14,500 after expansion

Source: Modjo Dry Port Service Enterprise and ESLSE

The historic TEU figures of Modjo are presented in the following table. The assumption is made that TEU export is equal to TEU import at Modjo³⁵. In 2017, Modjo handled 263,817 TEU, which is 44% of total Ethiopian trade.

Table 3-30: Modjo Historical TEU Throughput

Modjo**	2010	2011	2012	2013	2014	2015	2016	2017
Ethiopian TEU	298,722	292,541	346,634	370,394	428,091	495,909	583,600	596,452
% Ethiopian trade	8%	12%	19%	25%	33%	43%	44%	44%
Modjo TEU*	23,123	35,910	64,585	93,505	140,204	211,109	258,019	263,817

*import = export.

** years are calendar years i.e. 1st January – 31st December.

Source : MTBS based on Modjo Dry Port Service Enterprise, DPFZA.

³⁵ Modjo Dry Port information.

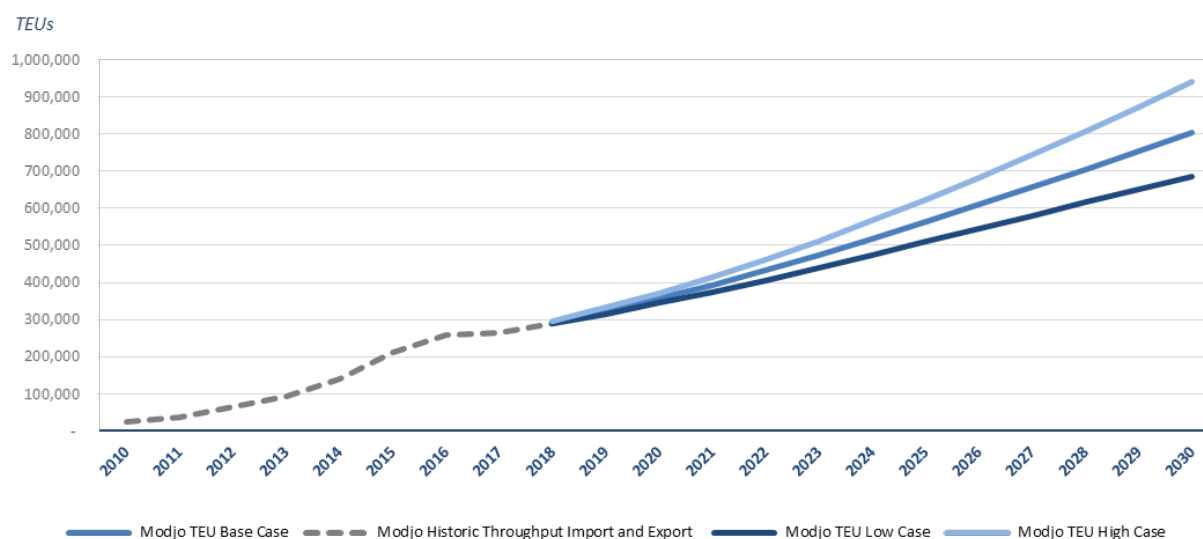
Modjo TEU Forecast

The container forecast for Modjo is derived from Modjo's historical figures and the projection of its share in Ethiopian Trade, based on the corridor analysis and the market analysis on the competing dry port developments. Three cases are forecasted:

- **Low case:** Modjo's market share gradually decreases from 44% in 2017 to 40% by 2030, due to the assumption that Modjo loses market share to other dry ports in Ethiopia or to other logistics service providers. This is because of the capacity expansions of other dry ports and the opening of the logistics market for private logistics service providers;
- **Base case:** Modjo's market share gradually increases from 44% in 2017 to 47% by 2030. It is expected that Modjo does not lose market share to other dry ports or logistics service providers due to its location on the main corridors, the cost reduction and synergies following the Addis Ababa – Djibouti railway and its expansion of logistics services; and,
- **High case:** Modjo's market share gradually increases from 44% in 2017 to 55% by 2030. In this case, it is assumed that Modjo Logistics Hub has a large competitive advantage compared to other logistics service providers, following the developments mentioned in the Base Case.

In the Base Case, throughput is expected to increase from 291,997 TEU in 2018 to 803,716 TEU in 2030, presented in Figure 3-21. CAGR 2018-2030 is 8.8%, which means that Modjo is expected to experience a large growth in throughput and has to expand its port.

Figure 3-21: Modjo TEU Forecast



Source: MTBS based on Modjo Dry Port Service Enterprise

Value Added Activities Forecast

This section presents the forecast of the value-added activities, which includes both the import and export of products. The following products are forecasted:

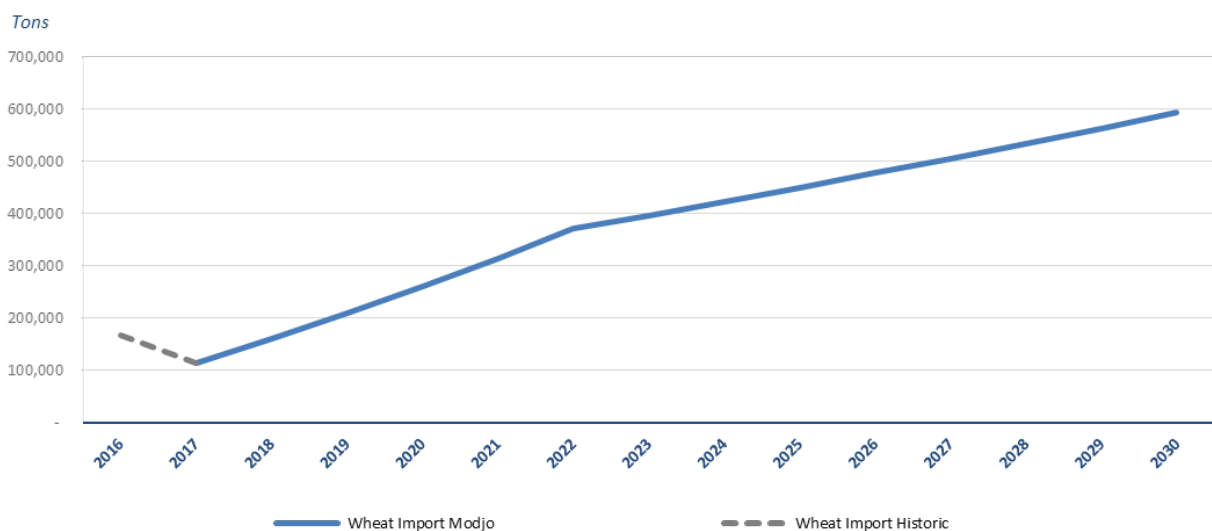
- Wheat (import);
- Fertiliser (import);
- Vehicles (import);
- Coffee (export);
- Vegetables including pulses (export);
- Oilseeds including soybeans (export);
- Edible fruits (export);
- Meat (export);

The forecasts of the export products are all based on their Ethiopian export forecast. The forecasts for the export products start at 2022 because it is expected that Modjo Logistics Hub is structured in 2019, procurement takes place in 2020 and development of the logistics hub in 2021.

Wheat Import

Wheat is mainly imported by the Government of Ethiopia for the bread subsidy program, food assistance and the Productive Safety Net Program. Since the most populous areas are in Oromia, around Addis Ababa, Modjo is strategically located for the import of wheat to the end-user. Since wheat has been transported in containers last years, this forecast is part of the container forecast. However, it is not expected that wheat will be only transported in containers in the future. In 2015/16, Modjo imported 105,000 ton wheat: 3% of total imported wheat in Ethiopia. The expectation is that the market share of Modjo gradually increases to a market share of 30% in 2022, and 40% in 2030. The forecast is presented in Figure 3-22. The import of wheat is expected to increase from 100,000 ton in 2017 to 600,000 ton in 2030.

Figure 3-22: Import Wheat Modjo Logistics Hub



*Wheat Import Modjo Historic is based on the 105,000 tons in 2015/2016. It is assumed that 1/6 was handled in the second half of 2015 and 5/6 in the first half of 2016 since the wheat import in 2016 increased by 100%.

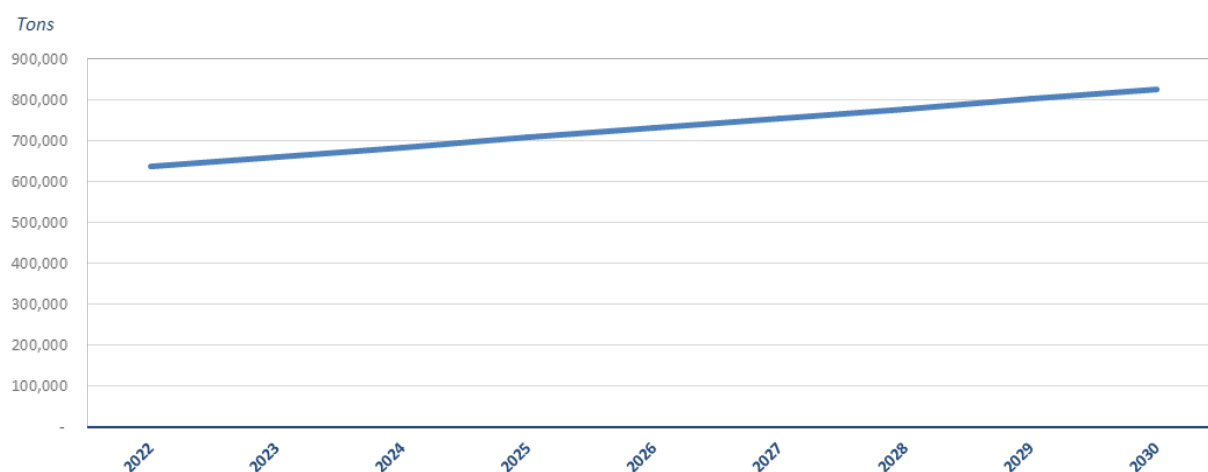
Fertiliser Import

As was already presented in the Ethiopian forecast (country level) of fertilizer imports in chapter 3.4.1, there are two scenarios possible:

- **The first scenario** is assumed to be the “base case” in which no fertilizer plant is built in Ethiopia. This is done for reasons of conservativeness (on Ethiopian level) as many development projects are often not implemented. After all, this development is still in its early study/feasibility phase;
- **The second scenario** assumes that the fertilizer production plant is actually built. In case it is developed, the actual demand to handle fertilizer import in Modjo Logistics Hub is assumed to be nihil as Ethiopia then turns into a net exporting market of fertilizers.

At present, fertiliser is packed in bags at Djibouti Port. To ease the transportation of fertilisers to Ethiopia, it is assumed that Modjo Logistics Hub provides a bagging machine for fertilisers. Therefore, the expectation is that about 50% of the fertiliser import is bagged at Modjo Logistics Hub in 2022. The market share is expected to remain stable in the years thereafter, i.e. 50%. It is expected that Modjo imports about 650,000 tons of fertiliser in 2022, increasing to 800,000 tons in 2030.

Figure 3-23: Import Fertiliser Modjo Logistics Hub – Base Case (Scenario 1)



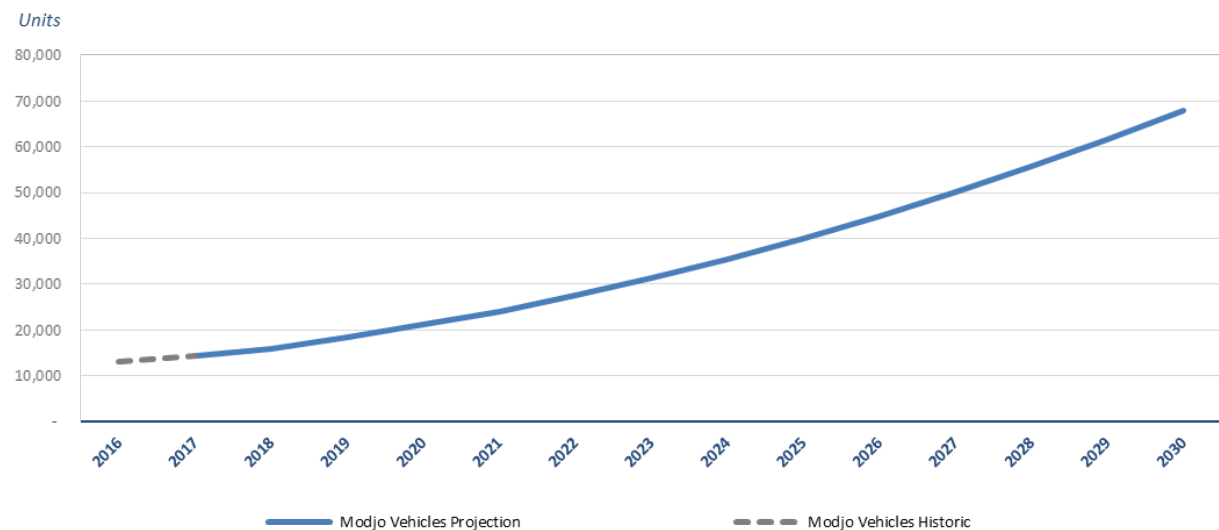
Source: MTBS

As mentioned above, in the second scenario in which the Ethiopian fertilizer production plant is built by the Moroccan OCP Group in Dire Dawa, the demand to handle fertilizer imports in Modjo Logistics Hub is assumed to be nihil.

Vehicles Import

In 2015/16, Modjo handled 13,224 vehicles: 7.2% of the total Ethiopian vehicle import. It is expected that the market share of Modjo in the vehicle import gradually increases from 7.2% to 10% in 2030 to a total of nearly 70,000 vehicles. Currently, vehicles are transported in containers at Modjo. Hence, the vehicle import is already incorporated in the container forecast. The vehicle forecast is presented in the following figure.

Figure 3-24: Import Vehicles Modjo Logistics Hub

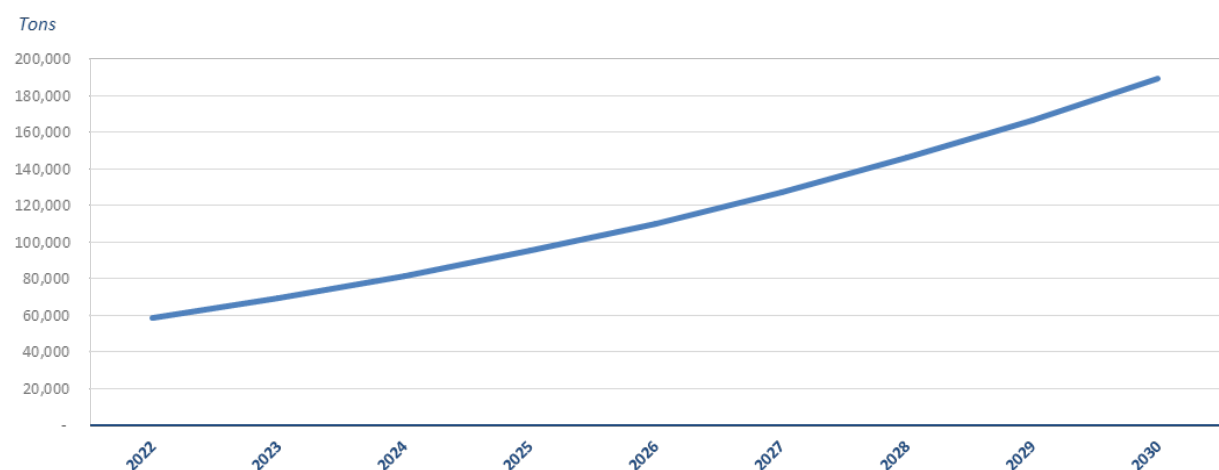


Source: MTBS

Coffee Export

Modjo Logistics Hub is strategically located in the production area of coffee since coffee is mainly produced to the south and west of Modjo. Currently, about 80% of the coffee export is stuffed into containers in Djibouti and 20% at inland dry ports or warehouses. The assumption is made that in 2022, 15% of the export of coffee is stuffed at Modjo. This percentage gradually increases to 25% in 2030. The expectation is that Modjo exports about 60,000 tons of coffee in 2022, increasing to 190,000 tons in 2030. The forecast is presented in the figure below.

Figure 3-25: Export Coffee Modjo Logistics Hub

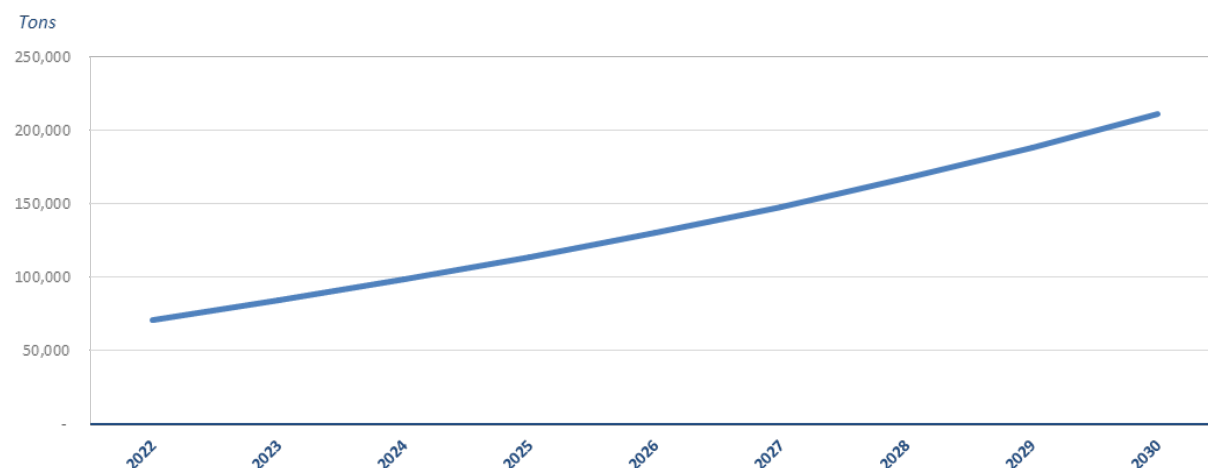


Source: MTBS

Vegetables Export

The vegetables export comprises mainly pulses. The production of pulses is concentrated in the Amhara and Oromia regions. It is expected that Modjo handles 10% of the Ethiopian vegetables export in 2022, and the market share gradually increases to 20% in 2030. The export increases from nearly 70,000 tons in 2022 to 210,000 tons in 2030.

Figure 3-26: Export Vegetables Modjo Logistics Hub

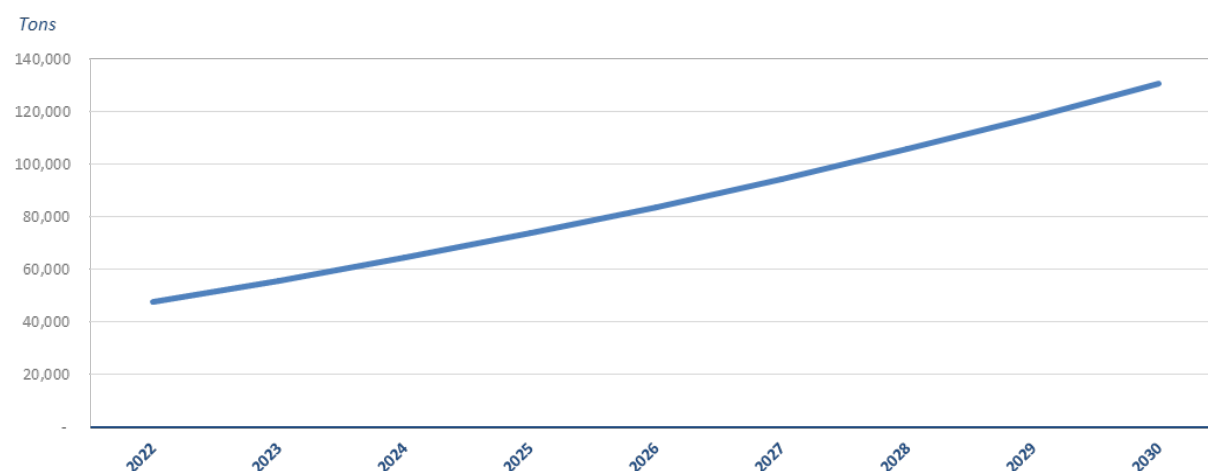


Source: MTBS

Oilseeds Export

The production of sesame seed, which accounts for 70% of the total oilseeds export, is concentrated in the north-western regions of Ethiopia. The oilseeds are mostly transported to the Port of Sudan and Port of Djibouti. It is expected that Modjo can capture about 10% of the oilseeds market export, increasing to 20% in 2030. This assumption results in a 45,000 ton export of oilseeds in 2022 and 130,000 tons in 2030.

Figure 3-27: Export Oilseeds Modjo Logistics Hub

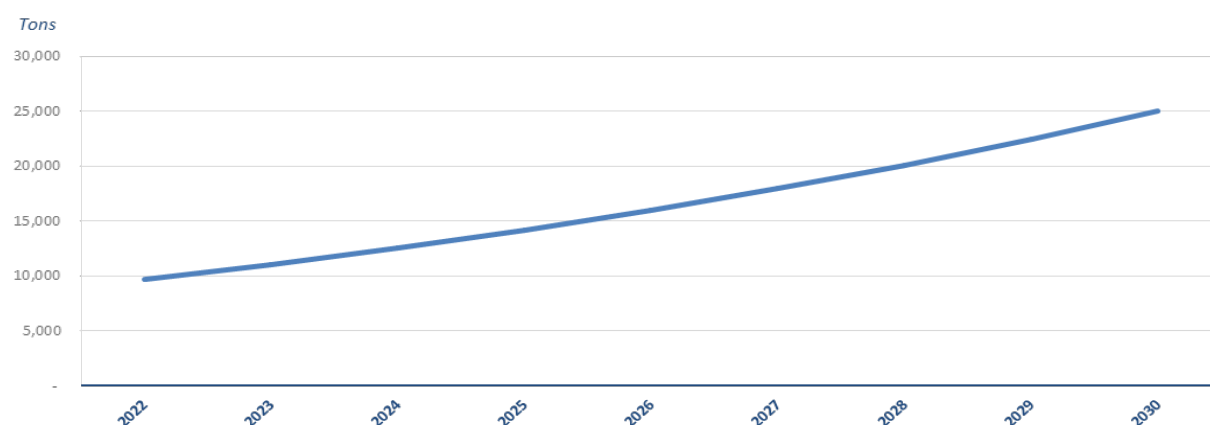


Source: MTBS

Fruits Export

The main growing areas of fruits are SNNP, Oromia and Amhara. Of seventeen large fruit companies in Ethiopia, all member of the Ethiopian Horticulture Producer Exporters Association, sixteen are located within the region of Modjo Logistics Hub. Therefore, Modjo is strategically well located for the export of fruits. It is assumed that Modjo will capture a market share of 30% in the Ethiopian export market in 2022, increasing to 40% in 2030. Modjo is expected to handle 10,000 ton in 2022 and 25,000 ton in 2030.

Figure 3-28: Export Fruit Modjo Logistics Hub

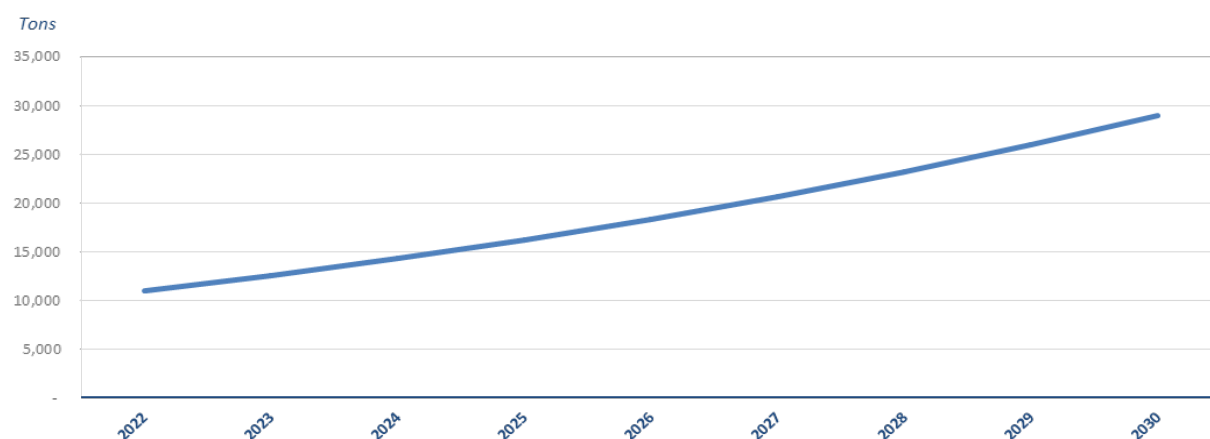


Source: MTBS

Meat Export

Exporting meat is a large opportunity for Modjo Logistics Hub. Currently in Ethiopia, 12 large meat-producing companies are operating, of which nine are located around Modjo. The companies all have more or less of the same production capacity per day, implicating that 75% is located in Modjo. The assumption for the forecast is that about 60% of the meat that is exported from Ethiopia can be exported through Modjo Logistics Hub, starting with 40% in 2022 and gradually increasing to 60% in 2030. The forecast is presented in Figure 3-29. The export of meat is expected to be 11,000 tons in 2022 and 29,000 tons in 2030.

Figure 3-29: Export Meat Modjo Logistics Hub



Source: MTBS

Summary Export Demand Forecast

The export forecasts for Ethiopia and Modjo from 2022 till 2030 are summarised in Table 3-31.

Table 3-31: Summary Export Demand Ethiopia and Modjo

In Ton	2022	2025	2030
Ethiopian Coffee Export	327,373	507,561	757,345
Market Share Coffee %	15%	18%	25%
Modjo Coffee Export	58,790	95,168	189,336
Ethiopian Vegetables Export	711,335	826,823	1,055,260
Market Share Vegetables %	10%	13%	20%
Modjo Vegetables Export	71,134	113,688	211,052
Ethiopian Oilseeds Export	539,025	608,831	740,736
Market Share Oilseeds %	10%	13%	20%
Modjo Oilseeds Export	47,533	73,822	130,641
Ethiopian Fruits Export	32,402	41,962	62,613
Market Share Fruits %	30%	34%	40%
Modjo Fruits Export	9,721	14,162	25,045
Ethiopian Meat Export	27,516	34,184	48,319
Market Share Meat %	40%	48%	60%
Modjo Meat Export	11,007	16,237	28,991

Source: MTBS

Total Demand Forecast

The total demand for the Modjo Logistics Hub from 2018-2030 is forecasted and presented in the previous sections. However, to establish a more profound financial model the traffic of Modjo Logistics Hub is forecasted till 2039. The following assumptions are made regarding the forecast from 2030-2039:

- TEU Forecast Ethiopia: the assumption is that Ethiopian GDP growth decreases to 2% in 2039 and the multiplier is reduced to 1.0 in the base case, resulting in a total TEU Forecast of 2.4 M in 2039;
- TEU Forecast Modjo: in the base case, Modjo's market share remains 47% in the base case till 2039;
- Export products forecast Ethiopia: the assumption is that the growth rate of export gradually decreases to 3-4% annually in 2039 for the five indicated export products;
- Import products forecast Ethiopia: wheat is assumed to grow by 2% annually, fertiliser by 3% annually (depending on the development of the fertilizer production plant in Dire Dawa); and,
- The market shares for Modjo of the import fertilisers, wheat, vehicles and export coffee, oilseeds, fruits, meat and vegetables all remain equal from 2030-2039.

A summary of the total cargo at Modjo Logistics Hub is presented in the table below. The export products are expected to be transported in containers to Djibouti or other ports, reducing the number of return-leg empty containers. Furthermore, by handling a sufficient amount of cold chain products, such as edible fruits and meat, Modjo Logistics Hub can provide reefer containers through synergies between these two types of cargoes. Transporting fruits and meat by sea instead of air reduces the transport costs. Eventually, a more efficient supply chain results in the attraction of foreign investments.

Table 3-32: Total Demand Forecast Modjo

Cargo	2018	2020	2022	2025	2030	2035	2039
Containers Import and Export in TEU	291,997	356,896	431,619	562,746	803,716	999,092	1,107,360
Fertiliser import in ton*	-	-	637,815	707,156	826,439	958,070	1,078,316
Wheat import** in ton	161,097	261,329	371,497	450,069	593,759	655,558	709,597
Vehicles import** units	15,989	21,093	27,495	40,026	67,791	88,850	101,002
Coffee export in ton	-	-	58,790	95,168	189,336	257,348	299,114
Vegetables export in ton	-	-	71,134	113,688	211,052	265,112	312,135
Oilseeds export in ton	-	-	47,533	73,822	130,641	156,413	177,186
Edible fruits export in ton	-	-	9,721	14,162	25,045	34,580	41,499
Meat export in ton	-	-	11,007	16,237	28,991	38,795	46,262

* Based on the "base case" (scenario 1) in which the potential fertilizer production plant in the Dire Dawa region is not built

** Assumed is that wheat and vehicles are currently imported in containers and can be transported in bulk in the future.

The export products coffee, vegetables, oilseeds, fruits and meat are transported in containers from Modjo. The assumption is that 10 ton of export products are stuffed in one container³⁶. Furthermore, we assume that full import containers are 50% of the total containers and empty import 0.05%. The distribution of full and empty import and export containers is presented below.

³⁶ World Bank

Table 3-33: Modjo TEU Forecast Distribution

Modjo ICD	2018	2020	2025	2030	2035	2039
Full import TEUs	145,999	178,448	281,373	401,858	499,546	553,680
Empty import TEUs	146	178	281	402	500	554
Full export TEUs	-	-	31,308	58,507	75,225	87,620
Empty export TEUs	145,853	178,269	249,784	342,950	423,822	465,507
Total TEUS Modjo ICD	291,997	356,896	562,746	803,716	999,092	1,107,360

Source: MTBS

3.5 Land Demand Forecast Modjo Logistics Hub

3.5.1 Introduction

This paragraph presents the area demand forecast of Modjo Logistics Hub. The area forecasts are primarily based on the market demand assessment for import and export for Modjo Logistics Hub as described in paragraph 3.3. The results of the area demand forecast as described in this paragraph provide insight into the size of the overall area required for the implementation of the Logistics Hub concept.

The current size of the dry port area is about 63 ha, presented in Figure 3-30. About 3 ha is currently designed for customs, 27 ha for the container depot, about 10 ha for the railway, 10 ha for warehouses and 13 ha for other areas such as import administration, customs administration, commercial activities, the gates and new offices that are being built. Currently, the warehouses are not used for storage of goods, but for customs inspections.

Figure 3-30: Current Dry Port Area



Source: MTBS

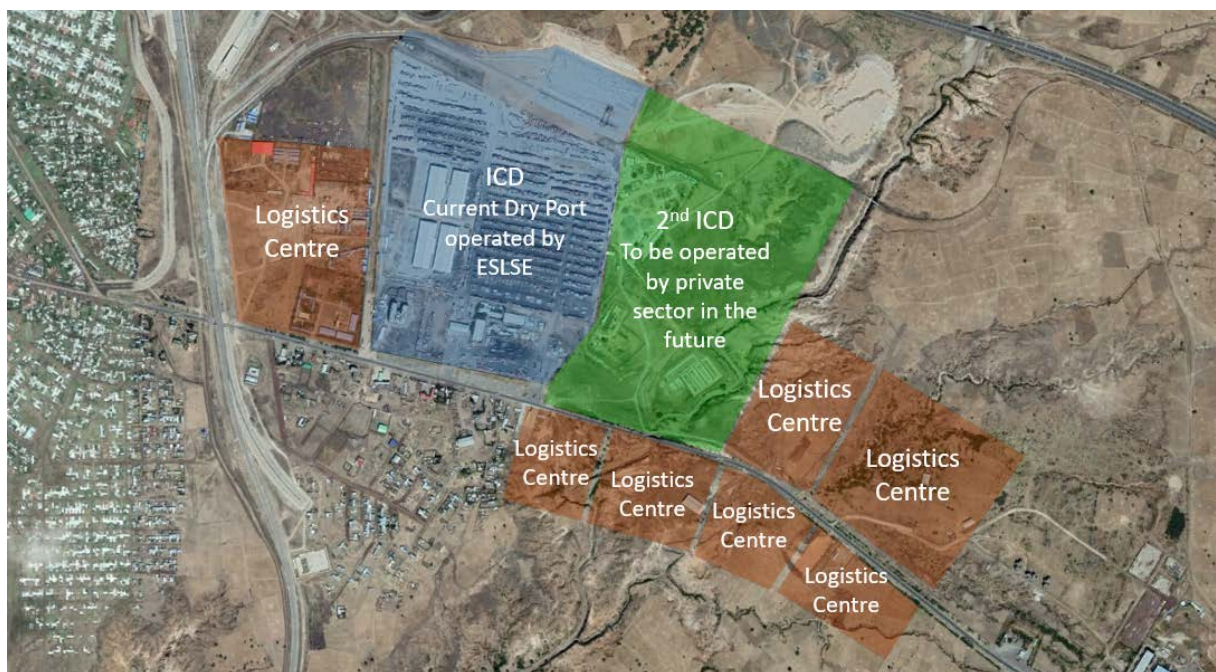
The future Logistics Hub will comprise the following:

- Current Dry Port Area as indicated in the figure above, referred to as ICD in the future;
- Expansion ICD Area, or second ICD;
- New Logistics Centres.

Methodology

The Logistics Hub concept as applied in this study is part of an overall development zone that comprises, besides the Dry Port, additional activities that are typically located close to a Dry Port in the Logistics Centre. Examples of these activities are warehousing for exports or imports, cold chain storage, (de)consolidation of imports and exports, packaging, labelling, inspection activities etc. From now on, we will refer to the current dry port as the ICD. The ICD and logistics centres, together the Modjo Logistics Hub, are presented in the following figure. The number, size and location of the logistics centres and second ICD in the figure are indicative and should be the outcome of a detailed Masterplan study, which is currently ongoing for Modjo Logistics Hub.

Figure 3-31: Indicative Modjo Logistics Hub concept

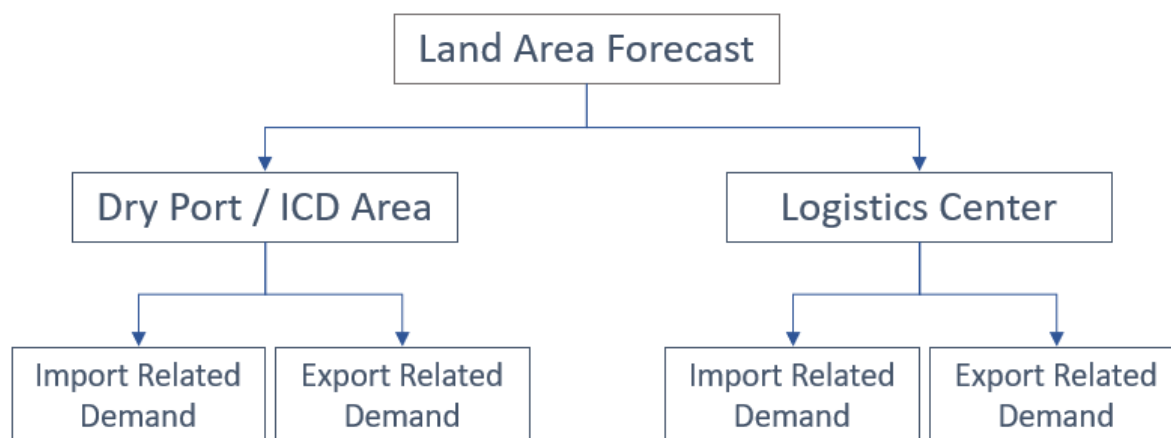


Source: MTBS; Size, location and number of logistics centres and 2nd ICD are indicative.

The services to be provided in the various areas as presented in the figure above form the basis for the area demand forecast of the Modjo Logistics Hub. The most important aspect in the area demand analysis is the traffic forecast that forms the basis of the developments in Modjo Logistics Hub.

The applied methodology to prepare the area demand forecasts for Modjo Logistics Hub is visualized in the figure below is based on the forecasts of cargo for Modjo in section 3.4.3.

Figure 3-32: Methodology Area Demand Forecast



Source: MTBS

3.5.2 ICD Area Demand Forecast

The ICD area demand forecast is based on the traffic forecast for Modjo Logistics Hub, presented in section 3.4.3. Based on industry best practice benchmark figures, the number of required hectares for the expected amount of TEUs is forecasted.

The traffic and area demand forecast for Modjo ICD Area is presented in the sections below, as described earlier in this chapter. The basis for the area demand forecast of the Modjo ICD is the container traffic forecast for Ethiopia. The area demand forecast for the ICD area is based on the base case traffic forecast for Modjo and presented in the following table.

Table 3-34: Modjo ICD Traffic Forecast Base Case

Modjo ICD	2018	2020	2025	2030	2035	2039
Full import TEUs	145,999	178,448	281,373	401,858	499,546	553,680
Empty import TEUs	146	178	281	402	500	554
Full export TEUs	-	-	31,308	58,507	75,225	87,620
Empty export TEUs	145,853	178,269	249,784	342,950	423,822	465,507
Total TEUS Modjo ICD	291,997	356,896	562,746	803,716	999,092	1,107,360

Source: MTBS

Based on the traffic forecast for the Modjo ICD, the required area for the Modjo ICD is determined. An industry benchmark used for determining the size of the container stacking area (Container Depot) is that for a yearly throughput of 15,000 TEU, approximately 1 hectare of Container Depot is required. For the customs inspection area and exchange bay, an average of 50% of the Container Depot area is applied. Based upon experience, the remaining area (bonded warehousing, offices, parking, internal roads, etc.) is assumed to be 30 hectares in this case. The resulting Modjo ICD area demand is then presented in the table below.

Table 3-35: Area Demand Forecast Modjo ICD

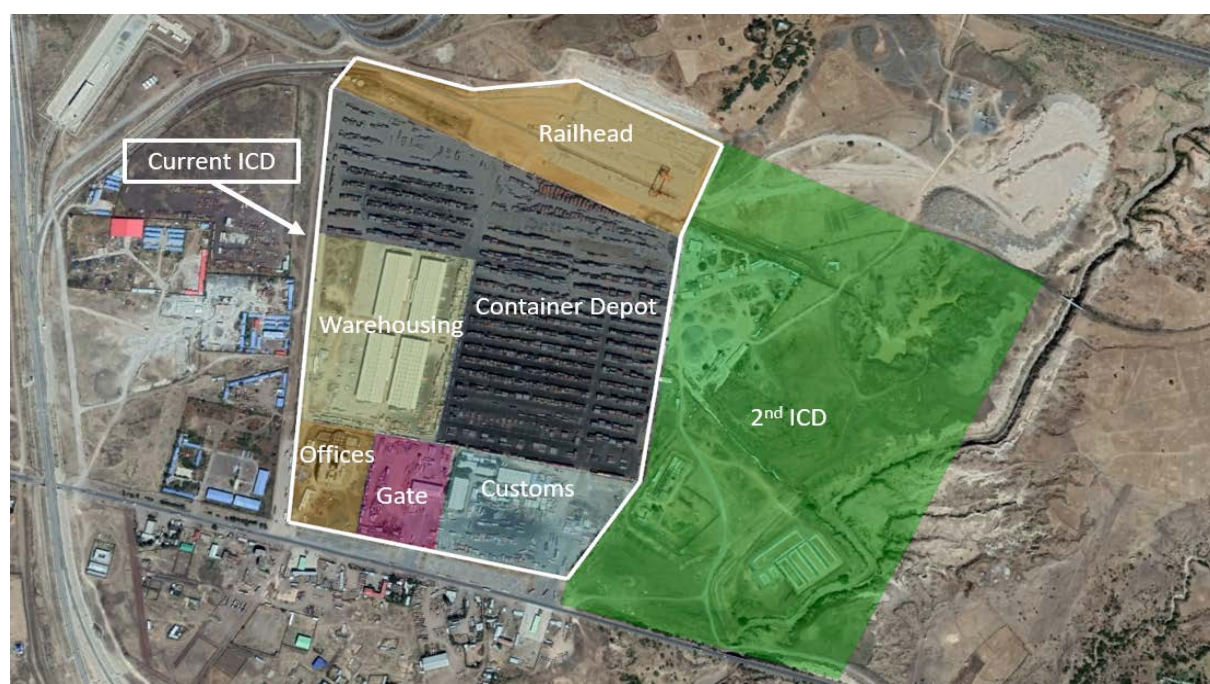
	2018	2020	2025	2030	2035	2039
Container volumes handled (TEU) Modjo Base Case	291,997	356,896	562,746	803,716	999,092	1,107,360
Container Stacking Area (Container Depot) in ha	20	22	38	54	67	74
Customs inspection area and exchange bay in ha	15	11	19	27	34	37
Others (offices, parking area, etc.) in ha	30	30	30	30	30	30
Total ICD Area Demand Containers in ha	60	63	87	111	131	141

Source: MTBS

Future ICD Area

The total area demand for the current Modjo ICD in 2018 is around 60 ha. At the moment, a new office is being built at the bottom-left corner in Figure 3-33. The customs area should be relocated to the current location of the offices and other activities. Moreover, the customs activities currently taking place in the four new warehouses should be shifted towards the customs area and freed-up for CFS and warehousing activities for the private sector. Consequently, this results in a larger area for the ICD. The warehouses at the current Modjo ICD are expected to be operated by smaller private Ethiopian logistics service providers in the near future.

Figure 3-33: Future Area Modjo ICD



Source: MTBS

Customs plays an important role in the future Modjo ICD. Therefore, emphasis should be placed on the future role of customs in the Modjo Logistics Hub. The customs area and container depot area are bonded, while the warehousing area at the ICD is not bonded. Therefore, a fence should be placed around the customs area and container depot area. Besides the area dedicated to customs in the future ICD, customs will have an office in the new office building that is being built. Furthermore, at the area of the offices, indicated in the next figure, there should be land available for the following additional services and activities:

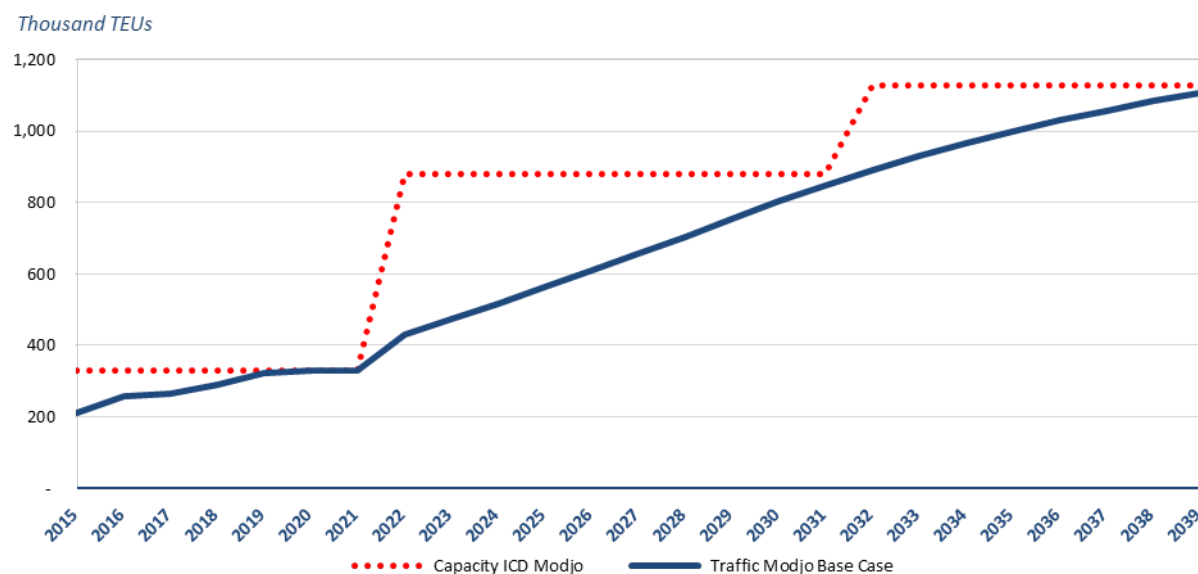
- Police;
- Fire department;
- Banks;
- Parking lot for trucks;
- Restaurant and hotel for truck drivers; and
- Other additional services related to the logistics hub.

In the year 2039, a total area of around 141 ha is envisaged. Looking at the size of the current ICD area at the moment, the ICD area should be expanded. There are two options to expand the ICD area. The first one is the expansion of the current ICD area to land adjacent to the dry port, under the responsibility of the same operator as the initial dry port, ESLSE. The second option is to attract a new player to operate the second ICD since it is expected that there is sufficient demand in the future. The attraction of a new operator automatically results in competition between the two operators, demanding more efficient operations. Consequently, the Modjo Logistics Hub as a whole is expected to benefit from the competition in the ICD area activities.

In 2018, the area of Modjo will be expanded to 80 hectares. In 2020, the area will be expanded to 130 hectares for both the ICD operations and the logistics centre. Therefore, the ICD operations cannot use all 130 hectares and sufficient time is required to develop the new land in an ICD area. Therefore, the first capacity expansion for the ICD is foreseen in 2022. Furthermore, in this report, the assumption is being made that extra land to accommodate for the growth till 2031 is purchased in 2020.

The ICD area is foreseen to be built in two phases. It is assumed that when the capacity of the ICD area reaches 85%, the ICD area will be expanded. The capacity of the ICD area is foreseen to be around 380,000 TEU till 2021, 880,000 TEU in 2022 and 1,130,000 TEU in 2032. The following figure presents the TEU forecast and the capacity of the ICD.

Figure 3-34: Forecast TEU Modjo and Capacity ICD



Source: MTBS

Table 3-36: Modjo ICD Area Demand and Land Available

Modjo ICD Area Demand	2018	2020	2025	2030	2035	2039
Area Demand ICD in ha	60	63	87	111	131	141
Area available ICD in ha	63	63	118	118	143	143

Source: MTBS

3.5.3 Logistic Centre Area Demand Forecast

The same approach as applied for the ICD area demand analysis is also valid for the logistic centre area demand analysis for Modjo Logistics Hub; the traffic forecast for the import and export related cargo of Modjo Logistics Hub presented in section 3.4.3 is the basis for the area demand forecast.

As upfront investments for the development of a logistic centre are relatively small, logistic centre developers can easily spread out investments over time by developing the area in line with demand. A detailed area demand forecast for logistic services is, therefore, less determining compared to the ICD area demand forecast since these services are typically developed 'on a market need basis'. The main interest of logistic centre area developers, therefore, is that a sufficient and dedicated land area is guaranteed within the overall zone.

The land area development of the logistics centre will take place in the vicinity of the ICD area. This section describes the area demand forecast for the logistics centre, which is based on the following steps:

- Step 1: Warehousing demand of goods handled by Modjo Logistics Hub, based on:
 - Full import containers requiring warehousing services.
 - Average load of a TEU.
 - Non-containerised import cargo.
 - Export cargo.
 - Cold chain warehousing.
- Step 2: Determination of warehouse capacity required at the logistics centre, based on:
 - Average throughput of cargo per m2/year.
 - Factor for non-storage area requirements in a warehouse.
- Step 3: Determination of total area demand for logistics centres at the logistics centre, based on:
 - Gross warehouse capacity required.
 - Reservations for roads, utilities and parking space.

