

**The Republic of the Sudan**

**Data Collection Survey on  
Trade Promotion and Enhancement of  
Trade Environment in Sudan**

**Final Report**

**December 2021**

**Japan International Cooperation Agency (JICA)**

**Oriental Consultants Global Co., Ltd.**

**Nippon Koei Co., Ltd.**

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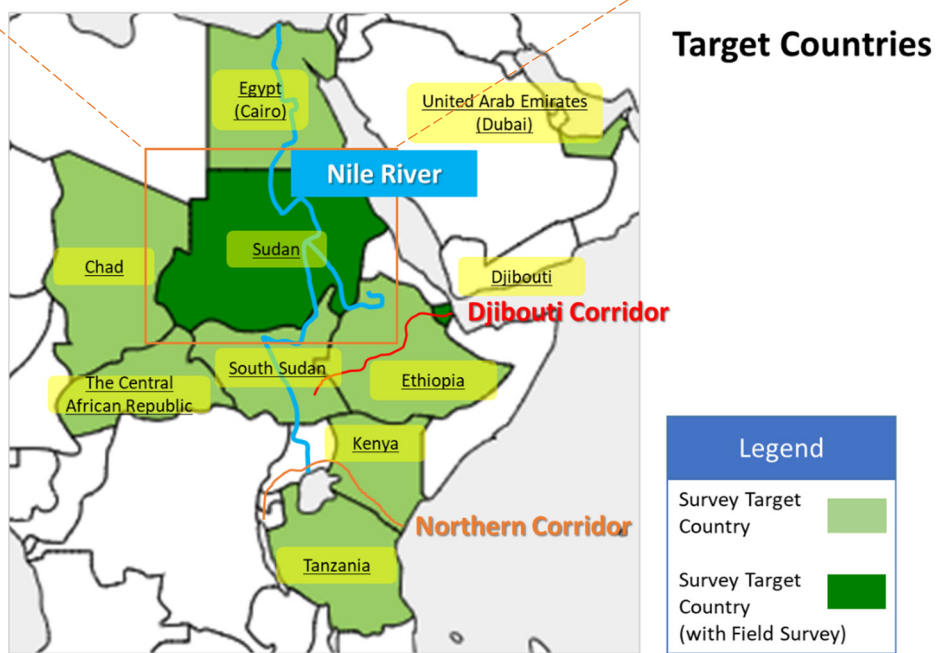
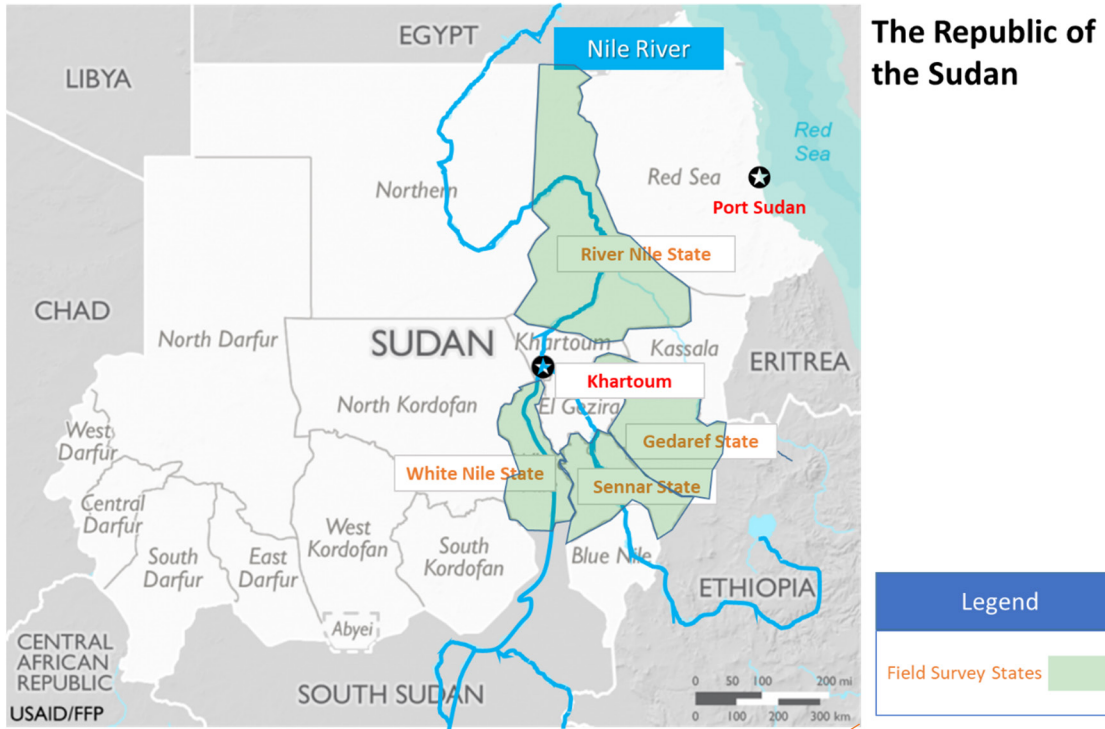
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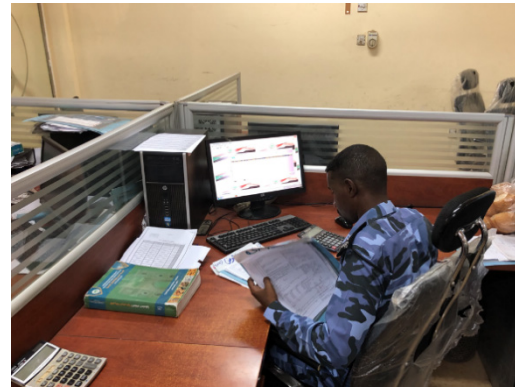


**Location Map of Survey Target Countries**

Pictures (1/8)



Meeting with Sudanese customs senior officers  
June 13, 2021



Customs clearance with ASYCUDA World  
(Verification by customs officer)



Meeting with Minister of Trade and Supply  
(June 21, 2021)



PCM PDM Workshop  
(Explanation by Chief Consultant)



PCM PDM Workshop  
(Discussion of participants 1)

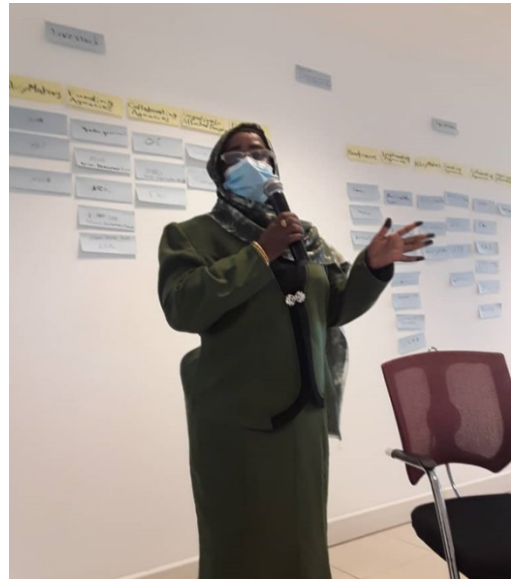


PCM PDM Workshop  
(Discussion of participants 2)

Pictures (2/8)



PCM PDM Workshop  
(Presentation of participants 1)



PCM PDM Workshop  
(Presentation of participants 2)



Draft Final Report Conference  
(Explanation by Chief Consultant)



Draft Final Report Conference  
(Executives of Sudan Government and  
Ambassador of Japan to Sudan)

Pictures (3/8)



Road surface condition of Atbara-Haya road  
(Back side of road is constructed by China  
Front side of road is constructed by India)



Road surface condition of Atbara-Haya road  
(Road pavement that needs to be repaired)



New Box Culvert  
on Atbara-Haya Road



Section where pavement is covered with sand  
on Atbara-Haya Road



Road maintenance equipment at National  
Highway Authority River Nile Sector



New Weighbridge in  
Dama district of Atbara

Pictures (4/8)



Flood washed roadbed and ballast of Sudan Railways Corporation's track



Current Status of Sudan Railways Corporation's track



Workshop at Sudan Railways Corporation Atbara Headquarters



Training facilities of Sudan Railways Corporation Atbara Training Center



Djibouti-Addis Ababa Railway



Garri Free Zone, Khartoum State

Pictures (5/8)



Soba Dry Port, Khartoum



Physical inspection at Atbara Dry Port



Djibouti Old Port (PDSA)



Djibouti Multipurpose Port (DMP)



Djibouti Free Zone (DFZ)



Damerdjog Industrial Park planned site



Pictures (6/8)



Quarantine Station at Khartoum State needs rehabilitation of roof, fence, etc.



Slaughterhouse for export  
(under GIAD Group)



Livestock vaccines produced at the Central Veterinary Research Laboratory (CVRL) under the Ministry of Animal Resources



Vaccine Refrigerator at White Nile State susceptible to power outages, need solar panels installed



Livestock market at White Nile State needs rehabilitation of roof, water supply, etc.



Maintenance of roads is important as livestock is transported by truck from White Nile State

Pictures (7/8)



Many mango tree in River Nile State are larger than 4 meters.



Pheromone traps for fruit flies have been distributed to mango farmers by the government.



A number of composting companies have been established in Khartoum State in recent years.



Mango trees in Khartoum State are grown to around two meters for ease of management.



The Mango Festival is held every year.



Ministry of Agriculture and Natural Resources officials discussing mangoes with the Agriculture Research Corporation (ARC)

Pictures (8/8)



Government-managed nursery production houses at Sennar State need to be expanded and upgraded



Sesame farmers at Sennar State do not use herbicides and often weed vast areas by hand



Silo for storing sesame and other crops at Sennar State



Sesame farmers at Gedaref State often do not apply fertilizer and grow in rotation with sorghum and groundnut



Interview with Undersecretary, Ministry of Agriculture and Natural Resources



Interview with Undersecretary, Ministry of Animal Resources

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## Abbreviations

Abbreviation	English Meaning
AfCFTA	African Continental Free Trade Area
AICD	Africa Infrastructure Country Diagnostic
COMESA	Common Market for Eastern and Southern Africa
C/P	Counterpart
DWT	Deadweight Tonnage
EU	European Union
FY	Fiscal Year
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GLOBALG.A.P.	Global Good Agricultural Practices
HACCP	Hazard Analysis and Critical Control Points
HS	Harmonized Commodity Description and Coding System
ICD	Inland Container Depot
IGAD	Inter-Governmental Authority on Development
ISO	International Organization for Standardization
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
LDC	Least Developed Country
MoANR	Ministry of Agriculture and Natural Resources
MoAR	Ministry of Animal Resources
MoFEP	Ministry of Finance and Economic Planning
MoFNE	Ministry of Finance and National Economy
MoU	Memorandum of Understanding
MoUDRB	Ministry of Urban Development, Roads and Bridges
MRCC	Maritime Research & Consultation Center
NETREP	National Emergency Transport Rehabilitation Project
NHA	National Highway Authority
NTMP	National Transport Master Plan
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OIE	International Epizootic Office
OSBP	One Stop Border Post
PCI	Pavement Condition Index
PCM	Project Cycle Management
PDM	Project Design Matrix
PSI	Pre-shipment Inspection
RTG	Rubber Tyred Gantry
SDG	Sudanese Pound
SDGs	Sustainable Development Goals
SOP	Standard Operating Procedure
SPC	Sea Port Corporation
SPS	Sanitary and Phytosanitary Measures
SRC	Sudan Railway Corporation
SSMO	Sudanese Standards and Metrology Organization
SSTL	State Sponsors of Terrorism List
TEU	Twenty-Foot Equivalent Unit
TFA	Trade Facilitation Agreement
TRS	Time Release Study
UNIDO	United Nations Industrial Development Organization
VTMS	Vessel Traffic Management Systems
WCO	World Customs Organization
WB	World Bank

