

2. Methodology and Data Sources

The resources available for the Ethiopia Logistics Masterplan Diagnostic (ELMD) exercise were insufficient to rely on collection of primary data so the Diagnostic relies heavily on secondary data collected mainly by Addis Ababa University (AAU), who were contracted to collect the data required for the Diagnostic. **All figures and tables not attributed underneath the table or figure are sourced from the work done by Addis Ababa University.**

AAU employed a mixed research approach involving both qualitative and quantitative approaches. The extensive amount of data that needed to be captured and then analysed and assessed, and the need to triangulate information gathered from several sources, necessitated the use of the mixed approach.

Secondary data has been gathered, mainly by Addis Ababa University, from recently published and unpublished documents including relevant legal documents such as Proclamations, Regulations, Directives and manuals related to trade logistics, transportation and Customs. Further reviews include national and sectoral strategic plans such as the National Transport Master Plan and National Logistics Strategy, studies and reports on trade logistics, main import and export value chains, logistics systems and logistics facilities such as industrial parks, warehouses, border posts and dry ports. Numerical data has been gathered from reports from the Central Statistical Agency, National Bank of Ethiopia and Ethiopian Customs Commission.

Primary data has been gathered from various stakeholders and government ministries and agencies using questionnaires or data templates, key informant interviews and Focus Group Discussions for each sector which included the mining and mineral sector, agricultural commodities, and logistics sectors. This data includes production and distribution of major agricultural commodities and fertiliser, mining and minerals production, industrial park production and facilities, warehouse facilities and volume, port facilities, border posts, logistics facilities and road vehicle and fleet capacities.

Table 2.1 shows the breakdown of the qualitative data collection through individual interviews and focus group discussions.

Table 2.1: The breakdown of the qualitative interviews across different Key Informants

No	Key Informant group	Individual interviews	FGDs
1	Regulatory body and development partners	17	8
	- Federal and regional government offices (MoTL, EMA, MoA, Regional agricultural bureau, MoM, ERA, ERC)	12	6
	- Development partners (WB, WFP, CRS)	5	2
2	Warehouse operators and distributors	16	6
	- Agro sector (ETBC, NDRMC, EABC, EPSA, ECX, Associations)	10	4
	- Logistics Sector (ESLSE, associations)	6	2
3	Logistics Facility Providers	8	2
	- Industrial Park	4	1
	- Dry port	4	1
Total		41	16

Data collection templates and questionnaires have been employed to gather objective and numerical agricultural warehouse data, including capacity, location, condition and distribution information; of

mining commodities; of industrial parks and dry port information; and of other logistics information such as vehicle and train capacity, volume, and driver time logs.

Data has been obtained from three stakeholder categories, these being Regulatory Authorities and Development Partners; Warehouse Operators and Distributors; and Logistics Facility providers. A mix of purposive sampling and snowballing techniques were used to select interviewees from selected members of Regulatory Authorities, supply chain actors, and logistics facility providers. Initially, purposive sampling was used for high level key informant interviews; then sequential snowballing was adopted to locate the right key informants fitting each specific interview guides. Finally, data collection templates were administered to gather concrete official numerical and statistical data. In parallel, key data providing offices from each sector were approached to gather national and regional data on the selected sectors.

The schedule at Table 2.2 summarises the sample proportion if population size can fairly be determined.

Table 2.2: Breakdown of study population

No	Population category	Data collection method	Sampling technique	Sample size
1	Regulatory organs and development partners	Interview, FGD,	Purposive, Snow balling	17
2	Warehouse operators and distributors	Interview, FGD	Purposive, Snow balling	16
3	Logistics facility providers	Interview, FGD	Purposive, Snow balling	8
4	Primary data providers	Survey	Purposive	50

The study employed both qualitative and quantitative data analysis techniques as follows: -

- Quantitative Methods of Data Analysis The research utilised mainly descriptive statistical analysis to summarise and present the analysis and quantitative components of the research with the help of appropriate statistical packages for each topic using:
 - o Descriptive statistics - employed to present data using percentages, frequency tables, items analysis, means, value chain maps, and business process analysis, and projections.
 - o Value chain Analysis - conducted to map the value chains of main agricultural and mining commodities affecting the national trade logistics of Ethiopia.
 - o Business process analysis – a six-step business process analysis has been employed to show the Business process selected import/export cargos in the main port corridors using root cause analysis and experience analysis.
- Qualitative Methods of Data Analysis: The study applied qualitative analysis techniques such as narrative, content, and thematic analysis to explain and understand the different qualitative aspects of collected data. The qualitative assessment followed careful coding data, identification of themes and pattern, organization into coherent categories, linking within and between categories of data, and data interpretation.