The logistics centre offers complementary services to the ICD functions. At Modjo ICD, which is partly a Customs Zone, the bonded storage of goods takes place as well as non-bonded warehousing. At the logistics centres, the non-bonded warehousing and other logistics value added services take place.

Step 1: Warehousing demand for Modjo Logistics Hub

The logistic centre area within Modjo Logistics Hub mainly comprises the storage and value-added services related to consumer goods. The quantitative demand for warehouse capacity is closely related to the import of full containers at Modjo ICD, the export of products and the non-containerised import products.

It is assumed that initially 10% of the import cargo and 100% of the export cargo and cold chain cargo handled by Modjo ICD requires warehousing. Currently, the total handled number of tons at Modjo Dry Port is 550,000³⁷ tons in 131,777 TEU in 2017. This means that the current import containers at Modjo (1 TEU) include on average 4.17 tons of cargo. The assumption is that this amount increases up to 10 tons of cargo per TEU in 2039, which is more in line with the number of tons per container of international averages (best practice in developed countries). The following table presents the warehousing demand.

³⁷ World Bank Modjo Report

Table 3-37: Logistics Hub area forecast - warehousing demand

Warehousing demand (in tons)	2018	2020	2025	2030	2035	2039
Full import TEUs Modjo	145,999	178,448	281,373	401,858	499,546	553,680
Average tonnage per import TEU	4.43	4.96	6.29	7.61	8.94	10
Full import containers in tons	647,442	819,162	1,769,756	3,060,078	4,465,902	5,536,802
Non-containerised cargo import (fertiliser)*	-	-	707,156	826,439	958,070	1,078,316
Export in tons	-	-	313,077	585,065	752,248	876,196
Market share for warehousing/logistics import	10%	12%	16%	20%	20%	20%
Market share for warehousing/logistics export	100%	100%	100%	100%	100%	100%
Warehousing demand (ton)	67,744	95,569	1,300,444	2,023,520	2,603,498	3,061,872

Source: MTBS; * Base case assumed (scenario 1). This eventually depends on the development of the fertilizer production plant in Ethiopia. If the production plant is built, the fertilizer imports handled in Modjo Logistics are assumed to be zero.

Assumptions to market share

At present, third -party warehousing is not common in Ethiopia. Mainly all containers go directly to the final customer. Therefore, the initial demand (in 2018) for cargo requiring warehousing/logistics services is assessed to be 10% of the total cargo for the area. However, as the Modjo Logistics Hub will offer a variety of services and prove its benefits to the market, a growth to 20% of the cargo requiring warehousing and logistics services is foreseen in 2030.

For the indicated export products, a market share of 100% is assumed. This is because the export of products requires warehousing and consolidation, which is not provided by third -party logistics service providers or producers yet on a large scale. Besides, it is convenient to store and consolidate the products close to the ICD.

Step 2: Determination of warehouse capacity required at the logistic centre

Based on the yearly warehousing demand in tons, the required warehouse capacity for the Modjo Logistics Hub is determined. From our previous work, we can say that a benchmark is applied of a throughput of 10 tons/year per square meter of warehouse space. Moreover, in general, 70% of the total warehouse surface capacity is available for actual storage place; the remaining 30% is used for ventilation, passage-ways, handling space and re-packaging areas.

Moreover, for each calculation a scenario including and excluding the handling of fertilizers is included. This can be explained by the uncertainty of the actual development of the fertilizer production plant in Dire Dawa.

Table 3-38: Modjo Logistics Hub area forecast - warehousing capacity

Gross warehouse capacity required (in m2)	2018	2020	2025	2030	2035	2039
Warehousing demand (in tons) – Including fertilizer imports	64,744	95,569	1,300,444	2,023,520	2,603,498	3,061,872
<i>Warehousing demand (in tons) – Excluding fertilizer imports</i>	<i>64,744</i>	<i>95,569</i>	<i>593,288</i>	<i>1,197,081</i>	<i>1,645,428</i>	<i>1,983,556</i>
Net warehouse capacity required (in m2) – Including fertilizer imports	6,474	9,557	130,044	202,352	260,350	306,187
<i>Net warehouse capacity required (in m2) – Excluding fertilizer imports</i>	<i>6,474</i>	<i>9,557</i>	<i>59,329</i>	<i>119,708</i>	<i>164,543</i>	<i>198,356</i>
Additional capacity required (in m2) – Including fertilizer imports	2,775	4,096	55,773	86,722	111,579	131,223
<i>Additional capacity required (in m2) – Excluding fertilizer imports</i>	<i>2,775</i>	<i>4,096</i>	<i>25,427</i>	<i>51,303</i>	<i>70,518</i>	<i>85,010</i>
Gross warehouse capacity (m2) – Incl. Fertilizer imports	9,249	13,653	185,778	289,074	371,928	437,410
<i>Gross warehouse capacity (m2) – Excl. Fertilizer Imports</i>	<i>9,249</i>	<i>13,653</i>	<i>84,755</i>	<i>171,012</i>	<i>235,061</i>	<i>283,365</i>

Source: MTBS

As can be seen in the table above, the estimated required gross warehouse capacity in terms of square metres is expected to increase from about 9,249 m² in 2018 to about 437,410 m² reached by 2039 while including the handling of fertilizer imports. In the situation fertilizers are not imported and handled in Modjo Logistics hub, the required amount of gross square metres of warehouse capacity reduces to 283,365 m². Hence, it can be concluded that the fertilizer import concerns a considerable import commodity potential for Modjo Logistics Hub as long as the new fertilizer production plant is not built in Dire Dawa.

The gross warehouse capacity comprises two types of warehouses: regular warehouses and cold chain warehouses. The cold chain warehouses are required for the storage of meat and fruits. The gross warehouse capacity of the cold chain is envisaged to be 6,176 m² in 2030. The size of the cold chain warehouse, presented in Table 3-39, is already included in the warehouse capacity in the table above.

Table 3-39: Cold Chain Warehouse Capacity Required

Cold Chain Warehouse Capacity required	2018	2020	2022	2025	2030	2035	2039
Warehousing demand (in tons)	-	-	20,728	30,399	54,036	73,375	87,761
Gross warehouse capacity (in m2)	-	-	2,961	4,343	7,719	10,482	12,537

Source: MTBS

Step 3: Determination of area demand for Logistics Centres at the Modjo Logistics Hub

Based on the gross warehouse capacity required, the area demand for logistics centres at the Modjo Logistics Hub is determined, using a reservation of 100% of the gross warehouse capacity for the additional area required for roads, utilities and parking. An overview is provided in the table below. This is visualized for a situation including and excluding fertilizer imports.

Table 3-40: Modjo Logistics Hub area forecast - Logistic Centre

Area demand logistics centres (in hectares)	2018	2020	2025	2030	2035	2039
Warehousing demand (in tons) – Including Fertilizer Imports	67,744	95,569	1,300,444	2,023,520	2,603,498	3,061,872
<i>Warehousing demand (in tons) – Excluding Fertilizer Imports</i>	<i>64,744</i>	<i>95,569</i>	<i>593,288</i>	<i>1,197,081</i>	<i>1,645,428</i>	<i>1,983,556</i>
Gross warehouse capacity – Including Fertilizer Imports	0.92	1.37	18.58	28.91	37.19	43.74
<i>Gross warehouse capacity – Excluding Fertilizer Imports</i>	<i>0.92</i>	<i>1.37</i>	<i>8.48</i>	<i>17.10</i>	<i>23.51</i>	<i>28.34</i>
Additional area required – Including Fertilizer Imports	0.92	1.37	18.58	28.91	37.19	43.74
<i>Additional area required – Excluding Fertilizer Imports</i>	<i>0.92</i>	<i>1.37</i>	<i>8.48</i>	<i>17.10</i>	<i>23.51</i>	<i>28.34</i>
Area demand logistics centres – Including Fertilizer Imports	1.85	2.74	37.16	57.82	74.39	87.48
<i>Area demand logistics centres – Excluding Fertilizer Imports</i>	<i>1.85</i>	<i>2.74</i>	<i>16.95</i>	<i>34.20</i>	<i>47.01</i>	<i>56.67</i>

Source: MTBS

The initial area demand for Modjo logistics centre is determined to be about 2 hectares in 2018 for both scenarios, including and excluding fertilizer imports. This can be explained by the fact that a fertilizer import handling facility is still to be developed in Modjo, which is only expected to happen in case the fertilizer production facility planned in the region of Dire Dawa is not implemented. Moreover, the import handling and bagging facility in Modjo is not expected to be completed before 2022. Therefore, the distinction in volumes and required land demand only arises after 2022. The expected amount of land in the scenario including the handling of fertilizer imports increases to about 87 hectares in 2039. In the scenario excluding the handling of fertilizer imports the required estimated land demand for the Logistics Centre activities increases to about 57 hectares in 2039.

Future Logistics Centre Area

The future logistics centre area will consist of several plots of land that are either dedicated to vegetables, or coffee or other types of goods. The plots of land are presented in the following figure. The size, location and type of goods is indicative.

Table 3-41: Indicative Logistics Centre Area



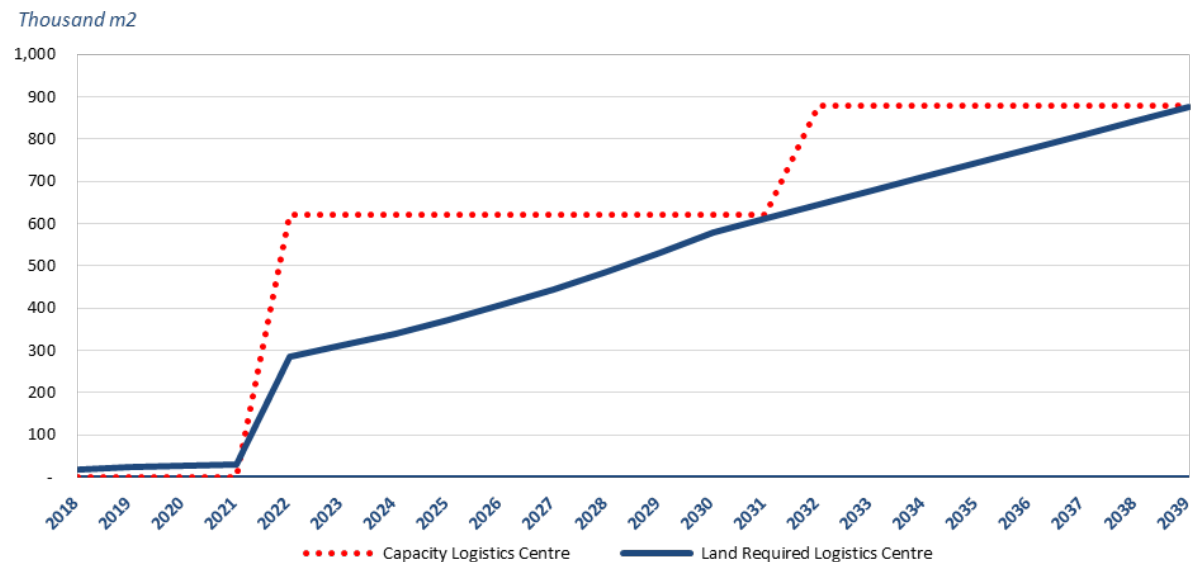
Source: MTBS; Size and location of the orange blocks are indicative.

In 2018, the area of Modjo is understood to be expanded to 80 hectares and in 2020 the area will be expanded to 130 hectares. In the coming years, till 2025, the available land is expected to be sufficient for the development of the logistics centre. However, the assumption is made that additional land to accommodate for the growth till 2030 and 2039 is purchased in batches.

The following figure presents the expected capacity phasing of the Logistics Centre and the area demand. The Logistics Centre is expected to open in 2022. From 2018 till 2021, the area demand for typical activities carried out at the logistics centre, mainly concerning import CFS, exceeds the capacity of the logistics centre. However, the current Modjo ICD has four warehouses which can be used for the import CFS area demand. The Logistics Centre is expected to be built in two phases: one phase of 620,000 square meters and one of 260,000 square meters.

For the purchase of the land the base case is assumed, which is the scenario in which fertilizer imports are expected to be handled and bagged in Modjo Logistics Hub. Hence, this scenario requires additional land.

Figure 3-35: Capacity Logistics Centre and Area Demand



Source: MTBS

Table 3-42: Modjo Logistics Centre (LC) Area Demand and Land Available

Modjo LC Area Demand	2018	2020	2025	2030	2035	2039
Area Demand LC in ha	2	3	37	58	74	87
Area available LC in ha	0	0	62	62	88	88

Source: MTBS

Number of Operators in the Logistics Centre

As explained in Step 3 of the logistics centre forecast, the total land demand for the logistics centre is twice the gross warehouse capacity. To calculate the number of operators, the gross warehouse capacity required for the CFS import and each export product is divided by the size of a typical warehouse. The size of a typical warehouse is about 5,000 m² to 10,000 m². The assumption is that every type of export product and CFS import requires a dedicated facility. Another assumption is that larger warehouses are used for the CFS import, as this activity requires the largest amount of land. The number of warehouses is presented in Table 3-43.

Table 3-43: Number of Warehouses Required based on #m² per facility

	2022	2025	2030
Gross Warehousing Space Required CFS Import m ²	22,587	40,030	87,431
Warehouses required CFS import (10,000m²)	3	5	9
Gross Warehousing Space Required Coffee Export m ²	8,399	13,595	27,048
Warehouses required Coffee export (5,000m²)	2	3	6
Gross Warehousing Space Required Oil Seeds Export m ²	6,790	10,546	18,663
Warehouses required Oil seeds export (5,000m²)	2	3	4
Gross Warehousing Space Required Vegetable Export m ²	10,162	16,241	30,150
Warehouses required Vegetable export (5,000m²)	3	4	7
Gross Warehousing Space Required Meat Export m ²	1,572	2,320	4,142
Warehouses required Meat export (5,000m²)	1	1	1
Gross Warehousing Space Required Fruits Export m ²	1,389	2,023	3,578
Warehouses required Fruits export (5,000m²)	1	1	1
Total Warehouses	12	17	28

Source: MTBS

The gross warehousing space that is required depends on the development of demand for these particular products. This means that the number of operators as mentioned in this section, depends on the Modjo Logistics Hub forecast of this assignment.

CFS Warehousing

For CFS import, three warehouses are required in 2022. This means that three different operators can invest in these warehouses. In 2030, a total of nine warehouses are foreseen to accommodate all demand. Instead of nine different operators, some operators might want to invest in the expansion of their existing facility, which reduces the number of operators active.

Other Value-Added Export Activities:

It should be mentioned that the amount of facilities indicated in the coffee, oil seeds, vegetables, meat and fruit export is based on a certain amount of m² required. However, for these specific product exports it can be expected that only one facility is constructed per commodity which is used by multiple parties within this chain. Thereby, the entire facility will rather expand to one larger facility, than through the creation of more facilities. Hence, the expansion of the facilities should be taken into account in its design. Especially associations or cooperatives are foreseen to invest in the warehouse and rent parts to their members.

Meat and fruit export require both one cold-storage warehouse in 2022 till 2030. Similar to the other export products, one warehouse can be shared between different operators.

3.5.4 Total Modjo Logistics Hub Area Demand Forecast

Based on the above sections, the total land area forecast of the Modjo Logistics Hub is presented in the following table.

Table 3-44: Modjo Logistics Hub area forecast

Area demand Modjo Logistics Hub	2018	2020	2025	2030	2035	2039
Area demand ICD in ha	60	63	87	111	131	141
Area demand logistics centres in ha – Including Fertilizer Imports	2	3	37	58	74	87
<i>Area demand logistics centres in ha – Excluding Fertilizer Imports</i>	<i>2</i>	<i>3</i>	<i>17</i>	<i>34</i>	<i>47</i>	<i>57</i>
Area demand Modjo Logistics Hub – Including Fertilizer Imports	62	66	124	169	205	228
<i>Area demand Modjo Logistics Hub – Including Fertilizer Imports</i>	<i>62</i>	<i>66</i>	<i>104</i>	<i>145</i>	<i>178</i>	<i>198</i>

Source: MTBS

The total area of the Modjo Logistics Hub is around 62 ha in the year 2018, increasing to around 228 ha (198 in the case of no fertilizer imports being handled) in the year 2039. Extra plots of land have already been purchased to accommodate the expansion of Modjo Logistics Hub. The total area increases from 63 hectares to 80 hectares in 2018, and 130 hectares in 2020. In the financial model presented later on in this report, and in this forecast, the assumption is that extra land will be purchased in 2020 to accommodate for the demand till 2030 and extra land will be purchased in 2029 to accommodate for the demand till 2039. The following table presents the area demand and the area available, keeping in mind the time assumption when land is purchased.

Table 3-45: Modjo Logistics Hub Extra Land Required

Land required Modjo Logistics Hub	2018	2020	2025	2030	2035	2039
Area demand Modjo Logistics Hub in ha	62	66	124	169	205	228
Area available Modjo Logistics Hub in ha	80	130	180	180	231	231

Source: MTBS

Offside Facilities

Besides the main logistics facilities as described in this chapter being the ICD area as well as the Logistics Centre Facilities, multiple offsite facilities are required within the future logistics hub. These offsite facilities are necessary to ease the operations, improve the level of service and security offered to the logistics hub users and include, among others:

- Truck parking areas;
- Banks;
- Restaurants and refreshment areas (for truckers);
- Security services (local police office);
- Fire brigade; and,
- Etc.

The availability of the services as presented in the list above are deemed to be important for the success of the logistics hub and should be arranged and/or managed by the Logistics Hub Authority.

3.5.5 Summary

In summary, the area demand for the overall Dry Port and logistics zone is presented in the table below. Modjo Dry Port should be transformed to a Logistics Hub, by attracting new players on new plots of land. In the dry port area, small private logistics service providers can be attracted for operations in the warehouses. A second operator can be attracted for additional dry port areas, adjacent to the initial dry port area. At the logistics centre on plots of land in the vicinity of the dry port, private service providers or private exporters can be attracted to invest in value -added activities such as warehousing, CFS, packaging amongst others. The size of the ICD area that is envisaged in 2039 is 141 ha and the size of the logistics centre is 87 ha. In total, this is 228 ha in 2039.

3.6 Value Chain Analysis

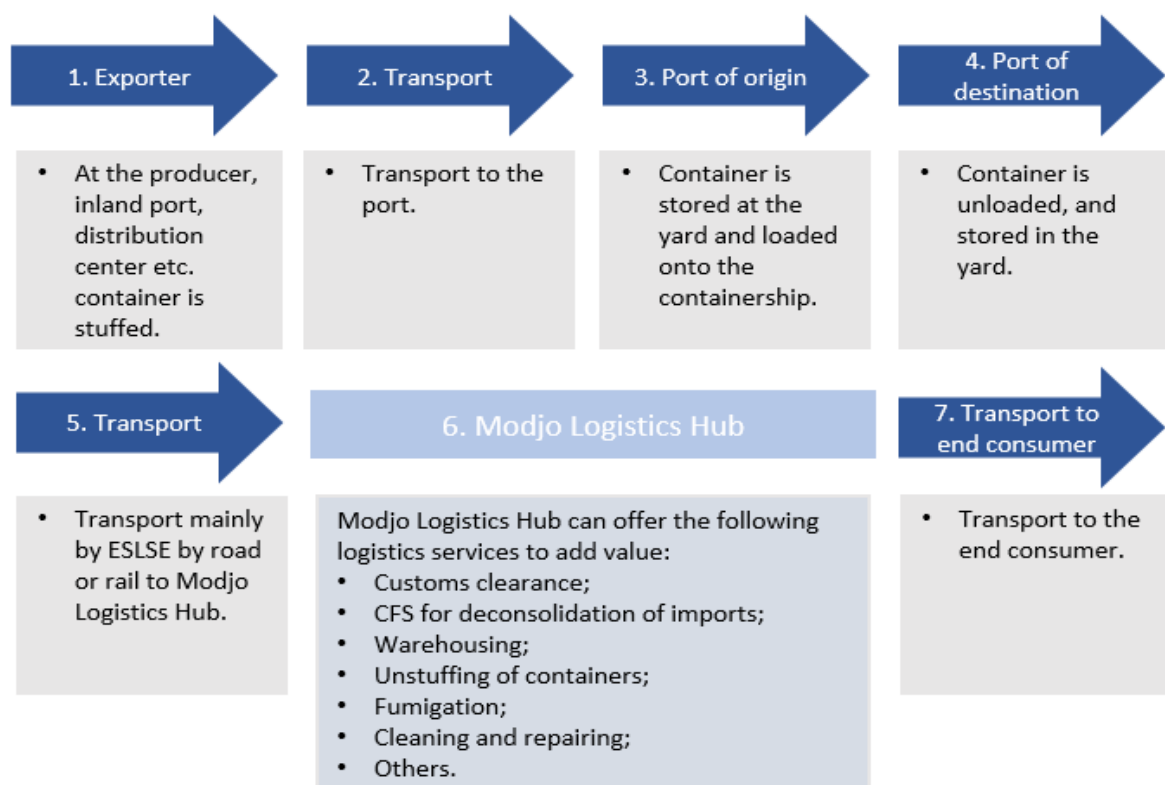
Modjo Logistics Hub is expected to facilitate for new export industries in the near future. The value chain of both import and export products is described in this paragraph. The handling of export products at Modjo is expected to attract new players in Modjo Logistics Hub, which can provide value-added activities such as warehousing, CFS, (de)consolidation, packaging and labelling, bagging and cold storage activities. Providing new activities is expected to generate additional jobs and foreign investments. This paragraph provides an overview of the value chain analysis of the main/focus cargo types including:

- Containers import and export;
- Vehicles import;
- Fertilisers import;
- Wheat import;
- Coffee export;
- Pulses export;
- Oilseeds export;
- Fruits export; and
- Meat export.

3.6.1 Value Chain Containers

Containers are the main type of cargo that is handled by Modjo Logistics Hub. Currently, containers are transported by ESLSE to Modjo Logistics Hub. From there, the containers are collected by the private logistics companies to bring the containers to the end consumer. No value is added at Modjo Logistics Hub, while this is possible through a Container Freight Station (“CFS”), warehousing or cleaning and repairing of containers. The future logistics value chain for import containers including Modjo Logistics Hub is presented in the following figure.

Figure 3-36: Logistics Value Chain Import Containers including Modjo Logistics Hub

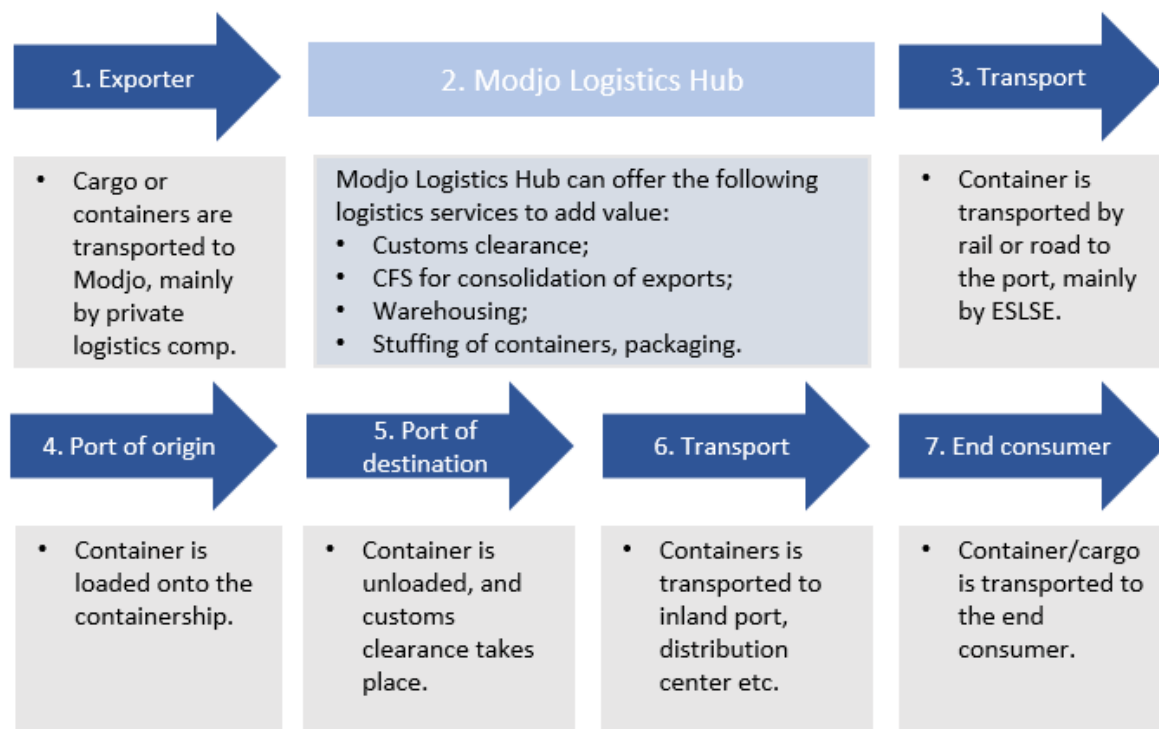


Source: MTBS

Currently, export cargo is stuffed into containers at Djibouti. This is because Ethiopia lacks good facility centres that can complete the shipping process³⁸. Another reason that is mentioned to stuff containers at Djibouti, is the road axle load limitation. However, the new railway between Modjo Logistics Hub and Djibouti eliminates this problem. Modjo Logistics Hub can offer the facility centres in the future, to complete the shipping process by the consolidation of exports and stuffing of containers. Furthermore, Modjo Logistics Hub can provide warehousing for the cargo. Because container shipment in Ethiopia constitutes mostly of small consignments of one of two containers or two or more individual consignments that are put in one container, deconsolidation of import cargo is a potential activity to be provided by Modjo. The following figure presents the future logistics value chain for export containers including Modjo Logistics Hub.

³⁸ ESLSE Facility Requirements Proposal for Common Use Facility Development Project at Mojo Dry Port

Figure 3-37: Logistics Value Chain Export Containers including Modjo Logistics Hub



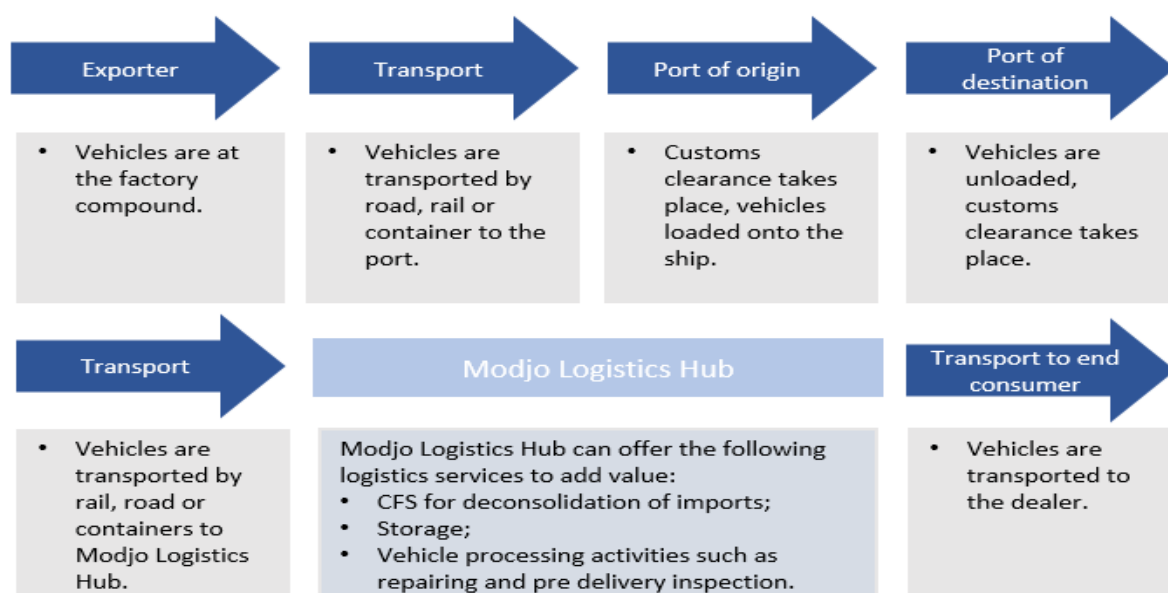
Source: MTBS

Third -party logistics service providers can be attracted as new players in the Modjo Logistics Hub. They can provide CFS, warehousing, stuffing and stripping of containers, packaging and labelling, amongst others. These companies include for example the members of the Ethiopian Logistics Community of Practice (ELCoP).

3.6.2 Value Chain Vehicles

Currently, Modjo Logistics Hub handles the import of vehicles. The vehicles are transported in a container to Modjo, are stored at Modjo and are collected by private logistics companies for transport to the dealer, vehicle processing centre, distribution centre or end consumer. New private players in Modjo Logistics Hub can provide value-added logistics services such as deconsolidation of imports, storage and vehicle processing activities. The latter activity includes activities such as repairing and pre-delivery inspection.

Figure 3-38: Logistics Value Chain Import Vehicles including Modjo Logistics Hub

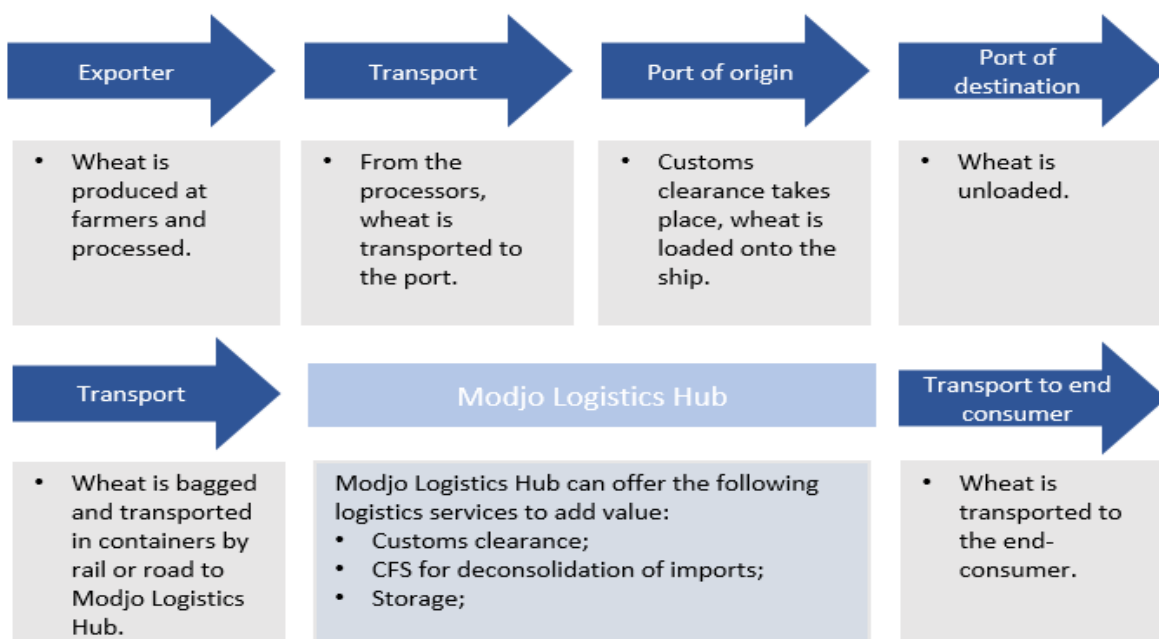


Source: MTBS

3.6.3 Value Chain Wheat

Wheat is mainly imported by the Government for the bread subsidy program, food assistance, and the Productive Safety Net Program. Wheat is mainly purchased in case of emergency situations or shortfalls. Modjo can add value to the logistics chain by providing storage for wheat, to regulate the purchase and transport movement of wheat.

Figure 3-39: Logistics Value Chain Import Wheat including Modjo Logistics Hub



Source: MTBS

3.6.4 Value Chain Fertiliser

At present, fertilisers are bagged at the bagging machine at Djibouti Port (see Figure 3-40). However, Djibouti Port and the bagging facility are very congested, making it more efficient to bag the fertilisers at Modjo Logistics Hub.

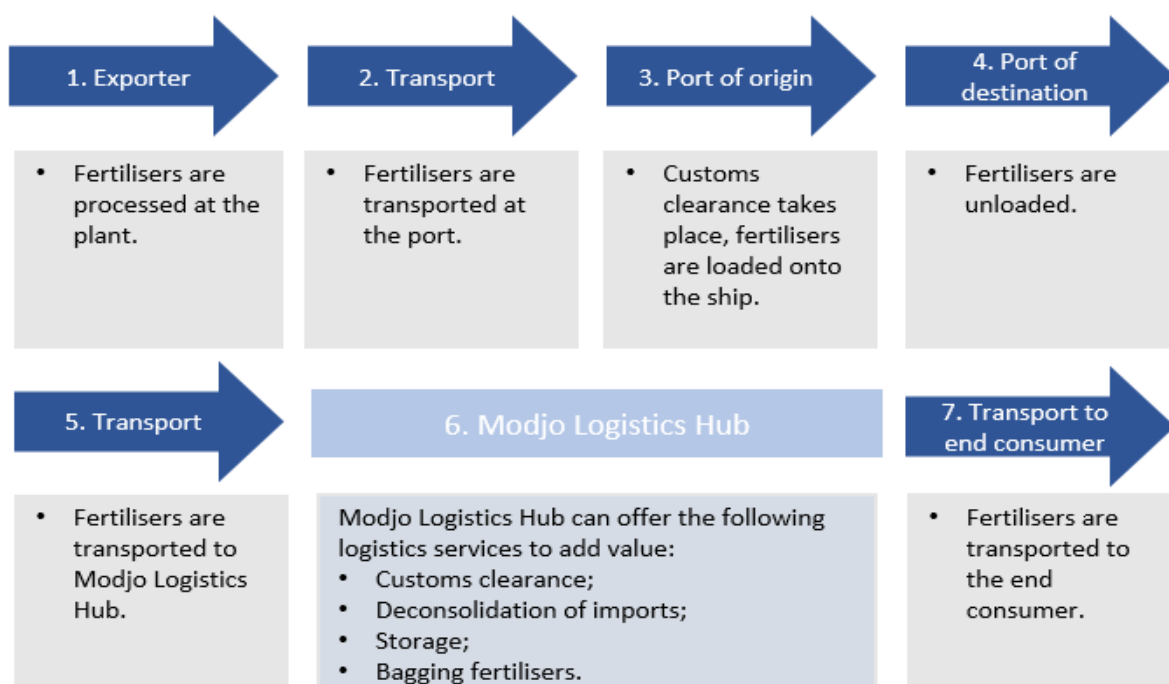
Figure 3-40: Bagging station at Djibouti



Source: STDTV Djibouti

Modjo Logistics Hub can attract new players that add value by providing bagging services, storage and deconsolidation of imports. The indicative logistics value chain for the import of fertilisers is presented in the following figure.

Figure 3-41: Logistics Value Chain Import Fertilisers including Modjo Logistics Hub



Source: MTBS

3.6.5 Value Chain Coffee

Modjo does not handle the export of coffee at the moment. To understand how Modjo can add value in the chain, the value chain of coffee in Ethiopia³⁹ is presented:

- Input supply: agro -dealers, local seedling suppliers, international agro -dealers, new variety seedlings or research institutes supply input;
- Producing: coffee is produced by cooperative smallholder producers, smallholder producers, medium scale producers, large -scale producers;
- Collecting: the coffee is collected from cooperative smallholder producers by the primary cooperatives, and from smallholder producers by local collectors.
- Processing: coffee of the primary cooperative is processed by cooperative unions, of local collectors and medium scale producers by processors.
- Wholesaling: wholesalers buy the coffee of cooperative unions (44% of total cooperative unions), all coffee from producers and 30% of the coffee produced by large -scale producers. The coffee is then traded at the Ethiopian Commodity Exchange (ECX).
- Exporting: coffee is exported by cooperative unions, private exporters for 43% of the total wholesaler's volume (57% is for domestic buyers) and large producers.
- Retailing: international buyers purchase 49% of the total volume and domestic buyers 51%.

Coffee is traded as raw beans and is collected at the farmers, processed and usually brought by suppliers to the auction centres of Addis Ababa and Dire Dawa. Before trading at the Ethiopian Commodity Exchange (ECX) in Addis Ababa, the producers or wholesalers should first transport the coffee from the production site to one of the ECX warehouses located in the production area. Then, a sample is taken for quality inspection and graded and deposited at the nearest warehouse location. The warehouse receipt is issued for the owner to be traded at the ECX centre in Addis Ababa. From there, coffee in 60-kg jute bags is carried in loose bags, loaded on trucks and directly transported to the Port of Djibouti for stuffing in containers. Not all coffee is traded through the ECX: coffees produced at the cooperative level are sold through a cooperative union, which functions as an intermediary between primary cooperatives and international buyers. The primary cooperatives comprise farmers with small parcels of land.

The cooperative unions include the following:

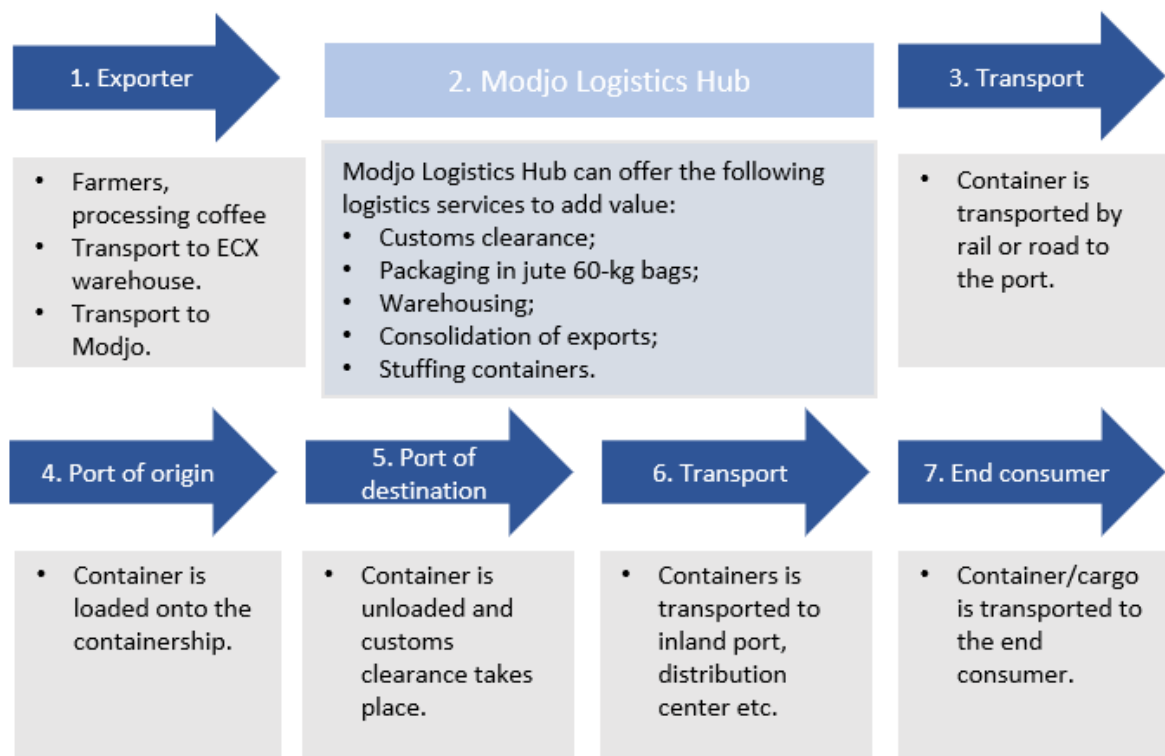
- Oromia Coffee Farmers Cooperative Union;
- Sidama Coffee Farmers Cooperative Union;
- Yergacheffe Coffee Farmers Cooperative Union;
- Kafa Forest Coffee Farmers Cooperative Union.

The Oromia Cooperative Union owns a processing facility and centre near Addis Ababa. Moreover, the private growers are neither required to sell through the ECX but can directly sell to the international market as they are owners of the product. Currently, 80% of the coffee export is stuffed at Djibouti and only 20% is stuffed into containers at inland warehouses or dry ports. Exporters arrange transport to Djibouti on in-house or hired trucks and freight forwarders complete paper works in Ethiopia and arrange stuffing and shipping in Djibouti.

³⁹ Value Chain Analysis of Ethiopian Coffee, December 2017

Modjo Logistics Hub can attract new players that can offer logistics services to add value to the export of coffee through packaging in bags, labelling, warehousing, consolidation of exports and stuffing containers. The logistics value chain of coffee export including Modjo Logistics Hub is presented in Figure 3-42.

Figure 3-42: Logistics Value Chain Export Coffee including Modjo Logistics Hub



Source: MTBS

By organising the logistics of coffee in this way, costs will be reduced because less empty containers have to be transported back to Djibouti; less damage to the coffee will take place than when transported in loose bags to Djibouti; and oversight of preparing for shipping the container is easier.

There are about 50 large coffee growers, producers and exporters in Ethiopia. There are all located in the Oromia and SNNP region⁴⁰, making Modjo Logistics Hub an ideal facility for packaging, labelling, warehousing and transport to the seaports. Besides, these companies can invest in warehouses and packaging and labelling services amongst others. The following table provides an overview of coffee exporting companies in Ethiopia that are a potential investor or customer for Modjo Logistics Centre and their location, activities and export in ton.

⁴⁰ Ethiopian Coffee Buying Manual USAID

Table 3-46: Coffee Processing and Exporting Companies

Company	Location	Activities	Export in ton	Potential Modjo
Members of the Ethiopian Coffee Exporters Associations (ECEA)*	Oromia and SNNP region (SNNPR)	Traders, producers	Over 200,000	Yes
Ethiopian Trading Business Corporation	Ethiopia	Cooperation	4,946	Yes
Sidama Coffee Farmers Cooperative Union	Sidama Zone, SNNPR	Cooperation	4,944	Yes
Oromia Coffee Farmers Cooperative Union	Oromia Region	Cooperation	3,043	Yes
Yergacheffe Coffee Farmers Cooperative Union	Gedeo Zone, SNNPR	Cooperation	1,610	Yes
Kafa Forest Coffee Farmers Cooperative Union	Kaffa Zone, SNNPR	Cooperation	257	Yes

*Names of the coffee exporting companies are known to the Consultant.

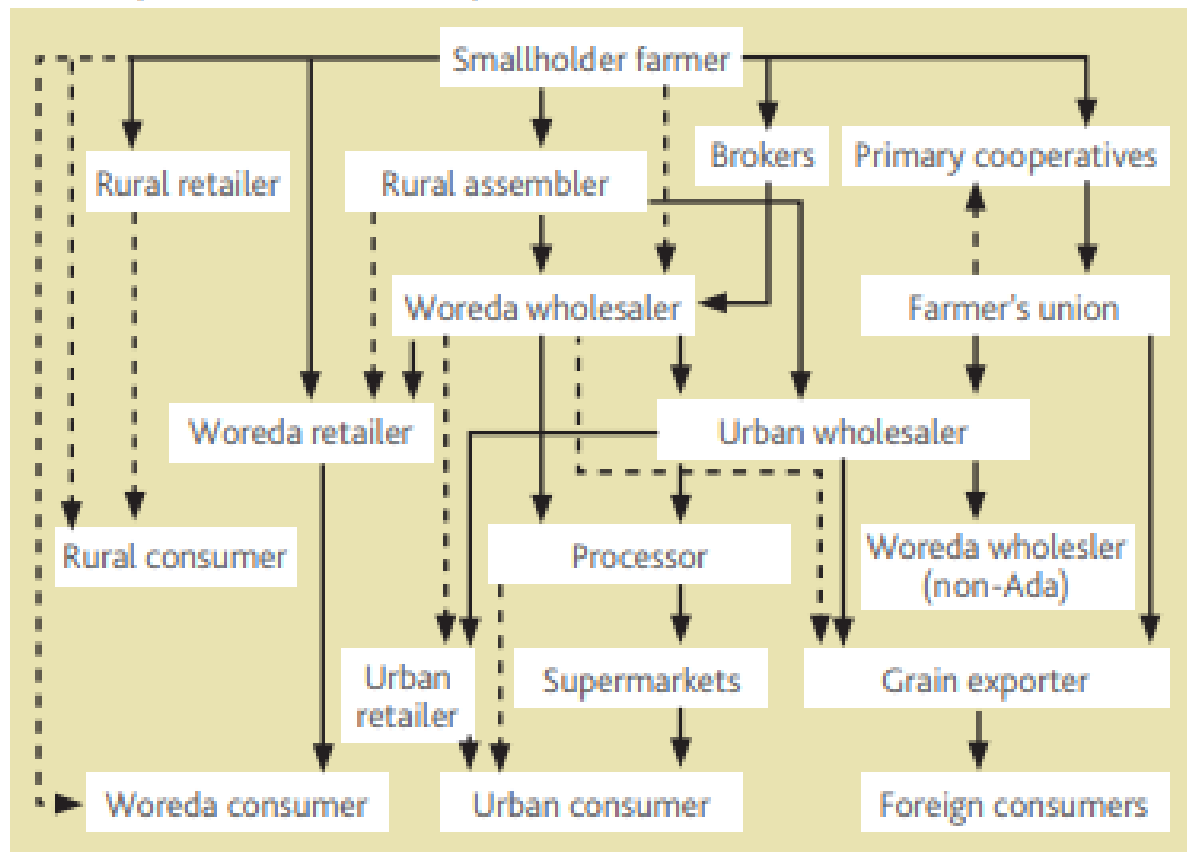
3.6.6 Value Chain Pulses (Vegetables)

Pulses are one of the largest export cargoes of Ethiopia. The value chain for pulses is a complex one, involving handling from multiple intermediaries. Pulses can be bought in three 'markets':

- Primary markets: buy directly from producers and include rural retailers, rural assembles, brokers and primary cooperatives;
- Secondary markets: buy products primarily from originators and include woreda retailers, woreda wholesalers and farmers unions;
- Tertiary markets: including urban wholesalers, urban retailers, processors, supermarkets, grain exporters and are located in larger cities such as Addis Ababa.