# **Chapter 1 Overview and background of the survey work**

## **1-1 Background and purpose of the survey**

### **1-1-1 Background of the Survey**

Interest in the Sudanese market among European, U.S., and Japanese companies has started to grow again after the U.S. government officially removed Sudan from the State Sponsors of Terrorism List (SSTL) in December 14, 2020 (U.S. time). This happened following the fall of President Bashir, who had maintained a dictatorship for 30 years, in April 2019 and the inauguration of a civilian transition government in August of the same year. While issues concerning political stability, security risks (especially in rural areas), and the development of laws on investment and business remain, it is hoped that the recent lifting of the SSTL will restore international remittance capacity in Sudan and encourage foreign companies to set up operations in the country, leading to the development of the Sudanese economy. Some moves could be observed after the SSTL was lifted. Regarding the United States, General Electric, together with its related companies, visited Sudan in October 2020 and signed a Memorandum of Understanding (MOU) on power generation with the Government of Sudan. Boeing, another U.S. company, sent a delegation to Sudan in November 2020 to pay a courtesy call to the Prime Minister and discuss future cooperation with the Ministry of Transport.

In Europe, in September 2020, the Dutch government agreed with the Sudanese government to collaborate on the Gum Arabic industry.

As for the Middle East, in October 2020, IHC Food Holding of the UAE and DAL Group of Sudan reached an agreement for a cooperative project to develop agricultural land in River Nile State.

Meanwhile, there are several challenges in trade and logistics, including frequent regulatory revisions, cumbersome trade and foreign exchange procedures, unpaved roads that have impacted over 90% of domestic transportation, and inadequate inspection and quarantine systems at the shipping and distribution stages. Previously, JICA conducted a "Data Collection Survey on Trade and Investment in Sudan" and Japan External Trade Organization (JETRO) performed a survey on "Trade and Investment Related Legal Systems" in Sudan, but both of these surveys were conducted in 2012.

As a hub for international trade, Sudan has an international port, Port Sudan that faces the Red Sea, and the Nile Corridor that connects to South Sudan along the Nile River. In addition, a plan for a 1,522 km railway network linking Addis Ababa, Khartoum, and Port Sudan has been agreed upon with the Ethiopian government. Moreover, Sudan is a member of regional economic communities such as the Common Market for Eastern and Southern Africa (COMESA) and the Inter-Governmental Authority on Development (IGAD), it has concluded customs unions with 14 countries, including four landlocked countries that border it, and is preparing to ratify the African Continental Free Trade Area (AfCFTA) agreement, which came into force in 2019 and became operational in January 2021. With respect to the AfCFTA, Sudan has a preferential tariff elimination period because it is a Least Developed Country (LDC) (other LDCs have a 10-year deadline for tariff elimination on non-sensitive items, while Sudan is specifically granted a 15-year grace period). Taking the opportunities that these frameworks offer to increase trade (including transit trade) has been one of the main economic policies of the Sudanese government.

The agricultural sector is Sudan's core industry, accounting for 30% of Gross Domestic Product (GDP), and providing jobs to about 40% of the working population. About 50% of exports are generated by the sector, specifically various agricultural and livestock products, including gum arabic, sesame, dates, and sheep. In addition, there are many cases of Sudanese products exported to the Middle East being processed and then re-exported to European and Asian markets, or being shipped back without meeting quarantine standards. Therefore, adding value through processing in Sudan and quality control in line with the standards of overseas markets are also issues to be addressed.

### **1-1-2 Purpose of this survey**

The purpose of this survey is twofold: First, to collect and analyse information necessary for the development of Sudan's trade promotion and logistics system from both hard and soft aspects, and to examine the direction of future efforts. Secondly, the survey team will provide information to Japanese companies interested in doing business in Sudan.

In addition, since improving connectivity with the logistics infrastructure of neighboring countries is essential for strengthening Sudan's trade and logistics system, the operational status of One Stop Border Posts (OSBP) in Eastern Africa, efforts to improve the efficiency of cross-border logistics, and issues to be addressed will also be summarised.

## **1-2 Overview of countries and cities surveyed**

### **1-2-1 Target area**

The following countries and cities (eight countries and two cities) (hereinafter referred to as "target countries") were selected for this survey based on the following three criteria: (1) strong economic ties with Sudan, (2) potential as export destinations or transit trade destinations for Sudanese products, and (3) active intra-regional trade. Of these, the field survey was conducted in the two underlined countries.

For countries and cities other than those covered by the field survey, a survey and analysis was conducted based on public documents and interviews with relevant persons.

- (i) Africa region: Sudan, Kenya, Tanzania, Djibouti, Ethiopia, South Sudan, Chad, the Central African Republic
- (ii) Middle East region: Cairo (Egypt), Dubai (United Arab Emirates)

### **1-2-2 Target institutions**

The primary target institutions for this survey were the following government agencies in Sudan.

Ministry of Finance and Economic Planning; Ministry of Trade and Supply; Sudan Customs; Sudanese Standards and Metrology Organization; Central Bank; Ministry of Transport; Ministry of Agriculture and Natural Resources; Ministry of Animal Resources; Sudan National Working Group on Trade Facilitation; Chamber of Commerce



### 1-3 Survey Team Members

Table 1-3-1 below shows the main tasks assigned to each expert for this survey.

**Table 1-3-1 Details of Work Assigned to Each Expert**

Name	Person in charge	Description of work
Mitsunori Numaguchi	Chief Consultant / Trade Promotion	Work as Chief Consultant/Trade Promotion Expert <ul style="list-style-type: none"> <li>• Organising issues</li> <li>• Holding of various briefing sessions (progress report meetings, and survey results report meetings for the Sudanese and Japanese sides)</li> <li>• Propose solutions/improvements to barriers/concerns for Japanese companies to do business in Sudan</li> <li>• Preparing, compiling, and discussing survey descriptions and various reports (work plans, progress reports, interim reports, draft final reports and final reports)</li> </ul>
Kazuharu Oide and Shuichi Tanimoto	Logistics Infrastructure 1	Work as Logistics Infrastructure 1 Expert <ul style="list-style-type: none"> <li>• Organising issues and information on logistics infrastructure in Sudan and examining the direction of JICA's future cooperation through information collection and analysis</li> <li>• Support projects formulation and coordination between the Japanese and Sudanese sides</li> <li>• Holding of various briefing sessions</li> <li>• Participation in various briefing sessions (progress report meetings and survey results report meetings for the Sudanese and Japanese sides)</li> <li>• Propose solutions/improvements to barriers/concerns for Japanese companies to enter into business in Sudan</li> <li>• Explanation of the survey and preparation of various reports (work plans, progress reports, interim reports, draft final reports and final reports)</li> </ul>
Ryota Kawai	Logistics Infrastructure 2	Assist the Logistics Infrastructure 1 Expert
Takamasa Noro	Agriculture and Livestock Sector / Market Trends / Coordination	(1) Agriculture and Livestock Sector / Market Trends Expert <ul style="list-style-type: none"> <li>• Collecting and organising information on Sudan's export promotion candidates (agricultural and livestock products) and examining the direction of JICA's future cooperation through information collection and analysis</li> <li>• Participation in various briefing sessions (progress report meetings and survey result report meetings for the Sudanese and Japanese sides)</li> <li>• Propose solutions/improvements to barriers/concerns for Japanese companies to enter into business in Sudan</li> <li>• Explanations of survey and preparation of various reports (work plans, progress reports, interim reports, draft final reports and final reports) reports</li> </ul> (2) Work as coordinator <ul style="list-style-type: none"> <li>• Assist in supervising the progress and results of the entire project</li> <li>• Assist in compiling various reports</li> <li>• Business coordination, accounting and logistics management</li> </ul>

Source: JICA Survey Team

## 1-4 Field survey plan

### 1-4-1 First dispatch for field surveys (June 8 - July 8, 2021)

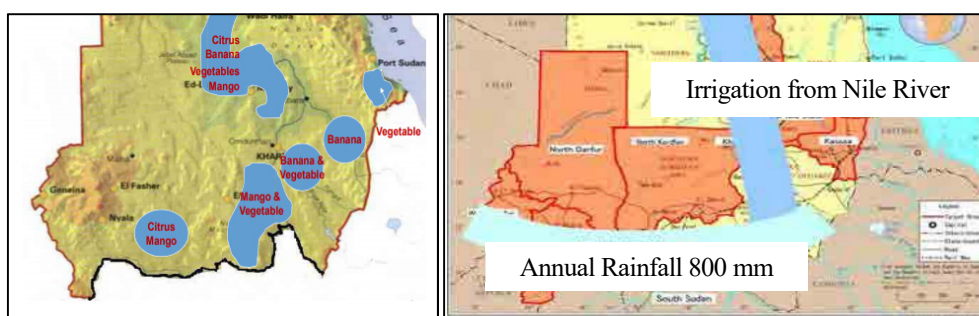
#### (1) Field survey of potential export promotion sites and evaluation of their potential, etc.

The Team visited the production areas of the export promotion candidates (agricultural and livestock products) selected through work in Japan to evaluate whether they had the potential to expand sales channels and enter new markets overseas. It also identified the knowledge and technology (post-harvest technology, processing technology, trade practice training, etc.) necessary for their export promotion. Regarding the field survey, River Nile State and White Nile State were selected as the survey sites based on the descriptions in Table 1-4-1.