In compliance with applicable ethical procedures, participants are informed of the purpose of data collection and their consent of participation. In addition, the anonymity and confidentiality of participants is strictly preserved.

For the railway sector component a different data-gathering and analysis technique was used. The two railway Non-Key Experts reviewed existing reports on the Ethiopian railway sector. They then prepared a Power-Point presentation which summarised the Ethiopian railway sector and presented this in a 2-day workshop of selected Ethiopian railway experts. The workshop reviewed the material collected and made a series of recommendations on how the railway sector should be further developed after first analysing the challenges faced in the sector. Specifically, the following methodology for the railway sector was used:

- Direct Data Collection from Ethiopian Railways Corporation (ERC): This included details about the national railway network, its current status, and future plans. This direct approach ensured that the data was accurate and up to date, providing a reliable foundation for the report.
- Compilation of Information from Various Sources: Compiling detailed descriptions and technical conditions of the Addis Ababa-Djibouti railway project from different publications. These publications were sourced from the Ethiopian Railways Corporation and the Ministry of Transport and Logistics. This method allowed for a broad range of perspectives and data points to be included in the report.
- Collection of Operational Data: This involved using annual reports from the Ethio-Djibouti Standard Gauge Railway Company (EDR) to collect operational data. This data provided a clear picture of the company's performance and operations, which was crucial for understanding the current state of the railway sector.
- Review of Previous Studies: This involved reviewing previous studies on the railway sector. In the past five years studies have been carried out by different institutions in the railway sector, including a study by ERC, the World Bank and McKinsey and these were reviewed. These studies focused on sector governance, finance, investment, and market structure and, by reviewing these studies, a comprehensive understanding of the sector was achieved, which helped to contextualise the data collected.
- Focus Group Discussion: Discussions were held with the management of the Ethiopian Railways Corporation. These discussions provided valuable insights and perspectives on the critical problems facing the railway sector in Ethiopia. This qualitative data added depth to the report, providing a more nuanced understanding of the challenges and opportunities in the sector.
- Collaboration with Experienced Railway Professionals: This involved collaborating with a select group of experienced railway professionals. These professionals had in-depth knowledge of the Ethiopian rail industry and helped to create a the SWOT analysis and a comprehensive ten-year scenario analysis for EDR, the railway operation company. This analysis included a thorough evaluation of the current state of the industry, as well as predictions for future growth and development.

Data gathering on road condition was from the Ethiopia Roads Authority, who were able to provide data on the international Roughness Index (IRI), which is a measure of the physical condition of a road, and average annual daily traffic (AADT) counts for all sections of the main trunk road system.

The shipping profile is calculated from a dataset obtained from Linescape, a company which advertises itself as compiling the most comprehensive source of global sailing schedules, ships register details and liner profile information. The database covers 134 shipping lines and 1,100 ports.

The dataset is in a “raw” state when received and requires some work to screen out duplicate voyages/ calls (to eliminate the instances of more than one liner offering capacity on the same vessel, sometimes on different dates). For the period analysed (October 2021 to June 2022) the master data file of some 900,000 records is reduced to about 21,000 relevant records which include all the sailing legs of all the services that call at the target ports listed above.

Ports’ tariffs’ contribution to the cost of importing into and exporting out of Ethiopia was obtained from Ethiopian Shipping and Logistics (ESL), with the source being the port tariff book, dated 2017/2018 (Doraleh Container Terminal, Djibouti), 2021 (Berbera), and 2022 (Port Sudan and Mombasa).