An example of the chickpeas chain is as follows:

Figure 3-43: Chickpea value chain in Ethiopia



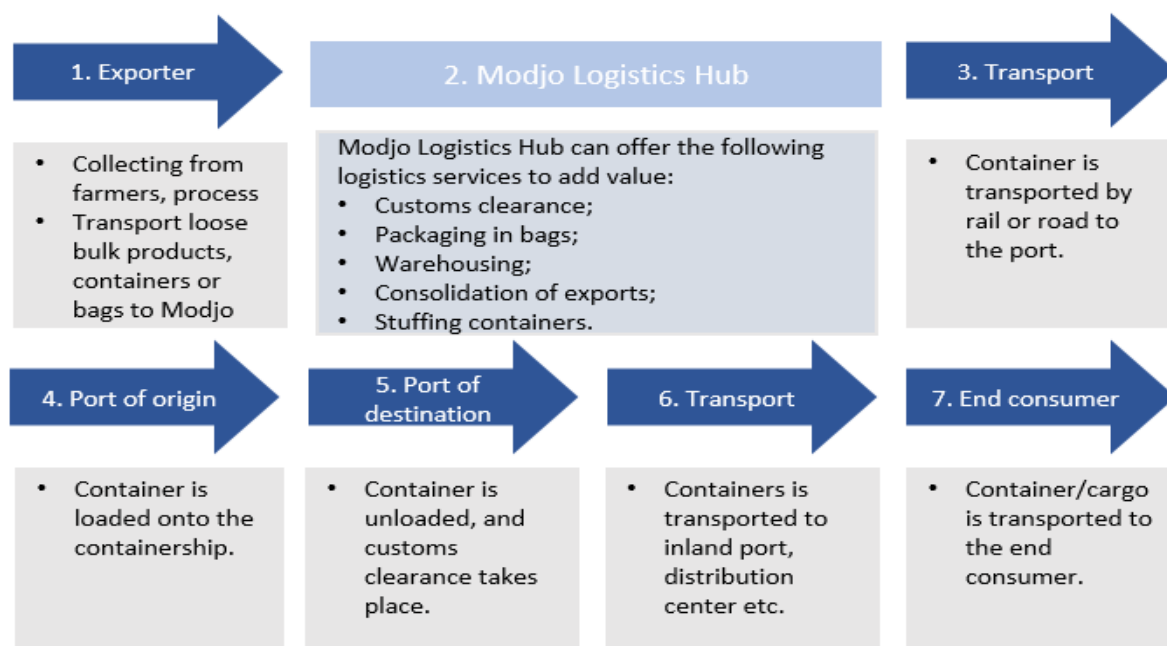
Source: Investments Opportunities in the Ethiopian Oilseeds and Pulses Sub-Sector, 2015

Modjo Logistics Hub can offer value-added logistics services for pulses. Currently, a large part of cargo is transported to the Port of Djibouti in bags on breakbulk basis, and stuffing into containers is done in Djibouti. A little part of the cargo is stuffed into containers at inland ports or warehouses in Ethiopia. Usually, exporters arrange transporting from inland haulage to the Port of Djibouti and forwarders or agents do customs paperwork in Ethiopia and arrange port operations in Djibouti, by using third party agents⁴¹. Similar to the export of coffee, the logistics chain of oilseeds and pulses lacks a logistics centre, in which products can be stored and stuffed into containers.

Modjo Logistics Hub can be included as a player in the logistics value chain of pulses. Figure 3-44 presents this situation. Modjo can add value through packaging and labelling of the pulses, warehousing, consolidation of exports and stuffing the containers. There is a demand for consolidation of exports because a large part of the export is small lots shipped out in numerous individual consignments. There is also a demand for packaging, since almost all cargo is shipped in bags in containers, and only a little part is shipped in containers with loose bulk products.

⁴¹ Facility Requirements Proposal for Common Use Facility Development Project at Mojo Dry Port

Figure 3-44: Logistics Value Chain Export Pulses including Modjo Logistics Hub



Source: MTBS

The Ethiopian Pulses, Oilseeds & Spices Processors – Exporters Association (EPOSPEA) has 130 members. These members, if located close to Modjo, are considered as potential customers for Modjo Logistics Hub. These members are potential customers and investors in warehousing, packaging and labelling and CFS amongst others.

3.6.7 Value Chain Oilseeds

Oilseeds are one of the largest export products in terms of volume for Ethiopia. Sesame seed is the largest export product of the oilseeds export in Ethiopia. The sesame value chain⁴² is as follows:

- Producing: smallholders and commercial farmers, who sell products to suppliers. Producers sell in small quantity to small village traders, traditional oil millers and local consumers, while commercial farms sell directly through the ECX or directly to the international market.
- Collecting and Wholesaling: Village traders or collectors collect the product from producers and resell to brokers/wholesalers, oil millers and local consumers, without adding value. Primary producer cooperatives collect products from their members and sell:
 - in primary transaction centres;
 - directly to exporters through the Ethiopia Commodity Exchange;
 - or they can directly sell to international markets.
- Exporting: Public and private firms buying seeds from suppliers through the ECX to sell to the world market.
- Processing: Firms which buy the seed directly from producers and from suppliers through ECX and export after processing.
- Export after processing: Processors or exporters buy seeds from collectors and wholesalers to sell in the export market after processing and packaging.

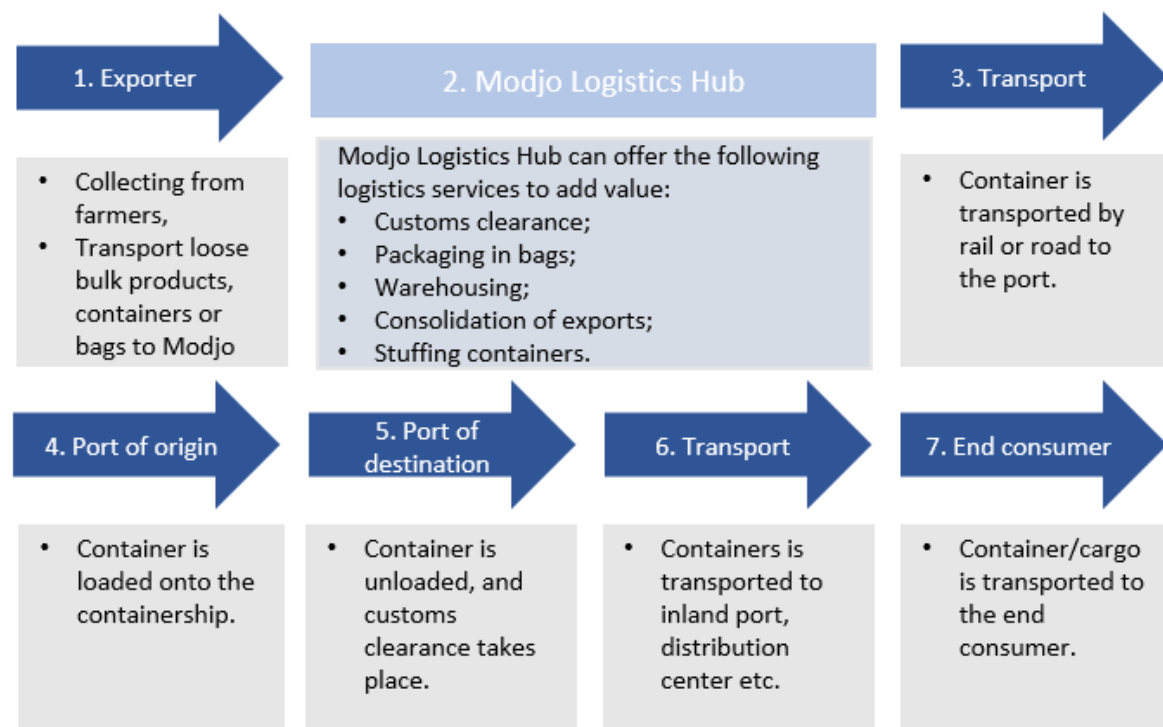
⁴² Investments Opportunities in the Ethiopian Oilseeds and Pulses Sub-Sector, 2015

The intermediaries in this process (collectors, traders, wholesalers, retailers etc.) are active between producers and consumers. Storage is very important to oilseeds, because it bridges the time between harvest and consumption. Oilseeds are transported mainly by trucks from farmer to collector/export trader, to the wholesaler, transport to the port and export by vessels.

Similar to the export of pulses, Modjo Logistics Hub can offer value-added logistics for oilseeds. Currently, a large part of the cargo is transported to the Port of Djibouti in bags on breakbulk basis, and stuffing into containers is done in Djibouti. A little part of the cargo is stuffed into containers at inland ports or warehouses in Ethiopia. Similar to the export of coffee and pulses, the logistics chain of oilseeds lacks a logistics centre, in which products can be stored to bridge the time between harvest and consumption and can be stuffed into containers.

Modjo Logistics Hub can be included as a player in the logistics value chain of oilseeds. The following figure presents this situation. Modjo can add value through packaging and labelling of the oilseeds, warehousing, consolidation of exports and stuffing the containers. Especially the demand for warehousing for oilseeds is high.

Figure 3-45: Logistics Value Chain Export Oilseeds including Modjo Logistics Hub



Source: MTBS

The Ethiopian Pulses, Oilseeds & Spices Processors – Exporters Association (EPOSPEA) has 130 members. These members, if located close to Modjo, are considered potential customers for Modjo Logistics Hub. Besides, these private companies are potential customers and investors in warehousing, packaging, consolidation and stuffing of containers.

3.6.8 Value Chain Meat

Meat is the ninth largest export product of Ethiopia in terms of volume, due to the country's large livestock population. There are two main production systems in the livestock sector in Ethiopia:

- Highland crop: livestock mixed system: 5% of the export;
- Lowland (agro-)pastoral system: 95% of the export is supplied by these areas in Afar, Somali and Borena. From Borena it is relatively easy to access the feedlots and abattoirs in Modjo and Adama.

The livestock value chain⁴³ is as follows:

- Producing: livestock is supplied by highland and pastoral producers;
- Collecting: livestock is bought from the livestock owners by small traders in bush markets or primary markets. Traders purchase animals without the use of scales. Then they sell them on secondary markets to larger traders. Livestock marketing cooperatives (primarily small traders) also purchase animals in bush markets and primary markets. They offer economies of scale and access to larger traders. Brokers act as intermediary price negotiators between buyers and sellers.
- Exporting: Feedlots, abattoirs and live animal exporters purchase livestock in secondary markets, through their own purchasing agents or from traders or cooperatives. Foreign exporters or importers are increasingly purchasing animals in Ethiopia, using Ethiopian traders as collecting agents in primary and secondary markets.

The majority of feedlots and abattoirs are located in Adama and Modjo. Of the 12 largest meat processing and exporting companies, nine are located within the region of Modjo. Modjo can add value to the meat export, by providing services such as cold chain storage, veterinary inspection, packaging and labelling. The value chain of meat including Modjo Logistics Hub is presented in Figure 3-46.

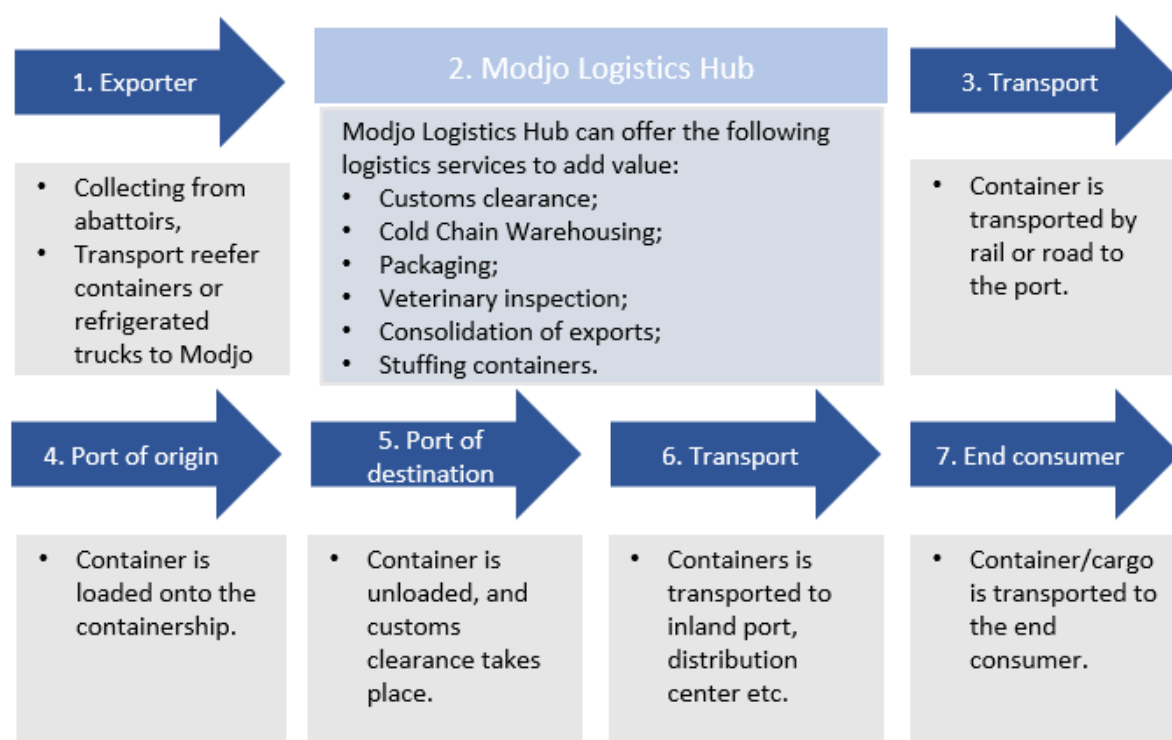
Living Animals

Whereas the Modjo Logistics Hub is expected to be able to play an important role in the export of meat, the role in the actual export of living animals is not expected to take place via Modjo. This can be best explained by the characteristics of the export chain of living animals, in which animal herds typically move around the Ethiopian highlands towards the ports of export, being for example the port of Berbera. Thereby, Modjo does not particularly play a role of importance.

Additionally, the Modjo Logistics Hub is especially foreseen to cater for cargo products able to be containerised or to be transported in bulk (e.g. fertilizers). Introducing the consolidation and export of living animals through the Modjo Logistics Hub is seen as a different type of focus commodity, in which much less synergies can be found with other value-added activities taking place in the Modjo Logistics Hub (packaging, labelling, warehousing, etc.). Moreover, it is expected that additional challenges and bottlenecks will be introduced by including living animals in the Modjo Logistics Hub, rather than increasing the benefits to Modjo.

⁴³ USAID End Market Analysis of Ethiopian Livestock and Meat, May 2010

Figure 3-46: Logistics Value Chain Export Meat including Modjo Logistics Hub



Source: MTBS

There are about 12 large meat processing export companies in Ethiopia, producing more than 2,000 sheep or 150 cattle per day⁴⁴. Of these 12 companies, nine are located within the Modjo region. These companies are potential customers and investors in Modjo Logistics Hub. These new players in the Logistics Hub can invest in packaging, veterinary inspection, cold chain storage and CFS. Besides, attracting new players in the cold chain logistics sector makes it possible for Modjo Dry Port to provide reefer containers.

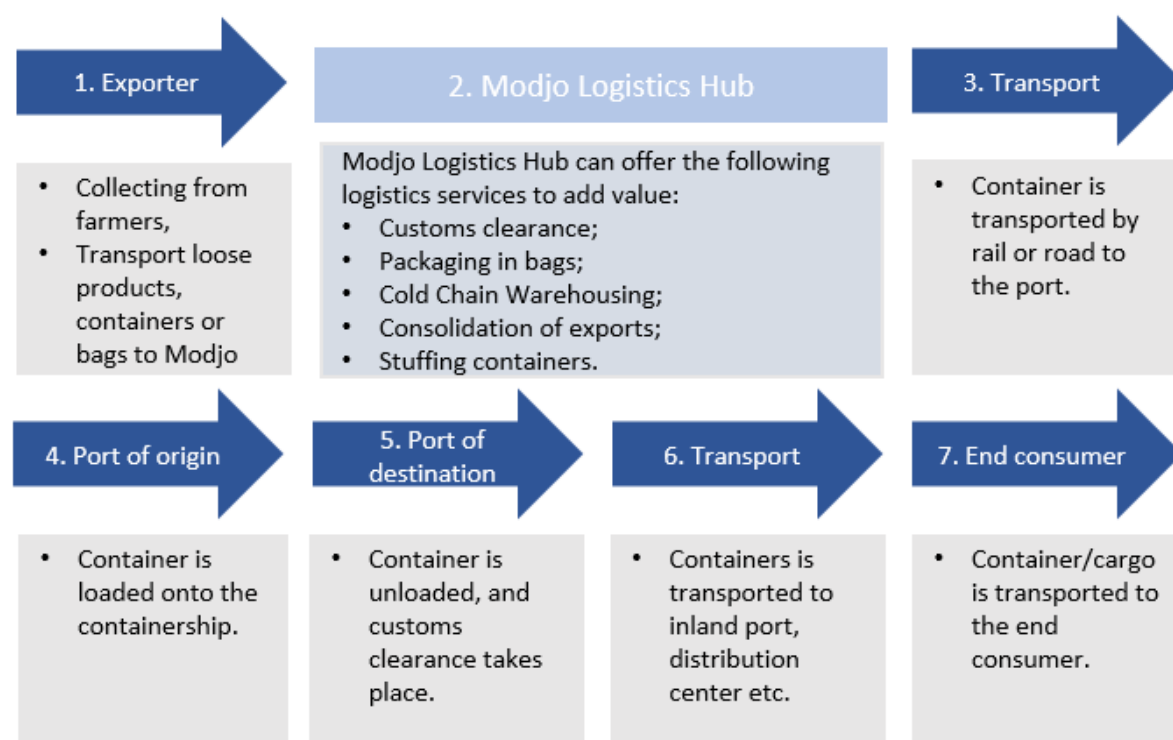
3.6.9 Value Chain Fruits

Currently, fruits are mostly produced by smallholder farms on small plots of land using traditional farming practices. These smallholder farms account for 95% of the total fruit production in the country. The Ethiopian government provides incentives to support the development of the horticulture sector. For example, farmers can obtain a loan from the government for 85% of the total required investment. Despite, smallholder farms are not able to afford cold or refrigerated trucks to transport the production or refrigerated warehouses to store the products, while commercial farms have this possibility. Some smallholder farmers are engaged in out growers arrangements or sell their products to cooperative unions under contractual agreements. At present, large commercial farms export their products via air transport. The products are transported to cooling facilities at the Bole airport in Addis Ababa before they are shipped by plane.

⁴⁴ Ethiopian Meat Producer-Exporters Association, names of the companies are known to the Consultant

In the Logistics Hub, Modjo can provide services to add value to fruits export. One of the most important services is providing reefer containers to transport fruit by sea. Currently, transport by reefer containers is too expensive due to the double transport costs. The exporter is required to pay for transport of the container from the port to the warehouse and from the warehouse back to the port. If Modjo provides reefer containers, the transport costs will be lower compared to the costs to transport by air. The following table presents the logistics value chain including Modjo Logistics Hub.

Table 3-47: Logistics Value Chain Export Fruits including Modjo Logistics Hub



Source: MTBS

In the last few years, several commercial fruit exporting and producing companies were established. There are 17 major companies active in the export of Ethiopian fruits and vegetables. Of these 17 companies, 15 are in the vicinity of Modjo Logistics Hub. Therefore, the 15 companies are all potential customers at Modjo Logistics Hub. These companies export fresh fruits and vegetables and have on average 500 employees and more than 100 hectares land⁴⁵. Moreover, these companies are potential investors in the Logistics Hub in packaging and cold chain warehousing amongst others. Besides, handling fruit export by Modjo Logistics Hub creates synergies between fruit export and meat export, since both types of cargo require reefer containers and cold chain warehousing.

⁴⁵ Ethiopian Horticulture Producer Exporters Association (EHPEA)

3.6.10 Value Chain Facilities

Facilitating new import and export products at Modjo Logistics Hub requires different logistics facilities. The next table gives an overview of the type of facilities per value chain that are required.

Value Chain	Type of Facilities	Complement
Containers import and export	At the ICD: • Customs; • Gate; • Administration offices; • Parking lot for trucks; • Reefer plugs; • Facilities for truck drivers. At the Logistics Centre: • CFS – warehouse for stuffing and stripping, consolidation and deconsolidation.	All import and export products in containers.
Wheat import	If wheat is to be imported in bulk, warehousing is required.	ICD
Fertiliser import	Fertiliser is to be imported in bulk, where after it bagged at Modjo Logistics Hub. For this, a bagging machine is required.	
Vehicles import	Sufficient parking space is required.	ICD
Coffee export	• Warehouse; • Consolidation, stuffing containers • Bagging and labelling facilities.	ICD
Vegetables export (mainly pulses)	• Warehouse; • Consolidation, stuffing containers • Bagging and labelling facilities.	ICD
Oilseeds export including soybeans	• Warehouse; • Consolidation, stuffing containers • Bagging and labelling facilities.	ICD
Edible fruits export	• Refrigerated warehouse; • Consolidation, stuffing containers; • Bagging and labelling facilities; • Reefer plugs at the ICD.	Meat export, ICD
Meat export	• Refrigerated warehouse; • Consolidation, stuffing containers; • Bagging and labelling facilities; • Reefer plugs at the ICD.	Edible fruits export, ICD

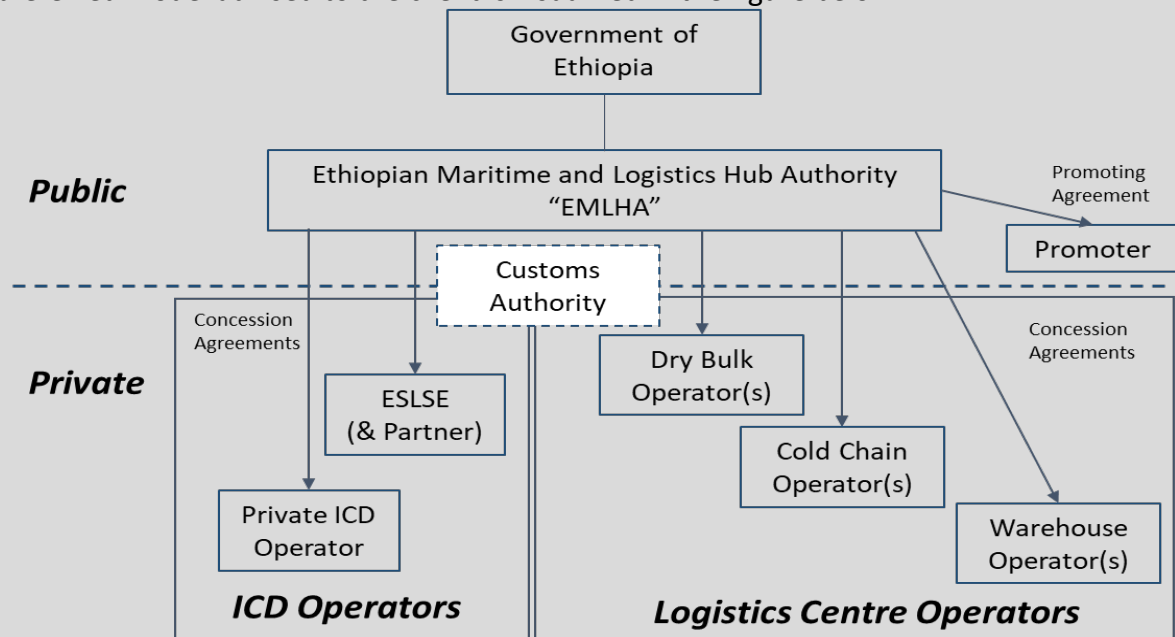
Source: MTBS

Page intentionally left blank

4 Identification of Alternative Governance Models

Summary

This chapter presents the identification of alternative governance models, of which the preferred model advised to the client is visualized in the figure below:



The preferred governance structure is characterised by, among others:

- A multi-user hub facility in which ESLSE operates alongside multiple private operators;
- A multi-purpose facility with different cargo types, offering various value-added activities such as warehousing, cold-storage, packaging, labelling, etc.; and,
- Close cooperation between the ICDs (container handlers) and Logistics Centre operators active in the value-added activity business.

ICD Operations:

The preferred and advised governance structure option is in line with industry best practise and supports a separate and dedicated concession agreement between the public authority "EMLHA" and the Modjo ICD operator(s). A direct concession agreement is recommended, as sub-concessions or structures alike are typically not attractive for terminal operators and complicates the situation of ESLSE (in which a public-public concession is to be created). This can be best explained by the lack of full control to the ICD operator(s) on the (master) concession agreement. Being a sub-concessionaire requires dependency on others, which increases risks that operators are normally not willing to take and comes at a higher funding cost. Moreover, the advised governance structure also provides the EMLHA to introduce a second concession agreement with another private ICD operator at Modjo, which is important due to the expected future increase of cargo demand in the area. This will introduce competition and force the operators to become more efficient and less expensive.

Logistics Centre Area:

The recommended option arranges for direct agreements/contracts between the potential tenants of the Logistics Centre Area and the EMLHA. These direct agreements with the tenants not only prevent potential restraints that private investors have under the circumstances of direct agreements with private competitors such as confidentiality issues (in the role of logistics centre developer), but also increase the transparency between EMLHA and the tenants. Finally, the direct agreements between EMLHA and the tenants is expected to improve the value to the government and tenants since no additional layer is included (logistics centre developer) that also requires making its return on investments made.

In case the canvassing and promoting power of EMLHA is not sufficient enough to set-up a strong canvass and marketing/promotion campaign for the logistics centre, a separate agreement with an experienced logistic centre developer/promoter can be considered. Such a promoter is able to support a market-driven implementation of the logistic centre and focusses on canvassing efforts for attracting logistics, industrial and commercial tenants to the area.

Contractual Relationship of the Concessions:

A contractual relationship is foreseen to exist between the EMLHA and the different ICD and Logistics Centre operators. Thereby, EMLHA can act as either:

- **A pure Landlord:** in which EMLHA rents out the land available to private operators for a specific time (10-30 years) that are able to invest themselves in superstructure and equipment, including:
 - ICD operators: such as ESLSE and international private GTOs; or,
 - Logistics Centre tenants: Ethiopian private companies active in the value-added activities; or,
- **A Landlord under a tailored Management Contract:** in which EMLHA invests in the required facilities (by using the USD 150 M World Bank loan) and subsequently rents out the entire facilities on a “turn-key” principle. This latter form is especially foreseen to be implemented for the high-risk investments in which the Ethiopian private sector is less willing to or able to invest in. However, the operations will be done by the Ethiopian private sector on a management contract basis in which they lease the facilities from the EMLHA for a specific amount of time (5-10 years).

Operational cooperation

Although there will not be a contractual relation in terms of a concession between the different operational actors in the Governance Structure (ESLSE and other private ICD or Logistics Centre operators), they are foreseen to have a strong operational cooperation. After all, cargo such as coffee that is consolidated in one of the coffee warehouses will be bagged and stuffed into a container. This empty container can be collected from one of the ICD operators (currently only ESLSE) and after stuffing brought back to the ICD operator as a full export container. Then, this container will either leave the ICD by truck or train to the port of export (e.g. Port of Djibouti). Hence, this activity will not only take place in the coffee value chain, but also in the value chains of meat, fruits, oil seeds, vegetables and other type of export cargoes handled by the warehouses.

To guarantee an optimal efficiency within the value chain, the ICD operators will closely cooperate with the different Logistics Centre operators. The indicative flow of cargoes between the ICD operators and the Logistics Centre operators is visualized in the figure below.

Indicative flow of cargoes between the ICDs and Logistics Centre Operators



Source: MTBS

Hub Authority Expertise Required:

To guarantee the sufficient operation of the EMLHA, different fields of expertise are required. This expertise can either be internally recruited at EMAA (or other governmental entities), or internationally hired depending on the field of expertise. ***It should be mentioned that the existing situation in which EMAA already acts as authority over ESLSE should be taken as starting position, which can be used as basis for the future Hub Authority (EMLHA).*** The fields of expertise required in the operation of the future Hub Authority include, among others:

- **(Dry)Port Master Planning:** Definition of zoning plans and arranging a healthy balance of demand/supply of land area and activities;
- **Management expertise:** As soon as the logistics hub is created it should be sufficiently managed over time. This includes for example the management of offside facilities (truck parking areas, banks, restaurants, police, fire brigade, etc.) and utility supply (e.g. electricity, water, gas, etc.) and the connecting infrastructure to the sites such as roads and rails that are offered within the Hub;
- **Policy implementation:** Securing the implementation and safeguarding of the policies of the transport/logistics sector of the Government of Ethiopia;

- **Safety and security:** examples are the fulfilments of ISPS requirements, safe routing of cargo flows and traffic control;
- **Investments:** The investments foreseen to be made in the hub by the authority should be carefully considered, for which financial analysis should be made;
- **Transactions, contracting, tendering:** The private entities willing to vest their interest in the hub should be selected based on certain criteria (e.g. business plan), which are to be reviewed by the authority; and,
- **Promotion:** The Logistics Centre is to be promoted by the hub authority in order to attract as many as value-added activities and private sector players as possible.

4.1 Introduction

This chapter presents the identification of alternative governance models for the future Modjo Logistics Hub. Hence, the main goal of this analysis is to merge the value drivers at Modjo identified and presented within the former chapter of this report with the characteristics of the different governance models. This approach enables the determination of the governance structure best suited to deal with the challenges and opportunities for the future development of modern logistics services at the Modjo Logistics Hub. Thereby, inspiration is drawn from international best practice governance models, which are used for the clarification and illustration of identified possibilities and opportunities in the light of the Modjo Logistics Hub and of Ethiopia in a wider context.

The remainder of this chapter is structured as follows:

- Overview of Government Bodies involved in the Modjo Logistics Hub project;
- Benchmark of the international best practice of logistics hubs examples;
- Identification of Alternative Governance Structures for the Modjo Logistics Hub; and,
- Institutional Framework, scenario thinking and sensitivities.

4.2 Overview of Major Governmental Stakeholders involved in Modjo Logistics Hub

The Ethiopian import and export logistics sector is characterised by the interface of many different stakeholders on three main levels including:

- **Infrastructure developers:** Ethiopian Roads Authority, Ethiopian Rail Corporation;
- **Regulators:** Ethiopian Maritime Affairs Authority, Ministry of Transportation, Ministry of Agriculture, FMHACA, Customs; and,
- **Operators:** Logistics service providers such as ESLSE and the smaller private companies like Pan Africa.

The Ethiopian logistics performance effectiveness in the international trade mainly depends on how well these three levels of stakeholders in their role as infrastructure developers, regulators, and operators coordinate their activities systematically for overall import and export logistics in Ethiopia. Unfortunately, the lack of coordination among any of the key stakeholders in their respective role results in poor logistics performance, and hence affects Ethiopia's import and export competitiveness in terms of high cost, long delivery time, poor safety, etc. At the same time, the current governance structure in the logistics sector of Ethiopia suffers from the many authorities involved in its administration. This often results in conflicting operational procedures and a lack of coordination in the logistics chain of command in synchronizing the logistics operation.

The following key stakeholders are briefly described in respect to their effect on the logistics performance in Ethiopia, specifically related to the Dry Port activities:

- Ministry of Finance and Economic Cooperation;
- Ministry of Transport;
- Ethiopian Maritime Affairs Authority;
- Ministry of Revenues (Customs Authority); and,
- Ethiopian Shipping and Logistics Services Enterprise.

4.2.1 Ministry of Finance and Economic Cooperation

The Ministry of Finance and Economic Cooperation concerns one of the major stakeholders related to the logistics infrastructure development. After all, especially ports and terminals designed for the Ethiopian import and export of goods using the multimodal or unimodal operation require substantial financing. The public expenditures are used to construct, for example:

- Dry Ports and terminals;
- Airports;
- Public warehouse; and
- Main infrastructure such as railways, roads and bridges.

Therefore, the role of the Ministry of Finance and Economic Cooperation is to allocate an adequate budget for the main Ethiopian logistics infrastructure developments that in all aspects affect the way import and export logistics services are provided to the cargo owners.

4.2.2 Ministry of Transport

The Ministry of Transport oversees the key stakeholders in the road, rail and air transport sector on the three roles as described in the introduction including infrastructure developers, regulators and operators. The stakeholders active within the Ethiopian logistics sector that fall under the jurisdiction of the Ministry of Transport include, among others:

- The Ethiopian Roads Authority;
- The Ethiopian Roads construction Enterprise;
- The Ethiopian Rail Authority;
- The Ethiopian Rail Corporation;
- The Ethiopian Aviation Authority;
- The Ethiopian Airlines;
- The Ethiopian Maritime Affairs Authority;
- The Ethiopian Shipping and Logistics Service Enterprise; and,
- Federal and regional states transport authorities.

Though major logistics stakeholders are coordinated and controlled under the Ministry of transport of Ethiopia, the accountability of customs commission and the National Bank are controlled by another Ministerial office, the Ministry of Finance and Economic Cooperation.

4.2.3 Ethiopian Maritime Affairs Authority

The Ethiopian Maritime Affairs Authority (hereinafter called “EMAA”) was established in 2007 under the Proclamation number 549. EMAA is mandated to carry out maritime related duties to ensure success on its key mandate to reduce transit time and cost of import and export. This is mainly done through the well-coordinated effort of different stakeholders. The purposes for which the Authority is established are as follows:

- Ensuring economical efficient transport operations and movement of goods for the import and export cargo of the country;
- To plan, coordinate and enforce such efficient operations;
- Reducing the transit time of import and export goods and coordinate the concerned Government bodies in this respect;

- Seek ways and means for the promotion and development of multimodal transport, marine transport, inland water transport and ensure the availability of uninterrupted resource of skilled manpower in the maritime sector for the Country;
- To implement obligations and rights of Ethiopia under international maritime conventions.

In addition to the described role and responsibilities of the EMAA, the authority has also the power and duty to:

- To supervise, coordinate and render timely solutions to problems arising in the course of the logistics operations;
- To analyse and solve problems arising from the use of seaports and negotiate on such matters;
- To ensure the availability of its own berth at seaports: supporting developments and construction of expansions;
- Related to the services of dry ports: development of skills in the negotiation of the cost of transit, shipping of goods and other freight services in the course of import and export operation;
- Strive for the strengthening of the national shipping carriers, supervising its activities, issue licenses, supervise bodies and persons engaged in sea and inland waterways transportation services;
- Regulate the manufacturing, possession, use, sale and purchase of any vessel, license and control seafarers, pilots and other persons working on board a vessel;
- Inspect, license and regulate all dry port and vessel services and facilities, the services at custom checkpoints;
- Issue licenses to persons desiring to engage in the multimodal transport business, renew such licenses and supervise their operation;
- Regulate and supervise dry ports, freight forwarders, ship agents, and the operation of customs clearing, to issue detailed directives, coordinate their tasks, and improve their capacity;
- Negotiate, with the approval of the Ministry, international maritime and transit services, issues implementation regulations and follow up their execution;
- Support the increased private organized participation in a structured manner in the maritime service sector, supervise the activities of associations organized in the maritime sector and disseminate properly analyzed trade information regarding the maritime sector to end users;
- Recommend tariffs to be charged at dry ports for the services rendered;
- Regulate the conditions under which passengers, goods and mail may be transported in vessels;
- Conduct research and prepare plans and programs for dry ports and other projects relating to maritime transport construction;
- Improve and maintain dry ports and other facilities for the use in accordance with the authorized programs;
- Ensure the availability of safe and adequate marine transport and dry port services;
- Require the provision of necessary marine and surface transport insurance;
- Maintain port and vessel records;
- Register all vessels and any rights relating thereto, issue registration marks to vessels; approve vessel christening; inspect and issue seaworthiness certificates, specify the type of services for which vessels are to be used, preserve and regulate condition as to the construction assignment, maintenance and repair of vessels;
- Designate and specify prohibited, danger and restricted areas for marine transport in inland waterways in cooperation with other concerned governmental agencies;

- Conduct and coordinate search and rescue operations for any vessel, investigate vessel accidents and prepare and issue accident reports;
- Cause the establishment of marine transport institution vessel construction, maintenance and repair centres and other facilities related to vessel operations;
- Collect fees, rents and other charges payable for navigation and port services, to be submitted by the Ministry of finance and approved by the Council of Ministers; and,
- Prepare and submit draft Directives necessary for the implementation of this Proclamation and Regulations issued under this Proclamation to the Ministry and make such Directives known to concerned parties.

4.2.4 Ministry of Revenue (Customs Authority)

The Ethiopian Revenues and Customs Authority is established as an autonomous federal government agency having its own legal personality. The Authority shall be accountable to the Prime Minister. Very recently, the Authority was upgraded to the Ministry of Revenue. The customs function is reestablished as customs commission accountable to the Ministry of Revenue.

The Authority has the following objectives:

- To establish modern revenue assessment and collection system and provide customers with equitable, efficient and quality service;
- To cause taxpayers voluntarily discharge their tax obligations;
- To enforce tax and customs laws by preventing and controlling contraband as well as tax fraud and evasion;
- To collect timely and effectively tax revenues generated by the economy; and,
- To provide the necessary support to regions with a view to harmonizing federal and regional tax administration systems.

4.2.5 Ethiopian Shipping and Logistics Services Enterprise

Based on the Council of Ministers regulation number 255/211, Ethiopian Shipping and Logistics Services Enterprise was established based on the merger of three state -owned Enterprises, namely:

- The Ethiopian Shipping Lines S.C.;
- The Maritime and Transit Services Enterprise; and,
- The Dry Ports Enterprise.

Currently, ESLSE is a sole multimodal transport operator, owner and operator of the dry ports in the country. The objective for which the Enterprise is established are:

- to render coastal and international marine and internal water transport services;
- to render freight forwarding and shipping agency, multimodal transport and air agency services;
- to provide the services of stevedoring, shore handling, dry port, warehousing and other logistics services for import and export goods;
- to provide container terminal services;
- to engage in the development, management and operation of ports;
- to establish and run human resources development and training centre in the field of the maritime profession;
- to study the country's import and export trade demand and thereby develop technological capacity in order to provide efficient maritime and transit transport services; and,
- to engage in other related activities conducive to the achievement of its objectives.

4.3 Benchmark of International Best Practice Logistics Hubs Examples

This analysis merges the identification of the potential value drivers with the characteristics of the different governance models that are best suited to deal with the challenges and opportunities at the future Modjo Logistics Hub. This is done through a benchmark focused on the identification of international best practice examples of logistics hubs, illustrating and clarifying relevant elements in terms of possibilities and opportunities for the Ethiopian context.

4.3.1 Main reasons for using Logistics Hubs: Direct benefits

A large number of logistics hubs and terminals is operated globally. These logistics hubs are used mostly to increase efficiency and/or realize transport cost savings in hinterland transport. The following points provide an overview of how these efficiency improvements or transport cost savings are realized.

1. Logistics hubs reduce congestion in seaports

In many seaports globally, congestion is experienced in multiple areas of container terminals. Especially when picking up containers from the yard, congestion is experienced by trucks entering and leaving the terminals. When using logistics hubs, the majority of the container ancillary services (customs clearance, fumigation, etc.) are performed within the hinterland. This puts less pressure on the terminal's yard and gate operations and enables seaports to operate in a more efficient manner.

2. Logistics hubs provide economies of scale in distribution to end consumer

When using an inland port, it is possible to benefit from economies of scale in inland transport: a container train with a capacity of 106 TEU replaces around 53 trucks on the road to transport the same number of TEUs to the hinterland in case the trucks are loaded in the most efficient way possible. If not, this number can even increase up to 106 trucks (all 20ft containers).

There is an additional benefit for transporting LCL (less-than-container-load) containers via logistics hubs. Usually, these containers are stripped at warehouses around the port in order to be transported to the importer by smaller general cargo trucks. Around 3 general cargo trucks are typically required for every stripped LCL TEU. At logistics hubs, these LCL TEUs can be transported as a full container over a larger distance in order to be stripped at a location close to the end consumer, in which Modjo can play the central hub role.

3. Logistics hubs reduce container storage in high valued seaport land area

At seaport terminals, containers are usually stored in container yards directly adjacent to the quay-wall. These areas are considered 'high-value' areas, as they have restricted space. Storage area at an inland port is regarded to be much costly, as there is usually more space available at the hinterland areas where logistics hubs are located. Hence, storing containers at Modjo instead of Djibouti prevents considerable amounts of costs that should be paid in foreign currency.

4. Logistics hubs are closer to final markets: improving the reliability of transport chains / better inventory management

Transporting cargoes via an inland port enables an improved reliability of the transport chain. Especially along the Djibouti – Addis corridor, where trucking is considered unreliable due to the traffic congestion and the bad road condition, direct rail transport is considered to be the most

reliable, safe and secured alternative. Furthermore, shipping to logistics hubs means that the cargo is brought closer to the importer, which means that the importer has a more reliable supply chain and can perform more optimized inventory management.

5. Logistics hubs provide efficient custom inspection and clearance procedures

Customs inspection and clearance procedures at seaports are often affected by the lack of space and congestion experienced at seaport terminals. This makes the process to inspect and clear cargoes for imports or exports inefficient. At logistics hubs, there usually is the availability of a dedicated area for customs inspection and clearance procedures.

6. Logistics hubs provide improved empty container logistics for shipping lines (empty returns)

Usually, empty container logistics are a challenge for shipping lines. Shipping lines operate empty depots to which importers have to bring their empty containers after unloading the goods. From the empty depots, shipping lines have to bring empty containers back to the port for exports or exporters pick-up the empty boxes for their export goods. Operations of empty depots are generally considered to be complex for shipping lines. At logistics hubs, it is possible to operate an empty depot that can benefit from the economies of scale in distribution to/from the port whilst it is located at short distance from main industrial areas.

4.3.2 Main reasons for using Logistics Hubs: Indirect benefits

The previous section provided an overview of the main direct benefits of using logistics hubs. These benefits relate to the increased efficiency and/or transport cost savings in inland transport that can be realized through logistics hubs. Next to these direct benefits, there are multiple indirect benefits associated with using logistics hubs. Such indirect benefits provide a positive economic impact on the economies in which the logistics hubs operate and relate to the following points:

1. Establishment of logistics hubs support economic development within specific regions and the overall country

Logistics hubs are well able to create synergies between different commodity flows. Thereby, logistics hubs can attract new players and new functionalities within the established locations. The efficient integration of logistics hubs within transport modalities such as rail and inland waterway connections enable economies of scale. This, in turn, attracts export industries and foreign direct investments of international players that are interested to vest their business due to the cost advantages offered by the efficient inland port infrastructure connections. Finally, the business climate facilitated by the inland port has a positive effect on the economy and job generation within the respective regions.

2. Using logistics hubs reduces city congestion

As logistics hubs are served by efficient modes of transport such as rail or barge modalities, they provide a positive contribution to city de-congestion. Seaport-related traffic often has a large impact on the cities in which the seaports are located. This applies especially for Djibouti, where large flows of trucks driving to and from the port are crossing the city. Through logistics hubs, trucks do not have to cross through towns and urban traffic becomes less congested, saving costs for the economy.

3. Using logistics hubs reduces emissions in hinterland transport

Next to the economies of scale achieved in rail operations, trains operate in a relatively environmental friendly manner as compared to trucks. When comparing the CO2 emissions from trucks with trains, trucks emit much more CO2 per ton of cargo transported. Since the rail system between Djibouti and Modjo partly replace trucks, the emission reduction is quite very relevant.

4. Using logistics hubs reduces accidents on national and city road networks

With rail transport replacing (a part) of the truck transport on the city and national road networks, the number of road accidents on will be reduced. Although the relative number of road accidents will be limited; the impact thereof is large and any reduction in accidents should be supported.

4.3.3 Main potential cargoes and value-added activities at Logistics Hubs

Based on a market sounding with main stakeholders (terminal operators, shipping lines, importers, exporters, forwarders and transport companies) and Consultant's experience in logistics hub operations, it is apparent that the main focus of the logistics hub will be on the handling of containers, as is the case today. Next to that, there is much potential to handle other types of cargoes such as:

- Agribulks: Grains, coffee, pulses;
- Cold chain: Meat, Vegetables, Fruit;
- Ro/Ro: Import vehicles (in containers); and,
- Other dry bulks and breakbulks: Fertilizers, steel.

In addition to the potential cargo types that can be handled at Modjo Logistics Hub, the following value-added activities could be provided:

- Container related: cleaning, maintenance, repair, empty depot, fumigation;
- Bagging, packaging, labelling, veterinary inspections; and,
- Warehousing (CFS), Light manufacturing and assembly.

Although the indicated cargoes and activities as mentioned provide potential business opportunities, investments would be required in dedicated facilities at the Modjo Logistics Hub.

4.3.4 Benchmark of International Best Practice Logistics Inland Hubs

This section presents a benchmark for the Modjo Logistics Hub Project with relevant International examples of logistics hubs with road, rail and inland waterway connections between seaports and the hinterland. Based on the logistics hub factsheets, the benchmark presents the key success factors for efficient hinterland transport based on examples in Europe. These key success factors are used to specify requirements and preconditions that are needed for the Modjo Logistics Hub Project successful implementation.

Selection

Based on the extensive transportation network of roads, railways and navigable river and canal system in Europe, a large number of hinterland corridors is present on the continent. For the selection of international best practise benchmark examples, the Consultant has therefore focussed on the European market.

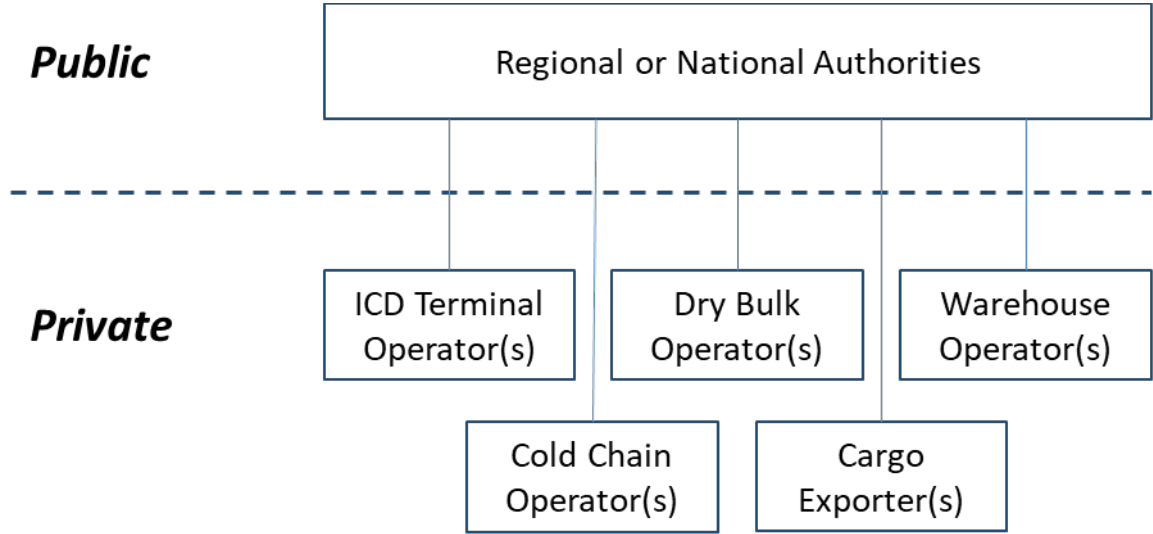
The main criteria for the selection of the benchmark is the availability of a similar hinterland market. For the three benchmarks selected, the hinterland transportation systems serve large consumer and industrial areas, similar to the future foreseen role of Modjo Logistics Hub. The following list presents the selection of logistics hubs that are regarded as a benchmark for this study:

- The Netherlands: Trade Port Venlo;
- Germany: Duisport; and,
- France: Port de Genevilliers near Paris.