**Table 1-4-1 Survey Site Selection Process for the Agricultural Sector**

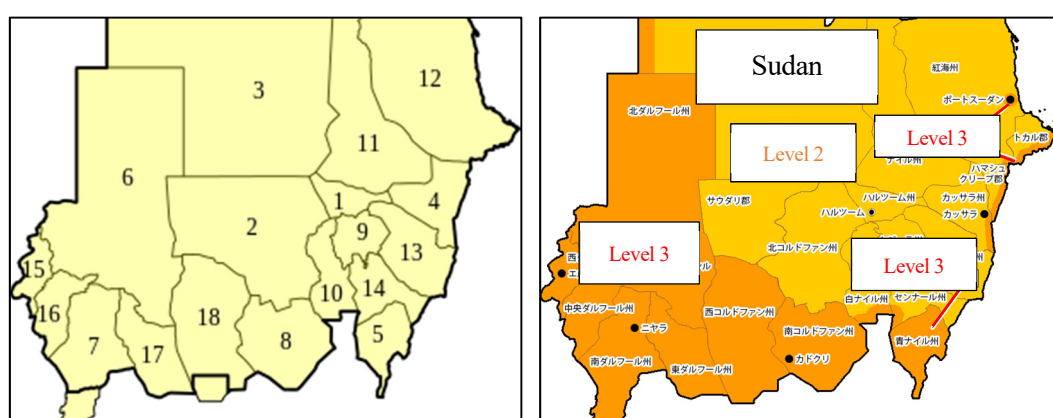
State (map number)	Outline of candidate site
Kassala (4)	<ul style="list-style-type: none"> <li>• Location of target sites of the JICA Small and Medium Enterprise Support Project's "Feasibility Survey for Improving Incomes of Small-scale Farmers Groups through Small-scale Dry Onion Processing"</li> <li>• As a measure to support the promotion of agricultural exports, the Kassala State Government is planning to construct an Export Village (a vegetable and fruit collection site on a 40,000 m<sup>2</sup> site) near Kassala Airport. (Republic of Sudan, Data Collection Survey for Trade and Investment Promotion, 2012, 5.1-12)</li> <li>• Mangoes from Kassala and other states are exported to Dubai (UAE), and then from there, exported as packaged high-quality mangoes. The same can be said about hibiscus (karkade). (Republic of Sudan, Data Collection Survey for Trade and Investment Promotion, 2012, 7-4)</li> </ul>
Gezira (9)	<ul style="list-style-type: none"> <li>• Horticultural vegetables (winter cultivated vegetables) such as green beans, okra, green pepper and cherry tomatoes are cultivated in greenhouses, aiming to ship and export them during off-season. (Republic of Sudan, Data Collection Survey for Trade and Investment Promotion, 2012, 5.1-12)</li> <li>• Areas in the Djibouti Corridor (Khartoum-Addis Ababa)</li> <li>• Improved irrigation facilities</li> </ul>
White Nile (10)	<ul style="list-style-type: none"> <li>• Mango and vegetable production area</li> <li>• Areas in the Djibouti Corridor (Khartoum-Addis Ababa)</li> <li>• Abundant rainfall</li> </ul>
River Nile (11)	<ul style="list-style-type: none"> <li>• Irrigation by the Nile River is possible (JICA's irrigation scheme has been implemented).</li> <li>• JICA's technical cooperation project called "Capacity Development Project for promotion of market-oriented agriculture and improved Irrigation Scheme Management in River Nile State" is under implementation, so there is a possibility of collaboration in export promotion.</li> <li>• Location of target sites of the JICA Small and Medium Enterprise Support Project's "Verification Survey with the Private Sector for Disseminating Japanese technologies for Adding Value to Onion Products through Introducing Drying Technologies"</li> </ul>

Source: JICA Survey Team



Sources: Basic Information Collection and Confirmation Survey for Trade and Investment Promotion in Sudan (2012) P5.1-4, Report on Basic Information Collection and Confirmation Survey for Agricultural Sector in Sudan (2012) P5-1

**Figure 1-4-1 Status of Agriculture in Sudan (production areas of Vegetables and Fruits) (left), Development Potential Areas (right)**



Sources: <https://ja.wikipedia.org/wiki/%E3%82%B9%E3%83%BC%E3%83%80%E3%83%B3%E3%81%AE%E5%9C%B0%E6%96%B9%E8%A1%8C%E6%94%BF%E5%8C%BA%E7%94%BB>

**Figure 1-4-2 Map of Sudan (Administrative areas) (left), Hazard Levels (right)**

**Table 1-4-2 Survey Site Selection Process for the Livestock Sector**

State (map number)	Proposed slaughterhouse construction site*	Outline of candidate site
Khartoum (1)	Omdurman	<ul style="list-style-type: none"> <li>• Easy access as it is the capital city</li> <li>• There is a large livestock market.</li> </ul>
North Kordofan (2)	El-Obeid	<ul style="list-style-type: none"> <li>• Large livestock market.</li> </ul>
White Nile (10)	Kosti	<ul style="list-style-type: none"> <li>• Two large livestock markets are located in Kosti and Rabak.</li> <li>• As a transportation hub in Sudan, it has become a centre for livestock distribution (overlaps with the candidate sites for the Logistics Infrastructure Sector study).</li> <li>• Overlap with potential study sites in the agricultural sector</li> </ul>
Gedaref (13)	El-Gedaref	
North Darfur (6)	El-Fasher	
South Darfur (7)	Nyala	

Note: \* Primary screening was carried out according to the proposed site for the construction of a modern slaughterhouse as indicated in The Five-Year Programme for Economic Reform 2015- 2019 (hereinafter referred to as the “Five-Year Economic Reform Plan”) formulated by the former Ministry of Finance and National Economy (MoFNE). North Darfur and South Darfur were excluded from the study sites due to security concerns.

Source: JICA Survey Team

Sudanese products with export potential (agricultural and livestock products) were examined from two perspectives: new entry and expansion of sales channels. Hence, when determining potential during the field survey, the evaluation included not only secondary industries, such as processing facilities and technologies and distribution, but also the prospects for increased production due to natural and agricultural land conditions. In addition, for exports to Europe it was considered important to obtain certifications, such as GLOBALG.A.P. (Global Good Agricultural Practices) and HACCP (Hazard Analysis and Critical Control Points), but it was necessary to study the level of recognition and diffusion of these certifications when determining development priorities.

With regard to livestock, the background to the large number of exports to the Middle East of live animals was thought to be factors such as the difficulty of traceability due to grazing and the small number of slaughterhouses that were operating properly. Therefore, it was necessary to study detailed information on current slaughterhouses (location of facilities, equipment, human resources involved in operation, etc.) and identify issues. Furthermore, in order to export meat to the Middle East and other Muslim countries, it is necessary to slaughter Halal meat, thus it was necessary to evaluate the feasibility of developing slaughterhouses through large-scale investment.

## **(2) Barriers and concerns of Japanese companies to doing business in Sudan and related matters**

Solutions and improvement measures (including consultations with Sudanese counterparts) were examined to address barriers and concerns of Japanese companies interested in considering transactions with Sudan. These apply not only for Sudan, but also when starting business with a foreign counterparty whose creditworthiness is a concern. The survey team conducted interviews with other companies in the region to determine how to ascertain the creditworthiness of trading partners and identify solutions. In addition, when trading, there are obstacles or concerns about quality control of products, securing transportation methods, import/export procedures, and costs associated with trading. Since these varied from product to product, the products that Japanese companies prefer were clarified in advance through surveys in Japan, and obstacles and concerns and their solutions were discussed in detail for each product.

## **(3) Consideration on the future cooperation**

The survey team conducted a Project Cycle Management (PCM) Project Design Matrix (PDM) workshop, as outlined in Table 1-4-3 for Sudanese relevant organisations to facilitate project formulation under their initiative. The problems and solutions identified through this workshop were discussed from a wide range of perspectives such as priority implementing body, financial resources and inputs from Sudan side.

**Table 1-4-3 PCM PDM Workshop Summary**

<b>Curriculum</b>	<b>Project Management Workshop</b>			
<b>Date</b>	<b>23-24 June 2021 (2 days)</b>			
<b>Lecture</b>	<b>Moderator: Numaguchi, Deputy Moderator: Japanese expert, South Sudanese Consultant</b>			
<b>Participants and Groups</b>	<b>Sudanese officials: Ministry of Finance and Economic Planning, Sudan Customs Authority, Ministry of Trade and Supply, Central Bank of Sudan, Sudan Standard and Metrology Organization, Ministry of Agriculture and Natural Resources, Ministry of Animal Resources, Ministry of Transport, Ministry of Urban Development, Roads and Bridges etc. Group: Trade promotion, Logistics Infrastructure, and Agriculture and Livestock</b>			
<p>Module outline:            Extract issues for promoting trade in Sudan (especially promoting exports of agricultural and livestock products), and consider measures (projects, etc.) for solving the issues. After that, the Project Design Matrix (PDM) plan and the Plan of Operation (PO) plan for implementing the same policy will be examined. Introduction to Project Cycle Management (PCM) method · After the lecture on PDM, problem analysis will be conducted (participant analysis is omitted), and PDM proposals will be discussed in group work. Based on the content of the discussion, Japanese experts will study PDM while facilitating.</p>				
<p>Specific goals:</p> <ol style="list-style-type: none"> <li>(1) Increase ownership of Sudanese officials for this survey and projects that may be adopted in the future.</li> <li>(2) Deepen understanding of PCM and PDM.</li> <li>(3) Consider PDM (draft) and PO (draft).</li> </ol>				
<b>First day</b>				
<b>Day and time</b>	<b>Contents</b>	<b>Person in charge</b>	<b>Implementation unit</b>	<b>Handouts</b>
08: 30-09: 00	Opening / self-introduction	All participants		List of Participants
09: 00-11: 00	PCM / PDM lecture	Numaguchi	Lecture	PowerPoint document
11: 00-11: 30	Tea break			
11: 30-13: 30	Problem analysis group work (including lecture)	Numaguchi	Lecture/Exercise	PowerPoint document Flipchart, post-it, pen
<b>Second day</b>				
<b>Day and time</b>	<b>Contents</b>	<b>Person in charge</b>	<b>Implementation unit</b>	<b>Handouts</b>
09: 00-10: 30	Objective analysis group work (including lecture)	Numaguchi	Lecture/Exercise	PowerPoint document Flipchart, post-it, pen
10: 30-11: 00	Tea break			
11: 00-13: 00	PDM study / group work	Numaguchi	Lecture/Exercise	PowerPoint document Flipchart, post-it, pen
13: 00-13: 30	Workshop summary / Q & A	Numaguchi	Q & A	

Source: JICA Survey Team

## 1-4-2 Second field survey (August 11 - September 24, 2021)

### (1) Draft Final Report Conference to discuss results of the survey

Survey debriefing sessions with Sudanese officials, including senior officials from relevant ministries and agencies (50 people), were held. Representatives (participants in the PCM PDM Workshop held in June 2021) were requested to report on potential cooperation projects formulated as a result of the first workshop. The executives of the ministries (i.e. Minister level) could know issues and the need for cooperation with the ministries. The survey team reported the results of the survey, explained the issues related to trade promotion that the survey team had identified, and exchanged opinions on future improvement measures. The following Table 1-4-4 is the program of the Draft Final Report Conference.

**Table 1-4-4 Draft Final Report Conference Program**

(Corinthia Hotel, Khartoum, 23<sup>rd</sup> August)

No	Time	Agenda	Remarks
-	– 09:00	Registration of Participants	
0	09:00 – 09:15	Opening Remarks by Representative of Sudan Ministers and Undersecretaries Opening Remarks by Embassy of Japan Remarks by H.E. Takashi Hattori, Ambassador of Japan to Sudan	
1	09:15 – 10:30	Agenda 1 : Presentation on possible future project Facilitator: Mr. Mitsunori Numaguchi, Chief Consultant <ul style="list-style-type: none"> <li>• Presenters: Representatives from ministries Trade (SCA, Ministry of Trade, SSMO, CBOS) (4) Logistics Infrastructure (Ministry of Transport, Ministry of Urban Development, Roads and Bridge) (3) Agriculture and Livestock (Ministry of Agriculture and Natural Resources, Ministry of Animal Resources) (3)</li> </ul>	
	10:30 – 11:00	Tea Break	
2	11:00 – 12:15	Agenda 1 : Presentation on possible future project <ul style="list-style-type: none"> <li>• Continue</li> </ul>	
3	12:15 – 13:15	Agenda 2 : Report of the Survey <ul style="list-style-type: none"> <li>• Speaker: Mr. Mitsunori Numaguchi, Chief Consultant</li> <li>• Q &amp; A</li> </ul>	
4	13:15 –	Meeting close Mr. Koji Sakane, Chief Representative of JICA Sudan Office	

Source: JICA Survey Team

**(2) Field survey of potential export promotion sites and evaluation of their potential, etc. (Supplementary survey)**

After the first field survey and the desk survey in Japan to collect and analyse information on the expansion of exports of sesame, mango, livestock, and meat, it was determined that field surveys in the following two states were necessary for further study. The field survey was conducted on September 4-8, 2021.

- Sennar State: Mangoes and sesame seeds are grown here. For mangoes, a company has been established with a vapor heat treatment facility for export (the others are only in Khartoum State). Sennar State also has plans to further expand its mango cultivation area by 30,000 feddan (about 12,600 ha). As for sesame, it was informed that the entire state is cultivating sesame without pesticides.
- Gedaref State: This is a major sesame producing area and has one of the most developed markets in Sudan (the only other state is North Kordofan State). Twenty to thirty years ago, sesame from the Gedaref State had a very high reputation in the world.

# Chapter 2 Trade Overview of Sudan

## 2-1 Economic and Social Review of Sudan

### 2-1-1 General situation of the economy

Sudan experienced protracted social conflict and the loss of three-quarters of its oil production due to the secession of South Sudan. Since 1999, the oil sector has driven the bulk of Sudan's GDP growth. For nearly a decade, the economy boomed on the back of increased oil production, high oil prices and a significant inflow of foreign direct investment. Since the economic shock of South Sudan's secession, Sudan has struggled to stabilise its economy and make up for the loss of foreign exchange earnings. The interruption of oil production in South Sudan for more than a year in 2012, and the resulting loss of oil transportation revenue further exacerbated the fragile state of the Sudanese economy. Ongoing conflicts in southern Kordofan, Darfur region, and Blue Nile States, the lack of basic infrastructure in large areas, and the dependence of much of the population on subsistence agriculture mean that nearly half of the population remains below the poverty line.

Sudan was removed from the U.S. SSTL in December 2020. Since 2017 until removal from the SSTL, Sudan had attempted to develop non-oil revenue sources, such as gold mining and agriculture, while implementing austerity plans to reduce spending. Sudan is the world's largest exporter of gum arabic, producing 75 to 80 percent of the world's total production. Consequently, agriculture continues to employ 80 percent of Sudan's workforce.

Sudan introduced a new currency called the Sudanese Pound (SDG) after the secession of South Sudan, but the value of the currency has fallen since its introduction. The SDG exchange rate was the most pointed issue when discussing the Sudanese economy. This is because there was a large discrepancy between the SDG exchange rate against the official rate by the Central Bank and the parallel market rate. However, this issue was resolved as the Ministry of Finance and Economic Planning and the Central Bank announced in February 2020 that they unified the exchange rate with that of the market. In addition, the exchange rate for customs clearance was also unified with other rates.

Sudan's economic indicators are shown in Table 2-1-1.

**Table 2-1-1 Sudanese Economic Indicators**

Indicator	Data
Real GDP growth rate	1.4% (2017 estimate) 3% (2016 estimate) 1.3% (2015 estimate)
Real GDP per capita	USD3,958 (2019 estimate) USD4,161 (2018 estimate) USD4,363 (2017 estimate)
Real GDP (purchasing power parity)	USD168.28 billion (2019 estimate) USD172.601 billion (2018 estimate) USD176.646 billion (2017 estimate)



Indicator	Data
Industry composition (% of GDP)	Agriculture: 39.6% (2017 estimate) Industry: 2.6% (2017 estimate) Services: 57.8% (2017 estimate)
Inflation rate (Consumer Price Index)	50.2% (estimated for 2019) 62.8 percent (2018 estimate) 32.5% (2017 estimate)
World Bank Doing Business (2020)	Overall index: 44.8 (2020) (171st in the world) Entrepreneurship: 76.7 (2020) (157th in the world) Trade: 19 (2020) (185th in the world) Contract execution: 47.8 (2020) (148th in the world)
Industry	<b>Agricultural products</b> Sugarcane, sorghum, milk, peanuts, onions, sesame, goat's milk, millet, bananas, wheat <b>Manufacturing products</b> Petroleum, cotton mill, textiles, cement, edible oil, sugar, soap distillation, shoes, oil refining, pharmaceuticals, weapons, car/light truck assembly, milling
Revenue	<b>Taxes and other income</b> 18.5 percent (of GDP) (2017 estimate)
Financial situation	<b>Budget deficit</b> -10.6% (of GDP) (2017 estimate)
Current account balance	▲USD4.811 billion (2017 estimate) ▲USD4.213 billion (2016 estimate)
Trade statistics	<b>Exports</b> USD4.1 billion (2017 estimate) USD3.094 billion (2016 estimate) <b>Export Partner Countries (2019)</b> UAE 31%, China 19%, Saudi Arabia 14%, India 12%, Egypt 5% <b>Export Items (2019)</b> Gold, crude oil, sesame, sheep, goats, cotton, peanuts <b>Imports</b> USD8.22 billion (2017 estimate) USD7.48 billion (2016 estimate) <b>Import Partner Countries (2019)</b> China 31%, India 14%, UAE 11%, and Egypt 6% <b>Import Items (2019)</b> Raw sugar, wheat, packaged pharmaceuticals, jewelry, tires, automobiles, and vehicle parts

Source: CIA World Factbook (<https://www.cia.gov/the-world-factbook/countries/sudan/>)

**2-1-2 General information on society**

**(1) General information**

General information on Sudan is presented in Table 2-1-2.

**Table 2-1-2 General Information on Sudan**

<b>Indicator</b>	<b>Data</b>
Population	46,751,152 (Estimated in July 2021)
Ethnic groups	Arabs (about 70%), Nubians, Beja, Nuba, Hur, etc. (there are more than 200 tribes)
Languages	Arabic (official), English is also spoken, and many other tribal languages
Religions	Sunni Islam, Christianity, and traditional religions
Major areas (2021)	Khartoum (capital): 5,989,000 people Nyala: 967,000 people
Urbanisation	Urban population: 35.6% of total population (2021) Urbanisation rate: 3.43% annual rate of change (2020-25 estimate)

Source: CIA World Factbook (<https://www.cia.gov/the-world-factbook/countries/sudan/>)

**(2) Legal system**

Sudan has adopted a mixed legal system of Islamic law and English common law. The latest initial draft of the constitution was completed by the Transitional Military Council (TMC) in July 2019. The revised draft, known as the "Draft Constitutional Charter for the 2019 Transitional Period," was signed by the TMC and the opposition coalition on August 4, 2019. It was amended to incorporate the Juba Agreement for Peace in Sudan in 2020. In July 2020, Sudan amended 15 provisions of its 1991 Penal Code.

The judicial system consists of the National Supreme Court, the Constitutional Court, the Court of Appeal and other national courts (district, town and municipal courts). The nation's highest court consists of 70 judges organised into panels of three judges and includes four circuits that operate outside the capital. The Constitutional Court is composed of nine judges, including the President of the Court. The Constitutional Court is not subject to the selection and tenure of the country's judicial judges. The judges of the Supreme Court and Constitutional Court were selected by the Supreme Judicial Council, which replaced the National Judicial Service Commission upon the enactment of the draft Constitutional Charter for the 2019 transitional period subordinate courts.

**(3) Government**

Sudan has a presidential republic system. As of December 2021, the local administrative areas consist of the following 18 states. However, the Juba Agreement for Peace signed in October 2020 includes a protocol to restructure the current 18 states into eight regions.

Current 18 states:

- Khartoum, North Kordofan, Northern, Kassala, Blue Nile, North Darfur, South Darfur, South Kordofan, Gezira, White Nile, River Nile, Red Sea, Gedaref, Sennar, West Darfur, Central Darfur, East Darfur, West Kordofan

Future eight regions (planned):

Khartoum, Eastern Sudan, Northern Sudan, Central Sudan, Darfur, South Kordofan, West Kordofan, Blue Nile

#### **(4) Administration**

The Head of State is Abdel Fattah Abdelrahman al-Burhan, Chairman of the Sovereign Council. The presidency is vacant as of September 2021.

In August 2019, the ruling military council and the civilian opposition alliance signed a power-sharing agreement as a "sovereign council" chaired by Lieutenant General Abdel Fattah Abdelrahman al-Burhan and composed of five military personnel and six civilians. The council is currently led by the military, but slated to transition to civilian leadership.

The last time elections were held was on April 13-16, 2015. The transitional period was set at 39 months from the signing of the Juba Agreement for Peace in Sudan, which was signed between the transitional government and armed groups on 3 October 2020 (until January 2024).

#### **(5) Legislature**

According to the August 2019 Constitutional Decree that established Sudan's transitional government, the Sovereign Council and the Council of Ministers will function as the parliament during the interim period until elections are held.

As of September 2021, the Transitional Legislative Council has not been established yet.

## **2-2 Sudan's trading system**

### **2-2-1 Foreign exchange system**

#### **(1) Outline of foreign exchange system**

Foreign investors are required to register their capital and other information when conducting transactions in Sudan. Otherwise, their accounts cannot be opened.

Having low foreign exchange reserves is a challenge for the Central Bank of Sudan (CBOS). It has issued Sudanese pound-denominated short-term financial bills for fiscal adjustment, but not foreign exchange bills for foreign exchange reserves. The government is currently preparing to issue foreign currency bonds for foreign exchange reserves.

As of September 2021, the IMF is providing financial support (debt relief). This was the Staff-Monitored Program (SMP). Sudan needed to demonstrate strong performance under the IMF's year-long economic reform programme in order to reach its debt relief benchmark under the Highly Indebted Poor Countries (HIPC) process. Sudan reached its target in June 2021, and proceeded to the next step, the Extended Credit Facility, in July.

As of September 2021, overseas remittances should be able to be sent and received without problems due to the lifting of sanctions by the United States and the United Nations, and the joining of

International Bank Account Number (IBAN). However, the suspicion of money laundering has not been dispelled, and many foreign financial institutions are hesitant to deal with such transactions, fearing that they may be punished after the fact for their involvement in money laundering-related transactions. Currently, the only foreign financial institutions with CBOS partnerships are Islamic Bank and El Nileim Bank in Abu Dhabi. Currently, Saudi Arabia and the UAE are being consulted for partnerships.