Logistics hub factsheets have been developed to present an impression of the main characteristics of the selected benchmark examples. These factsheets present the ownership and operational structure of the inland transport system, their system’s capacity and throughput and an overview of the connections and services offered at the terminals.

The governmental structure within these ports is typically characterised by the same structure with a public authority acting as landlord of the logistics hub/region, having direct agreements with the private operators active within the region. The schematic overview of this structure is presented in the figure below.

Table 4-1 Typical governmental structure of industry best practice examples



Source: MTBS

The information of the industry best practice examples of logistics hubs within Europe are presented in a summarized fashion on the next pages.

Netherlands: Trade Port Venlo

General:

Trade Port Venlo (TPV) is a large inland logistics hot spot in the Netherlands. There are two inland container terminals located close to TPV:

- TCT Venlo Barge Terminal (TCTVBT)
- Venray Barge Terminal (VBT)

Both inland terminals function as an extended gate for deep sea terminals located in Rotterdam and Antwerp.

The TCTVBT terminal is linked via high-frequency trimodal (rail/road/inland shipping) connections to the deep-sea terminals in Rotterdam, Antwerp and the extended hinterland (Ruhr Area). Venray Barge Terminal has a bimodal connection (road/barge) to both deep sea ports and to the extended hinterland.

In addition to the two barge terminals, TPV has two rail terminals. The rail terminals offer capacity up to 200,000 TEU per annum and have a high-frequency (>20 trains per week) rail connection with Rotterdam.

Governance Structure:

A development organisation “Greenport Venlo Development Company” is established under the regional public authority, responsible for the development of Trade Port Venlo. TCT Venlo Barge terminal is part of the extensive synchromodal network operated by private company Europe Container Terminal (ECT) subsidiary European Gateway Services. ECT is currently Rotterdam’s largest deep-sea container terminal operator. The Venray Barge Terminal is part of the BCTN inland container terminal network.

Services Offered:

Both TCT Venlo Barge Terminal and Venray Barge Terminal offer their clients a broad spectrum of services, such as:

- Short and long-term container storage
- Deliver and retrieval of containers by truck to and from the customers
- Empty depot
- Container cleaning, maintenance & repair



Terminal Facts

Cargoes handled:

Containers

Annual capacity (TEU):

TCT Venlo Barge Terminal: 56,000 TEU
Venray Barge Terminal: 140,000 TEU

Quay wall length (m):

TCT Venlo Barge Terminal: 155 m
Venray Barge Terminal: 300 m

Terminal area (ha):

TCT Venlo Barge Terminal: 7 ha
Venray Barge Terminal: 4,5 ha

Barge calling frequency at the terminals:

TCT Venlo Barge Terminal: Rotterdam: 5x per week
 Antwerp: 3x per week

Venray Barge Terminal: Rotterdam: 5x per week
 Antwerp: 5x per week

Transport modalities:

TCTVBT: Rail, Road, Barge
VBT: Road, Barge

Terminal Overview TCT Venlo Barge Terminal:



Terminal Overview Venray Barge Terminal:



Schematic Overview of Trade Port Venlo:



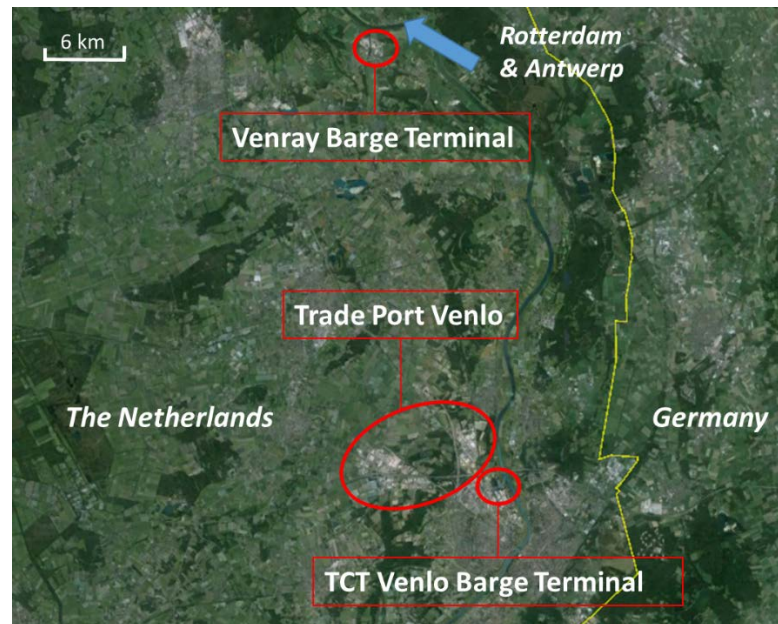
Organizational Structure:

Transport Node/Link	Responsible
Deep Sea Terminals	Private Terminal Operators (APMT, DP World, ECT)
Barge Transport	Private sector (over 70 private barge companies such as Danser Group, Contagro, and Eurobarges B.V.)
Inland Terminals	Private Terminal Operators (ECT, BCTN)
Inland transport	Private sector

Terminals' Advantages:

- Trimodal connections (road, rail, waterway)
- Multiple logistics companies vested nearby the terminal specialized in the "Last Mile" transport
- Transport cost savings due to efficient barging up to 250 TEU and efficient railway connections
- Both the terminals are located close to the Ruhr Area in Germany, one of Europe's largest industrial centres
- Offers customs bonded warehouse services
- Over 70 barge companies operating between the North Sea Deep Sea Terminals and the Inland Terminals

The figure below visualizes the location of the two inland terminals, TCT Venlo Barge Terminal & Venray Barge Terminal in relation to Trade Port Venlo.



Germany: Duisport

General:

Duisport is the World's largest inland container port with an annual throughput of 3.4 million TEUs. The inland port accommodates nine inland container terminals in five different port districts:

- Duisburg-Ruhrort
- Duisburg-Neuenkamp
- Logport I
- Logport II
- Logport IV

Besides containers, the port handles coal and iron ores destined for the large industrial sector located in and around the port.

Governance Structure:

Duisburger Hafen AG, a department of the city, is the port authority for the Port of Duisburg. The local authority is responsible as landlord for the management of the logistics area, whereas multiple private logistics companies are vested in and around the Port of Duisburg.

The container terminals are owned and operated by private terminals operators. Rotterdam's currently largest deep-sea container terminal operator ECT also owns one of the inland container terminals in Duisburg. This concerns the trimodal (road/rail/inland shipping) connected DeCeTe Terminal.

Services Offered:

The port of Duisburg offers a wide range of services such as:

- Container services:
 - Storage & Transport
 - Maintenance & Repair
- 2 million m² covered storage space
- CFS and Packaging services
- Customs Bonded Warehouse services
- Bunkering



Inland Port Facts

<u>Cargoes handled:</u>	Containers, Dry Bulks, Liquid Bulks, Break-bulks, Ro/Ro
<u>Annual TEU Throughput:</u>	About 3.4 million TEU
<u>Annual cargo handled (tons):</u>	About 131 million tons
<u>Quay wall length of container terminals (m):</u>	2,825 meters (estimated)
<u>Total port area (ha):</u>	1,350 ha
<u>Transport modalities:</u>	Road, Rail and Barge
<u>Terminals:</u>	9 container terminals 5 dry bulk (import coal) 19 Liquid bulk facilities

Overview Logport I (one of the four main port areas of Duisport):



Terminal Overview DeCeTe Duisburg:



Terminal Overview DUSS (rail) Terminal:



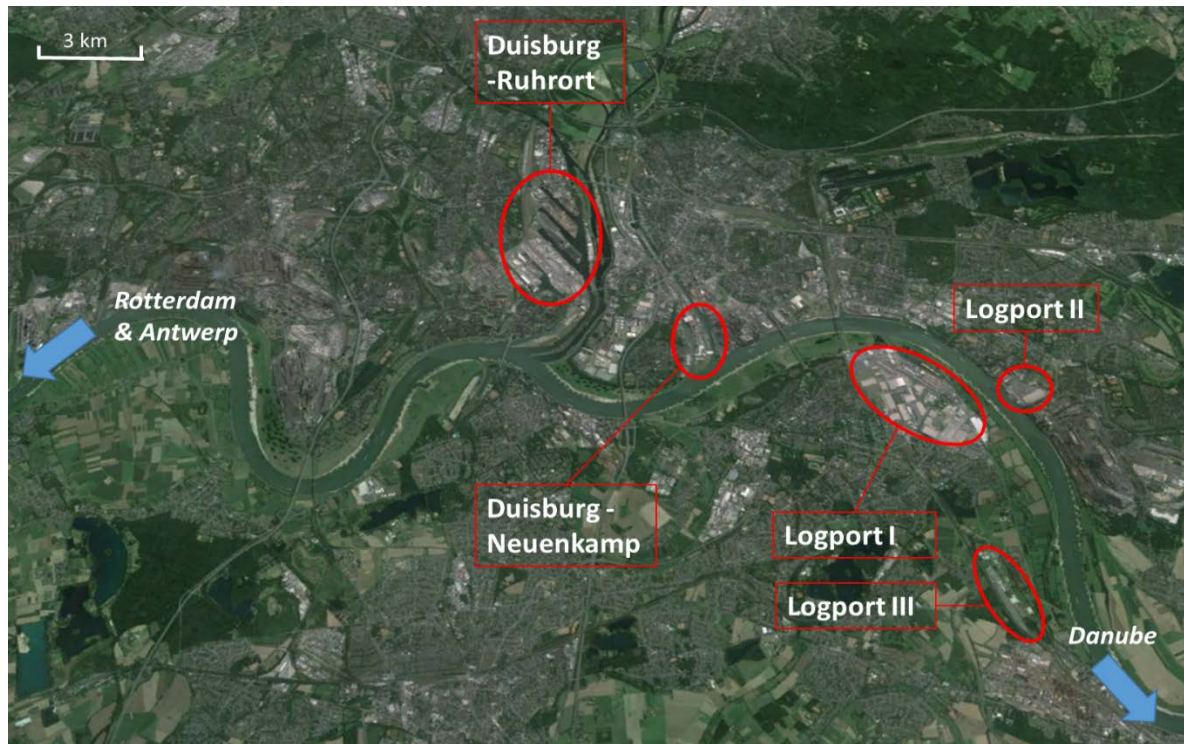
Organizational Structure:

Transport Node/Link	Responsible
Deep Sea Terminals	Private Terminal Operators (APMT, DP World, ECT)
Barge Transport	Private sector (over 70 private barge companies such as Danser Group, Contagro, and Eurobarges B.V.)
Inland Terminals	Private Terminal Operators (such as ECT)
Inland transport	Private sector (Geodis, DHL, etc.)

Terminals' Advantages:

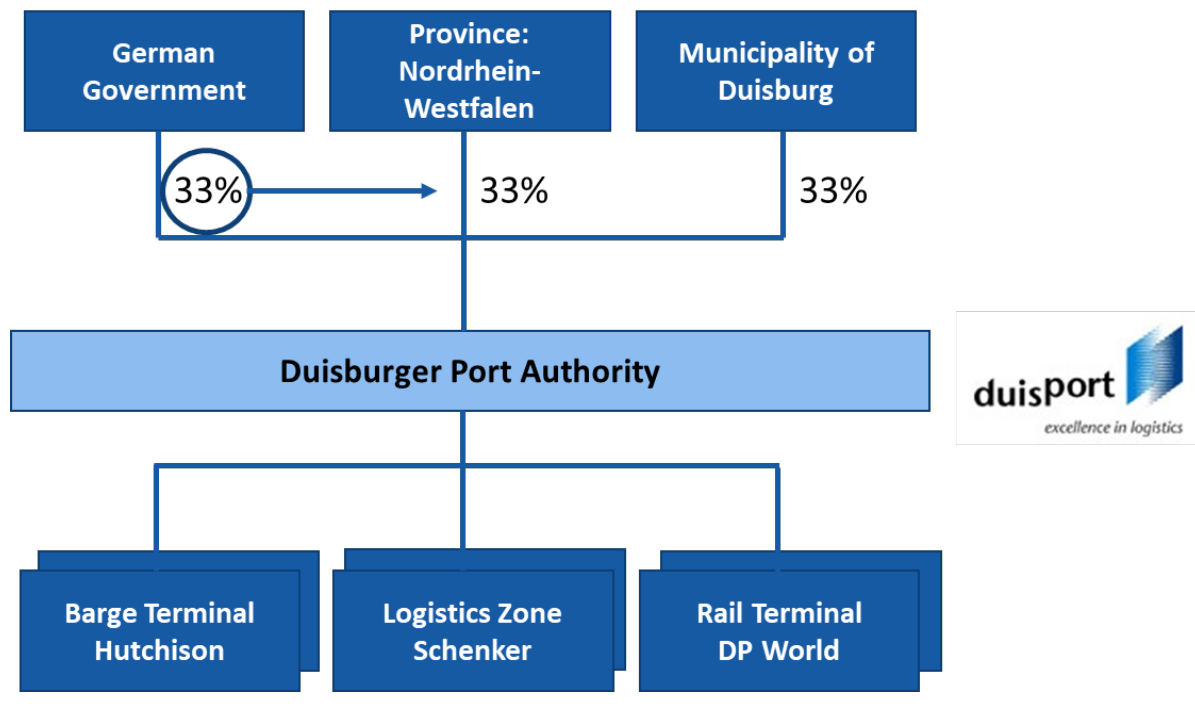
- Trimodal connections (road, rail and waterway)
- Up to 500 TEU vessel handling capacity
- In the proximity of a major industrial and logistics inland hub (Ruhr Area)
- Multiple logistics companies vested nearby the terminal specialized in the "Last Mile" transport
- Offering of customs bonded warehouse services
- Around 300 logistics-oriented full-service companies that are domiciled in Duisburg
- Over 70 barge companies operating between the North Sea Deep Sea Terminals and the Inland Terminals

The figure below visualizes location of the five port areas of Duisport in which all container terminals are situated.



Organogram Duisport:

Changing Governance Structures: Port Authorities are trying to get equity stake in Duisport, i.e. influence in hinterland network.



France: Port de Gennevilliers near Paris

General:

Port de Gennevilliers is located north west of the capital city of France, Paris. The port is strategically positioned close to the city centre of Paris, perfectly able to facilitate city supplies via inland shipping.

Port de Gennevilliers offers trimodal connections for container transport (road, rail and barge). The port covers a total area of over 400 ha and annually handles over 20 million tons of cargo.

Governance Structure:

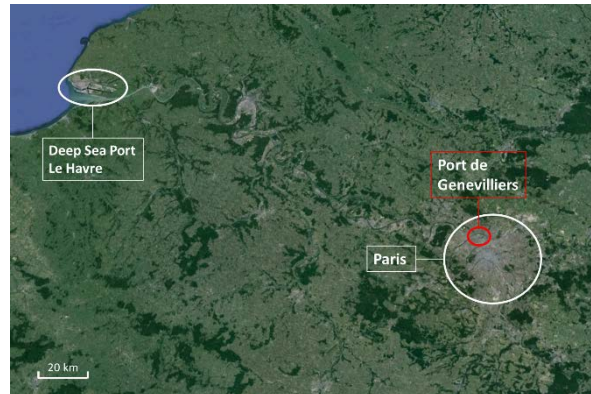
Port de Gennevilliers is part of the HAROPA network, together with the ports of Le Havre and Rouen. Port de Gennevilliers is a public institution under the supervision of the Ministry of Ecology, Sustainable Development and Energy. The HAROPA network cooperates in terms of strategy, commercial development, the quality of the network services and communication.

The container terminal in Port de Gennevilliers is operated and by the private company Paris Terminal S.A. There are also other private operators active in the port that have a direct agreement with HAROPA, the public port authority.

Services Offered:

Port de Gennevilliers offers a wide range of services such as:

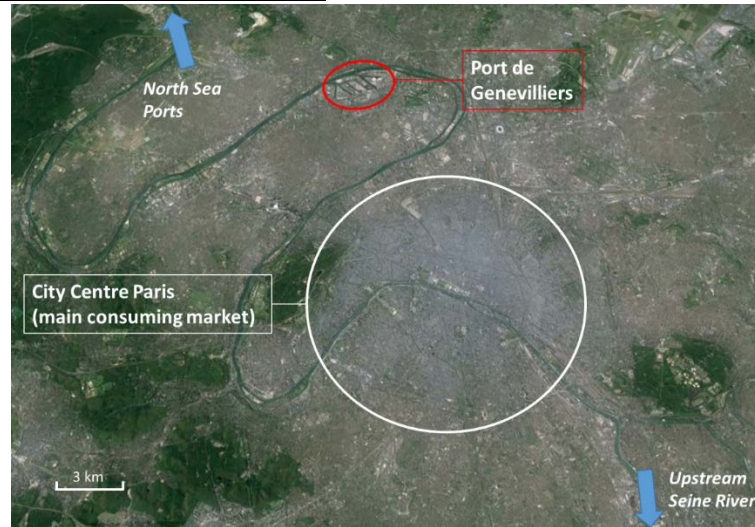
- Container services:
 - Storage
 - Transport to and from customers
 - Cleaning
 - Maintenance & Repair
- 510,000 m² covered storage space (warehouses)
- CFS and Packaging services
- Customs Bonded Warehouse services



Container Terminal Facts

<u>Annual TEU capacity:</u>	600,000 TEU
<u>Annual TEU Throughput:</u>	> 350,000 TEU (estimation)
<u>Container terminal quay wall length (m):</u>	700 meters
<u>Total terminal area (ha):</u>	20.8 ha
<u>Transport modalities:</u>	Road, Rail and Barge
<u>Barge calling frequency at the terminal:</u>	Le Havre: 10x per week Bonneuil Sur Marne: 2x per week

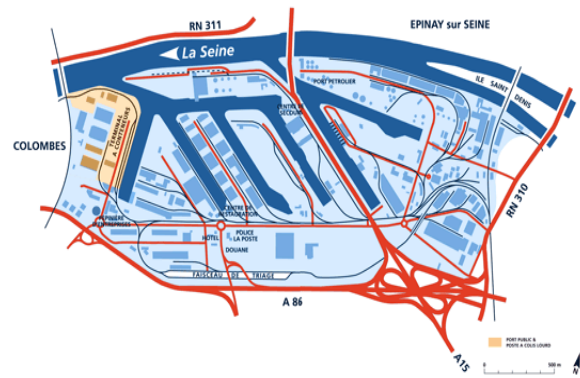
Regional overview of Port de Gennevilliers:



Paris Terminal S.A. overview:



Port de Gennevilliers overview:



Organizational Structure:

Transport Node/Link	Responsible
Deep Sea Terminals	Private Terminal Operators (Such as TIL, DP World, CMA CGM)
Barge Transport	Private sector
Inland Terminal	Paris Terminal S.A.: Private Container Terminal Operator
Inland transport	Private sector (road and rail operators)

Terminals' Advantages:

- Trimodal connections (road, railway and waterway)
- Up to 350 TEU vessel handling capacity
- In the proximity of one of Europe's largest cities, Paris
- Multiple logistics companies vested nearby the terminal specialized in the "Last Mile" transport
- Offers customs bonded warehouse services

4.3.5 Conclusions: Common success factors and impact on Modjo Logistics Hub

Based on an assessment of the Inland Logistics Hub Factsheets, the following common success factors are distinguished:

- **Governance Structure:** In all situations, either municipal, regional or national authorities are created acting as landlords that own the land and are responsible for the efficient managing of the Logistics Hubs. Moreover, multiple private companies operate their business and have a direct agreement with the authorities;
- **Connectivity:** all inland logistics hubs and terminals offer multi-modal links (road, railways and inland waterways);
- **Distance to industry:** almost all inland terminals are located in the proximity of industrial areas or logistic zones;
- **Distance to consumer market:** almost all inland terminals are located in the proximity of main urban areas;
- **Extended gate:** a large number of terminals benefit from the extended gate concept by avoiding congested deep-sea port areas through the use of inland ports in less congested areas;
- **Custom-bonded:** all the benchmark terminals provide an opportunity for custom-bonded movement of cargoes to the inland terminal; and,
- **Private-sector operations:** for all of the benchmark cases, the inland transport chain is operated by private-sector parties.

The common success factors for the different benchmark inland waterway systems are summarized in the following table:

Success Factor	Venlo	Duisport	Paris
Governance Structure	Development company under municipal authority	Public authority, special department of the city	HAROPA Ports is a public landlord authority
Connectivity	Barge, Rail, Road	Barge, Rail, Road	Barge, Rail, Road
Distance to industry	<5 km	<5 km	<5 km
Distance to consumer market	<50 km	<5 km	<10 km
Extended gate	Rotterdam	Rotterdam & Antwerp	Le Havre
Custom-bonded	Yes	Yes	Yes
Private-sector barge operations	Yes	Yes	Yes
Private-sector inland terminal operations	Yes	Yes	Yes

Source: MTBS

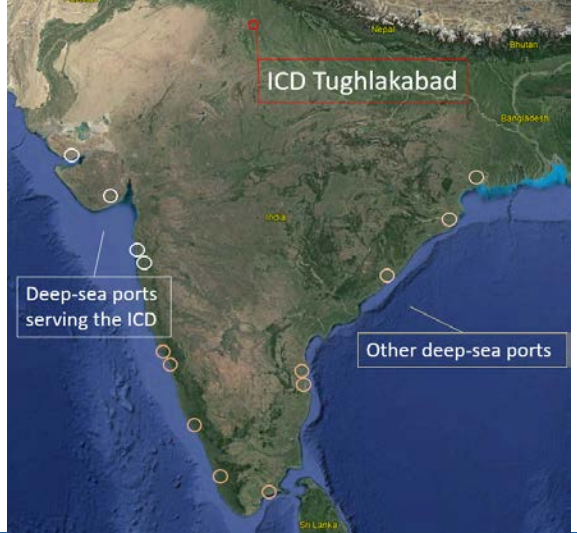
Impact on Modjo Logistics Hub

All benchmark inland logistics hub systems have similar success factors as indicated in the table above. When the success factors are put into perspective of the future Modjo Logistics Hub, the following conclusions can be drawn:

- **Governance Structure:** A public authority should be created, responsible to act as landlord and manage the Logistics Hub;
- **Connectivity:** Modjo Logistics Hub will offer rail and road connections. The distances to and from the main point of entry concerning the Port of Djibouti is relatively long (> 800 km). Since rail transport becomes more cost efficient in comparison with other transport modes from distances above 200-300 km, rail transport to and from the Modjo Logistics Hub is expected to become the most important transport mode as long as the offered capacity is sufficient to cater for the demand;
- **Distance to the consumption and production markets:** the Modjo Logistics Hub is well located as consolidation and deconsolidation point for import and export products. The distance from Modjo to the main consumption centre of Addis Ababa is about 75 km. In addition, Modjo is well located to support the logistics demand for industrial parks located in the proximity, such as Adama Industrial Park. Thereby, Modjo Logistics Hub is expected to function well as an extended gate, from which the last mile to and from the consumption and production centres can be done;
- **Extended gate:** Modjo Logistics Hub will mainly function as an extended gate of the Port of Djibouti on the short-term, and possibly other corridors such as the Berbera, Eritrean, Sudan or Kenyan corridors in the future;
- **Custom-bonded:** Custom bonded warehouse/terminal facilities offer financial advantages for customers and are already offered within Modjo Dry Port. Future private ICD facilities and value-added facilities such as warehouses should be offered bonded-status as well in case they comply with the required regulations; and,
- **Private-sector involvement:** in general, private operators are able to operate in a more cost and time efficient manner. Therefore, it is recommended that the future facilities within the Modjo Logistics Hub are mainly operated by a reputable international container terminal operator and other private sector logistics service providers that are able to guarantee smooth terminal operations and reach the required Key Performance Indicators in line with the industry's best practice.

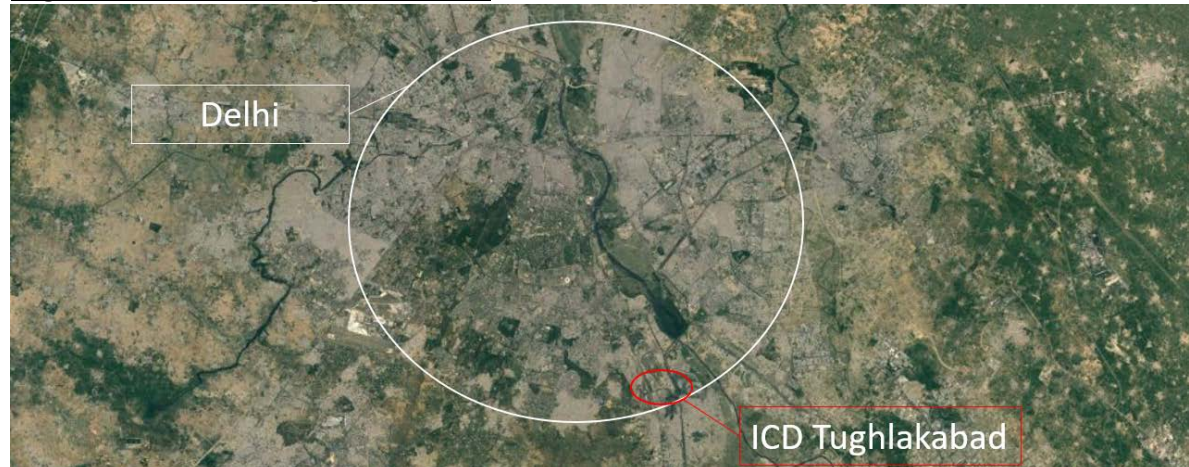
4.3.6 Benchmark of Inland Container Depots in Africa and Asia

This section presents more information on two ICDs in Asia and Africa, Tughlakabad ICD in India and Nairobi ICD in Kenya.

India: Tughlakabad ICD									
General: The inland container depot in Tughlakabad was inaugurated on the 1st of September 1993. It is situated southeast of Delhi. It is a flagship terminal of CONCOR and is pioneer in development of containerisation in India. The ICD is the largest dry port in India and its hinterland comprises of Northern and Western India. The ICD has daily train services to five gateway ports in the western part of India⁴⁶: JNPT, GTIL, NSCT, PPSP and MDPT. Governance Structure: The Container Corporation of India Ltd. (CONCOR) is the owner of the Tughlakabad ICD, together with 72 other terminals in India. In 1989, the company took over the existing network of 7 ICDs from the Indian Railways. The company is a Public Sector Undertaking or in other words, a state-owned enterprise, under the Indian Ministry of Railways. Services Offered: ICD Tughlakabad offers a wide range of services such as: • Container services; • 16,000 m² covered storage space (warehouses); • Open stack space for 12,000 loaded TEUs and 2,000 empty TEUs; • Customs Bonded Warehouse facility.	 Terminal Facts <table> <tr> <td><u>Cargoes handled:</u></td><td>Containers</td></tr> <tr> <td><u>Annual capacity (TEU):</u></td><td>300,000</td></tr> <tr> <td><u>Terminal area (ha):</u></td><td>About 50 ha</td></tr> <tr> <td><u>Transport modalities:</u></td><td>Train, truck</td></tr> </table>	<u>Cargoes handled:</u>	Containers	<u>Annual capacity (TEU):</u>	300,000	<u>Terminal area (ha):</u>	About 50 ha	<u>Transport modalities:</u>	Train, truck
<u>Cargoes handled:</u>	Containers								
<u>Annual capacity (TEU):</u>	300,000								
<u>Terminal area (ha):</u>	About 50 ha								
<u>Transport modalities:</u>	Train, truck								

⁴⁶ CONCOR website

Regional Overview of Tughlakabad ICD:



Organizational Structure:

Transport Node/Link	Responsible
Deep Sea Terminals	PSA International, APM-Terminals and CONCOR (public), DP World, Adani Ports.
Inland Terminals	Public and private
Inland transport	Private sector

Terminals' Advantages:

- Offers bonded warehousing facility;
- Multimodal transport logistics and infrastructure;
- Situated close to New Delhi, the largest city of India.

Kenya: ICD Nairobi

General:

The Inland Container Depot is located in the capital city of Kenya, Nairobi. The ICD is situated in an industrial area off Mombasa Road. The ICD is also linked by rail to the Port of Mombasa.

Governance Structure:

The ICD Nairobi is owned and operated by Kenya Port Authority (KPA). The KPA is mandated to manage and operate the Port of Mombasa and other ports in Kenya including Lamu, Malindi, Kilifi, Mtwapa, Kiunga, Shimoni, Funzi and Vanga. The authority also manages inland waterways and other ICDs at Embakasi, Eldoret and Kisumu⁴⁷.

Services Offered:

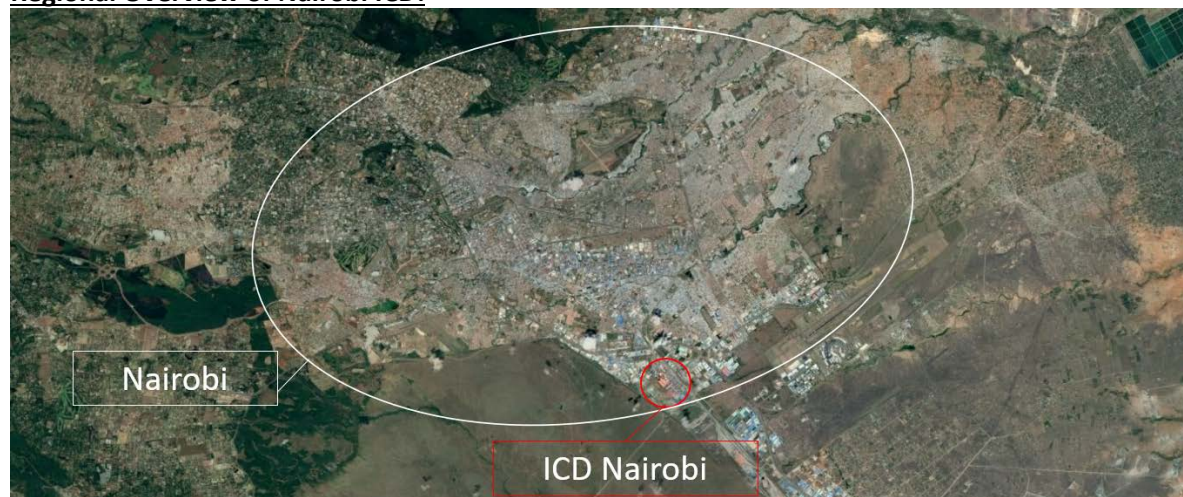
- Container services:
 - Storage
 - Stripping and stuffing
 - Consolidation
 - Weighting



Terminal Facts

<u>Cargoes handled:</u>	Containers
<u>Annual capacity (TEU):</u>	180,000
<u>Terminal area (ha):</u>	29 ha
<u>Transport modalities:</u>	Train, truck

Regional Overview of Nairobi ICD:



Organizational Structure:

Transport Node/Link	Responsible
Deep Sea Terminals	KPA
Inland Terminals	KPA
Inland transport	Private sector

Terminals' Advantages:

- Well connected to the railway and road network in Kenya;
- Situated in the largest city of Kenya.

⁴⁷ KPA Website

4.3.7 Conclusions: ICDs in Africa and Asia

Based on an assessment of the Inland Logistics Hub Factsheets in Africa and Asia, the following common factors are distinguished:

- **Governance Structure:** In both inland container depots, the owner and operator is the port authority, owned by the government. Besides, the KPA owns and operates both the ICD as the deep-sea ports in Kenya and CONCOR operates dry ports and some deep-sea terminals in India;
- **Connectivity:** both inland logistics hubs and terminals offer multi-modal links (road and railways);
- **Distance to consumer market:** both inland terminals are located in the proximity of the largest urban areas of the country;
- **Extended gate:** both terminals benefit from the extended gate concept by avoiding congested deep-sea port areas through the use of inland ports;
- **Custom-bonded:** both ICDs provide an opportunity for custom-bonded movement of cargoes to the inland terminal; and,
- **No private-sector operations:** for both ICDs, the inland transport chain is not operated by private-sector parties, but by the Government entities.

Both ICDs in this selection are owned and operated by the government. However, the KPA has the ambition to become a landlord port authority, overseeing private concessionaires. In this case, there is one entity (the KPA) to oversee private concessionaires at both the deep-sea ports and the ICDs.

There are other examples in Asia and Africa of ICDs including private sector involvement. These are presented in the following table.

Table 4-2: ICDs in Africa and Asia

Location	Governance Structure	Additional remarks
Philippines, Laguna Gateway Inland Container Terminal	Operated by a joint-venture between a subsidiary of ICTSI (60%), NYK and Nippon Container Terminals and Transnational Diversified Group, a Philippine company (40%).	ICTSI has also a concession for the container terminal in Manilla, the deep-sea port in the Philippines ⁴⁸ .
Niger, Dry Port Project in Dosso and Niamey Rive Droite ⁴⁹	Government of Niger created a new Dry Port Authority in 2014. The authority acts as the conceding and monitoring authority of the concession and the main interlocutor of the concessionaire (Bolloré).	The concession includes a mandatory investment of USD 50 M divided in four phases and has a duration of 20 years. Bolloré operates also terminals in Togo, Benin, Ghana and Côte d'Ivoire.
Korea, at five locations Inland Logistics Depots ⁵⁵	PPP contract with public (25%) and private (75%) shareholdings. The owner of the land is the Korean National Railroad Network Authority. BOT and BOO concessions.	Public invests in road and rail accesses to terminals and private in infrastructure and handling equipment within the boundaries of the terminals.
India, Dadri Inland Container Depot ⁵⁵	CONCOR launched Asia's largest ICD at Dadri. CONCOR has leased approximately 27.5 hectares with 4 CFSs (total 110 ha) to various private sector partners through JV agreements (49% CONCOR, 51% private).	Concession agreement has a duration of 30-years. CONCOR is responsible for providing land and infrastructure and private companies to provide handling equipment and to operate CFS with their own staff.

Source: MTBS

The four examples above present four main takeaways for the governance structure of Modjo Logistics Hub:

- In the example of the Philippines and Niger, the private companies operate in both the ICD and the deep-sea terminal(s);
- In all four examples, the private sector has more than 50% ownership of the shares;
- In the example of Niger and Korea, the public-sector acts as a landlord;
- In the example of Dadri ICD in India, the CFSs are leased to the private sector through JV agreements. This is also an opportunity for the current four warehouses at Modjo ICD.

⁴⁸ ICTSI website

⁴⁹ UNESCAP

4.4 Identification of Alternative Governance Models for the Modjo Logistics Hub

This section presents the identification of the optimal governance structure implementation options in view of the future development and operation of the Modjo Logistics Hub. It is important to identify and understand the different players and their roles within the future Modjo Logistics Hub in order to define the optimal governance structure. For this reason, the main type of parties is identified first and are foreseen to consist of:

- **Logistics Hub Authority (Public):** A logistics hub entity to act as main public authority with whom private entities can sign their concession contract, for either Inland Container Depot(s) (hereinafter called “ICD”) activities or other value-added activities taking place within the Logistics Centre Area;
- **ICD Operators (Public/Private):** The future ICD operator(s). The container facility currently called the “Modjo Dry Port” owned and operated by ESLSE is an example of one of the existing ICD operators in Modjo; and,
- **Logistics Centre Operators (Private):** The Modjo Logistics Centre operators. This logistics centre concerns an area to cater for value-added activities in which different private parties could vest their business. This logistics centre development intends to support the further growth of the Modjo Logistics Hub specifically and accelerate the economic development of and exports from Ethiopia.

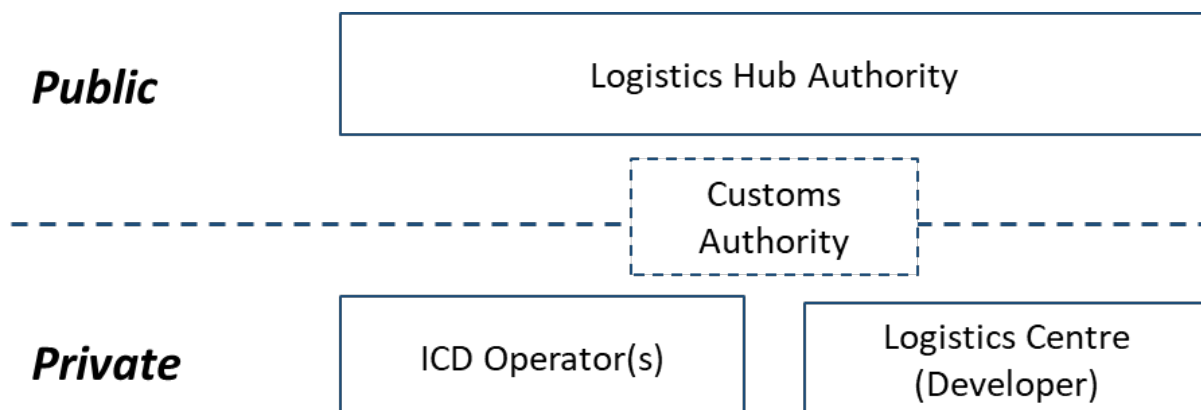
The roles and agreements between the different actors are introduced within this section. However, the allocation of risks and investment responsibilities is presented within the institutional framework in the next section. It should be noted that within this specific section different scenarios are drafted in order to deal with the sensitivities in the Ethiopian context, such as the introduction of competition to ESLSE and the potential effect of lifting the FOB directive.

The next sections present the key public and private stakeholders and their roles in more detail first. Thereafter, an overview of potential alternative governance structure implementation options and the considerations of each of the options are presented, leading towards the identification of the preferred standard governance structure implementation option for the Modjo Logistics Hub. For this specific option, a tailor-made solution is prepared and presented in chapter 4.5.

4.4.1 Key Public and Private Stakeholders

Before there is focussed on the different Governance Structure implementation options that are applicable for the implementation of the Modjo Logistics Hub, an overview is provided of the main entities possibly involved in the project as discussed above. This is visualized in the figure below:

Figure 4-1: Key public and private stakeholders in the Modjo Logistics Hub Development



Source: MTBS

Logistics Hub Authority (public)

For the implementation of the Modjo Logistics Hub, it is advised that a public authority is created, which should act as the delegated public authority for this specific project and potentially for other foreseen future Logistics Hub Projects in Ethiopia. The creation of this public hub authority is in line with international best practice as was presented in the former section of this report. The public authority is responsible to lease out the land to the private ICD operator(s) and logistic centre developer or operators, free of encumbrances and liabilities. The role of the authority is to facilitate the private ICD operator(s) and logistic centre developer in the successful realisation of the project and assist in obtaining the relevant permits/licenses.

In terms of investments, the authority is typically responsible for land acquisition, construction of connecting roads/railway to the site and connecting utilities to the site. However, the eventual investment responsibility of the authority depends on the governance structure implementation option chosen for the development of the Logistics Hub.

The existing situation as starting point:

Currently, the Ethiopian Maritime Affairs Authority is currently in the position of acting authority for the Modjo Dry Port. For this reason, it goes without saying that the most obvious public entity best positioned to take the role of the Logistics Hub Authority concerns EMAA. Thereby, the current role and responsibilities of EMAA can be used as starting position, on which the future structuring of the role and responsibilities of the Logistics Hub Authority (under the lead of EMAA) can be further refined based on the Governance Structure Model as advised in this report.

Naming of the Authority:

The Client mentioned the importance of the naming of the future Hub Authority and wishes the Consultant to advise on a suitable name. Eventually, the actual name of the authority is completely independent on its actual role and responsibilities.

Nevertheless, since the main function of the authority is to manage and support the overall development of the Ethiopian logistics sector, it is obvious that parts of the name could include, among others:

- **Ethiopian:** as the authority is foreseen to act nation-wide, being the authority not only for Modjo but also for other future logistics hubs in Ethiopia;
- **Logistics:** as main sector related to the authority concerns the logistics sector;
- **Authority:** because its main function is to act as authority;
- **Hub:** as the authority is to manage different “hubs”;
- **Maritime:** as the hubs are strongly related to maritime logistics activities and act as an “extended gateway” for the seaports of, for example, Djibouti and Berbera;
- **(Dry)Port:** as the logistics hub can be seen as a is related to “(dry)port” activities; and,
- **Trade:** as the function of the logistics hubs is to facilitate Ethiopian trade.

It goes without saying that there could be even a larger number of different “terms” that could be included in the eventual name of the future authority, but the selection as presented above are seen as the most likely options. Moreover, examples of authority names could be, among others:

- Ethiopian Maritime Logistics Hub Authority (EMLHA);
- Ethiopian Logistics Hub Authority (ELHA);
- Ethiopian (Dry)Ports Authority (EPA);
- Ethiopian Logistics Authority (ELA); and,
- Ethiopian Logistics Hub and Trade Authority (ELHTA).

The eventual name to be chosen for the future authority is to be decided by the Client. However, for the purpose of this report, the name of Ethiopian Maritime and Logistics Hub Authority (EMLHA) is applied to indicate the function of the authority.

Bonded and non-bonded areas:

Under the foreseen structure, the EMLHA has the right to provide a bonded licence to operators in case they apply for and comply with all requirements. Hence, under this structure, it could be that potential tenants active within the Modjo Logistics Centre achieve a bonded status, similar to the status that the Modjo Dry Port already has today.

Modjo ICD Operator(s) – Private/Public

The ICD operator(s) lease the land from the EMLHA and will pay a lease fee in return. It is envisaged that the ICD operator(s) will be a private company, experienced in the development and operation of (inland) container terminals. It should be mentioned that on the long-term multiple ICD operators should be able to vest their business within the Modjo Logistics Hub to introduce competition and improve efficiency, as long as the demand is sufficient enough to support such a development.

The ICD operator(s) is typically responsible for the future investments within the boundaries of the terminal area, including site preparation, internal roads on the site, access to utilities on the site, gate complex, pavement, (CFS) warehouses and cargo handling equipment. Separate facilities for customs inspection and clearance are normally developed at the site as well (if required).

The Ethiopian Shipping and Logistics Service Enterprise (ESLSE)

The current container operator of the Modjo Dry Port concerns ESLSE, who over time heavily invested within the development of the facility. It should be noted that under international best practices the ICD operations should be performed by a private operator. This can be explained by the fact that international terminal operators are typically able to maximize the terminal efficiency due to their global experiences. However, within chapter 4.5, multiple scenarios will be provided in which the continuation of ESLSE as operator is also discussed in more detail.

Modjo Logistics Centre (Developer) - Private

The last main party (or group of parties) consists of the logistics Centre Developer and the private tenants vesting their business within the logistics centre. The necessity of having a dedicated Logistics Centre Developer depends on the ability and capacity of the public authority to manage the development of the logistics centre and private entities vesting their business within the logistics centre (tenants).

In a situation that a Logistics Centre Developer is appointed for the management and development of the Logistics Centre, then the developer will lease the (undeveloped) land from the EMLHA and will pay a lease fee in return. In such a situation it is recommended that the Logistics Centre Developer is a private company, experienced in the canvassing/promoting and development of logistic facilities. The Logistics Centre Developer is typically responsible for the investments within the boundaries of the logistic centre area, including site preparation, internal roads on the site, access to utilities on the site and gate complex. However, as explained for the future EMLHA and the private ICD operator(s), the eventual investment allocation and responsibilities of the logistics centre developer depends on the chosen governance structure implementation option of the Modjo Logistics Hub.

The main business of the Logistics Centre Developer is to improve and subsequently lease out developed and serviced land to private logistic/industrial/commercial enterprises (tenants). The Logistics Centre Developer then has two main options available in which either:

- the tenants develop their own warehouses and superstructure and perform their own activities on the land rented from the Logistics Centre Developer; or,
- the tenants (e.g. shippers, forwarders, producers, exporters, etc.) lease the warehouses developed by the Logistics Centre Developer based on a turn-key principle.

Customs and Trade Facilitation

Finally, although the Customs Authority (Ethiopian Customs and Revenue Authority) does not have a contractual role in the new Governance Structure with either the Hub Authority or the Private players, they will play a vital role in the overall logistics system. After all, the main role of the customs authority is related to the clearance of import and export cargo, the collection of duties and to control the overall surveillance and investigation process of the transport of cargo. Therefore, the customs authority plays an important role in the Modjo Dry Port of today but will also do in the future Modjo Logistics Hub. Hence, it is important to reserve and plan for adequate space for the customs authority to perform their services, including office space, as well as space to physically check the cargo.

Under the current Dry Port structure, the customs authority already has space assigned to conduct their activities, which is also the case in the future. For more information, please refer to chapter 3.5 of this report in which the future configuration of the Logistics Hub is carefully analysed and presented.

International Best Practice Examples on Customs Effectiveness:

The UNCTAD have adopted several guidelines to improve the effectiveness of customs. The importance is to move towards digitalisation through E-Declaration and E-Clearance by use of the Single Administrative Document and supported by a Single (Customs) Window. This overlaps with the earlier discussed topic in the section on the preliminary IT infrastructure. Opportunities for the logistics sector in Ethiopia, specifically for Modjo are based on international best practices.

The international best practises are found in countries like South Korea, Singapore and in Europe. These countries have adopted systems which, generally speaking, strive for the same objective namely: ***disconnecting the administrative flow for customs duties from the physical flow. At the same time the level of risks is to be determined, monitored and controlled by customs.***

This section presents two examples of international best practice on customs operations:

- South Korea; and,
- European Union.

Example 1: South Korea:

South Korea is using and own developed single window system called UNI-PASS. This is an all-in real-time trade facilitation system including the customs and nation security information system. It started with a large one-stop system in the 1980s emerged with EDI applications in the late 1990s. In 2005 the Uni-pass system was incorporated as a web-based clearing system and today it has been further developed as a “smart system” with mobile, RFIDs and cloud solutions. This means that the application can be opened at any PC, Smartphone or laptop device and is open each customer 24/7.

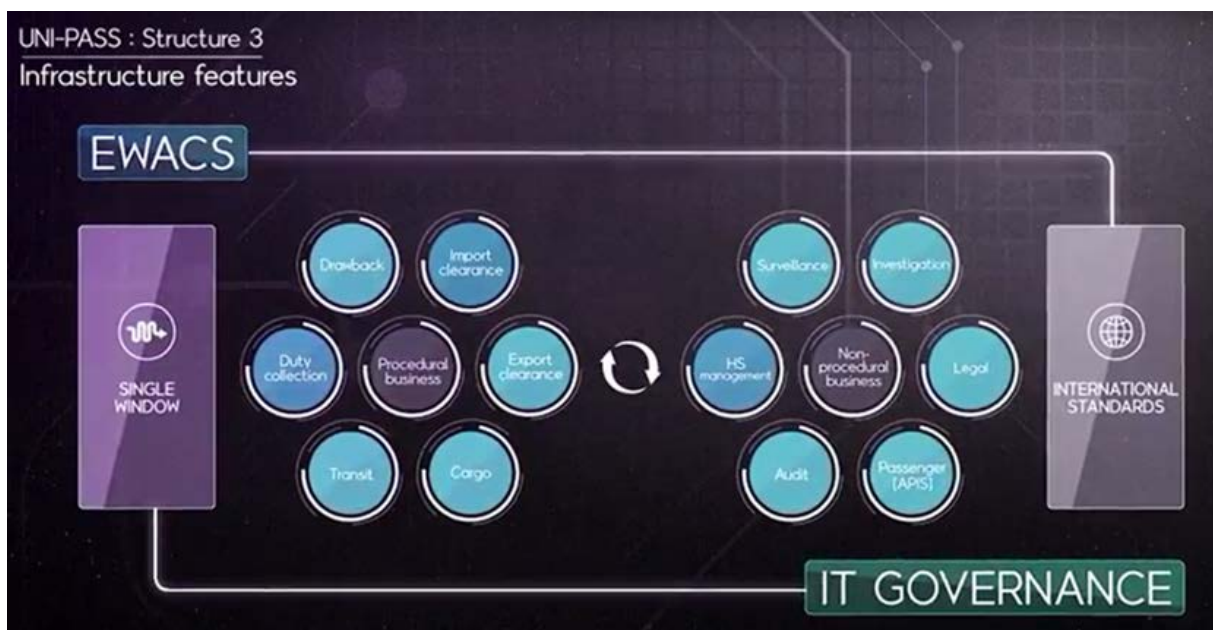


Uni-Pass system facilitates a one trillion USD of trade. About 180 M E-documents are processed real-time each year, serving 50 M passengers. The fully paperless and single window system saved an estimated value of USD 3.8 billion on logistic administration each year. Moreover, it reduced declaration and clearance time of goods from 48 hours in the past to only 1.5 hours. The export documentation time was reduced from 24 hours to only 1.5 minute.