Regarding the procedure for payment of import duties, Sudan Customs Authority instructs that the tax is to be paid before the import permit is granted. The importer must pay the tax at a commercial bank and obtain a certificate of tax payment. A bank-issued proof of tax payment, called an IM, is required to be submitted to Customs. It doesn't matter to which bank, or branch, the taxes are paid. Tax payment information is shared by commercial banks to the Central Bank through the Central Bank network, and the same information is also communicated to Customs. It is also possible to pay tax directly to the Customs Office through mobile payment.

## **(2) Foreign exchange system**

One of the pillars of the policy of the CBOS is the stability of the exchange rate. Policies under this pillar are aimed at achieving exchange rate stability and flexibility, which can be achieved through a number of policies and procedures, including the foreign exchange rate regime as one of the top priorities for achieving economic stability.

With regard to trade, there used to be three different exchange rates in Sudan. These were the prevailing rate, official rate, and customs rate.

In the past, there was a large discrepancy between the prevailing rate (Black Market Rate or Parallel Rate) and the official rate. While the prevailing rate was about 400 SDG/USD, the official rate was 55 SDG/USD, a gap of about a factor of seven. However, a review of these two exchange rates was announced by the Sudanese Ministry of Finance and Economic Planning and the CBOS on February 21, 2021, the official rate in the exchange was depreciated and they were unified into the official rate. As for the rates for customs clearance, the Sudanese Customs Authority announced that they would be integrated into the official rate on June 22, 2021. This removed the uncertainty about the exchange rate in Sudan.

## **(3) Customs clearance exchange rate**

The customs clearance rate was set to be the same as the official rate on June 22, 2021, so there is no problem on that at present. However, there used to be a large discrepancy between them.

Since tariffs are levied on the Sudanese pound, this has the effect of keeping tariffs low at the time of importation when the Sudanese pound is highly valued (i.e., when the Sudanese pound is strong relative to the prevailing rate). On the other hand, there is a large difference between the taxable price at the time of importation and the domestic sales price after importation, resulting in the generation of profits that exceed the actual situation, which has the adverse effect of making the amount of domestic tax (corporate tax, etc.) larger than the actual situation for corporations that pay corporate tax appropriately.

Exchange Rate Review by the Ministry of Finance and Economic Planning of Sudan and the Central Bank of Sudan on 21<sup>st</sup> February, 2021 (Document released by the Central Bank.)

Source: Japan Embassy in Sudan (Translated by the Survey Team)

- (i) The Sudanese economy continues to be plagued by structural imbalances, both domestic and international, characterised and manifested by rising inflation, multiple parallel exchange rates, and continued depreciation of the local currency against foreign currencies.
- (ii) Most of the oil reserves were lost with the independence of South Sudan, and the U.S. economic sanctions and inclusion in the State Sponsors of Terrorism List (SSTL) created a big burden on the economy, while security, political, and economic challenges continued to destabilise the Sudanese financial institutions and foreign correspondent banks. As a result, the aforementioned imbalances were exacerbated by the decline in foreign currency flows due to the difficulty and complexity of the relationship with the correspondent banks and the inability to take advantage of international debt relief initiatives such as the HIPC Initiative.
- (iii) Now, as the country is facing a new phase of political development following the December Revolution in 2018 and the signing of the Juba Agreement for Peace, and as Sudan becomes more open to the outside world following removal from the SSTL, it is necessary to review all national economic policies to address the requirements of this new phase and to support the achievement of economic stability. In addition, full coordination and cooperation among the agencies involved are required to address the aforementioned imbalances. (From this perspective, the Transitional Government of Sudan has adopted a managed flexible exchange rate system to implement a package of policies and measures aimed at reforming and consolidating the exchange rate system.)
- (iv) In the said framework, as of Sunday, February 21, 2021, the Central Bank Circular and Regulation was issued to (all) banks and money exchange companies in Sudan to implement the National Reform Initiative. The above will be implemented by unifying the exchange rates that will contribute to the realisation of the following:
  - a. Unify and stabilise the exchange rate.
  - b. Move (financial) resources from the parallel market to the official market.
  - c. Attract remittances from Sudanese overseas workers through official channels.
  - d. Attract foreign investment.
  - e. Attract grant aids and loans by normalising relations with regional and international financial institutions and friendly countries.
  - f. Promote business by applying preferential exchange rates to producers, exporters, and the private sector.
  - g. Prevent the smuggling of commodities and currency.
  - h. Close loopholes to prevent speculators from taking advantage of the exchange rate differential between the official and parallel markets.
  - i. Support Sudan's efforts for external debt relief through the HIPC Initiative.
- (v) The Central Bank of Sudan believes that to ensure the success of these policies and measures, all relevant institutions, including government agencies and the private sector, must cooperate, and we (the Central Bank of Sudan) point out that it is necessary to implement the economic reform package quickly and without delay in full cooperation with the government.

22 June 2021 Sudanese Ministry of Finance and Economic Planning and Sudanese Customs  
Review of the Exchange Rate for Customs Clearance

On June 22, the Sudanese General Authority of Customs announced that the exchange rate for customs clearance would also be unified with other exchange rates. At the same time, tariff rates, etc., were reviewed, and the tariff burden on many items was lowered.

- (1) Lieutenant General of Police (Director General of Customs) Bashir Al-Taher, Head of Customs Authority, announced on 22 June 2021 the integration of the exchange rate for customs clearance and the official rate. At the same time, the elimination or reduction of tariff rates was also announced.

Several measures have been taken, the most important of which is the abolition of the following customs duties and taxes:

- a. Additional duty on all imports
  - b. Business profit tax
  - c. Reducing customs duty to the minimum for basic commodities and to zero for many essential commodities
- (2) Gen. Hasbo Elkarim cited the following categories of additional fees on all goods and their reduction on luxury goods.

◇ Advantages of the decision:

1. Achieves protection for local industries by exempting materials and production inputs
2. Exempting the necessary and basic commodities for price stability so that they do not affect the consumer
3. Exemption of capital, agricultural, and industrial goods

◇ Disadvantages of multiple exchange rates:

1. Increases the demand for and speculation on free currencies
2. Increases inflation rates

- (3) These procedures will be implemented immediately by the Customs Authority.

According to Major General Hasab al-Karim, Director of Planning of the Customs Authority, major reductions have been made on customs duties/taxes on consumer goods; goods of 40% reduced to 10% or 3%; goods of 25% reduced to 3%.

Police Brigadier General Babiker Badur from the Department of Tariffs said that they had conducted analytical studies for all imported goods to the country.

- The import fee for necessary goods has been reduced by up to 90% , while the additional fee for imports has been completely abolished, with the exception of four items, which are mostly luxury goods used by high-income earners.
- An additional fee, which ranged from 20% to 300% for vehicles, had been applied. However this has now been cancelled, except for some luxury goods such as vehicles and products of the tobacco industry.
- Powdered milk was reduced from 25% to 3%. Infant formula is completely exempted.
- Fruits were reduced from 40% to 10%.
- The Egyptian fava beans were reduced from 40% to 3%.

- Coffee and tea were reduced from 25% to 3%. The COMESA agreement exempts tea and coffee from import duties, and therefore these are considered exempted completely.
  - Wheat is completely exempted. Vegetable and animal oils were reduced from 40% to 3%.
  - Sugar of all kinds was reduced from 25% to 3%.
  - Bakery and biscuit industry products were reduced from 40% to 3%.
  - Notebooks and brochures from 25% to 3%.
  - More than 7,000 commodities are in the customs identification book and the tax rate for all have been reduced by 1%, 2%, or less than 1%. Review through various media outlets is continuing to raise the awareness of the public.
  - Many commodities have been completely exempted, such as seeds, lentils, beans, millet, grains, flour, active yeasts used in bakeries, gasoline preparations, ferns, vitamins, pesticides for agricultural purposes, all machines used in agriculture and all machines used in industry.
- (4) Bashir Taher, Head of the Customs Authority, has assured the general public that these measures do not increase the price of goods, but rather reduce their prices.
- Everyone should adhere to their right that the prices of goods are not increased, and all measures taken are in the interest of the public and at the same time contribute to reforming the economy and distortion due to the multiplicity of exchange rates.
  - No increase in prices, especially basic commodities, from this measure.

## 2-2-2 Customs procedures

### (1) Customs procedures

#### 1) Import and export customs clearance procedures

According to the *Customs Procedures Guide* (English Version, First Edition, 2020) published by Sudan Customs Authority, the main procedures (export, import, other procedures, etc.) relevant to this survey are as follows:

#### ① Export procedures

**Table 2-2-1 Petroleum Export Customs Clearance Procedures**

Chapter	Description
1-1	Export: Petroleum

#### **Regulations and Conditions:**

No	Regulations
1	Raw petroleum and derivatives should be exported through pipelines (measurement unit is barrel)
2	Exportation process should be supervised by the Ministry of Oil according to agreements between the Ministry of Oil and Petroleum Companies
3	Petroleum exports are exempted from customs duties and other taxes

**Regulations and Conditions:**

No	Document
1	Petroleum and derivatives exporting form (export sale contract)
2	Form (EX) issued by a bank
3	International surveyor certificate
4	Quality certificate (SSMO)

**Regulations and Conditions:**

No	Procedure
1	Customs declaration should be introduced by authorized declarant
2	The identifying number of the Ministry of Oil or petroleum Companies
3	The exported quantity should be determined
4	The Customs administration at the refinery should be informed by the declarant or the exporter, documents should be introduced and procedures of export certificate should be completed before the arrival of the exported goods to the customs enclosure
5	Certificate of withdrew quantity from the refinery comply with the released quantity should be introduced

Note: As a result of the reorganisation of ministries in February 2021, the ministry in charge was changed from Ministry of Oil to Ministry of Energy and Oil.