The system is organised with separate subsystems which interface with one Single Window and is compliance with international standards. The Uni-pass as single window has the following supporting systems behind it, see the table on the next page.

Uni Pass – Korea Single window support systems

EWACS (Early warning and control system)	A system for early warning and control of goods and passengers. The system warns possible threats whilst goods/persons are still to arrive at the border.
IRM (Integrated Risk Management)	The risk system is based on a two-track system (safe and non-safe). It is an intelligent system which applies different risk management levels and is sorting businesses to their compliance levels. The non -safe category is monitored and/or physically examined.
CDW (Customs Data Warehouse)	The data warehouse system collects all information on clearance of cargo, passenger investigations, surveillance and audits. The system also collects external information on companies audits and prepares national statistical information.
Data Mart (Data Intelligence Integration)	The data Mart system analyses all intelligent information by linkages of Company, Cargo and Traveller information and provides intelligence support to find and trace illegal actions.
KMS (Knowledge Management System)	The knowledge management system provides intelligent information from external sources linked with investigation.
PMS (Performance Management System)	The performance system shows real-time performances of the customs and national security divisions for managers.
APIS (Passenger Information System)	The Passenger information system is an integrated personal data intelligence tool.

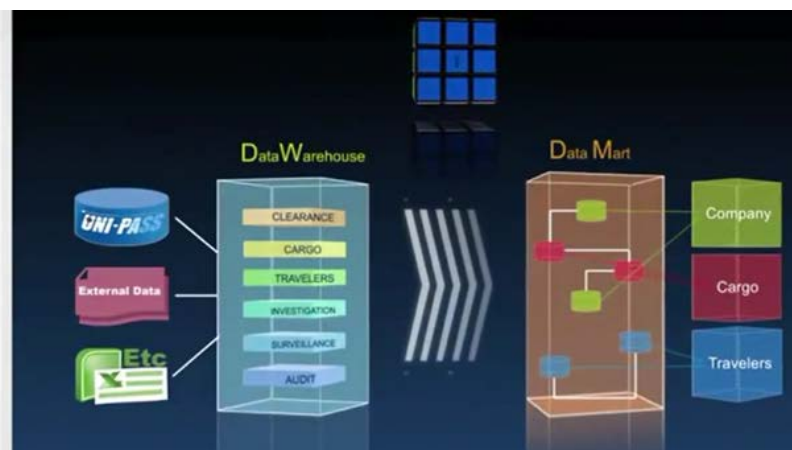


The Uni-pass system has the following main features:

- One-stop customs clearance at 24/7 along the distribution chain;
- Paperless;
- Single window for large and small companies;
- E-Declaration;
- E-Clearance;
- E-Payments from banks and via internet;
- No examination at the border unless regarded as “non-safe” and container are scanned;
- Open to customers all-time 24/7;
- Fast, reliable, trade facilitation;
- Real-time integrated risk management control system;
- Intelligent real time tracking systems; and,
- Risk factors are analysed through risk profiles which threaten public safety and trade stability (tax evasion, illegal foreign-currency transactions, smuggling of hazardous items, weapons and origin laundry).

- Creates the risk profiles of each cargo, business and traveler
- Applies selection techniques based on multifaceted analysis
- Ensures thorough follow-up reviews / based on close correlations among data

- Increases the chances of detecting illegal acts
- and guarantees the transparency of customs clearance settings
- Increases national revenue and enhances social and trade stability



Example 2: European Union:

The EU is characterized by many independent countries. They all work with a Single Administrative Document for declaration of goods based on the HS classification codes. Goods can be transported in bond and duties and VAT only needs to be paid in the country of destination. *Customs clearance takes place independently from the physical activities* by the ports or logistics service providers at warehouses. Often the logistics service provider is not required to obtain permission from customs to redistribute goods which makes it possible to operate the European Distribution Centre 24 hours a day, 7 days a week and 365 days a year. The goods can be declared independently from any delivery service.

This flexibility to warehouses is permitted by customs under strict requirements and depends on the type of license (in The Netherlands for example C-Custom-Warehouse or E-Custom-Warehouse). Consignees and shippers and logistic service providers are obtaining licenses for the digital handing of documents and payments. Full details need to be registered such as: value, tariff code, weight and origin. The customs clearance can be carried out via Electronic Data Interchange (EDI). Supplying customs with information this way allows customs to do more detailed checks on the clearances as well as the mutations of the warehouse inventory.

Clearance is done electronically, and examinations are limited based on risk management. In the port of Rotterdam a few customs inspection areas have been created. The number of containers which are physically inspected is relatively low. This because customs provide electronically clearance for the majority of containers and directs only high risk containers to the inspection yard based on risk management.

International Organisations encourage and support the adoption of modern Customs control techniques, using Risk Management principles. For example; WTO/Kyoto Convention and APEC Sub-Committee on Customs Procedures.

Controlling risks

Risk Management is the name given to a logical and systematic method of identifying, analysing, treating and monitoring the risks involved in any activity or process.

1. Establish the risks;
2. Identify the risks;
3. Analyse the risks;
4. Evaluate the risks; and,
5. Treat the risks.

It is a dynamic process in which monitoring, review, communication and consultation goes hand in hand. Customs should improve the risk management system with the focus on priorities and in decisions on deploying limited resources to deal with the highest risks. It is not a matter of controlling everything, it is a matter of identifying and controlling the high risk (risk/reward). Monitoring and learning categorises the goods into new classifications over time, resulting into less likely sectors with lower risks.

Risks Classification / Occurrence	Extreme	Very high	Moderate	Low	Negligible
Almost certain	Severe	Severe	High	Major	Moderate
Likely	Severe	High	Major	Significant	Moderate
Moderate	High	Major	Significant	Moderate	Low
Unlikely	Major	Significant	Moderate	Low	Very low
Rare	Significant	Moderate	Low	Very low	Very Low

Treating the risks is for port activities a very important element. High levels of physical examinations in the port leads to congestion and space constraints. Through increasing the development of risk profiles and industry audits the random examinations will increase and the physical examinations can be reduced.



Risk profiles are developed as a means of putting risk management into practice at the operational level. A risk profile is normally specific to a customs office. It describes:

1. The risk areas;
2. Assessment of the level of risk;
3. The countermeasures adopted;
4. Activation date and review dates; and,
5. Means of measuring effectiveness.

The profile information is used as the basis for the selection criteria. Documents received and processed by customs, i.e., cargo and passenger manifests, goods declarations, are compared against the selection criteria through the use of automated systems. The action plan for physical examinations or random examinations is thereafter determined. In all the objective should be to increase the compliance and the control the level of risk.

To conclude, there is still much space for the improvement of the Ethiopian customs procedures and systems used in order to increase the overall customs efficiency.

4.4.2 Governance Structure Implementation Options

To implement the Modjo Logistics Hub, there are various governance structure options possible. Four main alternatives are identified for this project and to be considered for the implementation of the Modjo Logistics Hub, including:

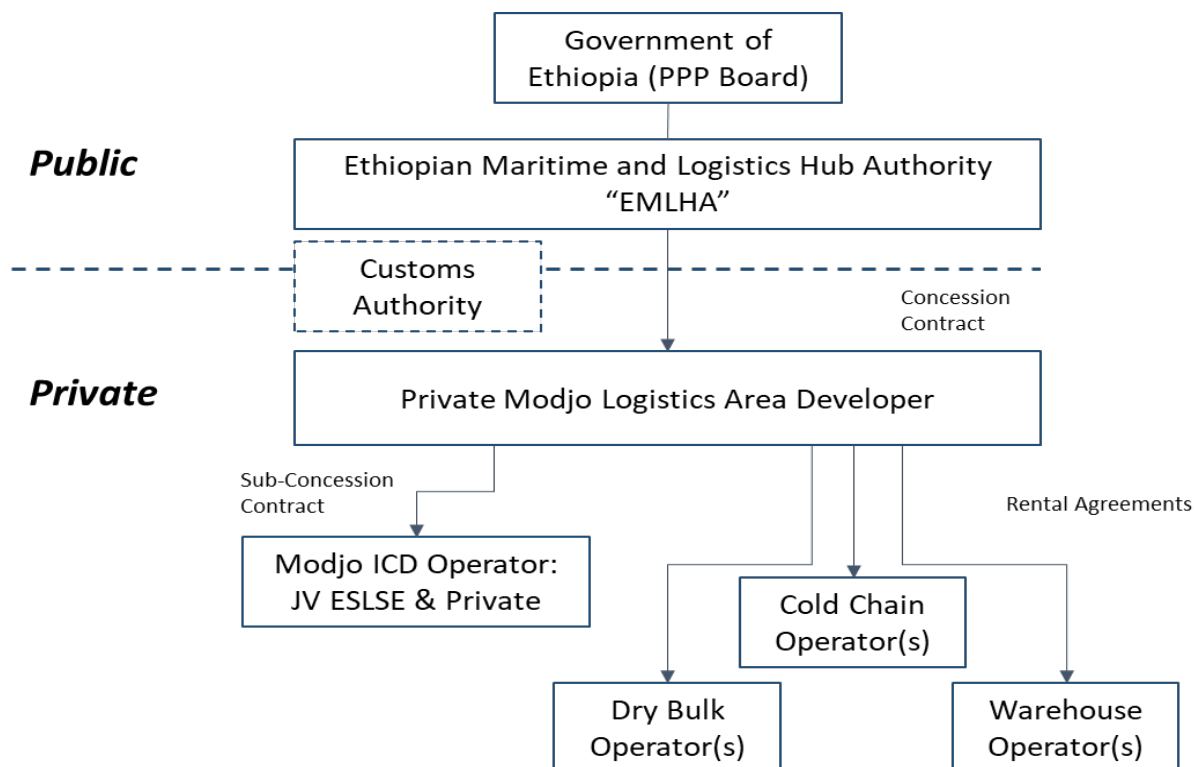
- **Option 1:** An integrated concession contract between the Government of Ethiopia/EMLHA and one private Logistics Area Developer who is subsequently responsible for the sub-concession contracts of the ICD operator consisting of a JV between ESLSE and a private sector terminal operator. Moreover, the private tenants interested to vest their business in the Modjo Logistics Centre also have a concession contract or rental agreement with the Logistics Centre Developer.
- **Option 2:** Separate concession contracts between the Government of Ethiopia/EMLHA and:
 - the ICD operators consisting of:
 - JV between ESLSE and a private international terminal operator; and,
 - Another competing private sector terminal operator (JV between Ethiopian and International company);
 - the private Logistic Centre Developer, who in its turn will have rental agreements with private tenants; and,
 - **Sub-Option 2A:** This option is included as a modified sub-option under option 2, as per request of the client. The difference between option 2 and sub-option 2A is that ESLSE together with its partner(s) will act in the role as Modjo ICD Developer and operator. Other future ICD operator(s) will also have their direct concession contract with EMHLA.
- **Option 3:** Separate concession contracts between Government of Ethiopia/EMLHA and:
 - the ICD operators consisting of:
 - JV between ESLSE and a private international terminal operator; and,
 - Another competing private sector terminal operator (JV between Ethiopian and International company); and,
 - direct concession contracts and/or lease agreements with the potential tenants for the Modjo logistics area. In this specific structure a “canvassing vehicle” is used, in which a private company is hired as “marketeer” to boost the development of the Modjo Logistics Area on behalf of the EMLHA.
- **Option 4:** Like sub-option 2A, this option is also requested for by the client to be included as one of the governance structure options. Under this specific option, ESLSE is foreseen to become the Logistics Hub Authority. ESLSE is then foreseen to have a “master” concession contract with a Private Logistics Hub Developer, with whom both the ICD operations and the logistics centre operators will have their sub-concession agreements.

The options as described above are presented, visualized and further elaborated on in the next sections.

Governance Structure Option 1: Integrated Concession Contract

This section presents the first governance structure option in which an integrated concession contract is applied. The indicative overview of this governance structure is presented in the figure below.

Figure 4-2 Option 1: Integrated concession contract



Source: MTBS

The main characteristics are:

- The public EMLHA (mandated by the Government of Ethiopia to act as the landlord of the Modjo Logistics Hub, as well as other potential future logistics hubs in Ethiopia) establishes an integrated concession contract with a private Modjo Logistics Area Developer; the scope of the concession contract encompass both the Modjo ICD operations, as well as the logistic activities of the Modjo Logistics Centre; and,
- The private Modjo Logistics Area Developer has the right to sub-concession the Modjo ICD operations to a dedicated container terminal operator (JV of ESLSE and private operator). Rental agreements are established with separate tenants (logistics, industrial, commercial) who will start a business at the Modjo Logistic Centre.

It should be mentioned that under this structure there can be multiple future ICD operators active with their own sub-concession contract (bonded or non-bonded).

The main benefit of this governance structure to EMLHA is the transparency of the concession contract between EMLHA and the private Modjo Logistics Are Developer. After all, the only official

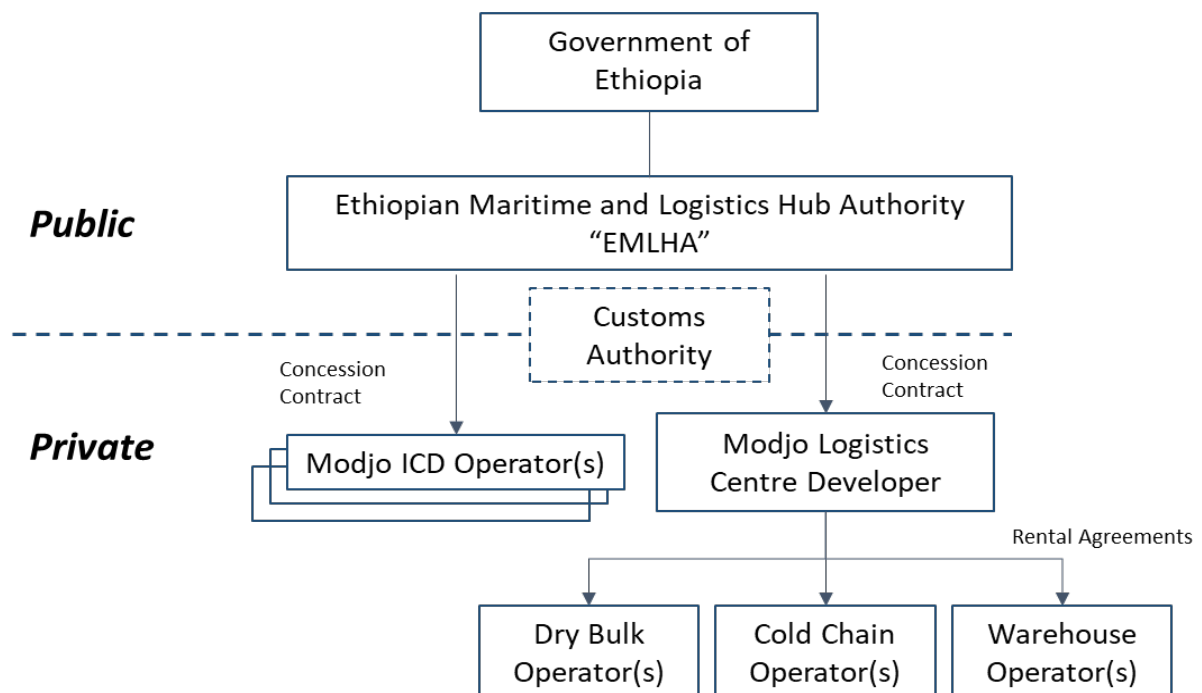
counterpart to EMLHA in this situation concerns the future private Modjo Logistics Developer, who on his turn is responsible for the sub-concession contracts of the ICD operator(s) as well as the tenants willing to vest their business within the Modjo Logistics Centre.

The main disadvantage of this particular governance structure is that sub-concessions or structures alike are typically not attractive for terminal operators, as they do not have full control of the (master) concession agreement. Being a sub-concessionaire and as such, being dependent on other (private) companies, increases risks which operators normally are not willing to take, or comes at a high cost. Moreover, this governance structure could be implemented in case all ICD operators and tenants within the logistics centre area concern private players. In a scenario in which ESLSE (partly) remains the operator of the dry port, this option is not preferred, as a public entity such as ESLSE is not foreseen to have a sub-concession agreement under a private party.

Governance Structure Option 2: Separate Concession Contract

This section presents the second governance structure option in which separate concession contracts between the public authority (EMLHA) and the Modjo ICD operator(s), respectively the Modjo Logistics Centre Developer are applied. The indicative overview of this governance structure is presented in the figure below.

Figure 4-3 Option 2: Separate concession contracts



Source: MTBS

The main characteristics of this option are:

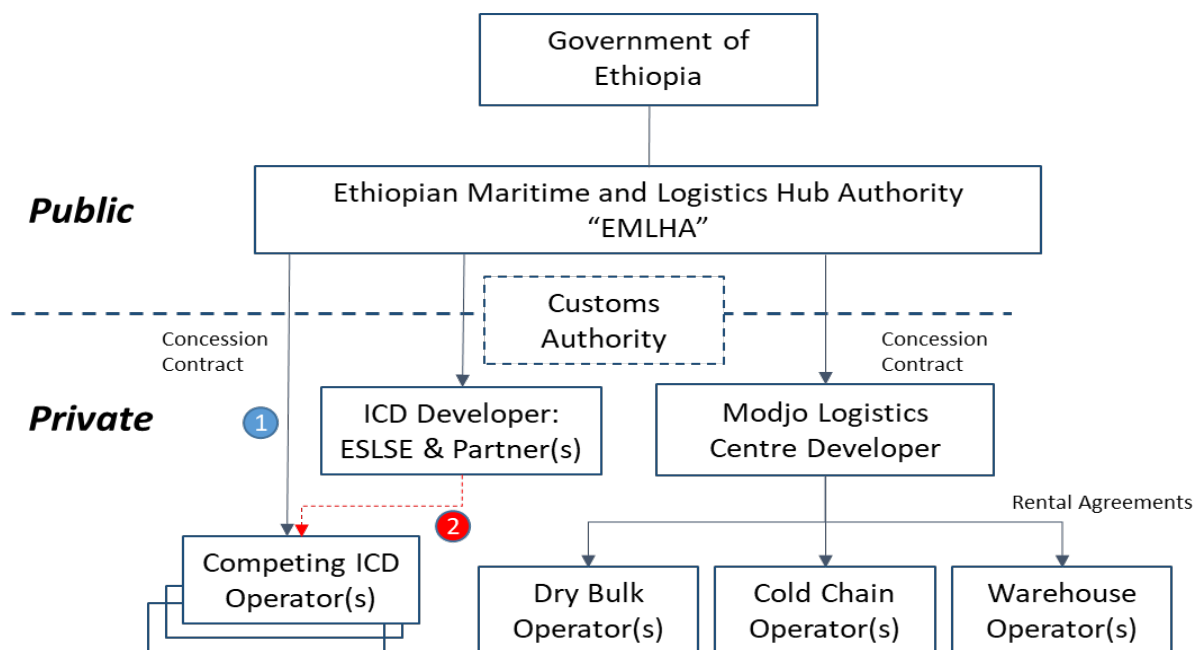
- The public EMLHA (mandated by the Government of Ethiopia to act as the landlord of the Modjo Logistics Hub and other future Ethiopian Logistics Hubs) establishes a separate concession contract with an ICD operator(s); the scope of the concession contract(s) encompass only the Modjo ICD operations, for which multiple operators can achieve their own concession contract for container operations, whether they are public like ESLSE or private in case of new competition; and,
- The public EMLHA establishes a separate concession contract with a private Modjo Logistic Centre Developer. The scope of the concession contract encompasses only the logistic centre activities. On his turn, The Modjo Logistics Centre Developer establishes rental agreements with separate tenants (logistics, industrial, commercial) who will start a business at the Modjo Logistic Centre.

The main benefit of this specific alternative governance structure is that the ICD operator(s) is able to have a direct concession contract with the EMLHA, which is typically preferred by private operators. In this way, the private operator has increased control over its own concession agreement with EMLHA and does not depend on any other private company. In turn, this governance structure option is expected to have a higher market appetite compared to governance structure option 1, as it reduces the risk to the operator.

Governance Structure Sub-Option 2A: Separate Concession Contracts

This option is included as a modified sub-option under option 2, as per request of the client. The difference between option 2 and sub-option 2A is that ESLSE together with its partner(s) will act in the role as Modjo ICD Developer and operator. Other future ICD operator(s) will also have their direct concession contract with EMHLA. This specific structure is illustrated in

Figure 4-4 Sub-Option 2: Separate concession contracts



Source: MTBS

The main conclusions of this sub-option are:

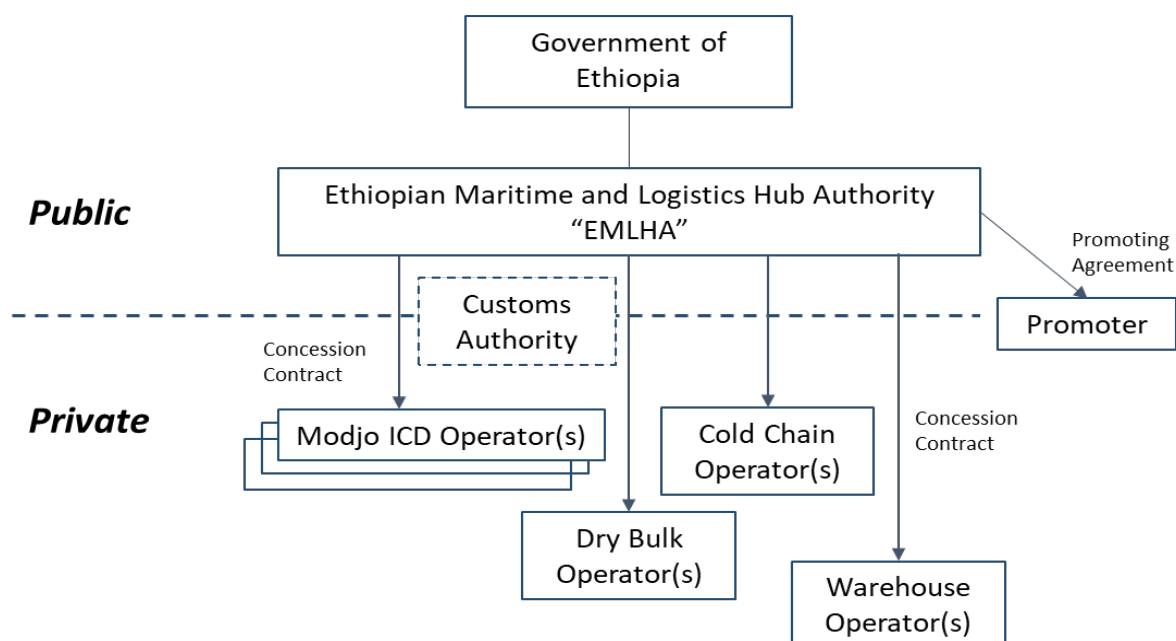
- The characteristics between option 2 and sub-option 2A do not differ much in case other future competing ICD operators have their direct concession contract with EMLHA. After all, then the only difference is that ESLSE and its partner(s) are mentioned in a different box under the ICD operations in Modjo Logistics Hub. The direct concession contract structure between competing ICD operators with EMLHA is required in order to have a level playing field between ESLSE and its partner(s) on the ICD operations (this structure is visualized through path 1);
- However, in case other future ICD operators have a sub-concession contract with ESLSE and its JV partner(s), then there is no longer a level playing field (indicated through path 2). This modification would put ESLSE in the position of Modjo ICD Developer, as well as in its current position of ICD operator (Dry Port Operator). Hence, this then results in a potential conflict of interest between ESLSE (in the function of both developer and ICD operator) with future private involvement in the role as additional ICD operators. For this reason, this modification is not recommended to be done.

The only way this structure could support level playing field is when ESLSE would only act as ICD developer with whom other private ICD operators have their concession contract. However, in this situation ESLSE is required to stop its role as operator and sell its container terminal to a private party.

Governance Structure Option 3: Separate Concession Contracts with a private “canvassing vehicle”

The final proposed structure is based on the same structure as option 2, but with direct agreements between the logistics centre tenants and EMLHA, instead of with the private Modjo Logistics Centre Developer. In addition, a private marketer can be hired in this option in order to boost the development of the Modjo Logistics Centre. The indicative overview of this structure is presented in the figure below.

Figure 4-5: Separate direct concession contracts with a private “canvassing vehicle”



Source: MTBS

The main characteristics of option 3 are more or less in line with the characteristics of the separate concession contracts described in option 2.

The only difference is that a private company active in the role as logistics centre promoter can be hired to arrange for canvassing and a promoting/marketing campaign and overall promotion in order to boost the success of the Modjo Logistics Centre. Thereby, the interested tenants will not have their concession contract or rental agreement with the private Logistics Centre Developer, but directly with the EMLHA.

The main advantages of this option include, among others:

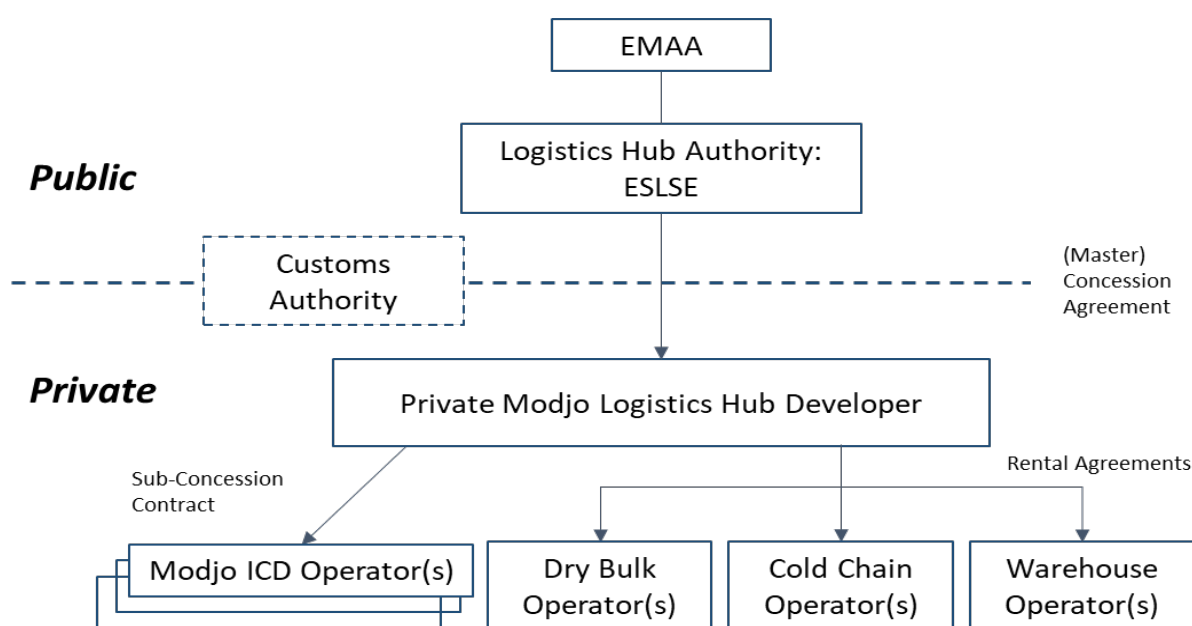
- Increased transparency due to the direct concession or rental agreements between the EMLHA and the logistics centre tenants;
- Reduced potential restraints that private investors might have in case of a direct agreement with a potential private competitor (in the role of the logistics centre developer); and,
- Improved value to the government and tenants as an additional layer (the Logistics Centre Developer) is taken out which also requires achieving its return on investments.

Hence, the private interest to vest business within the Modjo Logistics Centre is expected to be increased under this specific structure. However, a sufficient level of expertise, knowledge and capacity within the public authority (EMLHA) are requisite to successfully implement this governance structure characterised by all direct concession agreements. Hiring an experienced promoter to boost the success of the logistics centre can be considered, especially in case of limited canvassing and promoting/marketing experience and power at the side of EMLHA.

Governance Structure Option 4: Integrated Concession Contract with ESLSE as Hub Authority

The fourth and final governance structure was proposed by the Client as well and is included in this Final Report.

Figure 4-6: Integrated concession contract with ESLSE as Hub Authority



Source: MTBS

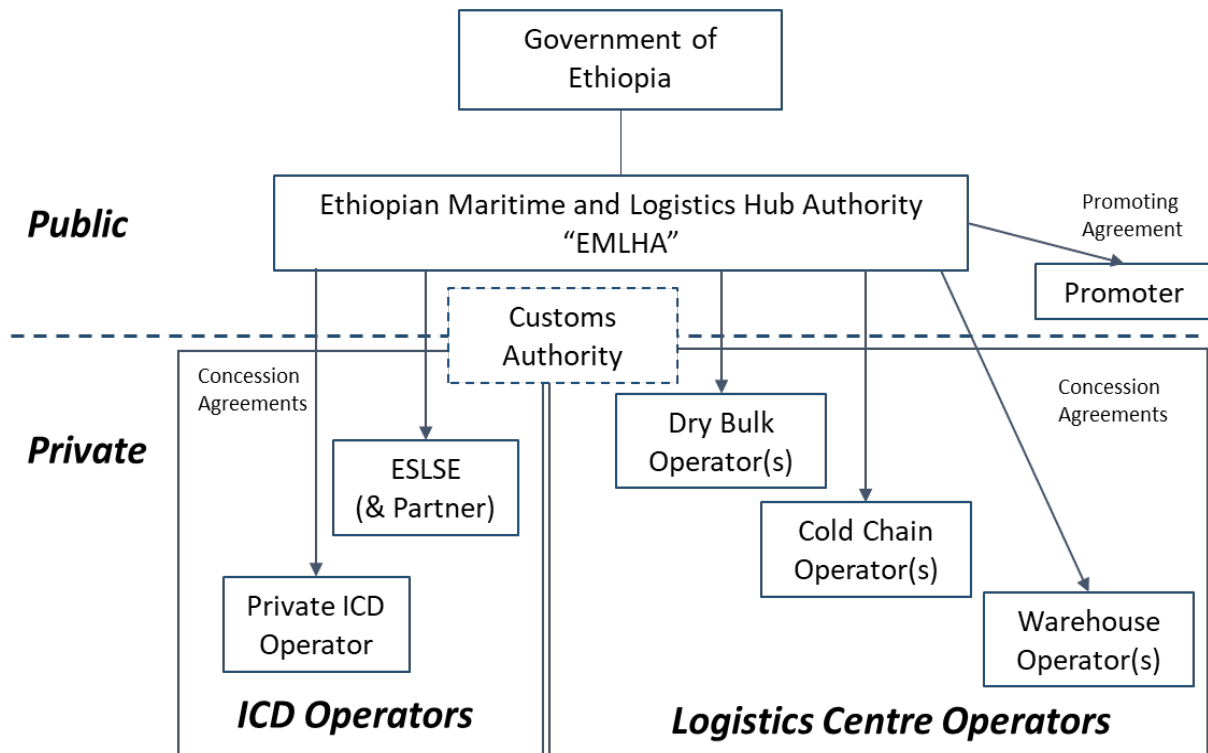
The main conclusions of option 4 are:

- Option 4 is characterized like option 1 as an integrated concession contract. However, in this specific option ESLSE takes over the role as Hub Authority from EMAA, which is positive in case EMAA is not able to sufficiently act as Hub Authority because of the lack of internal resources and required expertise level;
- ESLSE is foreseen to have the mandated by the Government of Ethiopia to act as the landlord of the Modjo Logistics Hub, as well as other potential future logistics hubs in Ethiopia. Thereby, ESLSE establishes an integrated concession contract with a private Modjo Logistics Hub Developer; the scope of this master concession contract encompasses both the Modjo ICD operations, as well as the logistic activities of the Modjo Logistics Centre; and,
- Like in option 1, the private Modjo Logistics Hub Developer has the right to sub-concession the Modjo ICD operations to a dedicated private container terminal operator, as well as to establish rental agreements with separate tenants (logistics, industrial, commercial) who will start a business at the Modjo Logistic Centre.

The most important requirement under option 4 is that ESLSE does not act as ICD operator any longer, as is currently the case in Modjo Dry Port. In case ESLSE wishes to continue the ICD operations in Modjo as operator (because of the considerable investments made), then option 4 is not recommended. After all, this would put ESLSE in the position of both Authority as well as ICD operator. This potential “double role” of ESLSE is expected to result into a conflict of interest in the future situation in which other ICD operators might become active in Modjo Logistics Hub. This can be best explained by the fact that as Logistics Hub Authority ESLSE will be able to control and make decisions for other (competing) ICD operators who also directly compete with ESLSE in the container business in Modjo.

Conclusion: Preferred Governance Structure Option 3

During the conversations with the Client and meetings with the stakeholders in Ethiopia it was mentioned that due to the considerable amount of recent investments made by ESLSE in Modjo Dry Port (ICD), it is not likely that ESLSE sells its operations (for 100%) to the private sector. For especially this reason, it is not expected that ESLSE will give up its role as ICD operator, which is required under option 4. For this reason, governance option 3 is the preferred governance structure option and recommended to be implemented for Modjo Logistics Hub and other future Ethiopian Logistics Hub.



Source: MTBS

The preferred governance structure is characterised by, among others:

- A multi-user hub facility in which ESLSE operates alongside multiple private operators;
- A multi-purpose facility with different cargo types, offering various value-added activities such as warehousing, cold-storage, packaging, labelling, etc.; and,
- Close cooperation between the ICDs (container handlers) and Logistics Centre operators active in the value-added activity business.

ICD Operations:

The preferred and advised governance structure option is in line with industry best practise and supports a separate and dedicated concession agreement between the public authority "EMLHA" and the Modjo ICD operator(s). A direct concession agreement is recommended, as sub-concessions or structures alike are typically not attractive for terminal operators and complicates the situation in the situation of ESLSE (in which a public-public concession is to be created). This can be best explained by the lack of full control to the ICD operator(s) on the (master) concession agreement. Being a sub-concessionaire requires dependency on others, which increases risks that operators are normally not willing to take or comes at a high cost.

Moreover, the advised governance structure also provides the EMLHA to introduce a second concession agreement with another private ICD operator at Modjo, which is important due to the expected future increase of cargo demand in the area. This will introduce competition and force the operators to become more efficient and less expensive.

Future Role of ESLSE

In the recommended Governance Structure ESLSE is foreseen to remain one of the ICD operators offering container related services (storage and handling) to its customers. Thereby, the customers include for example the importers of today using the facility of ESLSE, as well as the future exporters that vest their business within the Logistics Centre of Modjo Logistics Hub willing to export their containers via ESLSE. The future role of ESLSE is therefore solely focussed on the container activities.

ESLSE will also be responsible for the future investments in ICD superstructure and equipment, either with or without its future JV partner. Thereby, ESLSE is also responsible to guarantee and improvement of the current service levels (most likely through cooperation with an international GTO) to international standards.

The current 4 large warehouses at the premises of the current Modjo Dry Port are therefore foreseen to be transferred to the Logistics Hub Authority, who will subsequently rent the space to Logistics Centre operators (Ethiopian Private Logistics Companies) that are willing to perform CFS and warehousing activities within these warehouses. Currently, these warehouses are mainly used by the Customs Authority for timely storage purposes. However, after the refurbishment of the current dry port, the customs are foreseen to leave this area of the dry port and get their own dedicated area within the ICD area. For more information, please refer to chapter 3.5.2 of this report.

Logistics Centre Area:

The recommended option arranges for direct agreements/contracts between the potential tenants of the Logistics Centre Area and the EMLHA. These direct agreements with the tenants not only prevent potential restraints that private investors have under the circumstances of direct agreements with private competitors (in the role of logistics centre developer), but also increase the transparency between EMLHA and the tenants. Finally, the direct agreements between EMLHA and the tenants is expected to improve the value to the government and tenants since no additional layer is included (logistics centre developer) that also requires making its return on investments made.

In case the canvassing and promoting power of EMLHA is not sufficient enough to set-up a strong canvass and marketing/promotion campaign for the logistics centre, a separate agreement with an experienced logistic centre developer/promoter can be considered. Such a promoter is able to support a market-driven implementation of the logistic centre and focusses on canvassing efforts for attracting logistics, industrial and commercial tenants to the area.

Contractual Relationship of the Concessions:

A contractual relationship is foreseen to exist between the EMLHA and the different ICD and Logistics Centre operators. Thereby, EMLHA can act as either:

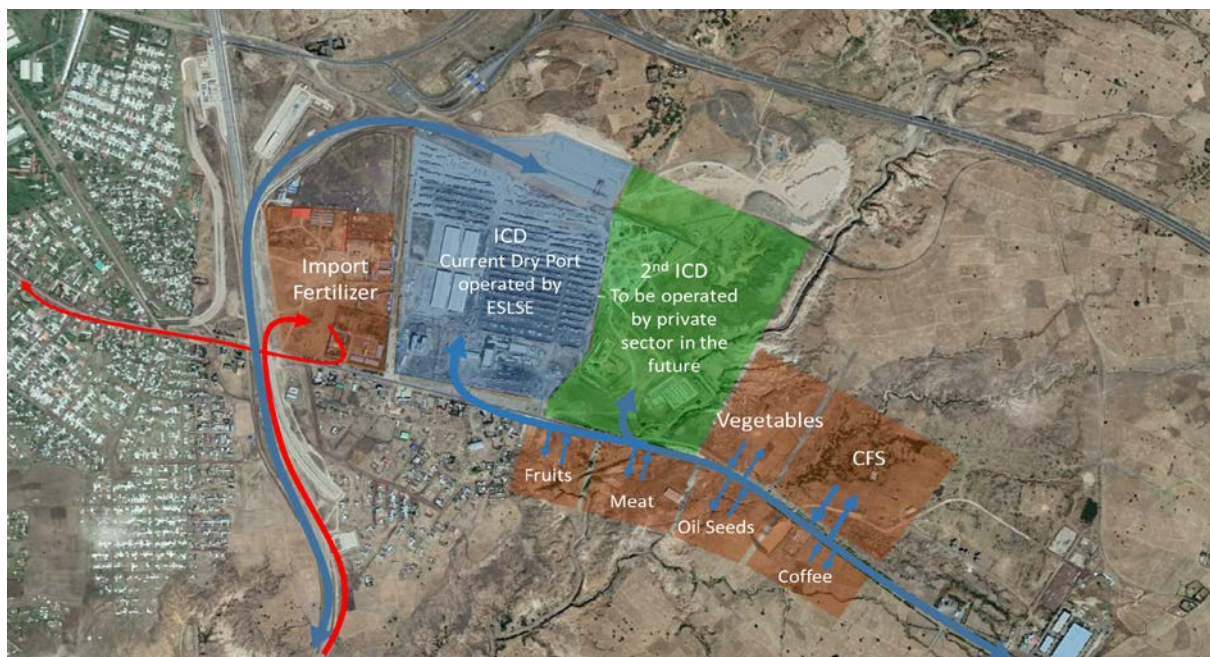
- **A pure Landlord:** in which EMLHA rents out the land available to private operators for a specific time (10-30 years) that are able to invest themselves in superstructure and equipment, including:
 - ICD operators: such as ESLSE and international private GTOs; or,
 - Logistics Centre tenants: Ethiopian private companies active in the value-added activities; or,
- **A Landlord under a tailored Management Contract:** in which EMLHA invests in the required facilities (by using the USD 150 M World Bank loan) and subsequently rents out the entire facilities on a “turn-key” principle. This latter form is especially foreseen to be implemented for the high-risk investments in which the Ethiopian private sector is less willing to or able to invest in. However, the operations will be done by the Ethiopian private sector on a management contract basis in which they lease the facilities from the EMLHA for a specific amount of time (5-10 years).

Operational cooperation in the Modjo Logistics Hub:

Although there will not be a contractual relation in terms of a concession between the different operational actors in the Governance Structure (ESLSE and other private ICD or Logistics Centre operators), they are foreseen to have a strong operational cooperation. After all, cargo such as coffee that is consolidated in one of the coffee warehouses will be bagged and stuffed into a container. This empty container can be collected from one of the ICD operators (currently only ESLSE) and after stuffing brought back to the ICD operator as a full export container. Then, this container will either leave the ICD by truck or train to the port of export (e.g. Port of Djibouti). Hence, this activity will not only take place in the coffee value chain, but also in the value chains of meat, fruits, oil seeds, vegetables and other type of export cargoes handled by the warehouses.

To guarantee an optimal efficiency within the value chain, the ICD operators will closely cooperate with the different Logistics Centre operators. The indicative flow of cargoes between the ICD operators and the Logistics Centre operators is visualized in Figure 4-7.

Figure 4-7 Indicative overview of operational cargo flows within the Logistics Hub



Source: MTBS

Hub Authority Expertise Required:

To guarantee the sufficient operation of the EMLHA, different fields of expertise are required. This expertise can either be internally recruited at EMAA (or other governmental entities), or internationally hired depending on the field of expertise. ***It should be mentioned that the existing situation in which EMAA already acts as authority over ESLSE should be taken as starting position, which can be used as basis for the future Hub Authority (EMLHA).*** The fields of expertise required in the operation of the future Hub Authority include, among others:

- **(Dry)Port Master Planning:** Definition of zoning plans and arranging a healthy balance of demand/supply of land area and activities;
- **Management expertise:** As soon as the logistics hub is created it should be sufficiently managed over time. This includes for example the management of offside facilities (truck parking areas, banks, restaurants, police, fire brigade, etc.) and utility supply (e.g. electricity, water, gas, etc.) and the connecting infrastructure to the sites such as roads and rails that are offered within the Hub;
- **Policy implementation:** Securing the implementation and safeguarding of the policies of the transport/logistics sector of the Government of Ethiopia;
- **Safety and security:** examples are the fulfilments of ISPS requirements, safe routing of cargo flows and traffic control;
- **Investments:** The investments foreseen to be made in the hub by the authority should be carefully considered, for which financial analysis should be made;
- **Transactions, contracting, tendering:** The private entities willing to vest their interest in the hub should be selected based on certain criteria (e.g. business plan), which are to be reviewed by the authority; and,
- **Promotion:** The Logistics Centre is to be promoted by the hub authority in order to attract as many as value-added activities and private sector players as possible.

4.5 Institutional Framework, Scenario Thinking and Sensitivities

After the outline governance structure is defined for the future development of the Modjo Logistics Hub, the project should be implemented under the optimal governance structure option. Therefore, this section elaborates on the different roles and responsibilities of the public and private sector first, where after a tailored approach for the development of the Modjo Logistics Hub is applied.

To determine the optimal governance structure model for Modjo Logistics Hub, there is looked beyond the standard models. This is mainly required due to the contextual sensitivity and the opportunities for chain integration in with Djibouti. Therefore, scenario thinking is applied, and specific attention is given to a tailor-made solution for the implementation of the optimal governance structure for Modjo Logistics Hub.

The remainder of this section is structured as follows:

- The Institutional Framework and PPP Law in Ethiopia;
- Introduction and overview of different PPP management models;
- Possible allocation of investments and responsibilities; and,
- Landlord governance model: A tailored approach for the development of the Modjo Logistics Hub.

4.5.1 Institutional Framework and PPP Law in Ethiopia

PPIAF: a multi-donor technical assistance facility

PPIAF concerns a global multi-donor technical assistance facility housed inside the World Bank and is dedicated to strengthening the policy, regulatory and institutional underpinnings of private sector investment in infrastructure in emerging markets and developing countries. Currently, PPIAF supports Ethiopia under the project “Ethiopia: Support for Instituting a PPP Framework”.⁵⁰ This project is focused on supporting the Government of Ethiopia (GoE) with the development of a PPP project pipeline and PPP project screening project to identify opportunities that meet the various requisites for suitability as a PPP project. The activity will also help with the development of, among others:

- sector specific PPP guidelines;
- a PPP policy;
- a legal framework;
- draft legislation; and,
- a generic PPP Guidelines/Manual.

In addition, supplementary guidelines for line ministries will be prepared that are specific to their respective sectors and describe the steps that need to be taken through project identification, preparation, procurement and implementation to help support capacity building efforts.

⁵⁰ <https://ppiaf.org/activity/ethiopia-support-instituting-ppp-framework>

PPP Proclamation⁵¹

Ethiopia has recently enacted a new Proclamation facilitating Public Private Partnerships (PPP), recognising that the private sector is essential to support the country's economic growth and improve the quality of public services, particularly in infrastructure and transport.

Purpose and scope

The Proclamation sets out the new PPP legislative framework with a view to promoting and implementing privately financed infrastructure projects by enhancing transparency, fairness, value for money and efficiency through the establishment of specific procedures. PPP projects may be for either new or existing facilities and projects, and can include one or multiple of the following activities in any combination:

- design;
- financing;
- construction;
- rehabilitation;
- expansion;
- modernisation;
- operation;
- maintenance;
- administration; and/or,
- management.

Approval authorities

Whilst the Proclamation states that the Federal Government entity responsible for the relevant infrastructure service will normally initiate PPP proposals and transactions, these will be subject to the approval or direction of a new PPP Board. The Board will consist of:

- The Ministry of Finance and Economic Co-operation (who will chair the Board);
- The National Bank of Ethiopia;
- The Ministry of Water, Irrigation and Electricity;
- The Minister of Transport;
- The Ministry of Public Enterprises;
- The National Planning Commission;
- The Ministry of Federal and Pastoralist Affairs; and,
- two members from institutions representing the private sector.

The overview of the PPP Board configuration provides an indication of the field of foreseeable PPP projects in Ethiopia. However, oil, mines, minerals and rights of air space are excluded from the scope of the Proclamation which also does not authorise privatisation or divestiture of public infrastructure or public enterprises.