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-2 Gold Export Customs Clearance Procedures**

Chapter	Description
1-2	Export: Gold

**Regulations and Conditions:**

No	Regulations
1	Approval of Central Bank of Sudan for exportation
2	Export should be included in gold exporters list
3	Gold commodity should be subject to standardization and issuance of certificate thereof from Sudanese National Standards and Metrology Organization



**Required Documents:**

No	Document
1	Exporters and importers register and tax number
2	Sale contract between exporter and importer approved by the Ministry of Foreign Trade
3	Invoice
4	Standardization certificate for the quantity according to the contract for gold
5	Certificate of Standards and Metrology
6	Agreement of the Ministry of Minerals
7	EX form from Commercial Bank

**Procedures:**

No	Procedure
1	The clearing agent should introduce export declaration attached with the required documents
2	The declaration and documents should be revised and the value should be confirmed according to the contract and the invoice
3	The declaration should be approved and customs release should be issued and approved
4	Gold should be exported by means of transport and through the port identified in the contract and the declaration
5	After shipment, EX form should be settled by number and date of the bill and send to the Central Bank electronically to follow up export proceeds

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

Table 2-2-3 Customs Clearance for Export of Agricultural and Forestry Products

Chapter	Description
1-3	Export: Agricultural and Forest Products

**Regulations and Conditions:**

No	Regulations
1	Exports of Sudan origin agricultural products should be processed according to valid exporters register under valid contract between the Sudanese exporter and the foreign importer from the Ministry of Commerce pursuant to approved prices from the trade point
2	The exporting process should be under the supervision of Commercial Bank to secure exports proceeds according to the known payment means identified by foreign currency department (Central Bank of Sudan) agricultural commodities should subject to control
3	Customs as executive authority could stop procedures of any prohibited or restricted goods and revise the introduced required licenses of the exported commodity and sacks should be stamped by the stamp of certified sieve in case of cereals
4	Agricultural calendar issued by the Ministry of Agriculture - General Administration of Gardens should be observed when exporting fruits, beans and aromatic plants
5	Exportation of corn is restricted by showing the agreement of the strategic stock (Agricultural Bank) and (National Council for Potatoes)

**Required Documents:**

No	Document
1	Valid exporters register
2	Identifying tax number
3	Valid export contract certified by the Ministry of Trade
4	Invoice
5	EX form from a Commercial Bank
6	Certificate of quality conformity issued by Standards and Metrology Organization
7	Certificate from the General Administration for Plant Protection - Ministry of Agriculture
8	Agricultural Quarantine certificate

**Procedures:**

No	Procedure
1	Introducing customs declaration for the commodity intended to be exported through the network
2	Exporters and importers register, the identifying tax number, contract, invoice and notice of form EX, the declaration should be revised according to the documents. Licenses should be revised and data of form EX should be matched
3	The consignment should be inspected and matched with the declaration in terms of class, quantity, weight and the stamp of the container
4	The container or the mean of transport should be send to the station of exit with the release
5	After shipment, the release should be settled according to the number of the bill, its date and the name of the ship
6	The release should be returned to clearance station and form EX should be settled and send to the bank electronically for follow up

Note: As a result of the reorganisation of ministries in February 2021, the ministries in charge were changed from Ministry of Agriculture to Ministry of Agriculture and Natural Resources, and from Ministry of Trade to Ministry of Trade and Supply.

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-4 Live Animal Export Customs Clearance Procedures**

Chapter	Description
1-4	Export: Live Animals

**Regulations and Conditions:**

No	Regulations
1	Live animals exportation bases on male and female of animals
2	Should be according to export contract for Sudanese exporter registered in the exporters and importers register and certified by the Ministry of Foreign Trade
3	EX form from Commercial Bank should be introduced
4	Live animals must be exported through ports and border stations, mostly there is veterinary quarantines in the clearing station and should be convoyed to the ports across specific roads for purposes of control and examination

**Required Documents:**

No	Document
1	Exporters register and tax identification number
2	Export contract certified by the Ministry of Commerce
3	Certified invoice
4	EX form from a Commercial Bank
5	Health certificate issued by the Ministry of Animal resources
6	Standards certificate

**Procedures:**

No	Procedure
1	The customs declaration should be introduced by a certified clearing agent in the station
2	Documents should be attached to the declaration, then revised and matched
3	Form EX data should be recorded in the customs declaration
4	All required licenses should be revised
5	Should be detected on the light of the release
6	The release should be settled by the bill of lading, the name of the ship and the date or the means of transport
7	The release should be returned to the export branch to settle form EX and then send electronically to the bank for follow up

Note: As a result of the reorganisation of ministries in February 2021, the ministries in charge were changed from Ministry of Foreign Trade to Ministry of Animal Resources, and from Ministry of Commerce to Ministry of Trade and Supply.

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-5 Customs Clearance for Export of Industrial Products**

Chapter	Description
1-5	Export: Export of Industrial Products

**Required Documents:**

No	Document
1	Standards and Metrology certificate
2	Notification for exporting goods
3	Form EX from the bank
4	Export contract
5	Invoice

**Procedures:**

No	Procedure
1	Exporter agent introduces export certificate
2	Attached documents should be revised
3	Detection of goods and match with the documents
4	Release of the goods and withdraw by customs form (10) from the factory under the supervision of the customs to the export port
5	Security cheque should be deposited equal to the due duties and should be refunded after the exportation process
6	Issuance of export certificate
7	Sending EX form to the bank for follow up

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-6 Re-export Customs Clearance from Customs Controlled Areas**

Chapter	Description
1-6	Export: Re-export (from inside the enclosure)

**Regulations and Conditions:**

No	Regulations
1	The agreement of the head of the station or the officer in charge in the station
2	Re-exportation of goods should be for the imported goods, it mostly contravenes or do not match with the Sudanese measuring standards or health conditions or any other logical reasons e.g the wrong importation that contravenes the conditions in the contract between the buyer and the seller

**Required Documents:**

No	Document
1	The agreement of the director of the station after confirmation of the information
2	Customs certificate should be introduced and subjected to detection and examination by the relevant parties and certificate of unconformity from the Sudanese Metrology and Standardization Organization should be issued or as the case may be

**Procedures:**

<b>No</b>	<b>Procedure</b>
1	The concerned person shall introduce application of re-export to the Head of the Authority or the officer in charge at the station
2	The container should be detected and stamped
3	Re-exportation certificate should be introduced
4	IM form should be returned to the bank
5	The concerned person should present security against the customs duties in case of re-exportation from dry port
6	Goods should be send by export release to the exit station under the customs supervision
7	After shipment, the issued release by number of bill and the name of the ship and date should be settled
8	After the arrival of the release, the security should be paid to the concerned person
9	The procedure should be against carried out by supervision fees determined by the director, the concerned person shall bear the administrative expenses of transport supervision

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-7 Re-export Customs Clearance Procedures from Outside Customs Controlled Areas**

**Procedures in case of re-exporting goods from outside the enclosure:**  
 This should be for goods that cleared and paid its all decided duties and its importation certificate has issued:

<b>No</b>	<b>Regulations</b>
1	Must be approved by the Head of the Authority
2	The application should be for acceptable and logical reasons
3	Import certificate should be attached
4	Re-exportation certificate should be introduced

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-8 Re-export Customs Clearance Procedures for Maintenance Purposes**

<b>Chapter</b>	<b>Description</b>
1-7	<b>Export:</b> Exportation and re-exportation for maintenance purposes form(9)

**Regulations and Conditions:**

<b>No</b>	<b>Regulations</b>
1	Exportation and re-exportation for maintenance purposes is normally for imported goods such as machines and tools through banks for public sector companies
2	It is carried out by application to the Ministry of Commerce after introduction of import certificate to issue export and re-export license

**Required Documents:**

<b>No</b>	<b>Document</b>
1	Import certificate (27) by which the goods entered
2	License from the Ministry of Commerce for exportation and re-exportation
3	Form EX (Export form for maintenance purpose)

**Procedures**

<b>No</b>	<b>Procedure</b>
1	Export declaration form should be introduced, export form and import certificate should be attached
2	Should be detected and matched, then the documents should be revised, export release should be confirmed and customs form (9) for goods for personal use should be issued from exit station consist of all the details number, weigh, serial numbers for chassis, machines and mark numbers and type. Goods then should be transported under customs supervision
3	After maintenance and return, a customs certificate should be introduced and form (9) attached, review is performed after detection with the introduction of maintenance invoice
4	Duties should be estimated according to the value of the invoice of the maintenance and then the goods released
5	Personal devices accompanied by passengers processed in the stations

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

② **Import procedures**

**Table 2-2-9 Transit Procedures**

<b>Chapter</b>	<b>Description</b>
2-8	Transit: (Transit Trade)

### Regulations and Conditions:

No	Procedure
1	Attachment of transport contract, as essential condition, sealed from Commercial Bank
2	Attachment of (T) form from the Ministry of Commerce
3	Introducing the agreement of the authorized ministry
4	The agreement of the authorized parties in case of Petroleum transit

### Required Documents:

No	Document
1	Form (T) from the Ministry of Commerce
2	Transport contract sealed by Commercial Bank and the Ministry of Commerce
3	The original bill of lading sealed by the Ministry of Commerce provided that the word (transit) should be clear by the country of origin
4	The original invoice sealed by the Ministry of Commerce
5	Introducing customs declaration

### Procedures:

No	Procedure										
1	Owner of the goods or the authorized person shall introduce the above mentioned documents to department of transit										
2	<table border="1"> <tr> <td rowspan="8">Applicant shall introduce transit form to fill the declared data in the form as follow:</td> <td>• Trade form No ..... date .....</td> </tr> <tr> <td>• Bill of lading No ..... date .....</td> </tr> <tr> <td>• Invoice No ..... date .....</td> </tr> <tr> <td>• Contract of transport .....</td> </tr> <tr> <td>• Type of goods .....</td> </tr> <tr> <td>• Name of the owner of the good .....</td> </tr> <tr> <td>• Number of chassis in vehicles case</td> </tr> <tr> <td>• Port of entry</td> </tr> <tr> <td>• Port of exit</td> </tr> </table>	Applicant shall introduce transit form to fill the declared data in the form as follow:	• Trade form No ..... date .....	• Bill of lading No ..... date .....	• Invoice No ..... date .....	• Contract of transport .....	• Type of goods .....	• Name of the owner of the good .....	• Number of chassis in vehicles case	• Port of entry	• Port of exit
Applicant shall introduce transit form to fill the declared data in the form as follow:	• Trade form No ..... date .....										
	• Bill of lading No ..... date .....										
	• Invoice No ..... date .....										
	• Contract of transport .....										
	• Type of goods .....										
	• Name of the owner of the good .....										
	• Number of chassis in vehicles case										
	• Port of entry										
• Port of exit											
3	The officer shall revise the documents and order to print the letter										
4	Transit letter should be printed to send a copy of the pass to the Head of the Authority and a copy to the General Director for Compliance and Facilitation and copy to the Director of Enforcement Directorate										
5	After the pass, officer in charge shall sign the letters and send it to the customs station										
6	<table border="1"> <tr> <td rowspan="4">The original of the letter + original of form (T) should be send to entry station and then copy of the letters send to the following parties:</td> <td>• Smuggling Combat General Administration</td> </tr> <tr> <td>• Intelligence Administration</td> </tr> <tr> <td>• Internal Audit Administration</td> </tr> <tr> <td>• Stations Administration, a copy should be preserved as (P.A)</td> </tr> </table>	The original of the letter + original of form (T) should be send to entry station and then copy of the letters send to the following parties:	• Smuggling Combat General Administration	• Intelligence Administration	• Internal Audit Administration	• Stations Administration, a copy should be preserved as (P.A)					
The original of the letter + original of form (T) should be send to entry station and then copy of the letters send to the following parties:	• Smuggling Combat General Administration										
	• Intelligence Administration										
	• Internal Audit Administration										
	• Stations Administration, a copy should be preserved as (P.A)										

Note: As a result of the reorganisation of ministries in February 2021, the ministry in charge was changed from Ministry of Commerce to Ministry of Investment and International Cooperation.

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>



**Table 2-2-10 Transshipment Procedures**

<b>Chapter</b>	<b>Description</b>
2-10	Trans-shipment

**Regulations and Conditions:**

<b>No</b>	<b>Regulations</b>
1	Transportation from foreign means of transport to another foreign means of transport from foreign port to another foreign port or from foreign airport to another foreign airport under the customs custody
2	The carrying company of trans-shipment presents goods manifest on the craft or the ship indicating the station of final destination

**Required Documents:**

<b>No</b>	<b>Document</b>
1	The manifest of the goods

**Procedures:**

<b>No</b>	<b>Procedure</b>
1	Agent of the means of transport introduces the documents to the officer in charge and prove that it's impossible for the means of transport to reach the customs station
2	After the agreement of the officer in charge to carry the goods from the means of transport to another, this carrying should be under the customs supervision
3	After completion of the carrying of the goods and upon the move of the means of transport, customs authorities shall seal the manifest and permit it to depart through civil aviation authorities

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-11 Tax Exemption Procedures for Intra-COMESA Transactions**

**Regulations and Conditions:**

<b>No</b>	<b>Regulations</b>
1	Bringing the original documents
2	Goods should be included within the agreed upon in the agreement
3	Shipment should be directly from the member country
4	Exemption of Comesa imports totally or partially from import duties

**Required Documents:**

No	Document
1	Comesa certificate of origin according to agreed upon in the agreement
2	Banking procedures (form IM)
3	Tax identification number
4	Invoice
5	Bill of lading
6	Packing list
7	Importers and exporters register

**Procedures:**

No	Procedure
1	Review of the documents
2	Input of data
3	First upload of documents by the scanner
4	Second upload of documents and be sure that uploading is valid
5	Sending the letter and the documents via the network to the director of the branch for review
6	After the review of the director of the branch, the letter and the documents should be send via the network to the director of the administration for the first approval
7	Sending of the letter and the documents via the network from the director of the administration to the director of the directorate for final approval
8	Sending of the approval letters by the director of the directorate via the network to the concerned station
9	In case of goods subject to damage, should be released first then complete the procedures later

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-12 Tax Exemption Procedures for GAFTA Intra-Regional Transactions**

Chapter	Description
3-3	Exemptions: Greater Arab Area Agreement (agreement for facilitation and development of trade exchange between Arab Countries )

**Regulations and Conditions:**

No	Regulations
1	Brining the original documents
2	Goods should be included within the agreed upon articles in the agreement
3	Goods should be from a signatory country to the agreement
4	(Shipment should be directly from the member country) countries of the Arab Area
5	Exemption of imports from import duties totally or partially according to the agreement

**Required Documents:**

No	Document
1	The agreed upon form of certificate of origin
2	Banking procedures
3	Tax reference number
4	Invoice
5	Bill of lading
6	Packing list
7	Register of exporters and importers

**Procedures:**

No	Procedure
1	Review of the documents
2	Input of data
3	Sending the letter and documents via network to the director of the branch for review
4	After review by the director of the branch, the letter and the documents should be send via the network to the director of the administration for first approval
5	Sending the letter and the documents via network from the director of the administration to the director of the directorate for the final approval
6	Sending the approval letters from the director of the directorate via the network to the concerned station

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-13 Duty-Free Procedures under the Bilateral Preferential Tariff Agreement with Ethiopia**

Chapter	Description
3-4	Exemptions: Bilateral Preferential Agreement with Ethiopia

**Regulations and Conditions:**

No	Regulations
1	Brining the original documents
2	Commodities or goods should be included in the goods agreed upon in the agreement
3	Origin of the commodities or goods should be from Ethiopia and shipped from Ethiopia
4	Exempted from import duties

**Required Documents:**

No	Document
1	Certificate of origin (Preferential Trade) authenticated from the Sudanese Embassy in Ethiopia
2	Banking procedures (IM)
3	Reference tax number
4	Bill of lading
5	Invoice
6	Packing list

**Procedures:**

No	Procedure
1	Review of the documents
2	Input of data, review and confirm its validity
3	Sending the letter and the documents via the network to the director of the branch for review
4	After review by the director of the branch, the letter and the documents should be send via the network to the director of the administration for the first approval
5	After review by the director of the branch, the letter and the documents should be send via the network to the director of the administration for the first approval
6	Sending the letter and the documents via the network by the director of the administration to the director of the directorate for final approval

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-14 Tax Exemption Procedures under the Sudan Investment Promotion Act**

Chapter	Description
3-7	Exemptions: According to investment promotion law

**Regulations and Conditions:**

No	Regulations
1	Investor should have license issued from the Ministry of Investment according to (feasibility study for the project) agricultural - industrial - service
2	List of requirements from production inputs and capital equipments and machines ...etc
3	Approval of the authorized party, Ministry of Agriculture - Industry - Transport - Health ... etc (according to type of project)
4	Field visit to the project site in Khartoum or in the states after addressing the state where the project located, States Customs Administration shall carry out the visit
5	Type of exemption (total or partial)

**Required Documents:**

No	Document
1	License issued by the Ministry of Investment
2	(Business name) Ministry of Justice
3	Copy of tax identification number
4	(Name of the project and the granted merits) Ministry of Investment
5	Original list of requirements for the project according to the type of the project
6	Agreement of the Minister of Investment in case of importing means of transport and containers
7	Certificate of research or Contract of lease

**Procedures:**

No	Procedure
1	Introducing the required documents to be reviewed by the customs unit in the Ministry (Customs commissioner)
2	Opening file with series number
3	Registering the list of the requirements after refining in the computer compared to investment law
4	Review of the commodities or the goods exempted from customs duties or the value added tax
5	The commissioner shall receive the user name and the password to accede to customs site and withdraw the commodities or the goods he wants to clear and attach the documents (e.g invoice, bill of lading, packing list)
6	Concerned person or his agent shall send the data to the unit via the network to the customs office, Ministry of Investment Unit
7	Access to the computer, review and match the letter with the attached documents and the list of requirements then dispatch it to the customs station as concession to be applied accompanied by the list of requirements
8	Contents should be detected and matched in the clearing station and the exemption would be applied

Note: As a result of the reorganisation of ministries in February 2021, the ministries in charge were changed from Ministry of Investment to Ministry of Investment and International Cooperation, and from Ministry of Agriculture to Ministry of Agriculture and Natural Resources.

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

**Table 2-2-15 Duty Exemption Procedures under the Sudanese Customs Law**

Chapter	Description
3-8	Exemptions: According to the customs law article 54(i)

**Regulations and Conditions:**

No	Regulations
1	Letter of the Ministry of Finance with the certified signatures by the concerned Administrations in the Ministry of Finance
2	(Exemptions from customs duties) total exemption
3	Should be one of the interested parties (parties have agreements with the Government of Sudan) mining companies, agricultural companies ...etc
4	Nature of contents according to the signed agreement

**Required Documents:**

No	Document
1	Letter of exemption issued by the Ministry of Finance
2	Bill of lading
3	Deposit of document of assignment issued by free zones or warehouses
4	The invoice or local internal invoice in case of purchase from the local market
5	Packing list
6	Certificate of origin

**Procedures:**

No	Procedure
1	Review of the letter of the Ministry of Finance and attachments
2	Shipment document, review the date, number and the interested party
3	Content
4	Directed into the customs station to clear the goods to certify the exemptions
5	Certified signatures (renewed annually)
6	Input of the series data by the party
7	(Review of the input) Head of the section
8	Approval by the Head of the branch
9	Sending the exemption letter to the concerned station
10	Record of the settled series monthly
11	Preparing the monthly report in the stations to be send it to the Enforcement Directorate

Note: As a result of the reorganisation of ministries in February 2021, the ministry in charge was changed from Ministry of Finance and Economic Planning.

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

③ **Other procedures, etc.**

**1. Bonded system**

**Customs warehouse**

Customs warehouses: One store or more established for permanent or provisional period of time according to written order from the Director to store goods subject to customs duties prior to payment of such duties.

**Types of warehouses:**

(A) Free warehouse:

Warehouse for storing goods that is subject to importation measures upon withdrawal under Bank of Sudan and the Ministry of Commerce procedures, the Head of the Authority may apply granted concessions and exemptions upon withdrawal under such concessions.

Note: As a result of the reorganisation of ministries in February 2021, the ministry in charge was changed from Ministry of Commerce to Ministry of Trade and Supply.

(B) Restricted warehouse:

Warehouse for storing specific production inputs of certain commodities, and factory producing such commodities.

(C) Provisional warehouse:

A warehouse permitted to store in single consignments. The permit is terminated after withdrawal of that consignment provided that the period of storing should not exceed (3) months from the date of admission of goods into that warehouse. The Head of Customs Authority may renew the permit for this warehouse pursuant to what he/she sees appropriate.

(D) Special warehouse:

One store or more established for a permanent or provisional period of time pursuant to written order issued by the Director to store special goods subject to customs duties prior to payment of such duties and release.

**Goods not permitted to be stored in warehouses:**

The following imported goods should not be stored in customs warehouses except by written permission from the Director.

- (A) Flammable substances
- (B) Explosives
- (C) Cattle
- (D) Instantly perishable and capable of destruction goods
- (E) Liquid or bulk goods
- (F) Prohibited or restricted goods pursuant to customs law or any other law in force
- (G) Goods that are not sufficiently covered or the cover is not in good condition
- (H) Gold or silver molds, money and precious stones

- (I) Goods that contaminate other goods by touch or smell
- (J) Goods that hold counterfeited trademarks which infringe comparative standards and contravene trademarks law, trade agents law, intellectual property rights and quality control measures, etc.

## 2. Protection of Intellectual Property Rights

**Table 2-2-16 Intellectual Property Protection Procedures by Customs Authority**

<b>Chapter</b>	<b>Description</b>
3-20	Protection of Intellectual Property Rights: Deposit of Trade Marks: Deposit/ pursuant to customs clearance procedures for importation of goods infringe intellectual property rights

### Regulations and Conditions:

<b>No</b>	<b>Regulations</b>
1	Deposit application/ stop customs clearance procedures for importation of goods infringe any intellectual property rights
2	Registration certificate of genuine property right at general register of intellectual property rights or valid international registration in the WIPO
3	If the trade mark or the possession of the intellectual property waived, certified waive should be attached
4	In case of the owner of intellectual property, authorization should be presented
5	In case of pharmaceutical and medical products trademarks, certified registration certificate from the national Council for Pharmaceutics and Poisons should be attached

### Required Documents:

<b>No</b>	<b>Document</b>
1	Registration certificate in the general register for intellectual property rights or from WIPO Organization for international registration
2	Names of country of origin produced the original product
3	Flash copy of the commodity carrying the trademark or the intellectual property of the original product for purpose of computerized deposit and snapshot in (A4) size for the product attached with the right to be protected
4	Guarantee cheque
5	Documents prove the identity of the owner
6	Commercial registration
7	Certificate of foundation
8	Fill of (121) customs form at the authorized administration
9	Identification tax number
10	Authorization, in case of possession of the property by another party
11	Proxy in case of existence of protection agent

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>



### 2-2-3 Import licensing system (Sudan Customs Authority, Other Government Agencies (OGAs), etc.)

#### (1) OGAs regulations

For certain shipments, certification by the Sudanese Standards and Metrology Organization (SSMO) is mandatory. There is a Pre-Shipment Inspection (PSI) obligation for certain shipments, which came into effect on March 1, 2021, through the SSMO Decision No. 86, as amended on December 9, 2020. A manual exists for obtaining the SSMO certification. It is also available online. However, the material is in Arabic<sup>1</sup> and an English version has not been produced as of August 2021. In Japan, Bureau Veritas International SA Japan and Cotecna Inspection SA Japan are the international surveyor companies registered at the SSMO.