⁵¹ Growling WLG (Article: 27 March 2018); Dr. Ensermu, Various internet sources

PPP Directorate

Following the PPP proclamation, Directive no: 2/2010 was issued by the Ethiopian Investment Board. Thereby, a PPP Directorate will be established within the Ministry and act as Secretariat to the Board. The Directorate will promote PPP, conceptualise, identify and categorise projects, make recommendations, establish policy guidelines, coordinate activities and ensure compliance; these are core powers in the Proclamation, depending on the level of delegation to it agreed by the Board. The Board will approve appropriate structures and feasibility studies, set minimum standards and require value for money to be demonstrated.

The Directive allows joint venture participation of international logistics service providers holding up to 49% or fewer stakes. Consequently, ESLSE is allowed to sell 49% of their shares to an international company. The Directive allows foreign investors to own a share in the logistics industry of Ethiopia and has two objectives:

- To expedite manufacturing industry growth; and
- To adequately increase export trade.

The following logistics activities, previously protected for local logistics companies, are allowed when forming a JV with an Ethiopian business counterpart:

- Container handling;
- Bonded warehouse administration;
- Consolidation and deconsolidation services; and
- Previously prohibited logistics services jobs for foreign investors such as:
 - Stuffing;
 - Freight forwarding; and,
 - Shipping agent services.

The PPP Proclamation allows the future Hub Authority to act as a landlord and to conclude a concession contract with private companies.

Process

Once a potential PPP project has been identified, a public-sector comparator will need to be developed for initial approval by the PPP Board, following which a feasibility study will need to be undertaken in order to seek authorisation to tender from the PPP Directorate.

Generally speaking, projects will be procured through an open bidding process. The private sector will be invited to prequalify. Following identification of suitably qualified bidders, they will be invited to submit bids pursuant to a Request for Proposals issued by the PPP Directorate setting out the technical and financial conditions required to be met. A preference margin may be granted to proposals reflecting local participation. Following any necessary clarifications, technical bids will be opened first and then, for those bids which are responsive, financial bids will be opened. An evaluation report will then be prepared to establish bidder rankings and the results published.

The Proclamation envisages various different methodologies for bidding: normally, either a two-stage process or competitive dialogue. However, direct negotiation may be allowed where there is an urgent need and either:

- (a) the former two processes are considered impractical;
- (b) the project is of short duration; or,
- (c) the project relates to national defence or national security.

The Proclamation sets out the process for each of these options. The Proclamation also contemplates PPPs proceeding by way of unsolicited proposals, provided these do not relate to a project which has already received approval or is being studied. Successful bidders must establish an Ethiopian company as the project vehicle, which may include a public entity as a minority shareholder.

Core terms

The PPP project agreement will set out the terms of the PPP arrangement, respective obligations and fees payable to, or tariffs permitted to be levied by, the private sector party. If any Government support is justified and agreed on a value for money basis, direct payments, contributions in kind or guarantees may be provided. The public sector will assist the private sector party with any necessary land rights. Subject to approval, the private sector may create security interests over assets, rights or interests required to secure financing.

The Proclamation specifically contemplates:

- private sector compensation for specific changes in law which substantially affect economic returns;
- the ability for the public sector temporarily to take over the operation of a PPP facility to ensure effective and uninterrupted service delivery in the event of private sector failure;
- the ability for the public sector to agree substitute private sector parties with financiers in the event of serious breach by the private sector party;
- termination and compensation payments; and,
- dispute resolution mechanisms in whatever forum may be agreed by the parties.

Policy awaited

Whilst the Proclamation contains certain prescriptive processes and conditions, further information is to be awaited on the approach the PPP Directorate will take in establishing relevant policies and procedures. No doubt, as the Directorate gains capacity and experience, the PPP market place in Ethiopia will become clearer, but a start has now been made.⁵⁷

4.5.2 Introduction and Overview of PPP management models

Agreements between public and private entities take many forms and sizes, for both new and existing services. At one end of the spectrum there is a management contract, whereby the public sector pays a fee for a service. At the other end, there is full privatization or divestiture (outright sale), where the government sells assets to a private company. Outsourcing has recently become another popular option, where a private company would handle an aspect of a service, such as billing, metering, transport or even cleaning of facilities.

Internationally, there are various PPP management models that have been developed. One way of modelling the various PPP management models is to distinguish the level of private sector involvement in five key areas:

- **Infrastructure:** Land acquisition, construction of connecting roads/railway to the site and connecting utilities to the site, etc.;
- **Superstructure:** Pavement, internal roads, buildings/offices, warehouses, internal utilities, etc.
- **Equipment:** Handling equipment to run business operations such as RTG's, reach stackers, empty handlers, forklifts, etc.
- **Management & Operations:** Responsibility for the day to day operation and management of the (dry)port, including labour;
- **Other services:** Port Community Systems, overall canvassing, promotion and marketing of the logistics hub, etc.

The World Bank-PPIAF Port Reform Tool Kit defines four standardised types of port management models, which are summarized below:

- Public service port;
- Tool port (Management Contract);
- Landlord port;
- Private service port (BOT).

The PPP management models differ in the allocation of risk, roles, and responsibilities between the private and public sector. Throughout the world, the landlord management model is the most commonly applied PPP management model for (dry) ports and logistics zones. The table below shows how risks, roles and responsibilities are assigned in each of the port management models.

Table 4-3 Typical PPP (dry) port management models as proposed for this Project

Type	Infrastructure	Superstructure & Equipment	Management & Operations	Other services
Management Contract	Public	Public	Private	Public/Private
Landlord Port	Public	Private	Private	Public/Private
Built-Operate-Transfer	Private	Private	Private	Private

Source: MTBS; based on World Bank PPP Toolkit

The current governance structure as implemented in Modjo Dry Port (ICD) can be best characterised as a public service dry port. After all, ESLSE as a governmental organisation is responsible for the operation and management of the dry port.

For the purpose of the initial comparison of the available PPP models for the implementation of the Modjo Logistics Hub, the identification of alternative PPP models is presented first. Thereafter, the initially foreseen preferred model is elaborated in more detail in the remainder of this section.

Evaluation of PPP implementation options

Selecting the preferred Public-Private Partnership structure for the implementation of the Modjo Logistics Hub is one of the key aspects driving the successful implementation of the project:

- The PPP structure drives project feasibility and project bankability;
- The PPP structure determines the future PPP Procurement Plan and the required profile of private sector bidders; and,
- The PPP structure is an important means for the public sector to ensure its strategic objectives are met.

Objectives for selecting preferred PPP management model

It is required first to clearly define the objectives with respect to selecting the preferred PPP structure for the Modjo Logistics Hub. We propose the objectives as follows, which is to be further refined with the Client during the Inception Mission:

- **Value maximisation:** ensure maximized value for the public sector, while ensuring attractive returns for (private) investors to ensure project bankability;
- **Allocation of risks:** by allocating and transferring investment obligations from public to private players also shifts the allocation of risks between both parties;
- **Private sector financing capabilities:** limited public funding possibilities, transferring investment/financing obligations to the private sector which is important to reduce the burden on public budget (EMLHA and/or Government of Ethiopia);
- **Market appetite:** yield sufficient market appetite for the project, ensuring PPP tender competitiveness and optimized bids;
- **Speed of implementation:** ensure that the project construction is executed in the foreseen timelines;
- **Quality & costs of service:** a private party is generally able to provide increased quality of services, which could, in turn, increase the service costs; and,
- **Level of public control:** ensure sufficient level of public control over strategic (ICD / Logistics Centre) infrastructure assets.

Main PPP options for the Modjo Logistics Hub

For the Modjo Logistics Hub, three main PPP structuring options are assessed, including:

- **Option 1:** Management Contract Model;
- **Option 2:** Landlord Model; and,
- **Option 3:** Built-Operate-Transfer Model (BOT).

The three PPP management models as presented in the list above are further elaborated on within the next section.

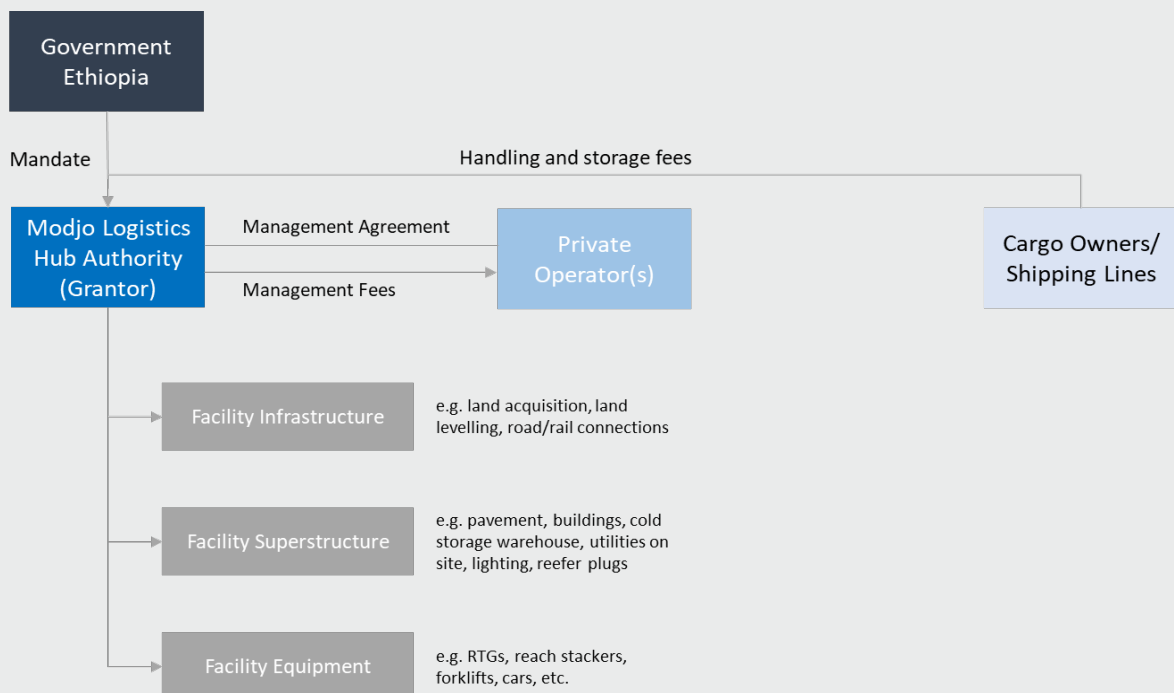
1. Management Contract Model

Under the Management Contract Model, the future EMLHA is responsible for all investments in the Modjo Logistics Hub. A separate management contract is established between EMLHA and the private operator(s) (e.g. ICD operator) who will be responsible for the management and the operations of the facility. The operator(s) is usually paid a fixed fee to recover its costs for staff and expenses, however more sophisticated management contracts may introduce some incentives for efficiency.

The contract duration is generally short-term, typically around 3-5 years. Traditionally, this option is favoured as a transitional arrangement for introducing private sector participation on a larger scale. This option is most seen in cases where the private sector would be unwilling to accept significant market risks.

All EMLHA's investments and costs should be recovered by the direct revenues generated by the project (received from cargo owners/shipping lines/etc.). Hence, EMLHA incurs all market risks under this option.

The Management Contract Model is visualized in the figure below:



Advantages:

- Straightforward transaction process, low transaction costs;
- Low interface risks since one entity (EMLHA) is responsible for all activities; and,
- Some (although limited) transfer of know-how and improved operational performance.

Disadvantages:

- Significant public funding since all investments are allocated to EMLHA;
- All market risks are allocated to EMLHA;
- Medium expected market appetite due to the limited financial potential for private sector players;
- Limited potential for major improvement in the efficiency of ICD operations;
- Private sector not 'locked in' in the project (no capex exposure), limited incentives to improve efficiency and service levels;
- EMLHA unable to tap from private sector experience to develop and construct ICD and logistics centre infrastructure under strict timelines; and,
- Difficulties in the enforcement of discipline by the private operator, as often the staff is still dependent on the Logistics Hub Authority for working instructions (interface).

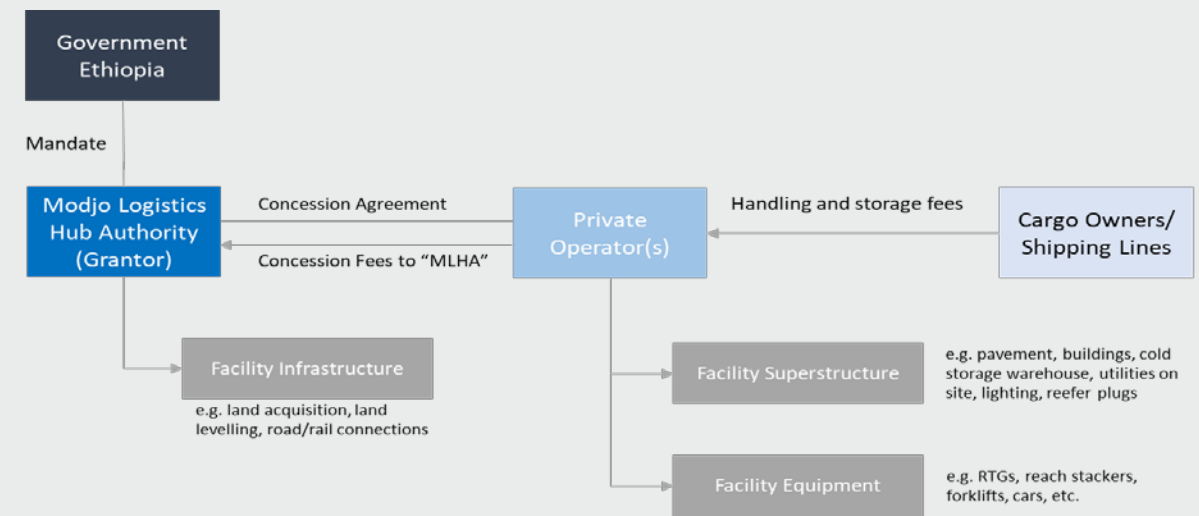
2. Landlord Model

Under the Landlord Model, the future EMLHA provides the main infrastructure (of which the majority is already in place as it partly concerns a brownfield situation), whereas the private operator(s) is responsible for providing the required superstructure, as well as the handling equipment (regarding the further expansion of the facilities). The private operator(s) will have the right to collect revenues from cargo owners/shipping lines/other customers, and in return pays a concession fee to EMLHA. For EMLHA, these concession fees should be sufficient to recover its investments in the required infrastructure (if any).

The contract term is typically between 15 – 20 years and is often applied in transport infrastructure projects such as dry ports and ICDs. Market risks are more balanced between EMLHA and the private operator(s); a substantial part of the market risks is transferred to the private sector (assuming a balanced fixed/variable concession fee structure).

Under this option, it is important for the EMLHA to assess public funding possibilities (Affordability) which are needed to finance the investments in the required infrastructure.

The Landlord Model is visualized in the figure below:



Advantages:

- In line with industry best practise;
- Substantial transfer of market risks from the EMLHA to the private operator(s);
- Private sector operational expertise might attract more cargo;
- Private sector 'locked in' in the project (capex exposure), sufficient incentives; and,
- Clear separation between public and private responsibilities.

Disadvantages:

- Significant public funding might be required since infrastructure investments are allocated to EMLHA (to be further investigated);
- Interface risks between EMLHA and private operator(s), as both are dependent on the performance (and interrelation of activities) of the other party; and,
- EMLHA unable to tap from private sector experience to develop and construct the required infrastructure under strict timelines.

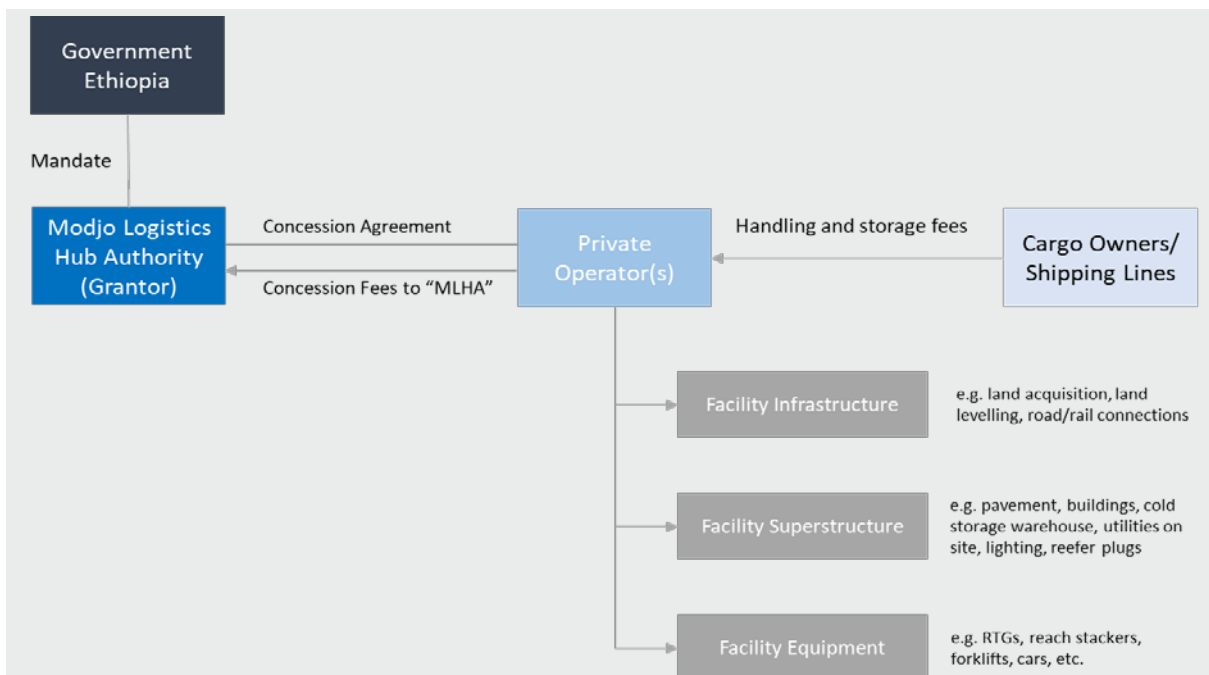
3. Built-Operate-Transfer (BOT) Model

Under the BOT Model, the private operator(s) is responsible for all investments in the project. Hence, this option assumes that (almost) all risks are transferred to the public sector including market risks, construction risks, cost overruns and delays, etc. Additionally, the future EMLHA has no/limited funding obligations. In return, the private sector has the right to collect revenues from cargo owners/shipping lines/other customers.

The concession fees paid to the EMLHA are typically low, as the EMLHA has not incurred investments that need to be recovered. It should be noted that for the Modjo ICD, currently known as the Modjo Dry Port, a considerable amount of concession fees can be expected to be paid. This can be explained by the brownfield situation in which a considerable amount of assets is handed over to the private sector, which considerably reduces the required initial private investments. One element important for a BOT structure is the transfer of public control to the private sector, which should be carefully governed through the concession agreement.

The contract term is 20 – 25 years, dependent on the scale of investments involved. However, after the end of the BOT concession, all assets are to be transferred to the public sector, after which the project can be reintroduced to the market for the next concession term.

The BOT Model is visualized in the figure below:



Advantages:

- No/limited funding requirements by EMLHA;
- Most (if not all) risks are shifted to private operator(s), including market risks, construction risks, etc.;
- Low interface risks since one entity is responsible for all activities;
- Relatively low risks for EMLHA. No project management, only contract compliance monitoring;
- Experienced private sector well able to manage and drive a complex ICD infrastructure development project under strict timelines; and,
- In line with industry best practise.

Disadvantages:

- Reduced level of control for EMLHA, important to structure a well-balanced and enforceable concession agreement);
- Limited upside benefit of BOT due to brownfield situation (main infrastructure already exists); and,
- Project implementation: limited buy-in for public sector, providing a potential risk for obtaining relevant clearance/permits on time for the private sector.

Considerations of the Selection of the Preferred PPP Management Model

Based on the proposed strategic objectives for the Modjo Logistics Hub and the identified advantages and disadvantages of each of the PPP models as presented in the previous sections, the PPP options are evaluated reflecting the strategic objectives for the Modjo Logistics Hub implementation. These objectives are summarised again below:

- **Value maximisation:** ensure maximized value for the public sector, while ensuring attractive returns for (private) investors to ensure project bankability;
- **Allocation of risks:** by allocating and transferring investment obligations from public to private players also shifts the allocation of risks between both parties;
- **Private sector financing capabilities:** limited public funding possibilities, transferring investment/financing obligations to the private sector which is important to reduce the burden on public budget (EMLHA and/or Government of Ethiopia);
- **Market appetite:** yield sufficient market appetite for the project, ensuring PPP tender competitiveness and optimized bids;
- **Speed of implementation:** ensure that the project construction is executed in the foreseen timelines;
- **Quality & costs of service:** a private party is generally able to provide increased quality of services, which could, in turn, increase the service costs; and,
- **Level of public control:** ensure sufficient level of public control over strategic (ICD / Logistics Centre) infrastructure assets.

For each of these objectives, the evaluation of the PPP management option is presented below:

Value maximization

- Management Contract Model: A management contract is less favourable, as the private operator is less incentivised to outperform/significant increase operational performance and project value. Limited transfer of private sector operational skills and know how. Finally, the Client is assumed to search for a long-term solution rather than a short-term solution.; and,
- Landlord Model: This specific project provides a perfect fit with the landlord model option, especially because most of the required infrastructure is already built. Hence, the majority of the investments are done on the public side, which minimalizes the exposed financial risk to the public sector. At the same time, the private sector can be handed over a considerable amount of existing assets. Due to the handover of assets, the private bidders are expected to be able to offer a substantial concession fee. For this reason, it is expected that the landlord model is able to sufficiently deal with the value maximization goal to the Government of Ethiopia; and,
- BOT Model: Typically, most of the risks (market, construction, etc.) are allocated to the private sector under a BOT PPP model. Thereby, this model provides sufficient incentives to improve the value of the project. However, as explained above, most of the required infrastructure assets are already in place as the majority of the project concerns a brownfield situation. This limits the typical benefit of a BOT structure in which all of the investment requirements are transferred to the private sector. Moreover, as more risks are shifted towards the private sector under a BOT model (market risk, country risk, financial risk, construction risk, etc.), the costs of financing (e.g. WACC) also increases a bit for the private operator, offsetting part of the value increase.

Risk Allocation

- Management Contract Model: Most of the risks are still allocated to the public sector, as the private sector is only hired to take over the management and operation of the facilities.
- Landlord Model: A Landlord model provides the best balance between the risks allocated between the public and private sector as investments are shared between the two parties.
- BOT Model: Although most (if not all) risks are allocated within this model to the private sector which is a benefit to the public sector, the BOT model usually comes at a higher cost as well (less value transfer due to the increased risks).

Private sector financing capabilities

- Management Contract Model: A management contract is not suitable, as all investments remain with the public sector, in this specific case the EMLHA;
- Landlord Model: There is still an amount of investments allocated to the EMLHA under the landlord model. However, the amount is expected to be limited as much of the infrastructure already exists. Amongst others, affordability need to be further investigated to confirm whether the future EMLHA and/or Government of Ethiopia has the required funding available (and is willing to finance); and,
- BOT Model: Normally, the BOT model would be the preferred model related to the private sector financing capabilities. However, as under a BOT for this specific project, the required amount of investments does not substantially differ compared to the landlord model, the additional benefit of the private sector financing capabilities compared to the landlord model is also limited to nihil.

Market appetite

- Management Contract Model: A management contract will likely to have low to medium market appetite. On the one hand management contracts have limited risks combined with secured revenues streams for the operator. However, on the other hand, the upside financial potential for private operators is limited as well, which is especially important for the larger terminal operators; and,
- Landlord and BOT Models: For a landlord and BOT model, the expected market appetite is high and assumed to be roughly equal. On the one hand, increasing investments for the private sector might reduce the number of bidders who are capable of undertaking such projects. On the other hand, the additional investments required under the landlord and BOT models also provide huge financial upside potential for the private terminal operators.

Speed of implementation

- Speed of implementation is of less importance, as the various steps in the transaction process do need time in any case. The landlord and BOT model would need some additional time for optimal preparation versus a management contract, but this would be in the range of 1-2 additional months during the transaction implementation phase.

Quality & costs of service

- Private operators are often able to improve the quality of service of a Dry Port, ICDs and Logistics Centres that could increase the satisfaction of its customers. This can be explained in several factors such as the use of new efficient equipment, reduced waiting times at the gate, less damage to goods and improved transport supply chain information (tracking & tracing). The improved quality of service could, however, come at higher costs as well. In the management contract, it is assumed that the older existing equipment of the dry port or second-hand equipment will be purchased, resulting in a higher risk of breakdowns and hence a lower terminal efficiency and service level.

Level of public control

- Level of public control is best secured through a management contract. With responsibilities being shifted towards the private operator under the landlord and BOT models, public control is reduced to some extent. Therefore, it is crucial to structure and implement a well-balanced and enforceable concession contract that should ensure an optimal monitoring of the private sector performance. Clear default and ultimately termination schemes are important in this respect.

A summary of the factors above is visualized for the Public-Sector Comparator situation in comparison with the three PPP options in the scoring table below. This analysis is done in a rather qualitative multi-criteria way, in which scores can range from --, -, 0, +, and ++. Thereby, -- stands for poor, - for fair, 0 for average, + for good and ++ for excellent.

It should go without saying that a similar exercise can be done in the form of a “weighted method” in which the Client puts the level of importance for each of the different objectives. Moreover, the selection of the preferred model can also be done by performing a quantitative Value for Money analysis. The latter will be done in the (financial) model phase of the assignment.

Table 4-4 Qualitative Selection (Multi-Criteria Analysis) of the Preferred PPP Governance Model

Government of Ethiopia Objectives	PSC	Management	Landlord	BOT
Value maximization	-	0	++	+
Risk Allocation	--	-	+	++
Private sector financing capabilities	--	--	++	++
Market appetite	--	+	++	++
Speed of implementation	+	+	0	0
Quality & costs of service	-	+	++	++
Level of public control	++	++	+	0
Total score (Balance # + & -)	-5	2	10	9

Source: MTBS

Landlord model as recommended PPP standard option for the Modjo Logistics Hub – Ethiopia

For this study and in line with international best practice, the landlord approach is the recommended option for the further development of the Modjo Logistics Hub to the EMAA. The main reasons are summarized below:

- In line with industry best practice;
- Long -term private and public commitment through joint investments;
- Balanced allocation of risks between EMLHA and private operator(s);
- Clear separation between public and private responsibilities;
- Value maximization secured;
- Making use of private sector financing capabilities;
- Efficient operations and high quality of services; and,
- Government retains control over land and main infrastructure.

Based on the above line of reasoning, the possible allocation of investments and responsibilities under the PPP Landlord model is further elaborated on in the next section.

4.5.3 Possible allocation of Investments and Responsibilities

In line with the more generic description of the PPP landlord model as provided above, this section further elaborates on the implementation of the landlord model tailored towards the development of the selected ICD operator(s) and logistics zone operator(s) in Modjo. This is primarily related to defining the optimal investment allocation between the public and private sector. The table below outlines the main options for allocating public and private investments:

Table 4-5 Public and private investments in the ICD and Logistics Zone

Responsibilities	Options
ICD Operations	Landlord Structure
1. Infrastructure up to the ICD Facility	
• Land acquisition • Access roads to the site • Utilities to the site	Public Authority
2. Infrastructure within the ICD	
• Internal roads and utilities • Gate and fencing of the ICD	Private Operator (or Public operator in case of ESLSE)
3. Superstructure and equipment	
• Pavement • Buildings and offices • Warehouses • Cargo handling equipment	Private Operator (or Public operator in case of ESLSE)

Responsibilities	Options	
Logistics Centre Operations	Option 1	Option 2
1. Infrastructure up to the Modjo Logistics Hub & Land - Land acquisition - Access roads to the site - Utilities to the site	Public Authority	Public Authority
2. Infrastructure within the Logistics Centre Area - Internal roads and utilities - Gate and fencing of the Modjo Logistic Hub	Public Authority	Private Operator*
3. Superstructure and equipment - Pavement - Buildings and offices - Warehouses - Cargo handling equipment	Private Operator	Private Operator

* Only in case if a Logistics Centre Developer is included in the Governance Structure, otherwise conflict of interest between private operators

1. Infrastructure up to the Modjo Logistics Hub & Land

As presented in the table above, the acquisition of land and the development of the infrastructure connections up to the Modjo Logistics Hub is recommended to be the responsibility of the public sector (e.g. land, main utilities and the access roads to the ICD and/or Logistics Zone) for both the case of the ICD operations, as well as the Logistics Centre operations.

It should be noted that the Modjo Dry Port and surrounding zone already exists and as a result, most of the infrastructure as typically required for the development of a logistics hub is already in place. Income for the Government could be derived from land lease rates to be paid by the private operator(s), and/or taxes received from private companies that start their business in the Modjo Logistics Hub area.

In various countries, it is seen that the investments and the maintenance costs for the hinterland infrastructure connections are part of the Government' efforts to promote business and employment in the area, usually financed from State Budgets; in other words, those expenses are not always directly recoverable and are seen as a type of subsidy.

2. Infrastructure within the ICD area or Logistics Centre Area

ICD Operations:

For the development of internal infrastructure within the ICD area, the private operator (or public operator in case of ESLSE) should be responsible. This internal infrastructure can consist of roads and utilities within the area boundaries, fencing, facility gates of the ICD.

Logistics Centre Operations:

For the development of the internal infrastructure on the Modjo Logistics Centre Area (e.g. roads and utilities within the boundaries of the area, gate, fencing) there are two possible options:

- **The responsibilities lie with the Government of Ethiopia (public authorities):** in this case the Government continues the development of the infrastructure (outside the Modjo Logistics Hub area) with the development of the internal infrastructure (inside the area) and leases out the developed and serviced land to a private operator/ logistics zone developer. In this case, the lease fee to be paid by the private operator/developer will be higher. It should be mentioned that this option can be only applied to the Logistics Centre Area;
- **The responsibilities lie with the private sector:** in this case, the private operator/developer leases the undeveloped land destined for the development of the logistics centre from the Government of Ethiopia (public authority) and makes the necessary investments for the internal infrastructure. The costs for developing and servicing the land will be recovered from the revenues generated from operations and/or rental fees from leasing out serviced land to private tenants. (This option can only be applied in case a private Logistics Centre Developer is contracted, which can be done in governance structure option 2 as presented in chapter 4.4.2).

In case no Logistics Centre Developer is assigned and contracted by the Logistics Hub Authority, the logistics centre tenants have direct contracts with the hub authority. In this situation, the hub authority should be responsible for the internal infrastructure of roads and utilities within the logistics centre boundaries up to the plots of land that are rented out to the private operators. If not, conflicts of interest would exist between different private operators. After all, who would be willing to invest in an internal road within the logistics centre area if other private operators could also use these roads for free after. Private investors would then rather wait for others to develop the necessary infrastructure that can thereafter be used for free.

3. Superstructure and equipment

In line with the landlord model, investments in superstructure (e.g. pavement, buildings, warehouses) and cargo handling equipment (RTGs, reach stackers, empty handlers, forklifts, etc.) are the responsibility of the private sector. This is the case for both the ICD operators as well as the private operators within the logistics centre.

After this explanation on the possible allocation of investments and responsibilities within a landlord structure, a tailor-made approach for the recommended governance structures that could be implemented within Modjo is elaborated on in the next section in more detail.

4.5.4 Landlord Governance model: A tailored approach for the Development of Modjo Logistics Hub

Nowadays, the landlord model is the most common and international best practice applied governance structure model for dry ports and logistics zones throughout the world. Long-term public interests in a landlord model are ensured through the presence of a public authority. The public authority acts as a regulatory body and landlord. Usually, the aim of the public authority is to operate commercially, fully recovering all costs, including capital costs on investments made in the main infrastructure (land, connecting road and railways to the site, utility connections to the site, etc.), plus an adequate return on capital. The private operators invest in its own superstructure and equipment or can lease superstructure and equipment from third parties.

However, although the landlord model concerns international best practice, a tailored approach is required in the situation of Modjo Logistics Hub. This can be best explained due to the important position of ESLSE with the Ethiopian logistics sector and the presence of the FOB directive. The remainder of this section presents:

- The typical Landlord Concession Contract Structure;
- The role of ESLSE and the effect of the introduction of Private Involvement;
- The Effect of the Potential Lifting of the FOB Directive on Competition;
- The Potential Opportunities for Further Chain Integration with Djibouti Port;
- The Smaller Local Private Players versus the International Private Players; and,
- The Conclusions and Recommendations on the Optimal Governance Structure.

Typical Landlord Concession Contract Structure

The contract between a public authority and private operator is called a concession contract. A concession contract leaves the commercial and capital investment risks related to the terminal operations to the private operator, who is allowed to use the public infrastructure for the operations. At the same time, the public landlord has the responsibility to acquire and issue the land under the concession contract, manage the land and traffic, safety and security and development of future master plans for the region. Under the landlord governance structure, the investment responsibilities for the public and private sector are summarized in the table below:

Table 4-6 Typical landlord governance structure investment responsibilities allocation

Responsibilities	Public sector	Private sector
Land & Infrastructure	X	
Superstructure		X
Equipment		X

The duration of the concession depends on the scope of the concession, the business case and the required investments to be made by the concessionaire, but typically is between 15 and 30 years. There should be sufficient time and opportunity for the private operator to recover the investments during the concession period. The concessionary payments from the private operator to the public authority should be based on smart structuring of the contract. The risks, roles, and responsibilities should be allocated and divided so that it caters for a balanced PPP to which both parties are committed.

In case of a brownfield ICD, as is the case in Modjo, there is an initial situation in which there is existing infrastructure, superstructure and equipment. The main difference compared a “greenfield” project is that potential bidders might take over the existing business and assets, including the superstructure and equipment, or take a stake within the current business to cooperate with the existing operator (in this case ESLSE). It goes without saying that in such a situation the amount of initial capital expenditures for the private operator is much less. However, it is likely that private operators are then able to provide increased concession fees to the public sector in return. Additionally, in brownfield scenarios private operators typically provide additional investment guarantees for the further development of the assets in line with the Business Case expectations of the public authorities that are discussed and agreed upon. Hence, the implementation of a landlord structure is well suited to deal with the challenges and should support opportunities for the future development of modern logistics services at the Modjo Logistics Hub. There are however various particular factors and sensitivities that should be taken into account within the situation of Ethiopia, which have their influence on the preferred and recommended governance structure that will be discussed in the next sections.

Role of ESLSE and Effect of Introducing Private Involvement

ESLSE is the current dry port terminal operator responsible for the operation and management of the Modjo Dry Port facility. Over the years, ESLSE heavily invested within the Dry Port, that nowadays is not only connected by road but also has its own rail facility connecting the site.

Under a typical landlord structure, the role and responsibilities of ESLSE should be fully transferred to the private sector. However, in the specific case of Ethiopia with the FOB directive in place, the ESLSE plays a vital role in the supply chain of Ethiopian import goods. After all, the international goods imported by Ethiopian traders that require a letter of credit from the bank are automatically forced to be transported under the unimodal or multimodal system of ESLSE. This put ESLSE in an important position within the Ethiopian logistics system.

Full privatisation of the current dry port would not only require a local Ethiopian private company to co-invest in the entity for at least 51% of the assets (49% is the maximum allowable stake of international investors within the logistics sector in Ethiopia), but still requires cooperation with ESLSE as logistics entity as long as the FOB directive is in place. For this reason, it is advised that ESLSE continues its involvement in the ICD operations at Modjo whenever the FOB directive is active.

However, the operational performance of ESLSE on the Modjo Dry Port still leaves much space for improvement, which is discussed in more detail in chapter 3.3 of this report. For this reason, private involvement in the operation of Modjo Dry Port is strongly advised in order to improve the efficiency in terms of documentation, automatization as well as operationalisation of the terminal area. One way of achieving this is by selling a stake of up to 49% to a private investor, which subsequently takes over the responsibility of the terminal management and operation, introduce a TOS system and guarantees maximum operational efficiency. The involvement of private sector participation is not only required to improve the efficiency of the Dry Port, but also to prepare the port for future potential competition between ICD operators within the Modjo Logistics Hub. This will be specifically discussed in the next section.

Effect of the Potential Lifting of the FOB Directive on Competition

Today, ESLSE is the sole container operator within Modjo. As explained above, the FOB directive that is currently in place for Ethiopian import cargoes bought with a letter of credit provides ESLSE with a monopolistic position. As long as the FOB directive is in place, ESLSE will remain to have this position and is able to secure a vast amount of cargo to be handled. In the situation the FOB directive is lifted in the future, then the Ethiopian importers are free to choose any logistics company providing the logistics services for their import cargo (ESLSE bill of lading is not required any longer). This situation would free-up the entire logistics import market within Ethiopia and introduce private competition and provides substantial business opportunities to the private sector as a result. Hence, for ESLSE it is specifically important to improve the level of service and efficiency before this situation occurs and if not, it is likely that ESLSE will lose a substantial market share to the private sector. This situation supports our recommendation to introduce international private sector involvement in Modjo Dry Port before the FOB directive is lifted, which helps ESLSE to prepare for future competition.

The future competition in ICD activities is foreseen to take place within a tender on which international terminal operators can bid in the form of a JV with Ethiopian logistics companies (49% / 51%). As explained within the land demand analysis of this report, the ICD activities and corresponding land these activities require substantially increase due to increased container demand in Modjo up to 2030. Therefore, new investments and developments in the ICD activities are expected to take place, in which the private sector should be able to develop a future ICD terminal via an international tender. This will introduce competition with ESLSE and its private partner, forcing the entire system to become more efficient and cheaper for importers.

Potential Opportunities for Further Chain Integration with Djibouti Port

Deep-sea port developments should be mirrored to dry port developments within the captive hinterland as the performance of the logistics system between them are strongly linked. Attracting private involvement into the current Modjo Dry Port (operated by ESLSE) creates opportunities for more chain-integrated governance between the deep-sea port operations and the dry port operations. For example, an equity swap could take place between the current private operator CMHI active in the Port of Djibouti and ESLSE. This would secure not only chain integration between the ports, but also private involvement in the Modjo Dry Port to improve the operational efficiency of the facility.

The Smaller Local Private Players versus the International Private Players

In respect to warehouse activities, the future governance structure should be able to support the involvement of larger local and international private logistics service providers, as well as local Ethiopian smaller logistics service providers. After all, larger international and Ethiopian private entities have the financial strength to invest in their own facility located outside the premises of the current Dry Port facility of today. The selection of the parties to develop such a new logistics warehousing facility for consolidation and deconsolidation of cargo could take place under an international competitive tender.

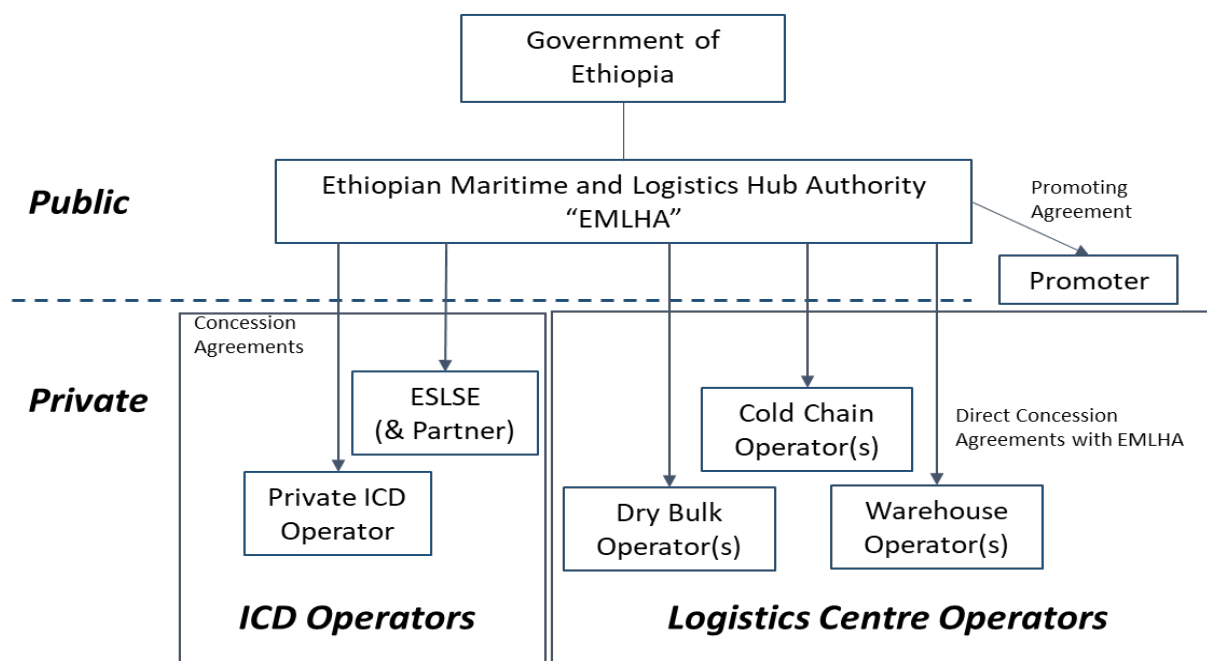
At the same time, the smaller Ethiopian logistics companies should also be offered the opportunity of developing their business. However, the financial strength of these smaller parties is not sufficient enough to develop a new facility outside the current Modjo Dry Port. For these players specifically, the current large 5,400 m² warehouses that were recently built by ESLSE should be leased (or partly leased) out to those specific players. This structure supports the overall development of the Ethiopian logistics sector. Once the smaller private players become stronger and gain more knowledge and experience, they should be able to invest in their own facilities in the future as well.

Conclusions and Recommendations on the Optimal Governance Structure

Based on the analyses as performed in this chapter, it can be concluded that a governance structure with separate but direct concession agreements between the national to be created public hub authority and private operators concerns the preferred option. Thereby, a distinction is made between the Logistics Centre operations and the ICD operations. In case the canvassing power of EMLHA is not sufficient enough to set-up a strong marketing campaign and overall promotion for the logistics centre, a separate agreement with an experienced logistic centre developer/promoter can be considered. Such a promoter is able to support a market-driven implementation of the logistic centre and focussed canvassing efforts for attracting logistics, industrial and commercial tenants to the area. However, tailormade modifications are required in order to deal with the sensitive context within the Ethiopian logistics sector. Therefore, private sector involvement within the current Modjo Dry Port operated by ESLSE is recommended to:

- Improve the overall terminal operational efficiency;
- Introduce automatization and implement a TOS system;
- Gain from private knowledge and experience; and,
- Prepare for future competition in case the FOB directive is lifted.

Figure 4-8 Recommended Governance Structure: Separate concession contracts, competition and “canvassing vehicle”



Source: MTBS

4.5.5 The recommended governance structure vis-à-vis the EMAA's objectives for Modjo Logistics Hub

In the Terms of Reference, it is clearly described what the result should be of the new legal framework (Governance structure) of the Modjo Logistics Hub. In this final paragraph of this chapter, the outcome of the recommended governance structure by the consultant is compared with the objectives as set by the Ethiopian Government for the Modjo Logistics Hub.

Objective Ethiopian Government (ToR)	Outcome Structure	Recommended Realisation
1. the new hub should meet increasing demand for specialized and value-added logistics services	Overall demand is the starting point to determine the required capacity of Modjo. Operational improvements will further enhance the total capacity of Modjo	YES
2. evolve from being a single user dry port that focuses on customs clearance to a multiuser multipurpose logistics facility that serves private logistics services providers in addition to ESLSE, the sole current user and owner of the facility.	The recommended structure includes one or multiple new ICD operators and new Logistics Centre Operators. This will both stimulate competition among operators but also provides a wider range of logistics services available for users	YES
3. promote the efficient provision of modern logistics services consistent with the country's current trading practices	With the wide range of new (international) operators in the dry port, modern logistics services will be provided, based on the local needs	YES
4. in line with international best practices that:	Railway will play an important role on the dry port. It will enhance the overall efficiency and cost-effectiveness of the supply chain.	YES
a. addresses the need for an efficient inter-modal transfer facility for the new railway line linked to Modjo	The new ICD operator will be selected based on its reputation on rail handling expertise	YES
b. takes into account current and future market demand for specific logistics services based on analysis of different commodity flows	See above	YES
c. creates an effective collaboration between relevant public bodies	The contractual structure of the governance model provides for an optimal risk and investment	YES

and different private sector players in the context of a multi-user facility	allocation between private and public entities which lead to an effective collaboration.	
d. assess which services private operators could provide under the FOB directive, and also in the absence of the FOB directive under free competition	When new operators are being attracted for Modjo, the legal setting around the FOB-directive can easily be used to determine a longlist of most suitable investors	YES
e. state ways to facilitate port-hinterland connectivity	See the previous statement on rail operators	YES
f. outlines a business model in which necessary investments in public and private infrastructures can be handled on an economically sustainable basis	The contractual structure of the governance model provides for an optimal investment allocation between private and public entities.	YES

Source: MTBS

Furthermore, it is stated in the ToR that the main starting point for the new governance structure is that it should incentivize the new value drivers that fit in the desired direction of a world -class multi-user logistics hub. These include synergies between different commodity flows, attracting new players, development of new functionalities, efficient integration of rail modality, facilitating new export industries, attracting foreign investment, job generation.

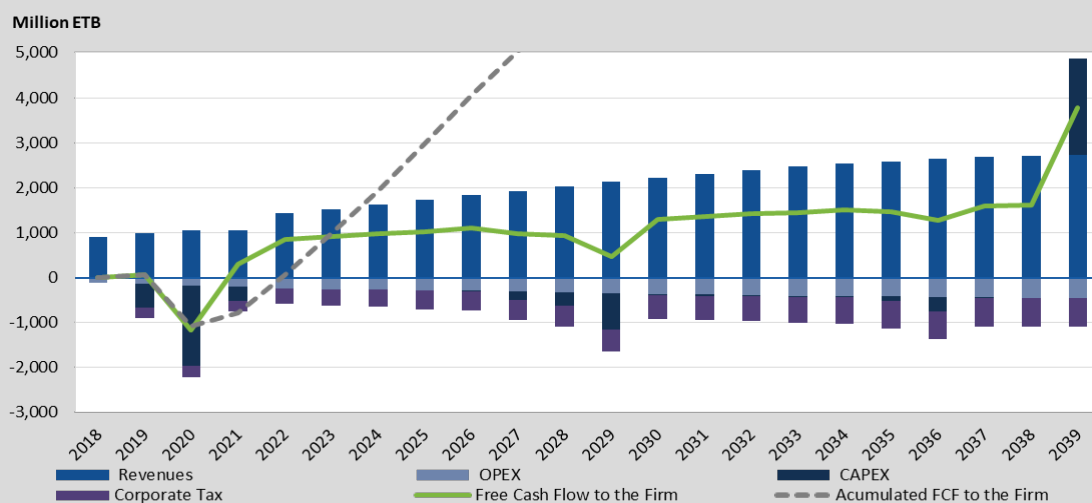
With the new policy to open up the market for private involvement also in container terminal operators and logistics service providers instead of promoting the monopoly situation of ESLSE, we are confident that these objectives will be met in the future. New operators will be attracted who will provide services for different commodity flows, if needed develop new functionalities, offer efficient rail operations and operate the Logistics Hub as such that it stimulates the exporting industries. These new players will provide for foreign direct investments and create a significant amount of new jobs.

Page intentionally left blank

5 Financial Analysis of Modjo Logistics Hub

Summary

This section presents the project's financial feasibility indicators, which include the presentation of the project's Net Present Value (NPV), Internal Rate of Return (IRR), the payback period and funding requirement. First the financial results are presented, where after a sensitivity analysis on the project is performed. The figure below summarises the annual free cash flow based on revenues, OPEX and CAPEX, as well as the cumulative free cash flow of the Project Business Case.



Source: MTBS

After the initial investment of approximately ETB 2.6 B for the infrastructure, superstructure and equipment for the phase 1 expansion in the period between 2019 and 2021, the free cash flows (FCF) only shows one negative year, which is in the year 2020. This can be best explained by the fact that Modjo Logistics Hub already concerns a healthy running business with a substantially positive operating cash flow. The cash flow overview does however show some dips, especially within 2029 again when the peak investment of the second phase expansion takes place. The large CAPEX peak on the end of the project time period can be explained by the remaining value of the assets, which in reality will continue to exist up to the moment they are fully depreciated.

The free cash flow of the Project Business Case leads to the financial indicators as presented in the table below. These financial outcomes are presented for three ways: (1) in which the entire project including the ICD and Logistics Centre is shown as one, (2), in which the ICD activities are shown in a ring-fenced manner and (3) in which the outcomes to the Logistics Centre are shown in a ring-fenced way.

Financial Indicators	Unit	Viability Requirement	Outcomes Project	Outcomes ICD	Outcomes LC
NPV	Thousands ETB	> 0	6,418,470	5,923,531	494,939
IRR	%	> 9.96%	59.4%	83.9%	17.0%
Pay-back Period	Years	N/A	4	4	8
Funding Requirement	Thousands ETB	N/A	(1,089,983)	(428,592)	(661,391)

Source: MTBS

As can be seen in the table above, the Project Business Case is expected to be feasible in all situations, as one large projects, as well as through the individual ring-fenced activities. The project business case shows an IRR of 59.4%, which substantially exceeds the WACC of 9.96%. Thereby, it can be concluded that the Project Business Case is financially feasible and reaches a NPV of ETB 6.4 B. The project has a payback period of 4 years and a total funding requirement of about ETB 1.1 B.

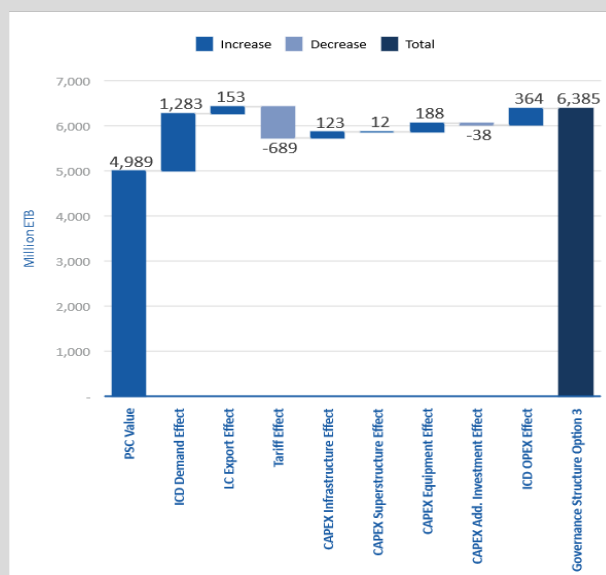
The business case of the ICD operations is shown to be highly profitable. This is mainly the case due to its running activities in which a considerable operating margin can be guaranteed right from the start of operations. This also explains the relative low funding requirement, as this can be paid for the larger part out of the cash flows generated from the ongoing business. In reality, the capital investment in the ICD expansion is much more expensive compared to the investments required for the Logistics Centre.

Finally, the level of free cash flows generated by this business case are typically sufficient to meet lender's Debt Service Requirements in the international market. Thus, the business case's financial indicators prove that the project should be able to reach bankability under the assumption that the project will be structured well, and all prior conditions are met.

Value for Money

The Value for Money analysis determines whether a project delivery through the different Governance Structure options add value compared to a project delivery by the public sector, the Public-Sector Comparator (PSC). Based on this analysis, the Ethiopian Maritime Affairs Authority is in the position to make the decision for the eventual Governance Structure option for the development and operations of the Modjo Logistics Hub.

Three Governance Structure options have been defined in this report. The VfM analysis yields the highest result for the Governance Structure Option 3, which is summarised below. The differentiators, estimated based on international benchmarks, indicate that the Governance Structure option 3 creates an additional ETB 1.40 B value vis-à-vis the PSC option.



Source: MTBS

- NPV FCF Governance Structure option 3 is ETB 6.39 B;
- NPV FCF PSC is ETB 4.99 B;
- The main drivers of the difference in value are:
 - the demand effect of containers and export;
 - the operational efficiency increase;
 - the CAPEX effect on infrastructure;
 - The CAPEX effect on equipment;
- Differences are caused mainly by
 - Private sector experience;
 - Improved bargaining port;
 - Broad network of private players; and,
- There are also two negative effects which are:
 - the reduced tariffs due to increased competition; and,
 - the additional investment requirements in offices and a terminal gate due to the presence of a second ICD operator active in Modjo Logistics Hub.

The Governance Structures option 2 and 3 nearly perform equally in terms of NPV. For this reason, the eventual Governance Structure option decision on the best implementation option may not only be decided on the NPV alone, but is a combination of factors:

- NPV, IRR and Payback period;
- Affordability and Private sector financing capabilities;
- Market appetite and Risk Allocation;
- Speed of implementation and Public-sector control; and,
- Quality and costs of service.

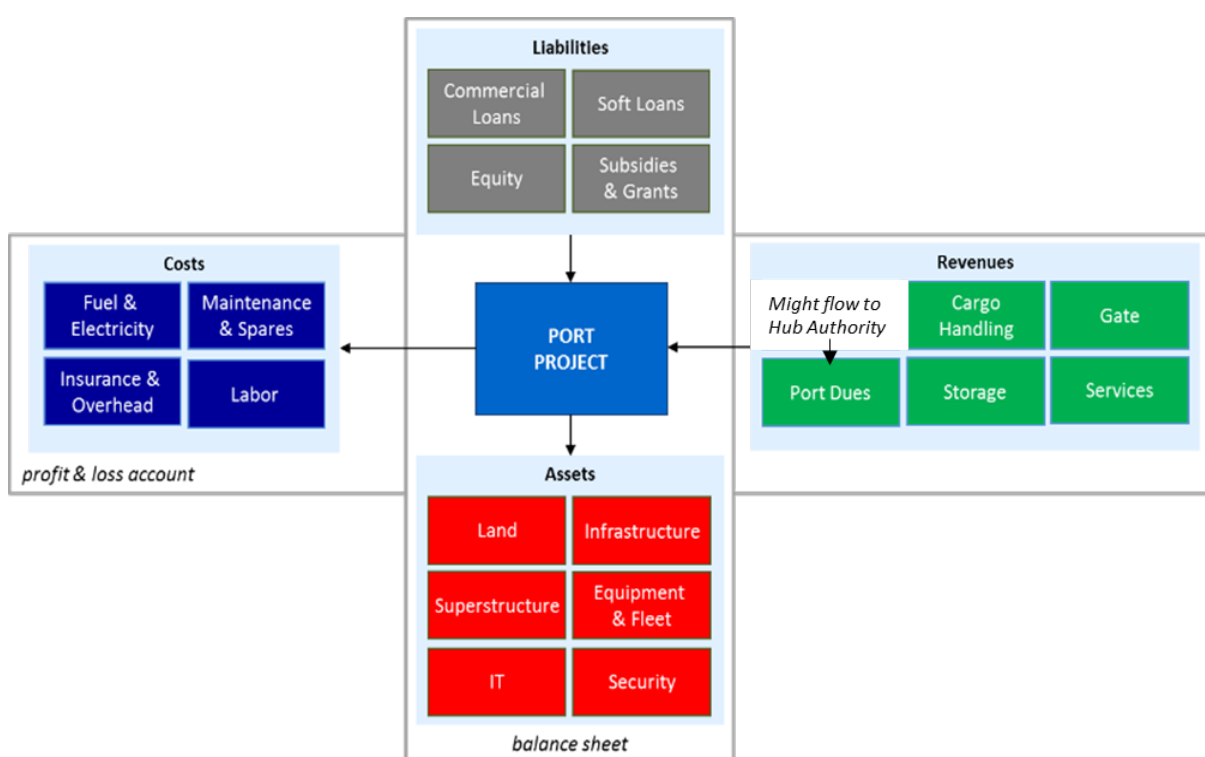
Recommendation: *The VfM analysis proves that the Governance Structure option 3 offers the highest value on a project level. Moreover, it was extensively described that this particular implementation option is also the recommended option from a qualitative perspective. For this reason, it is advised to the Ethiopian Maritime Affairs Authority to implement the Modjo Logistics Hub under Governance Structure option 3.*

5.1 Introduction

The objective of this section is to determine the financial feasibility of the business case from a project perspective. The project business case thus comprises a scenario that includes all cash flows resulting from the project, irrespective of investment allocation within the project. The different effects of the level of private sector involvement in the Modjo Logistics Hub is further analysed within the Value for Money analysis, which is presented in the next chapter. The financial feasibility is determined by the free cash flow and the financial indicators for viability such as the Internal Rate of Return (IRR), the Net Present Value (NPV), the payback period and the funding requirement.

To arrive at the free cash flow of the project, the segments that typically form the input of a project business case include:

Figure 5-1: Overview of Typical Project Business Case Elements



Source: MTBS

The financial feasibility section is structured as follows:

- Section 5.2 presents the general assumptions of the financial model;
- Section 5.3 provides the revenue projections based on the demand forecast and tariff structure;
- Section 5.4 presents the applied OPEX assumptions and results;
- Section 5.5 presents the applied CAPEX assumptions and results;
- Section 5.6 presents the main outcomes and sensitivity of financial analysis of the Project;
- Section 5.7 presents the affordability of the project with public funding; and,
- Section 5.8 presents the Value for Money Analysis on the different Governance Structures.

5.2 General Assumptions

All financial outputs presented in this chapter are based on the following general assumptions:

- **Timing:** The timing of the financial model starts in 2018. However, the feasibility of the project is estimated starting from 2020, which is assumed the starting year of the new situation in which the private sector becomes involved and is based on a 20-year period up to 2039;
- **Construction:** The construction period on the Modjo terminal expansion (or second container terminal) starts in 2020 and concerns two years construction time. The operational period of the expansion or second container terminal hence starts in 2022;
- **Inflation:** The financial model is presented real terms at price level year 2018, thus zero inflation applied;
- **Applied traffic scenario:** All volume related revenues and OPEX are based on the base case overall market projection and base case market share projection for Modjo Logistics Hub, including 100% of the forecasted logistics centre activities;
- **Tax:** Included in the model in line with the current Ethiopian corporate tax rate of 30%;
- **Depreciation and re-investment:** A linear depreciation over the lifetime of the assets is applied. Once an asset is fully depreciated, re-investment takes place;
- **Terminal Capacity:** The container handling capacity is based on efficient capacity phasing in which the terminal is expanded once its nearly reaching its maximum capacity. Moreover, once the terminal capacity is expanded, the new situation after expansion should be able to handle the demand for about 7 years after completion before it nearly reaches its capacity again and requires another expansion. The following terminal capacities applied for the different phases are:
 - **Currently:** The capacity of the Modjo Dry Port of today is estimated to be in the range of 330,000 TEU per annum;
 - **After Phase I expansion:** The terminal capacity is expected to increase to about 880,000 TEU per annum;
 - **After Phase II expansion:** The total container terminal handling capacity is expected to reach about 1,130,000 TEU;
- **Expansion Phase Trigger:** The expansion phases of the Modjo container capacity is assumed to be constructed once the terminal reaches 80% utilisation, of which the construction will take two years;
- **Applied currency:** Ethiopian Birr (ETB); and,
- **Project WACC:** 11% is applied to the business case financial outcomes, which is in line with expectations for such a type of project in the applicable market conditions in Ethiopia.
 - The eventual WACC naturally depends on the risk profile of the Concessionaire, depending on the level of required investments, the fixed concession fee and the variable concession fee to be paid to the Hub Authority; and,
 - It should be noted that the applied WACC is based on real terms. When including inflation, the WACC would be more in the range of 13%.

5.3 Revenue Projection

The future revenues of the Modjo Logistics Hub are the result of the volume forecast as presented in chapter 3 of this report, multiplied with the applied tariffs for the container activities, which are categorized in the table below. Moreover, the revenues also include the rent fee gained from the logistics centre activities multiplied with the land occupied by the logistics centre activities as calculated in paragraph 0.

Figure 5-2: Revenue Elements

Revenue Element	Description	Charge in ETB
Port Dues	Port dues charged on full containers entering the container terminal	700 per TEU
Container Handling	Handling of full containers at the terminal gate (rail/road)	1,200 per TEU
Container Storage	The storage of all types of containers, including full, empty and reefers for a certain period of time (based on assumptions) → Decreasing dwell times are assumed over the entire time period	Depending on Dwell time & type
Other Revenues (Overhead)	Including all remaining charges (documentation, photocopies, gate passes, etc.)	Respectively 24, 5 and 10 per Box
CFS Warehouse Rental Income	Income from rental fees of the existing warehouses on the Modjo Dry Port	2,000 per m ² per annum
Logistics Centre Rental Income	Income from rent charged to private players active in the future Logistics Centre	500 per m ² per annum

Source: MTBS based on Modjo Dry Port Tariff Book and Consultant's best estimate for rental incomes (CFS / Logistics Centre)

The tariffs applied are mostly in line with the Modjo Dry Port tariff book, which eventually will be the only or main competing container terminal in the Modjo Logistics Hub. The tariffs as applied in the analysis performed take into account the different charges for full/empty boxes and import/export boxes for all respective revenue elements, including the storage dwell times and the rental incomes for CFS warehousing and land lease of the Logistics Centre area based on the Consultant's best estimate.

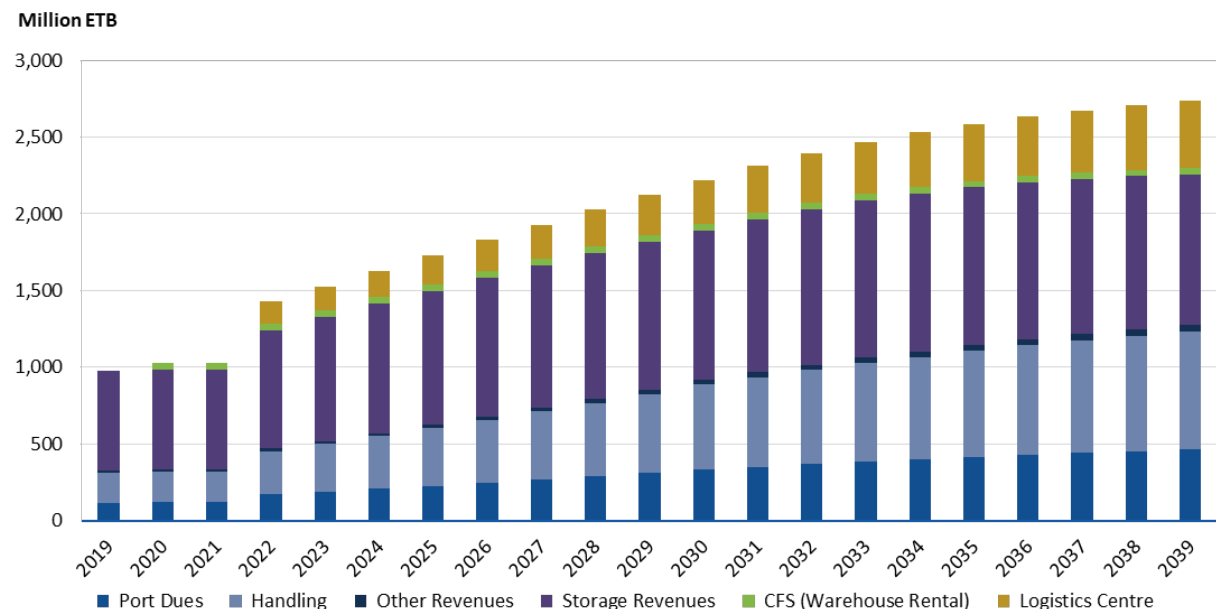
The estimates for the rental charges are based on the total investment costs (Land acquisition⁵², Land levelling, etc.), which are expected to be earned back within a 6 year-period (taking into account the discount rate). Thereby, the rental income from the logistics centre are estimated to be ETB 500 per m² per annum. For the CFS warehousing rental fee, the construction costs of the warehouse itself are also included, resulting in a charge of ETB 2,000 per m² per annum. For the detailed overview of the CAPEX investments on these specific items please refer to chapter 5.5 of this report.

Revenue Projection

Based on the revenue assumptions as presented above, the Modjo Logistics Hub revenue projection is made. All revenues are indicated in real values to avoid inflation and foreign exchange variation effects. It is assumed the Modjo Logistics Hub requires a construction time of two years for all new assets (new container capacity and Logistics Centre construction), starting in 2020 and completed at the end of 2021. Thereby, revenues will be generated from the start of 2022 onwards. The overview of the revenues generated by the Modjo Logistics Hub is illustrated in Figure 5-3.

It should be mentioned that for the Modjo Logistics Hub only the revenues are included generated from leasing the land to private investors. The actual revenues generated from all different business activities as such are subject to a much more detailed analysis of the different business cases. Therefore, these are not considered as part of the scope of this assignment nor taken into account within this report.

Figure 5-3: Modjo Logistics Hub Project Revenue Projection



Source: MTBS

⁵² The land acquisition costs are based on the official land acquisition costs per m² received during the data gathering mission, which is ETB 54 m² for farmers land and ETB 500 per m² for privately owned land. A 50/50 distribution is assumed, resulting into an average charge of ETB 277 per m² for land acquisition for the Modjo Logistics Hub.

In addition to Figure 5-3, the corresponding values of the different types of revenues generated by Modjo Logistics Hub are presented in Figure 5-4.

Figure 5-4: Modjo Logistics Hub Revenue Projection

Revenue in Million ETB	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Port Dues	117	119	119	170	188	207	226	246	267	288	310	333
Container Handling	194	198	198	283	312	343	375	409	443	479	515	552
Container Storage	656	656	656	772	809	844	876	904	927	947	962	972
Other Revenues	13	13	13	17	18	20	22	24	26	28	29	31
CFS												
Warehouse Rent	-	43	43	43	43	43	43	43	43	43	43	43
Logistics Centre Rent*	-	-	-	142	155	170	186	203	222	243	265	289
Total Revenues	979	1,029	1,029	1,427	1,526	1,627	1,728	1,828	1,928	2,027	2,125	2,221
TEU Handled (000s)	324	330	330	432	474	517	563	609	657	706	755	804
Average ETB/TEU	3,026	3,118	3,118	3,305	3,222	3,144	3,070	3,001	2,935	2,874	2,817	2,763

Source: MTBS

The main conclusions that can be drawn from the revenue projection are:

- The main driver for the revenue increase concerns the growing amount of cargo handled within the Modjo Logistics Hub. This is clearly visualised by the jump in revenues generated in the year 2022, which is the year the new container capacity becomes operational;
- The majority of the revenues generated are from container storage due to the long dwell time. However, this amount relative to the overall revenues slightly decreases over time due to decreasing dwell time assumptions;
- The total revenues generated are expected to gradually increase from ETB 979 M in 2019 to approximately ETB 2.2 B reached in 2030;
- *In the scenario excluding fertilizers being handled the logistics centre rent slightly decreases to ETB 171 M in 2030 for the logistics centre rental incomes;
- The current TEU capacity is clearly indicated in the table as the amount of TEUs handled in the first phase is capped in the years 2020 and 2021 at 330,000 TEU, whereafter the second phase becomes available in 2022, subsequently adding additional capacity to handle more containers; and,
- The average ETB/TEU slightly decreases over time, which can be best explained by the reducing dwell time of containers and thereby the reducing storage income per container over time.

5.4 OPEX Projection

The future operational expenses (OPEX) of the Modjo Logistics Hub are mostly generated by the amount of container volumes and other types of cargoes handled. The major OPEX categories as included within the Modjo Logistics Hub Business Case are presented in Figure 5-5.

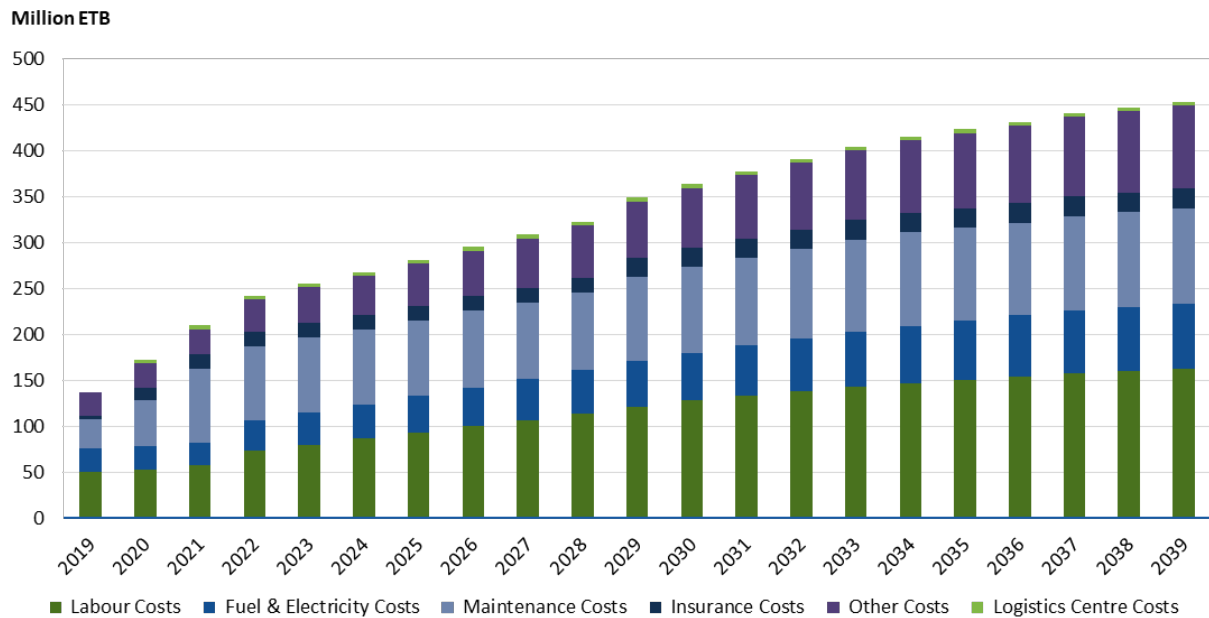
Figure 5-5: OPEX Elements Modjo Logistics Hub

OPEX Element	Description
Personnel Costs	The Logistics Hub activities require to be operated by operational personnel and managed by the administrative personnel and terminal management (Salaries based on Modjo Dry Port actuals).
Fuel & Electricity Costs	The equipment used to handle the containers consume electricity and diesel fuel, of which the consumption is linked to the operating hours of the amount of equipment required.
Maintenance Costs	The maintenance costs are linked to the superstructure and equipment fleet, multiplied with international benchmark maintenance percentages based on the purchase value, in order to optimally maintain the terminal assets to guarantee sufficient operations.
Insurance Costs	Like maintenance costs, the insurance costs are linked to the superstructure and equipment fleet, multiplied with international benchmark insurance percentages based on the purchase value.
Other Costs	The other costs include the other operational costs, as well as the overhead costs and, are extrapolated based on the actual figures of Modjo Dry Port in relation to the volume growth.
Logistics Centre Costs	The Logistics Centre costs are based on the maintenance and insurance on the utilities and infrastructure connections to the different sites.

Source: AGCT; MTBS

The OPEX projection for the Modjo Logistics Hub is illustrated in Figure 5-6.

Figure 5-6: Modjo Logistics Hub OPEX projection



Source: MTBS

In addition to the OPEX visualization of Figure 5-6, the corresponding OPEX amounts are illustrated in Figure 5-7.

Figure 5-7: Modjo Logistics Hub OPEX Projection

OPEX in Million ETB	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Labour Costs	51	53	58	74	80	87	93	100	107	114	121	128
Fuel & Electricity Costs	25	25	25	32	35	37	40	42	45	47	50	52
Maintenance Costs	32	51	80	81	82	82	82	83	83	84	92	93
Insurance Costs	3	12	16	16	16	16	16	16	16	16	20	20
Other Costs	26	27	27	35	39	42	46	50	54	58	62	66
Logistics Centre Costs	-	4	4	4	4	4	4	4	4	4	4	4
Total OPEX	137	173	210	242	255	268	281	295	308	323	348	363
TEU Handled (000s)	324	330	330	432	474	517	563	609	657	706	755	804
Average ETB / TEU	424	523	635	561	539	517	500	484	470	457	462	452

Source: MTBS

The main OPEX conclusions:

- The major driver for the OPEX increase concerns the volume growth due to the increased utilisation of the facility. This can be explained by the fact that the costs are on a real value basis and OPEX varies with the equipment, personnel and other operational costs required;
- The majority of the OPEX consists of personnel costs, which is based on an extrapolation of the current actuals with the volume growth. The second largest OPEX element concerns the maintenance, caused by the infrastructure, superstructure and equipment of the terminal, followed by the fuel and electricity costs and other costs;
- The total OPEX generated is expected to gradually increase from ETB 137 M in 2019 to approximately ETB 363 M reached by 2030;
- The Logistics Centre OPEX concerns of the maintenance and insurance costs to be paid for the utility and infrastructure connections to the specific sites. As soon as the sites are constructed, this amount is assumed to be stable over time.
- The average OPEX per TEU slightly varies over time but is in the range of ETB 500 per TEU, which increases in the first couple of years of private involvement, mainly due to the substantial increase of maintenance costs to guarantee efficient operations. Hence, this causes the average OPEX per TEU to increase for a short period of time, up to the moment the volumes go up.

5.5 CAPEX Projection

The scope of the Modjo Logistics Hub project is based on the ICD activities (Dry Port) as well as the Logistics Centre activities. The capital expenditure (CAPEX) categories as included in this Business Case are split into two different investment categories, including:

- Fixed assets, consisting of:
 - Infrastructure investments (like land acquisition, land levelling, fencing, gate, offices, etc.);
 - Superstructure investments (pavement, IT, Terminal lighting, water & fuel reservoirs, reefer plugs, etc.); and,
- Movable assets in the form of equipment investments (RTGs, Reach Stackers, Empty Handlers, Forklifts, Etc.).

Moreover, for the infrastructure distinction is made between the investments related to the ICD (container terminal) and the Logistics Centre related investments. These latter investments include, among others:

- Land acquisition;
- Land levelling; and,
- Site connectivity of utilities and infrastructure (roads).

The CAPEX types and main assumptions are visualized in Table 5-1.

Table 5-1: Summary on CAPEX Assumptions

Type	Investment (USD)	Lifetime in Years	Maintenance Costs in % per Annum	Insurance Costs in % per Annum	Description
Fixed Assets – Infrastructure					
Land Acquisition	277 ETB*	100	0%	0%	Costs per m ²
Land Levelling	250,000	100	0%	0%	Costs per Hectare
Pavement	550,000	25	2%	1%	Costs per Hectare
Fencing	100	20	2%	1%	Fencing around the entire Modjo Facilities per m ²
Logistics Centre Utility Connections	500,000	50	5%	1%	Site Connectivity for each value-added purpose
Fixed Assets - Superstructure					
Pavement	550,000	25	2%	1%	Costs per Hectare
Dry Port Offices**	1,000,000	25	5%	1%	Including terminal building, customs, bank, canteen, etc.
Gate**	250,000	25	5%	1%	Dry port entrance facility
CFS Area	7,500 ETB	25	5%	1%	CFS Warehousing per m ²
IT Infrastructure	250,000	5	10%	2%	IT infrastructure system for operational & planning support
Water & Fuel Reservoirs	100,000	25	2%	1%	Reservoirs for supplying purposes of water & fuel for the entire Dry Port (ICD)
Terminal Lighting	25,000	25	2%	1%	Costs per Hectare
Reefer Racks	4,500	15	5%	1%	Reefer storage racks, price per unit, amount based on demand
Movable Assets - Equipment					
RTGs	1,500,000	15	10%	1%	Cost per unit
Reach Stackers	350,000	10	10%	1%	Cost per unit
Empty Handlers	250,000	10	10%	1%	Cost per unit
Terminal Tractors	125,000	8	10%	1%	Cost per unit including trailer
Forklifts	20,000	8	10%	1%	Costs per unit

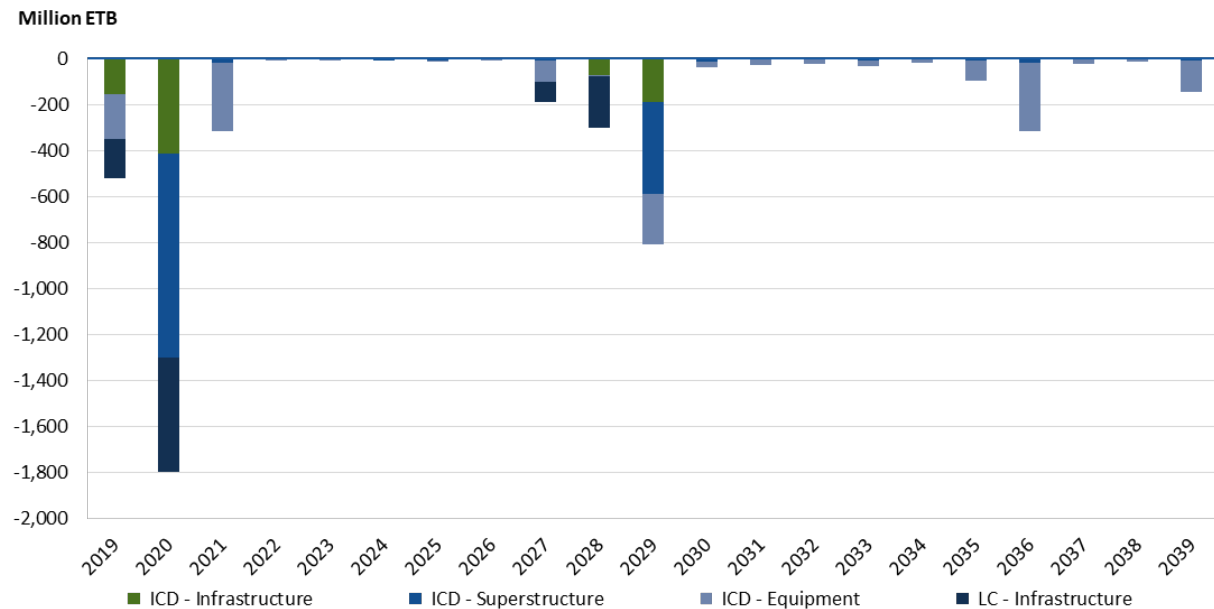
Source: MTBS

* Based on a blended tariff of 50% farmers land and 50% privately owned land

** Dry Port offices and Gate are only invested in case of option 2 and 3 where an additional private ICD operator invests in its own new facility

An overview of all CAPEX investments made is illustrated in Figure 5-8.

Figure 5-8: Modjo Logistics Hub CAPEX Projection



Source: MTBS

As indicated in the figure above, the majority of the CAPEX is invested in the years 2019 to 2021, as well as in 2027 to 2029, concerning the years in which the Modjo Logistics Hub is expanded in two phases. The total investment related to the first phase of infrastructure, superstructure and equipment is approximately equal to ETB 2.6 B. Moreover, a second expansion phase is investments is about ETB 1.3 B.

Furthermore, the figure illustrates multiple superstructure and equipment investments. These are either for re-investment purposes of IT or equipment, or for investments of new equipment due to increased market demand.

It should be mentioned that the maintenance and insurance costs of the infrastructure, superstructure and equipment are accounted for in the OPEX. The timing of the CAPEX investments and investment amounts as visualized in Figure 5-8 are presented in Figure 5-9. Thereby, a distinction is made between the fixed assets and movable assets investments.

Figure 5-9: CAPEX Investments Modjo Logistics Centre

CAPEX in Million ETB	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031 2039
ICD – Infra.	-152	-412	-	-	-	-	-	-	-	-69	-187	-	-
ICD – Super.	-	-886	-19	-	-	-6	-7	-	-6	-	-398	-13	-38
ICD - Equipment	-197	-	-298	-7	-7	-	-7	-7	-93	-7	-223	-24	-656
Logistics Centre Infra	-172	-499	-	-	-	-	-	-	-89	-222	-	-	-
Total CAPEX	-521	-1,796	-316	-7	-7	-6	-14	-7	-188	-298	-809	-37	-694

Source: MTBS

As presented in the table above, the major infrastructure and superstructure investments are focused around the period between 2020-2021 and 2027-2029, which concern the construction periods of the first and second phase expansions. Thereby, the first phase investments are in the range of ETB 2.6 B, whereas the second phase investments are about EUR 1.3 B. (Re)investments are made in the years up to the end of the concession period for equipment and reefer racks, which mainly explains the amount of investments required between 2031 and 2039.

Timing of the Second Phase

The major investments of the second phase are timed during 2027 and 2028 for the Logistics Centre activities, and for the ICD activities in 2028 and 2029. This can be best explained by the fact that the Logistics Hub is expected to reach its “second phase triggers” of 80% utilisation in 2026, respectively in 2027 for the ICD operations. The second phase infrastructure includes the additional purchasing of land, required land levelling and land preparation, as well as an additional investment in the pavement and other related terminal investments.

In addition, the equipment / movable assets require continuous (re)investments due to the increased cargo demand and shorter lifetime compared to the assumed concession duration (2019 to 2039). Therefore, the investments in equipment are not bound to a specific period and are relatively spread over the time period. The total equipment investments accumulate to about ETB 1.5 B over the 20-year duration up to 2039.

The main conclusions on the CAPEX projection are:

- The total amount of CAPEX investments accumulates to ETB 4.7 B and is divided over:
 - Infrastructure (Phase 1 & 2 of the ICD and Logistics Centre): ETB 1.8 B;
 - Superstructure (Phase 1 & 2): ETB 1.4 B; and,
 - Equipment (Phase 1 & 2): ETB 1.5 B.
- The majority of the CAPEX investments take place during the construction period of phase 1 and phase 2, which is between 2019-2021, respectively 2027-2029;
- All required equipment is purchased in the end of the year before the start of the next operational year. Hence, the first batch of equipment is purchased on the end of 2019, whereas operations of the project are assumed to start in the beginning of 2020;

- The substantial amount of equipment investments taking place, for example in the years 2019 and 2021, which can be either explained due to additionally required reach stackers (11) bought in 2019 or by the investments in RTGs required after the first ICD expansion (is assumed to be RTG operated); and,
- Since this business case is prepared on a project level no investment allocation is made within the model between the public and private sides, which is not required to test the feasibility of the different governance structure on a project level.

It should be noted that the model is prepared in a way that it automatically adapts to changes in sensitivities, both in terms of investment size and investment timing.

The financial outcomes of the revenues, OPEX and CAPEX as presented in the sections above are concluded in the next section.

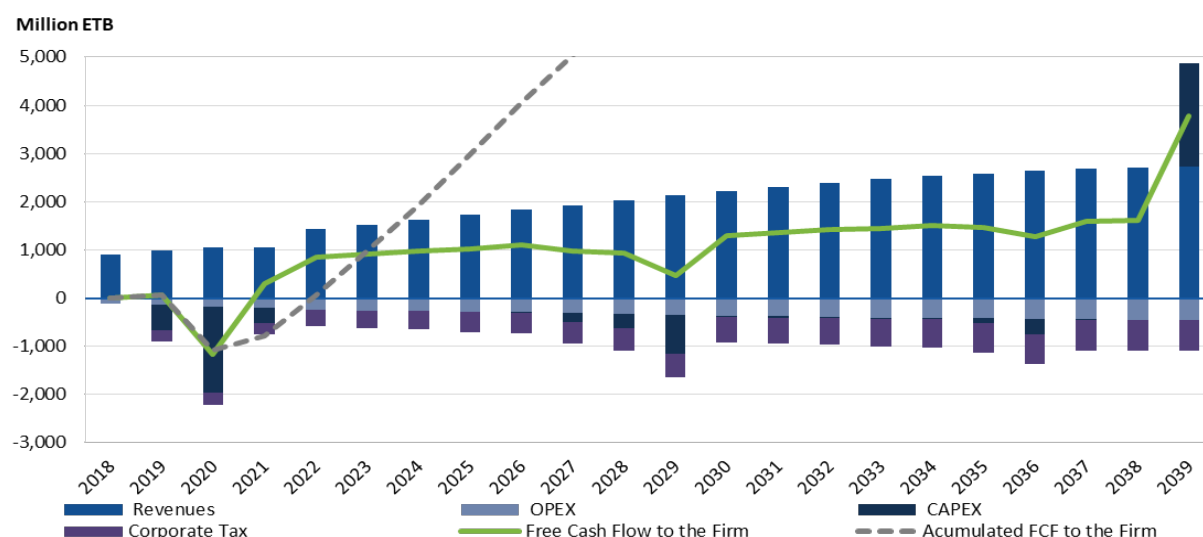
5.6 Business Case – Financial Outcomes

Based on the model inputs as discussed in this chapter, this section presents the project's financial feasibility indicators, which include the presentation of the project's Net Present Value (NPV), Internal Rate of Return (IRR), the payback period and funding requirement. First, the financial results are presented, where after a sensitivity analysis on the project is performed.

5.6.1 Financial Results

Figure 5-10 summarises the annual free cash flow, as well as the cumulative free cash flow of the Modjo Logistics Hub Project Business Case.

Figure 5-10: Modjo Logistics Hub Free Cash Flow



Source: MTBS

After the initial investment of approximately ETB 2.6 B for the infrastructure, superstructure and equipment for the phase 1 expansion in the period between 2019 and 2021, the free cash flows (FCF) only shows one negative year, which is in the year 2020. This can be best explained by the fact

that Modjo Logistics Hub already concerns a healthy running business with a substantially positive operating cash flow. The cash flow overview does, however, show some dips, especially within 2029 again when the peak investment of the second phase expansion takes place. The large CAPEX peak on the end of the project time period can be explained by the remaining value of the assets, which in reality will continue to exist up to the moment they are fully depreciated.

The free cash flow of the Project Business Case leads to the financial indicators as presented in

Table 5-2. These financial outcomes are presented for three ways: (1) in which the entire project including the ICD and Logistics Centre is shown as one, (2), in which the ICD activities are shown in a ring-fenced manner and (3) in which the outcomes to the Logistics Centre are shown in a ring-fenced way.

Table 5-2: Main Financial Indicators – Business Case (Base Case)

Financial Indicators	Unit	Viability Requirement	Outcomes Project*	Outcomes ICD	Outcomes LC
NPV	Thousands ETB	> 0	6,418,470	5,923,531	494,939
IRR	%	> 9.96%	59.4%	83.9%	17.0%
Pay-back Period	Years	N/A	4	4	8
Funding Requirement	Thousands ETB	N/A	(1,089,983)	(428,592)	(661,391)

Source: MTBS * In the case of excluding fertilizer imports the financial outcomes slightly decrease to ETB 5.9 B, resulting in an IRR of 56.4%. Hence, the fertilizer business is large but does not substantially influence the project's feasibility.

As can be seen in the table above, the Project Business Case is expected to be feasible in all situations, as one large projects, as well as through the individual ring-fenced activities. The project business case shows an IRR of 59.4%, which substantially exceeds the WACC of 9.96%. Thereby, it can be concluded that the Project Business Case is financially feasible and reaches an NPV of ETB 6.4 B. The project has a payback period of 4 years and a total funding requirement of about ETB 1.1 B.

The business case of the ICD operations is shown to be highly profitable. This is mainly the case due to its running activities in which a considerable operating margin can be guaranteed right from the start of operations. This also explains the relatively low funding requirement, as this can be paid for the larger part out of the cash flows generated from the ongoing business. In reality, the capital investment in the ICD expansion is much more expensive compared to the investments required for the Logistics Centre.

Finally, the level of free cash flows generated by this business case are typically sufficient to meet lender's Debt Service Requirements in the international market. Thus, the business case's financial indicators prove that the project should be able to reach bankability under the assumption that the project will be structured well, and all prior conditions are met.

5.6.2 Sensitivity Analysis

This section performs a sensitivity analysis of the financial indicators of the Project Business Case to the input assumptions as presented in the previous section. The assumptions of the Business Case are compared with various scenarios, in which sometimes single effects and sometimes combined effects are tested compared to the Base Case outcomes, as analysed in this chapter. Table 5-3 below presents an overview of all sensitivity scenarios as included in this report. The table below shows changing scenarios for:

- Cargo demand (High, Base, Low);
- OPEX (+ or – 20%);
- CAPEX (+ or – 20%); and,
- Tariffs (+ or – 20%).

Table 5-3: Project Sensitivity Scenarios

Scenario	Project IRR	Project NPV (ETB)	Description
Base Case Scenario	59.4%	6.42 B	This scenario is based on all base case assumptions
Individual Effects			
Cargo Demand – High Case	62.8%	7.11 B	This scenario is based on the high case cargo demand
Cargo Demand – Low Case	56.5%	5.58 B	This scenario is based on the low case cargo demand and only 50% of the logistics centre activities
OPEX + 20%	56.2%	6.08 B	This scenario is based on a 20% OPEX increase
OPEX – 20%	62.7%	6.76 B	This scenario is based on a 20% OPEX reduction
CAPEX + 20%	46.2%	5.86 B	This scenario is based on a 20% CAPEX increase
CAPEX – 20%	83.3%	6.98 B	This scenario is based on a 20% CAPEX reduction
Tariffs + 20%	71.2%	7.68 B	This scenario is based on a 20% Tariffs increase
Tariffs – 20%	48.8%	5.15 B	This scenario is based on a 20% Tariffs reduction
Combined Effects			
Cargo Demand Low, OPEX + 20%	53.5%	5.28 B	This scenario is based on the cargo low case demand in combination with a 20% OPEX increase
CAPEX + 20%, Tariffs – 20%	38.3%	4.59 B	This scenario is based on a 20% CAPEX increase, as well as a 20% tariff reduction
Cargo Demand Low, Tariffs -20%	46.3%	4.45 B	This scenario is based on the cargo low case demand in combination with a 20% tariff reduction
Cargo Demand Low, OPEX + 20%, CAPEX + 20% and Tariffs – 20%	34.0%	3.59 B	This scenario includes all negative sensitivities such as lower demand, higher operational costs, higher CAPEX investments as well as a 20% tariff reduction.

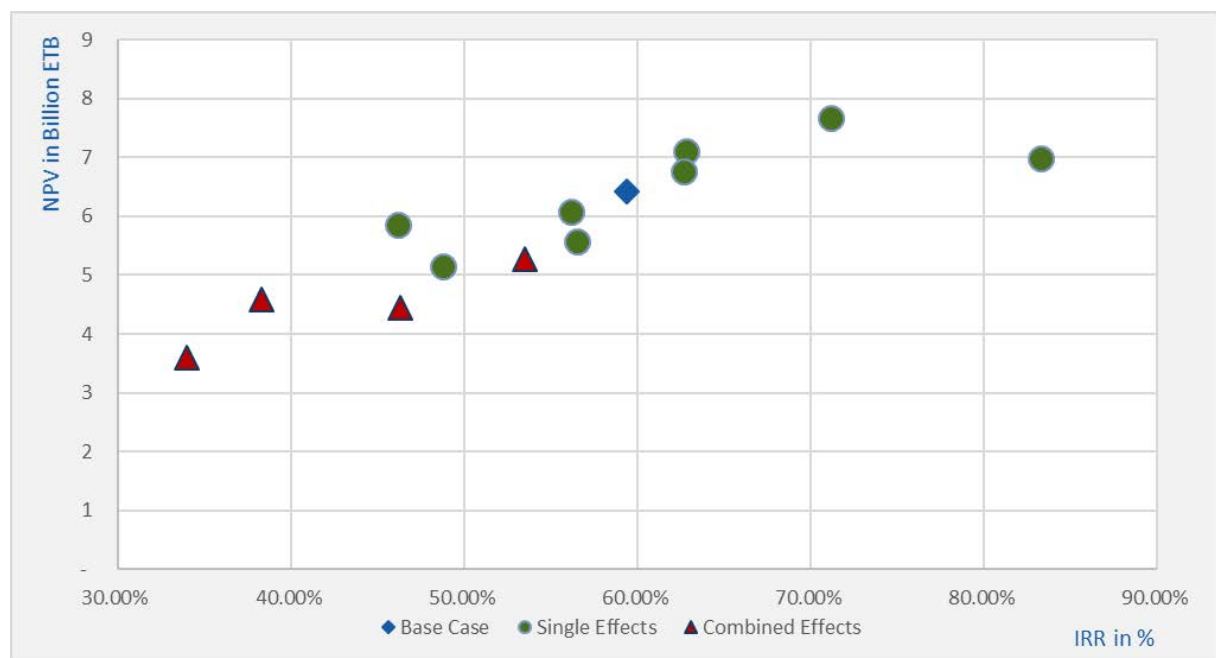
Source: MTBS

The sensitivity scenarios as visualized in Table 5-3 above show that the business case remains feasible in all sensitivity scenarios. For this reason, the business case proves to be strong as it is able to deal with multiple factors that might reduce the financial outcomes of the business case, but still remains a feasible outcome. The business case seems to be most affected by the following three single effects (Scored on effect on NPV):

- **Tariff reduction by 20%:** Within this scenario, the overall tariffs are reduced by 20%, which decreases the business case's IRR outcome by 10.6%. However, this still results in a feasible business case with a positive NPV of about ETB 5.15 B;
- **Cargo demand low case:** This scenario reduces the business case's IRR outcome by 2.9% and therefore still remains a feasible business case with an NPV of ETB 5.58 B; and,
- **CAPEX investments increased by 20%:** This scenario has the strongest effect on the business case's IRR which is reduced by about 13.2%. However, under this scenario the business case still remains positive, reaching a substantial NPV of ETB 5.86 B.

In addition to the numbers as presented in Table 5-3, the single and combined sensitivity effects are visualised in Figure 5-11 below.

Figure 5-11: Project Sensitivity Scenarios – NPV and IRR outcomes



Source: MTBS

5.7 Affordability Analysis

The affordability analysis aims to indicate whether or not the public sector has the ability to fund the viability gap. Section 0 showed that the funding requirement of the Project is about ETB 1.09 B. Applying an exchange rate of 28.02 ETB per USD⁵³, the funding requirement is equal to about USD 38.9 M. This amount is built up as follows:

- Funding Requirement ICD Activities: USD 15.3 M; and,
- Funding Requirement Logistics Centre: USD 23.6 M.

The available funds of the Government of Ethiopia consist of the budget that can be made available for this specific project. As mentioned by the Client during the Inception Mission, the Government of Ethiopia has a budget available for the development of the Modjo Logistics Hub of around USD 150 M. Therefore, it can be concluded that in case the entire project is to be funded through public budget the project should be affordable to the Government of Ethiopia.

However, it should be mentioned that the specific infrastructure, superstructure and equipment investment required to carry out the actual value-added activities are not taken into account if this study. Therefore, the corresponding OPEX and revenues that these activities might generate are also excluded from the scope. Based on the logistics centre demand estimations a land demand analysis is done. The actual cost for land acquisition, land levelling and preparation as well as for the connection of the main utilities and infrastructure connections to the different sites are taken into account.

Finally, it is in line of expectation that private sector involvement will take place in the future Modjo Logistics Hub. For this reason, a major part of the funding requirement is expected to be invested by the private sector as well, resulting in a reduced investment requirement for the public sector and increasing the chances of affordability to the Government of Ethiopia.

⁵³ USD – ETB Exchange rate 8th November 2018

5.8 Value for Money Analysis on the Governance Structures

This section presents the Value for Money analysis on the Governance Structure options as presented in chapter 4 of this report. The remainder of this sub-chapter consists of the following sections:

- 5.8.1 Introduction to the Value for Money Analysis;
- 5.8.2 The definition of the Public-Sector-Comparator (PSC) and Governance Structure Options;
- 5.8.3 Option 0: Public-Sector-Comparator;
- 5.8.4 Results of the Governance Structure Options; and,
- 5.8.5 Financial Outcomes of the Value for Money Analysis.

5.8.1 Introduction

This section presents the Value for Money (VfM) analysis for the Modjo Logistics Hub, a logistics project to be further developed in Ethiopia. The VfM analysis is a quantitative analysis of the difference in value between the different governance structure options as presented in chapter 4 of this report. Thereby, a distinction is made between public development and/or operations and private development and/or operations of the container terminal (ICD) activities and Logistics Centre activities. The analysis shows whether or not the different governance structures with private sector involvement are expected to create more value than the Public-Sector Comparator (PSC). In addition, if private sector involvement is expected to add value, the VfM Analysis estimates the type of Governance Structure that is expected to add most value, which is based on a scenario approach in which assumptions are made based on the Consultant's best estimate. These assumptions are explained in more detail within the next section. The purpose of this VfM analysis is to recommend the Ethiopian Maritime Affairs Authority on the most valuable Governance Structure option best able to support the future development of Modjo Logistics Hub. Based on this recommendation, the Ethiopian Maritime Affairs Authority together with the Ethiopian Stakeholders are in the position to make the decision for the eventual Governance Structure implementation option for the development and operations of the Modjo Logistics Hub.

In the second part, the financial implications of the PSC and Governance Structure delivery options are presented. The starting point of the financial analysis is the Project Business Case (Base Case assumptions) for each respective option. Subsequently, assumptions are made on Project Business Case level in which distinction is made between the operations and development of the Hub activities by a public party (e.g. ESLSE) and the private sector (private investor). Moreover, as each governance structure is characterised by its pros and cons as described in chapter 4.4 of this report, sensitivities are provided on the level of demand, revenues, OPEX and CAPEX for both the ICD activities as well as the Logistics Centre activities. The purpose of this analysis is to determine whether the respective Governance Structure options are able to provide an increased value to the project. This method is able to provide quantitative support for choosing the preferred Governance Structure implementation option. Eventually, this choice is not only based on this quantitative approach but is rather a combination of this VfM analysis together with the more qualitative approach on the analysis of the pros and cons of the respective Governance Structure options as performed in chapter 4 of this report.

5.8.2 Definition of PSC and Governance Structure Options

This section defines the scoring assumptions of the PSC and of the different Governance Structure options. More specifically, based on the characteristics of the different Governance Structure options as described in chapter 4 of this report, a sensitivity is provided on various value drivers. This is partly done based on the allocation of activities to the public or the private sector and partly based on the Governance Structure characteristics that are able to drive the value of the entire project. The value indicators included in this analysis are, among others:

- The level of demand:
 - ICD demand: Containerised traffic;
 - Logistics Centre demand: Value-added services related to imports and exports;
- The market power: tariff sensitivity;
- CAPEX sensitivity on infrastructure, superstructure, equipment for both the ICD as well as the Logistics Centre; and,
- OPEX sensitivity determined by the level of operational excellence and efficiency.

The following table quantifies the drivers of the VfM analysis and summarises the sensitivities of activities. ***It should be mentioned that the financial outcomes under governance structure option 4 are assumed to be equal to option 1. After all, both governance structures require an additional layer: The Logistics Hub Developer which reduces efficiencies and the transfer of value.***

Table 5-4 Allocation of Sensitivities on Value Drivers for the Governance Structure Options

Value Driver Sensitivities	Base Case	Option 0 (PSC)	Opt. 1 (4)	Opt. 2	Opt. 3	Description
Cargo Demand – ICD	Base	Low	Base	High	High	The container demand is based on the volume forecast as presented in chapter 3. Today's operational inefficiencies of ESLSE in Modjo Dry Port are expected to continue in the PSC scenario resulting in a low case. Private sector involvement in option 1 (ESLSE together with a private company) improve the efficiency and result in a base case. Moreover, both option 2 and 3 include a second private ICD operator, able to create a competitive environment with maximum attractiveness of the Modjo Logistics Hub, resulting in a high case scenario.
Demand (Export) – LC	100%	50%	85%	85%	100%	The more private involvement is guaranteed on the ICD level, the higher the efficiencies and synergies are within Modjo Logistics Hub. Therefore, the amount of export generated within the hub increases from 50% in the PSC option to 85% in which the LC tenants have a sub-concession to 100% in which they have a direct concession contract with the Logistics Hub Authority.

Value Driver Sensitivities	Base Case	Option 0 (PSC)	Opt. 1 (4)	Opt. 2	Opt. 3	Description
Demand (Import) – LC	100%	100%	100%	100%	100%	The import demand handled in the LC consist of fertilizers and wheat, both products procured by the Ethiopian Government. Hence, the Governance Structure is not expected to affect the amount of import cargoes in the LC.
Tariffs	100%	100%	95%	90%	90%	Tariffs are expected to be competed on in case of increased competition. Option 2 and 3 offer the highest competition and have the lowest tariffs.
CAPEX – ICD – Land Acquisition	100%	100%	100%	100%	100%	Land is bought by the Government of Ethiopia, not expected to differ between the different scenarios.
CAPEX – ICD – Infrastructure	100%	110%	105%	100%	100%	The private sector is expected to realise infrastructure, superstructure and equipment investments against a lower cost than the public party due to development experience, disciplinary workings of private funding (banks/shareholders) and negotiation power.
CAPEX – ICD – Superstructure	100%	115%	110%	100%	100%	
CAPEX – ICD – Equipment	100%	120%	100%	100%	100%	
CAPEX Investment – ICD	0	0	0	1	1	Based on a flag (0 = no, 1 = yes). The ICD CAPEX investment concerns a second office and gate for a terminal, which are only required in case of an additional private ICD starts operations next to ESLSE
CAPEX Sensitivity – LC	100%	100%	100%	100%	100%	The LC is expected to be operated and developed by the private sector in all scenarios.
OPEX Sensitivity – ICD	100%	120%	110%	100%	100%	The private sector is able to guarantee operational excellence and efficiency, decreasing OPEX costs.
OPEX Sensitivity – LC	100%	100%	100%	100%	100%	The LC is expected to be operated and developed by the private sector in all scenarios.

Source: MTBS; LC = Logistics Centre, ICD = Inland Container Depot

5.8.3 Option 0: Public Sector Comparator

This section calculates the project value of the PSC (option 0) in comparison with the base case as presented in the former sections. The total value of the base case option is equal to an NPV of ETB 6,418 M. The different effects of the sensitivities are shown in the table below, which summarises the outcomes of the PSC delivery option.

Table 5-5 Public Sector Comparator

Value Driver Sensitivities	Differentiator	Option 0 (PSC)	NPV in Million ETB
Base Case Value			6,418
Cargo Demand – ICD	Volume Scenario	Low	-626
Demand (Export) – LC	Volume Sensitivity	50%	-153
Demand (Import) – LC	Volume Sensitivity	100%	0
Tariffs*	Tariff Sensitivity	100%	0
CAPEX – ICD – Land Acquisition	Total Costs	100%	0
CAPEX – ICD – Infrastructure	Total Costs	110%	-121
CAPEX – ICD – Superstructure	Total Costs	115%	-12
CAPEX – ICD – Equipment	Total Costs	120%	-180
CAPEX Investment – ICD	Total Costs (0= off, 1 = on)	0	0
CAPEX Sensitivity – LC	Total Costs	100%	0
OPEX Sensitivity – ICD	Total Costs	120%	-337
OPEX Sensitivity – LC	Total Costs	100%	0
PSC Value			4,989

* Based on current Modjo Dry Port Tariff Book

It should be noticed that in the base case presented in the former sections of this financial chapter, all assumptions are based on private sector involvement and maximum efficiency. For this reason, downward adjustments are made in order to present the value of the PSC option. It is shown that based on the table presented above the value of the PSC (option 0) results into a positive NPV of about ETB 4,989 M, which is substantially lower compared to the base case development option based on private sector involvement.

5.8.4 Results of the Value for Money Analysis on Governance Structure Options

This section compares the Value for Money between the PSC and each respective Governance Structure option as presented in Table 5-4. The following three delivery options will be compared with the PSC:

- **Option 1:** An integrated concession contract between the Government of Ethiopia/EMLHA and one private Logistics Area Developer who is subsequently responsible for the sub-concession contracts of the ICD operator consisting of a JV between ESLSE and a private sector terminal operator. Moreover, the private tenants interested to vest their business in the Modjo Logistics Centre also have a concession contract or rental agreement with the Logistics Centre Developer.

- **Option 2:** Separate concession contracts between the Government of Ethiopia/EMLHA and:
 - the ICD operators consisting of:
 - JV between ESLSE and a private international terminal operator; and,
 - Another competing private sector terminal operator (JV between Ethiopian and International company); and,
 - the private Logistic Centre Developer, who in its turn will have rental agreements with private tenants.
- **Option 3:** Separate concession contracts between Government of Ethiopia/EMLHA and:
 - the ICD operators consisting of:
 - JV between ESLSE and a private international terminal operator; and,
 - Another competing private sector terminal operator (JV between Ethiopian and International company); and,
 - direct concession contracts and/or lease agreements with the potential tenants for the Modjo logistics area. In this specific structure a “canvassing vehicle” is used, in which a private company is hired as “marketeer” to boost the development of the Modjo Logistics Area on behalf of the EMLHA.

For a more detailed overview of the options as described above please refer to chapter 4 of this report.

The table below provides an overview of the financial outcomes of the Value for Money analysis conducted on the different Governance Structure Options.

Table 5-6 Financial indicators for the Project Business Case VfM Governance Structure Outcomes

Governance Structure Options	Financial Outcome
Public Sector Comparator (Option 0)	
WACC	10.0%
IRR	47.3%
NPV (in ETB Millions)	4,989
Pay-back period (in years)	5
Funding requirement (in ETB Millions)	-1,336
Governance Structure Option 1	
WACC	10.0%
IRR	52.4%
NPV (in ETB Millions)	5,820
Pay-back period (in years)	5
Funding requirement (in ETB Millions)	-1,220
Governance Structure Option 2	

Governance Structure Options	Financial Outcome
WACC	10.0%
IRR	55.6%
NPV (in ETB Millions)	6,339
Pay-back period (in years)	5
Funding requirement (in ETB Millions)	-1,188
Governance Structure Option 3	
WACC	10.0%
IRR	55.7%
NPV (in ETB Millions)	6,385
Pay-back period (in years)	5
Funding requirement (in ETB Millions)	-1,188

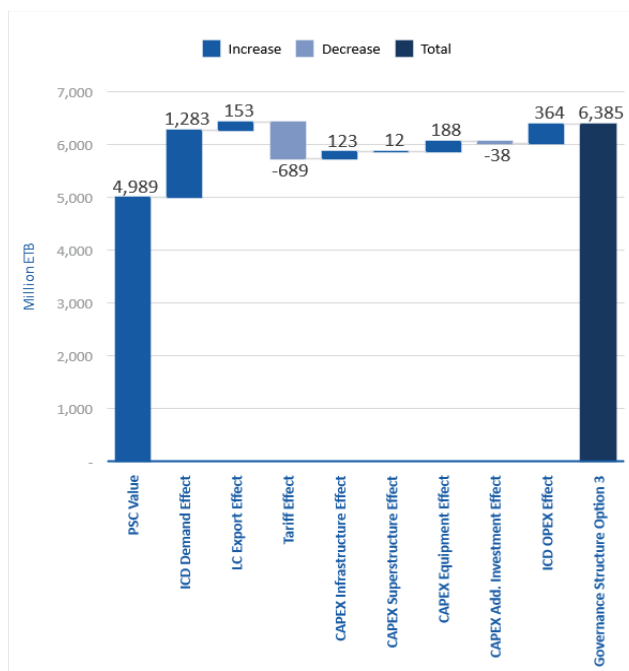
Source: MTBS

The financial indicators for the different Governance Structure options as well as the PSC option are presented in the table above. It is illustrated in this table that all Governance Structure options including private sector involvement are expected to increase the value of the project of Modjo Logistics Hub compared to the public-sector-comparator option. There is not much difference in value created between governance structure option 2 and option 3, which can be best explained due to the minor differences that exist between the two options. However, option 3 does show the highest value for money expectation out of all government structure options as analysed in this study and is therefore not only the preferred option based on a qualitative analysis conducted in chapter 4 of this report, but also on a quantitative base as estimated in this section. **Hence, Governance Structure option 3 is recommended as the preferred option for the implementation of the Modjo Logistics Hub.**

5.8.5 Conclusions Value for Money Analysis

The objective of this chapter was to conduct a Value for Money analysis to determine whether a project delivery through the different Governance Structure options add value compared to a project delivery by the public sector, the Public-Sector Comparator (PSC). Based on this analysis, the Ethiopian Maritime Affairs Authority is in the position to make the decision for the eventual Governance Structure option for the development and operations of the Modjo Logistics Hub.

Three Governance Structure options have been defined in this report. The VfM analysis yields the highest result for the Governance Structure Option 3, which is summarised below. The differentiators, estimated based on international benchmarks, indicate that the Governance Structure option 4 creates an additional ETB 1.40 B value vis-à-vis the PSC option.



Source: MTBS

- NPV FCF Governance Structure option 3 is ETB 6.39 B;
- NPV FCF PSC is ETB 4.99 B;
- The main drivers of the difference in value are:
 - the demand effect of containers and export;
 - the operational efficiency increase;
 - the CAPEX effect on infrastructure;
 - The CAPEX effect on equipment;
- Differences are caused mainly by
 - Private sector experience;
 - Improved bargaining port;
 - Broad network of private players; and,
- There are also two negative effects which are:
 - the reduced tariffs due to increased competition; and,
 - the additional investment requirements in offices and a terminal gate due to the presence of a second ICD operator active in Modjo Logistics Hub.

The Governance Structures option 2 and 3 nearly perform equally in terms of NPV. For this reason, the eventual Governance Structure option decision on the best implementation option may not only be decided on the NPV alone, but is a combination of factors:

- NPV;
- Payback period;
- Affordability;
- Private sector financing capabilities;
- Market appetite;
- Speed of implementation;
- Public sector control;
- Risk Allocation; and,
- Quality and costs of service.

Recommendation: *The VfM analysis proves that the Governance Structure option 3 offers the highest value on a project level. Moreover, it was extensively described that this particular implementation option is also the recommended option from a qualitative perspective. For this reason, it is advised to the Ethiopian Maritime Affairs Authority to implement the Modjo Logistics Hub under Governance Structure option 3.*

Page intentionally left blank

6 Needs Assessment – Private Sector Involvement and Capabilities

This chapter presents the needs assessment on the private sector involvement and its capabilities. Thereby, a distinction is made between the Ethiopian private sector and the international private sector. The remainder of this chapter is structured in the following sections:

- The Ethiopian private sector capabilities;
- The private sector involvement, including opportunities for further chain integration with Djibouti Port Developments;
- The FOB Directive and effect on Lifting the FOB Directive.

6.1 The Ethiopian Private Sector Capabilities

The Ethiopian private logistics sector is mainly characterised as:

- Not much developed, only a few larger private players able to make substantial investments (e.g. the largest members of the Ethiopian Logistics Community of Practice (ELCoP), etc.);
- Government discouraged/not supported the private logistics sector for a long time mainly due to the presence and central logistics position of ESLSE;
- Market recently opened for international private investors, able to create JVs in a 51/49% distribution (Ethiopian/international). Hence, the possibility is created for Ethiopian private companies to cooperate with the international sector and improve private sector capabilities on a larger scale; and,
- FOB directive still in place. In case it is lifted, the private sector will have more freedom to develop as well.

Although the Ethiopian private logistics sector did slowly develop over the years, there are a number of players able and willing to invest in their own facilities, like some large logistics service providers in Ethiopia are doing today.

The future situation in Modjo Logistics Hub

Based on the knowledge of the current situation of private sector logistics entities in Ethiopia the future private sector involvement in the Logistics Hub should be supported by its Governance Structure. Thereby, both the larger Ethiopian logistics companies willing to invest in their own facility outside of the current Dry Port boundaries, as well as the smaller logistics entities not able to invest in their own facility should be supported.

Therefore:

- **Smaller private logistics sector players** not able to invest in their own facilities should be offered rental agreements in the existing warehousing facilities located on the Modjo Dry Port. By starting there, these players are offered an opportunity and can slowly develop into medium/large private sector logistics service providers. By doing so, they will eventually reach the critical mass to move out of the Modjo Dry Port warehouses and invest in their own facility within the Modjo Logistics Hub;
- **Larger private logistics sector players** such as larger members of the ELCoP, should be offered an opportunity to rent a plot of land located within the Modjo Logistics Hub (near the existing dry port) and develop their own warehousing facilities. Thereby, synergies will be created between the (de)consolidation and warehousing activities taking place in the proximity of the container terminals and the logistics services offered by the ICDs (containerised traffic via rail). Through such developments, the entire Modjo Logistics Hub become more attractive for exporters and producers to vest their business, as well as an increasing amount of services, will be offered within the Hub.

It should be noted that both types of logistics parties are investigated and not only included within the demand analysis as presented in chapter 3 of this report but is also quantified within the financial analysis presented in chapter 5 of this report.

6.2 The Private Sector Involvement and Chain Integration with Djibouti Port

The international private sector plays a pivotal role in the development of the Modjo Dry Port to a multipurpose, multiservice logistics hub which can stand the international competition and is a catalyst for further economic development. One of the conditions to attract Foreign Direct Investments (FDI) in the ICD operations is an attractive investment climate. Potential FD Investors look at both cost factors and more qualitative factors:

Cost Factors	Quality Factors
Labour costs	Availability, quality of labour
Transportation costs	Logistics efficiency and operational excellence;
Occupancy costs (land lease, warehousing, etc)	Institutional criteria (PPP-law, Concession law, Procurement)
Incentives	Accessibility of the site (truck, rail, passenger traffic)
Overall package of Taxes, including tax holidays and exemptions	Hinterland connections to/from major ports and consumer and industrial clusters
Grant schemes	Availability and quality of utility services
Land and location	Site suitability and space availability

Source: MTBS

These are all factors that should be facilitated by the Ethiopia Government. Finally, but equally important is the availability of demand. With the Ethiopian economy, as one of the fastest growing economies and untapped potential, we are confident that international, but especially also local players have sufficient appetite to invest in Modjo. The international players are able to bring the following advantages to Modjo Logistics Hub (for the ICD activities):

- Operational excellence: operational systems and procedures that are both cost efficient and provide the best service levels to the logistics hub users;
- Private funds that will relief Ethiopian State Budgets: investments in superstructure and equipment which improves the current operational level significantly;
- Based on market demand, create new facilities and logistics services demanded by the market; and,
- Transfer of knowledge from these international players to their local staff which improves the local labour quality and makes the country as a whole more competitive.

However, it should be mentioned that international private sector involvement is only foreseen to take place in the ICD activities next to and as future competition of ESLSE. The value-added activities and services to be offered in the Logistics Centre (warehousing, (de)consolidation of goods, cold storage, bagging, labelling, etc.) are all foreseen to be performed by the Ethiopian private sector, either by own investments done (Landlord Model) or through a Management type of structure where the Hub Authority invests in infrastructure and superstructure and subsequently leases out the facility to the Ethiopian private sector.

Djibouti and Berbera Chain Integration

The international players can also play an important role to enhance the opportunities for further chain integration with the Djibouti Port developments. One of the most obvious opportunities is a possible cooperation with international companies that already have a vested interest in one of the main corridors of Djibouti or Berbera. One of the options is to sell a minority stake of 49% in the current ESLSE ICD facility and subsequently buy a share in the respective corridor(s), this should:

- Guarantee private sector involvement;
- Create synergies between the chain integration of Djibouti/Berbera and Modjo;
- Provide the transfer of knowledge;
- Prepares for future competition once a second ICD operator starts in Modjo Logistics Hub;
- Attracts a second ICD operator, the hub not only becomes more competitive, but also becomes a multi-user hub able to serve more clients; and,
- Introduces a TOS system, etc.

Another opportunity of corridor integration could be with the Berbera corridor. Since ESLSE is also active in the port of Berbera, further cooperation can improve the Addis Ababa – Berbera Corridor, which makes perfect sense. It limits the dependency on the port of Djibouti and it could attract additional cargo volumes to and from Modjo Logistics Hub. Besides, the improvement of the corridor, a Global Container Operators (GTO) is one of the most logical new ICD operators at Modjo Logistics Hub. If a GTO active in Berbera would be the company to open a second ICD in Modjo, then automatically 1) private sector involvement is introduced; 2) further supply chain integration with a second corridor is guaranteed and 3) competition is introduced at Modjo Logistics Hub, which improves the attractiveness for the port users (cargo owners, forwarders, warehouse operators, etc).

6.3 The FOB Directive and the Effect of Lifting the FOB Directive

Finally, the Ethiopian logistics sector of today is still characterised by the FOB directive, a measure that provides the Ethiopian economy positive as well as negative effect.

6.3.1 Introduction to the FOB Directive

The FOB directive was issued by the National Bank of Ethiopia in May 2000. The directive states that, sea transport for every import should be done by the country's flag carrier, Ethiopian Shipping Lines Share Company, as long as the carrier has a service from the Port of Loading mentioned on the Proforma invoice or the sales contract which will be used to open L/C. In other words, the deal should be done according to Incoterms FOB. It's the buyer - not the seller - that pays the freight. The freight will be paid in local currency (Birr) at ESL's head quarter in Addis Ababa. But this directive applies to those imports for which the foreign currency is paid by Ethiopian banks through letter of credit or cash against document. For those imports where the foreign currency is not paid by Ethiopian banks, the importer is free to use any Shipping Line. However, the majority of the imports is still done through a letter of credit via the Ethiopian banks.

If the Port of Loading mentioned on the proforma invoice is not called by ESL, importers can get a waiver from ESL's marketing department so that the banks could open the L/C on CFR/CNF terms. But all imports should use Ethiopian Insurance Companies to cover marine insurance.

The FOB directive is believed to help save foreign currency that will be used to pay the freight. Some, however, say that it's used to protect ESL from foreign competition. Even though Ethiopia Shipping Lines has not more than ten ships, it charters ships sometimes on time charter basis or usually on slot charter basis to transport the cargoes to Djibouti. The majority of the containers are carried by companies such as Maersk, PIL, APL, etc but under ESL's bill of lading. ESL has agreement with these companies on slot charter basis. Hence, the cargo is therefore still under control of ESL and thereby under the control of ESLSE for the land leg in case of multi-user service as well.

Other countries introduced different methodologies to deal with the letter of credit limitation through securing the payment by an export facility entity able to provide an insurance on the transport. One of the Dutch examples concerns Atradius. With this insurance it is possible to bypass the letter of credit and thereby the somewhat outdated banking system. However, Ethiopian importers are also obliged to get their insurance with Ethiopian insurance companies, who are bound to the same system.

6.3.2 The Pros and Cons of FOB Directive

This section will elaborate on both, of which the pros and cons of the FOB directive is presented in Table 6-1 in a summarized fashion.

Table 6-1: The Pros and Cons of the FOB directive

Pros	Cons
Providing an advantage to the local buyers (importers), enabling them to buy transport in local Birr, whereas ESLSE then pays the sea leg in USD. Thereby, ESLSE holds the USD risk	Due to the limited digitalisation of ESLSE, there is a suboptimal intermediate link between the buyers (importers) and the international shipping companies who eventually carry most of the cargoes on the sea leg, which results in limited transparency
Improved control of ESLSE on the import cargoes destined to Ethiopia, on the sea leg as well as the land leg	This suboptimal link results in additional processing time of which the eventual smaller Ethiopian importers are disadvantaged
The improved bargaining power of ESLSE against international shipping companies to set transport tariffs, protecting the Ethiopian importers and provide reasonable freight rates	It is believed that international and private freight forwarders are well able to deal with negotiations with shipping line. However, as the freight forwarder market in Ethiopia is less developed, they control less cargo to bargain with (mainly due to the role of ESLSE and the FOB directive)
Protecting the local public enterprises of too high trucking freight rates, which are negotiated by ESLSE	A balance is required between the quality of the logistics suppliers and the reward of transport prices. Part of this problem is also caused by the disproportionate purchases of sugar and fertilizers that could be better spread over time
Due to the control of ESLSE on most of the import cargoes, ESLSE is able to steer most of the cargoes to Modjo through its multi-modal solution	The FOB directive provides ESLSE the control (monopoly) over much of the import cargoes. This results into unfair competition within Modjo in regard to the handling of containers

Source: MTBS

In short, Ethiopian importers that require a Letter of Credit are obliged to do so via Ethiopian banks, after which the FOB directive states that importers then have to use the national carrier ESLSE. Due to this structure ESLSE controls most of the Ethiopian import market and therefore the free market mechanism cannot be applied.

Hence, the FOB directive does not directly affect the dry ports in Ethiopia, except for the fact that ESLSE is also active as dry port operator besides having considerable control over the import cargoes. As ESLSE struggles with limited operational efficiency and digitalization issues, the transparency and eventual effective service level offered to the importers (customers) is limited.

Finally, the reasoning above substantiates on the fact that the FOB directive does not support but hampers the development of the private logistics sector in Ethiopia, which also explains the rather small size of the Ethiopian private logistics sector such as freight forwarders and multi-user warehouse operators.

6.3.3 The effect of the potential Lifting of the FOB Directive on ESLSE

The FOB directive provides ESLSE a monopolistic position for the majority of the Ethiopian import products. For this reason, it is important to understand the potential effect on the logistics sector in case the FOB directive is lifted and in case it is not lifted. It goes without saying that in case the FOB directive is lifted the Ethiopian importers will be free to choose their own logistics service provider for the logistics services related to their import products. Thereby, the market available to the Ethiopian private logistics service providers will substantially increase, enabling many opportunities to start or enlarge their business. As long as the FOB directive will be there, ESLSE will retain their monopolistic situation. The potential lifting of the FOB directive, however, might have substantial consequences for ESLSE in different situation.

The table below provides an overview of the expected effect on the operations of ESLSE for the following situations:

- FOB directive is not lifted:
 - ESLSE remains alone without private sector involvement;
 - ESLSE partners with a private sector logistics partner;
- FOB directive is lifted:
 - ESLSE remains alone without private sector involvement; and,
 - ESLSE partners with a private sector logistics partner.

The potential effects for ESLSE and the wider Ethiopian economy and logistics market are indicated in the table below, ranging from:

- **Green:** positive for ESLSE and Ethiopian economy;
- **Yellow:** positive for ESLSE, economy partly stimulated through better performance of ESLSE and private partner;
- **Orange:** positive for ESLSE but not good for the wider Ethiopian economy due to limited operational efficiency; and,
- **Red:** negative for ESLSE as it is expected that ESLSE will lose a substantial share of its market, but better for the wider Ethiopian economy as importers are free to choose their own logistics service provider.

Table 6-2: Effect of Lifting the FOB directive on ESLSE

Scenario to ESLSE	Effect – FOB is not Lifted	Effect – FOB is Lifted
ESLSE alone	No effect, ESLSE remains to hold its monopolistic situation in Modjo Dry Port	ESLSE is expected to lose a considerable market share due to market underperformance compared to private players entering the Modjo Logistics Hub
ESLSE with private partner	No market effect but substantially improved services to Ethiopian importers and exporters, supporting the economic growth of the country	ESLSE prepared for market competition due to private sector involvement, ready to compete for cargoes flowing via the Modjo Logistics Hub in case of additional private competition

Colours indicating the preferred option from **green** as the favoured option to **darker red** as the unfavoured option in respect to ESLSE operations

The table above indicates that in any situation it can be recommended for ESLSE to partner with a private sector terminal operator to improve the efficiency within Modjo. This will not only stimulate the Ethiopian economy but also prepares ESLSE for potential future competition in Modjo. For this reason, private sector involvement within the current Dry Port facility is highly recommended (51% ESLSE and 49% Private Company) in which the private company should take over the lead in the terminal operations.

Especially in a situation that ESLSE remains one of the terminal operators in Modjo, private sector involvement within their terminal is required. After all, in case ESLSE does not partner with the private sector and the FOB directive is lifted, ESLSE is not only expected to lose the amount of cargoes to the private sector, but also the value of the ESLSE as dry port entity will substantially decrease.

From a strategic point of view, it is therefore also recommended to partner with the private sector prior to the potential lifting of the FOB directive. On the other hand, by doing so, the Ethiopian Government is able to more easily make the decision on lifting the FOB directive as the potential negative effect on ESLSE is in that scenario substantially decreased.

Page intentionally left blank

7 Implementation Plan

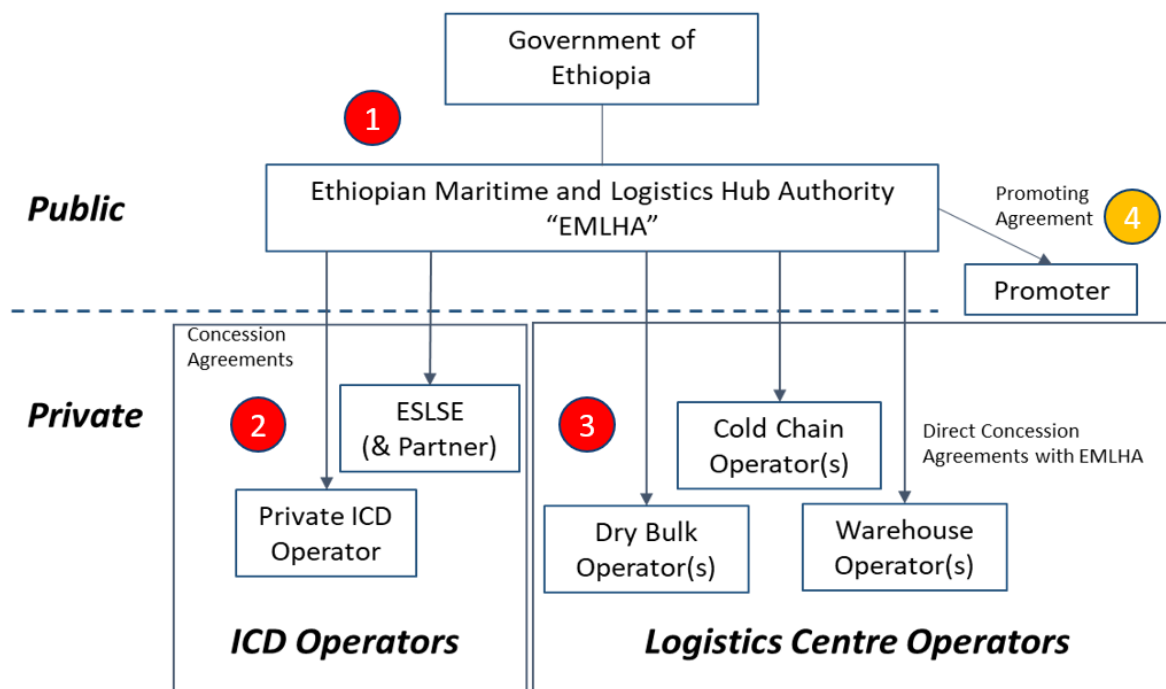
7.1 Introduction

The objective of this chapter is to present the steps and activities to be taken to implement the Governance Structure of Modjo Logistics Hub. Furthermore, the overall project implementation timeline is presented and comprises three years, i.e. 2019, 2020 and 2021. There are four main steps to be taken for the implementation of the project:

- Step 1: Creation of the “EMLHA”;
- Step 2: ICD implementation;
- Step 3: Logistics Centre implementation;
- Step 4: Appointment Logistics Centre Promoter (if required).

The four steps are visualised in the following figure and are explained in more detail in the next paragraphs.

Figure 7-1: Preferred Governance Model including the four steps to be taken



Source: MTBS

7.2 Implementation Plan

This paragraph describes the four steps and actions that need to be taken in order to implement the Governance Structure of Modjo Logistics Hub.

7.2.1 Step 1: Creation of the “EMLHA”

The first step comprises the creation of the “EMLHA” entity. Table 7-1 presents the steps that need to be taken, the description, the responsible entity and the timing of the actions. The actions in Step 1 all need to be taken in 2019.

Table 7-1: Actions Step 1

Actions Step 1	Description	Responsible	Timing
1 Creation EMLHA	Establishment of the new entity responsible for the management of the future Modjo Logistics Hub and possible other future Ethiopian Logistics Hubs.	EMAA	Q1-2 2019
1.1 EMLHA Act	Draft and ratification of the EMLHA Act which grants the authority the right to act as managing authority of the Ethiopian Logistics Hubs.	EMAA	Q1-2 2019
1.2 Organisation	EMHLA is responsible to implement the organizational structure, including staffing.	EMAA	Q3 2019
1.3 Financial Structure	EMHLA is responsible to implement the financial structure, opening balance sheet and budget planning and funding allocation (USD 150 M).	EMAA	Q3 2019
1.4 Land Acquisition	After establishment, the EMLHA is responsible to purchase the land required for the hub activities.	EMAA	Q4 2019

Source: MTBS

7.2.2 Step 2: ICD Implementation

The implementation of the ICD is the following step in the implementation plan. In 2019 the preparation for the equity transaction of ESLSE is to be carried out. Afterwards, an extensive market sounding is planned to raise market appetite. Furthermore, the tender procedure is executed, and the transaction documentation is prepared. These actions are planned in 2019 and 2020. Furthermore, once the Government of Ethiopia (GoE) opens the market for future competition, i.e. lifts the FOB directive, competition can be introduced for Modjo ICD operations. The introduction of private competition can be based on a time trigger, volume trigger or others. Table 7-2 presents an overview of all the actions of step 2, the explanation, the responsible party and the timing.

Table 7-2: Actions Step 2

Actions Step 2	Description	Responsible	Timing
1 Preparation Equity Transaction ESLSE	The current Modjo Dry Port Facility should be transformed into a “ringfenced” entity, able to be partly sold to the private sector (max. 49%)	ESLSE	2019
1.1 Strategic Partner Search	Extensive market sounding/road show campaign to raise market appetite and execution of the tender procedure resulting in a share purchase agreement (ESLSE & Private)	ESLSE	2019/2020
1.2 Creation Level Playing Field	Preparation of transaction documentation for a concession agreement between EMLHA and new JV ICD operator, securing the basis for future fair competition for Modjo ICD operations	ESLSE	2019/2020
2 Lifting FOB Directive	Required to open the market for future competition	GoE	2021+
3 Implementation Private Competitor	Introduction competition for Modjo ICD operations through an international tender procedure	EMLHA	Depending on FOB

Source: MTBS

7.2.3 Step 3: Logistics Centre Implementation

The implementation of the Logistics Centre is scheduled in 2020. At first, the land has to be prepared and utilities have to be connected to the plots of land. Then, the conditions for attracting Logistics Tenants will be defined and the concession contracts will be prepared. After the concession contracts have been signed, the private tenants are responsible for the development and construction of the value-added facilities. This is scheduled to be completed in 2021. Table 7-3 explains the actions of Step 3 that need to be taken in more detail.

Table 7-3: Actions Step 3

Actions Step 3	Description	Responsible	Timing
1 Preparation of the Land Area	All activities such as land levelling and utility connection realization to the sites to be leased in the Logistics Centre	EMLHA	2020
1.1 Tenant Selection	Define conditions for attracting Logistics Tenants (business plan, minimum volumes, etc.)	EMLHA	2020
1.2 Concession Contract	Preparation of concession contracts and/or lease agreements between EMLHA and the private tenants	EMLHA	2020
2 Facility Development	The private tenants are responsible for the development and construction of the value-added facilities (warehouses, etc.)	Private	2020/2021

Source: MTBS

7.2.4 Step 4: Appointment Logistics Centre Promoter

The last step includes the appointment of a private company as Logistics Centre Promoter. The promoter will arrange for canvassing, a promoting/marketing campaign and overall promotion in order to boost the success of the Modjo Logistics Centre. This step is only required if the EMLHA believes that a Logistics Centre Promoter is necessary, and the promoter is expected to add value. The following table presents the actions to be taken.

Table 7-4: Actions Step 4

Actions Step 4	Description	Responsible	Timing
1 Appoint Logistics Centre Promoter	The EMLHA appoints a private company as Logistics Centre Promoter.	EMLHA	2019
1.1 Tenants Search	The Promoter will search private tenants that will be responsible for the development and construction of the value-added facilities.	Logistics Centre Promoter	2020

Source: MTBS

7.3 Project Implementation Timeline

Figure 7-2 presents the estimated but indicative project implementation timeline in line with the steps and actions identified in the previous paragraph.

Figure 7-2: Implementation Timeline (Indicative)

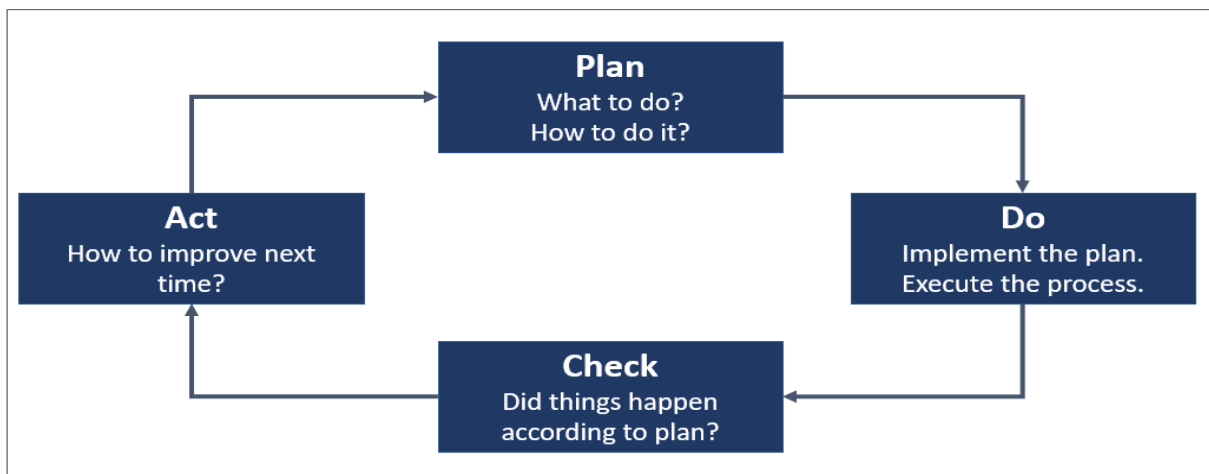
Implementation Timeline	Year 2019				Year 2020				Year 2021				Year 2022+			
	Quarter 1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Step 1: Creation of the "EMLHA"																
1. Creation EMLHA																
1.1 EMLHA Act																
1.2 Organisation																
1.3 Financial Structure																
1.4 Land Acquisition																
Step 2: ICD Implementation																
1. Preparation Equity Transaction ESLSE																
1.1 Strategic Partner Search																
1.2 Creation Level Playing Field																
2. Lifting FOB Directive																
3. Implementation Private Competitor																
Step 3: Logistics Centre Implementation																
1. Preparation of the Land Area																
1.1 Tenant Selection																
1.2 Concession Contract																
2. Facility Development																
Step 4: Appointment Logistics Centre Promoter																
1. Appoint Logistics Centre Promoter																
1.1 Tenants Search																
Construction Expansion ICD and LC																
Start Operations Expanded ICD and LC																

Source: MTBS

7.4 Monitoring and Evaluation of the Implementation Plan

A well-organized monitoring mechanism is required for the successful implementation of the Governance Structure. The basis of all monitoring (and evaluation) criteria is that they are SMART: Specific, Measurable, Actionable, Relevant and Time-based. If monitoring criteria do not meet this requirement, efforts to monitor the organisation's implementation progress will become time- and money-intensive without producing the required output of the monitoring exercises. The PDCA cycle is a practical tool for this kind of mechanisms. PDCA (plan–do–check–act or plan–do–check–adjust) is an iterative four-step management method used in business for the control and continuous improvement of processes and products. It is also known as the Deming Circle and is visualised in Figure 7-3.

Figure 7-3: Deming Circle



Scope for monitoring and monitoring mechanisms

The implementation processes should be monitored on three levels:

- Monitoring of **time**;
- Monitoring of **processes**; and,
- Monitoring of **risks**.

Each of these levels can be related back to the PDAC cycle at all times. Looking simply at the example of whether a process is being implemented within the planned timeframe, this will produce the following observations, actions and questions:

- **Plan:** Six months allocated to the creation of the “EMLHA” as described in Step 1;
- **Do:** Draft and ratification of the EMLHA Act;
- **Check:** Has the EMLHA Act been drafted and ratified in the allocated timeframe? A poorly managed use of time will also have consequences on the budget;
- **Act:** If the final time duration (and cost) risks to diverge significantly from the planned duration, ask what has contributed to the delay, what (intermediate) steps can be taken to prevent (further) delays, at what point or event must the entire planning be re-evaluated and, in the worst case, when the (financial) consequences of the adjusted planning are too significant, how can the process be terminated?

Furthermore, the entire pre-implementation and implementation period is in effect a long sequence of processes. These processes must be carefully managed and monitored. This involves making sure the right stakeholders are involved, decisions are made and monitored by the designated organs, all the while continuing to give, receive and integrate feedback through the PDCA-driven monitoring processes. The following questions can be raised to monitor the processes:

- **Plan:** Which processes are we starting? Which decisions are begin made at the end of these processes? Which stakeholders should be consulted?
- **Do:** Execute;
- **Check:** Are we respecting the planned processes? What is the impact of (not) respecting the planned processes? Were the stakeholders consulted as planned and who made the final decisions?
- **Act:** Re-adjust the pool of stakeholders and (re-)align the decision-making authority taking into account the (adjusted) strategic objectives and the new realities.

Finally, risks can be monitored in a similar manner:

- **Plan:** Identify the types of risks and evaluate the likeliness of the risk-taking place, the possible mitigation measures and the expected outcome if the risk occurs without being mitigated;
- **Do:** Execute;
- **Check:** Did the actual impact match the expected impact? Have the mitigation measures been applied as planned? Are there new risks?
- **Act:** Re-adjust the pool or risks, the risk impact and mitigation measures taking into account the (adjusted) strategic objectives and the new realities.

Evaluation criteria

Evaluating implementation processes is not similar to evaluating the operator of a concession. Indicators that measure the output per employee or per activity are not suitable in a process-driven environment. However, this does not mean that evaluation metrics or key performance indicators cannot be applied to the valuation of the implementation processes of the Governance Model and the Logistics Centre. Similar to the monitoring mechanisms, the evaluation criteria must be SMART: Specific, Measurable, Actionable, Relevant, Time-based.

Furthermore, the evaluation of implementation processes must align with the overarching objectives of the EMLHA. This means that:

- The objective to be evaluated follows directly from a long-term strategic objective;
- The objective is evaluated along the same time horizon as the strategic objective that it corresponds to; and,
- The evaluation process must evaluate the objective's development relative to reaching the strategic objective and, as such, any correction and/or improvement measures must correlate to furthering the strategic objective.

Appendix I Weighted Average Cost of Capital

This section provides a detailed calculation of the WACC for the Modjo Logistics Hub project implementation, which is calculated to be 9.96%. The calculation is illustrated in the table below.

Detailed WACC Calculation for the Project

Component	Ethiopia Est.	Comment
RF	1.00%	Risk -Free Rate, but based on Real Values, thus lower compared to USA RF (2.97%) due to Inflation Correction
RM	10.27%	A 2017 survey identified a market risk premium of 5.08% for Developed countries. For Ethiopia, 10.27% is assumed, including the country risk premium of 5.19%.
D/E	0.00	Debt/Equity ratio. Theoretically, the market value of equity (and of debt) rather than the book value is to be considered here. However, this model is based on an unleveraged situation, excluding debt from the project.
E/total liabilities	100.00%	Unleveraged model, resulting in 100% Equity
D/total liabilities	-	Target Debt/Equity level based on international benchmarking of similar projects prove a debt % of about 45%.
τ_C	30%	Marginal tax rate = Corporate tax rate of 30%
β_U	0.872	Unlevered Beta = Beta / (1 + (1- tax rate) (Debt/Equity Ratio))
β_L	0.872	$\beta_U * (1 + (1 - \tau) * (D/E))$
RE, L	9.96%	Leveraged cost of equity: $\beta_L * RM + RF + \text{Liq. premium}$
RD	10.00%	Company's marginal cost of debt
WACC	9.96%	$E / (\text{tot. liabilities}) * RE,L + D/(\text{total liabilities}) * RD * (1 - \tau_C)$

Source: MTBS

Appendix II Data Sources

This section includes the data sources that are used for the inception report, draft and final report. The data sources include site visits, workshops, interviews and databases. Other data sources that are used are presented in the footnotes of the report.

Type	Data Source
Site Visits	Modjo Dry Port Visit
Workshop 1 and 2	Stakeholders Meeting at EMAA
Interviews	Pan Africa - Ms. Elizabeth Getahun (CEO)
Interviews	Watt International Plc. - Mr. Woubishet Hailu (Managing Director)
Interviews	Champion Shipping - Ms. Azmera Tadesse
Interviews	ESLSE - Ato Roba Megersa and Management colleagues
Interviews	EMAA - Ato Mekonen Abera (Director General)
Interviews	EHPEA - Tewodros Zewdie (Executive Director)
Interviews	ERC - Management ERC
Data Bases	IMF World Economic Outlook, World Bank Open Data
Data	Previous MTBS Reports
Data	Matiwos Ensermu, our Ethiopian partner
Data	ESLSE
Data	EMAA
Data	Finance Director Modjo Dry Port
Data	Ministry of Trade
Data	Ethiopian Revenues & Customs Authority
Data	EHPEA
Data	Coffee and Tea Authority

Source: MTBS

The Pearl in the Shell

Unlocking Value in the Maritime & Transport Industry

Maritime & Transport Business Solutions

address Wijnhaven 3^E
P.O. BOX 601
3011 WG Rotterdam
The Netherlands

telephone +31 (0)10 286 59 40

e-mail info@mtbs.nl

internet www.mtbs.nl