There are three lists (A, B, and C) from which shipments that are required to be certified are regulated.

List (A) has goods that must be accompanied by a certificate of PSI after pre-export inspection from one of the international surveyor companies registered at the SSMO.

**Table 2-2-17 Items Subject to PSI**

Number	Items
1.	Wheat grain
2.	Wheat flour
3.	All kinds of sugar
4.	All kinds of iron
5.	Asphalt
6.	Fertiliser
7.	Agricultural chemicals (i.e., pesticide, herbicide, fungicide, etc.)
8.	All types of cement
9.	Vegetable ghee / animal ghee / shortening / margarine

Source: Bureau Veritas International SA Japan

List (B) has the commodities that need to be inspected and analysed by one of the following options:

- Certificate from an international surveyor company registered at the SSMO
- Certificate from an accredited laboratory according to the standard ISO 17025:2017
- Certificate for Electrical and Electronic Equipment and Appliances (International Electrotechnical Commission: IEC)
- Identical certificates of conformity from other relevant standardisation bodies by Memorandum of Understanding signed with the SSMO

<sup>1</sup> الهيئة السودانية للمواصفات والمقاييس - SSMO

**Table 2-2-18 Items to Be Inspected and Analysed**

Number	Items
1.	Empty cylinders for household cooking gas
2.	Printing ink
3.	Tyres except for manual tyres (wheelbarrows)
4.	All types of household appliances
5.	Liquid and dry cell batteries
6.	Electronic devices, panels, and network devices
7.	Devices, equipment and batteries for solar energy cells
8.	Data cable for network
9.	Fibre optic cable
10.	Refrigerators and fridges
11.	Screens and TVs
12.	Fans of all kinds
13.	All types of washing machines
14.	Electronic drums for home use
15.	Energy-saving systems
16.	Transformers (approved by the National Electrical Commission)
17.	All types of computers and their accessories
18.	Copy machines, etc.
19.	Mobile phones and accessories (batteries, chargers, headsets, etc.)
20.	Various air conditioning equipment
21.	Water pumps and motors
22.	Processed wood
23.	Manufactured marble and granite
24.	Paints and all kinds of coatings
25.	All types of piping materials (26 or more)
26.	Power generators
27.	Voltage changer appliances
28.	Lighting lamps
29.	Electrical switches and pallets
30.	Cables and wires
31.	Lubricants and petroleum greases

Source: Bureau Veritas International SA Japan

List (C) has goods that are newly imported and need to be inspected and analysed with a test report from the manufacturer.

**Table 2-2-19 Items Subject to Inspection and Analysis (new imports)**

Number	Items
1.	All kinds of moving vehicles
2.	All types of cargo/trucks
3.	All kinds of heavy machinery
4.	Jinrikisha
5.	Motorcycle

Source: Bureau Veritas International SA Japan

The SSMO is headquartered in Khartoum and has branch offices at the border and at each Dry Port. The SSMO is working closely with Customs. The SSMO has both central and regional laboratories. There are two central laboratories, one in Khartoum and the other in Port Sudan. The SSMO uses machines by Shimadzu Corporation, but there is a problem with the supply of spare parts. Shimadzu's local distributor, SHIFAC, is providing support for training in machine operation, but this is not sufficient, and human resource development for the SSMO staff is an issue. The low capacity of the SSMO staff has contributed to delays in the SSMO procedures.

The African inspection authorities (AFRIMETS member countries) gives the SSMO a rating of Yellow, the second from the bottom of five categories. Hence, further capacity building of the SSMO is required. Training of staff will be important in order to improve the rating.

**Table 2-2-20 Ratings of African Inspection Authorities (AFRIMETS member countries)**

Category	Criteria
1-Gold (Internationally Recognised Metrology Infrastructure)	-Official Institutes responsible for S&I and Legal Metrology -Member of BIPM/OIML -Capabilities in most areas of Metrology, or those critical for the country
2-Silver (Regionally Recognised Metrology Infrastructure)	-Official Institutes responsible for S&I and Legal Metrology -Associate of CGPM or Corresponding member of OIML -Capabilities in most areas of Metrology, or those critical for the country
3-Green (Established National Metrology Infrastructure)	- Official Institutes responsible for S&I and Legal Metrology -Associate of CGPM/OIML, or plans to become in the next 5 years -Capabilities in basic areas of Metrology, or those critical for the country
4-Yellow (Basic Metrology Infrastructure)	- Official Institutes or at least identifiable section with basic facilities within government department or other institute responsible for S&I and/or Legal Metrology -Capabilities in basic areas of Metrology, or those critical for the country
5-Red (Limited or No Metrology Infrastructure)	-No official institutes or identifiable bodies responsible for S&I and/or Legal Metrology -Very basic facilities in other institute not uniquely identified for metrology but performing some functions, or no capabilities at all

Source: AFRIMETS Roadmap 2011-2016<sup>2)</sup>

<sup>2</sup> Intra-Africa Metrology System. AFRIMETS Roadmap 2011-2016. July 2011, pp. 34.

## 2-2-4 Trade-related organisations

The Sudan National Working Group on Trade Facilitation was formed in 2009. The committee is chaired by the Minister of Trade and Supply. The Commission is composed of the following ministries. The National Working Group on Trade Facilitation, which is led by the Customs Authority, is a sub-organisation.

**Table 2-2-21 Trade-Related Organisations**

	Organisation
1	Ministry of Trade and Supply
2	Ministry of Finance and Economic Planning
3	Customs Authority
4	Ministry of Agriculture and Natural Resources
5	Sudan Standards and Metrology Organization
6	Ministry of Health
7	Ministry of Animal Resources
8	Ministry of Foreign Affairs
9	Chamber of Commerce
10	Ministry of Cabinet Affairs
11	Central Bank of Sudan
12	Ministry of Transport
13	Ministry of Justice
14	Ministry of Communications and Digital Transformation

Source: UNCTAD Website  
[https://unctad.org/system/files/non-official-document/TFC\\_SD\\_EN.pdf](https://unctad.org/system/files/non-official-document/TFC_SD_EN.pdf)

## 2-2-5 Trade facilitation measures (Sudan Customs)

Sudan has introduced trade facilitation measures, such as a Golden List for goods importers and exporters like Authorised Economic Operators (AEO).

**Table 2-2-22 Trade Facilitation Measures for Compliant Importers and Exporters**

Chapter	Description
3-19	Risk Management / Golden List Participation
Number	Regulation
1	Importers and exporters may engage in a wide range of activities in their business areas, depending on their risk management policies.
2	The importer or exporter must have a history with Customs in accordance with the law.
3	The project period must be at least five years.
4	Comply with all laws, regulations and systems and have not committed any violations of any kind in the three years prior to joining the system.
5	Agreeing to the 2010 ex-post investigation regulations.
6	Allow Customs authorities to inspect the offices of importers and exporters to ensure that all of the above conditions are met.

Number	Documents
1	Company establishment contract
2	Taxpayer identification number
3	Company's final foreign auditor's report
4	Explanation of the company's management and accounting systems
Number	Procedures
1	Applications must be submitted by importers and exporters who wish to participate in the Golden List Program of Risk Management.
2	The history of the importer or exporter should be examined by the reviewing department in addition to a site visit to the firm's site to ensure that all of the above requirements have been met.
3	Importers and exporters are required to submit an application to the Director General of Customs to join the Golden List.
4	Importers and exporters shall be duly notified of the approval of the Director General of Customs.
5	Importers and exporters are added to the programme in the system to get all the benefits given to those in the Golden List.
6	In case of violation, the importer or exporter will be disqualified from the Golden List and will be subject to the penalties set forth in the Customs Act and Regulations.

Source: The Website of Sudan Customs Authority  
<http://customs.gov.sd/en/wp-content/uploads/sites/2/2020/12/Customs-Procedures-Guide.pdf>

## 2-2-6 Sudan National Single Window

As of August 2021, a project to introduce a National Single Window (NSW) is underway under the leadership of the Ministry of Trade and Supply. The project will be carried out under the Public Private Partnership (PPP) scheme, and the contractor will be decided through international competitive bidding. Funds will be procured by the contractor under the Build Operate Transfer (BOT) method. The implementation plan and the details of the NSW specifications will depend on the contractor's proposal. The plan is for public announcement by the end of July 2021, and the contractor will be selected by the end of 2021.

## 2-2-7 Challenges facing Sudan Customs

### (1) Issues related to customs procedures in Sudan

As a result of the interviews with Sudan Customs prior to the field survey, the following were confirmed: the country has to improve its institutional and enforcement capacity in order to join the World Trade Organization (WTO), the land border is long and smuggling is a major issue, and the introduction of the OSBP, which has been introduced in other regions of Africa, is necessary to facilitate trade.

With regard to support for the introduction of OSBP, according to JICA's similar study, "Information Collection and Confirmation Study on Enhancing Customs Functions in Response to Changes in the International Trade Environment (2021)," as a characteristic of JICA's support to Africa, the support represented by OSBP (training of master trainers and capacity building of customs officers and clearing agents by master trainers) has been evaluated by the local community as a successful case study at TICAD 7. However, one of the factors behind the success of the OSBP, especially the OSBP of

the East African Community (EAC), is the success of the customs union based on a single customs territory. The analysis shows that there is a synergistic effect between the development of hard infrastructure by the OSBP, Grant Aid, and the strengthening of the capacity of the single customs territory and the customs union, as well as the customs and clearing agents, which are the operators and users of the system. Another success factor is that, as in the case of the South Sudan customs project, the project responds to changes in the situation in a hands-on and flexible manner, and deals with small and large problems in a detailed and prompt manner. Therefore, when considering OSBP cooperation for Sudan, it is essential to carefully examine whether the preconditions for cooperation are met, taking into account the characteristics of JICA cooperation, such as MT training, etc.

## **(2) Challenges perceived by Sudan Customs**

When the survey team interviewed Sudan Customs during the field survey in June 2021, it found the following issues:

1. Risk management
2. Human resource development (capacity building)
3. Manual cargo inspection (examination). Mechanisation is desired. There are two types of X-ray inspection systems that can be adopted: container scanners and small scanners. The small scanners are of the type used for passenger baggage screening.
4. Customs clearance system (Automated System for Customs Data (ASYCUDA) World)
5. Tracking system
6. CCTV
7. Communication devices

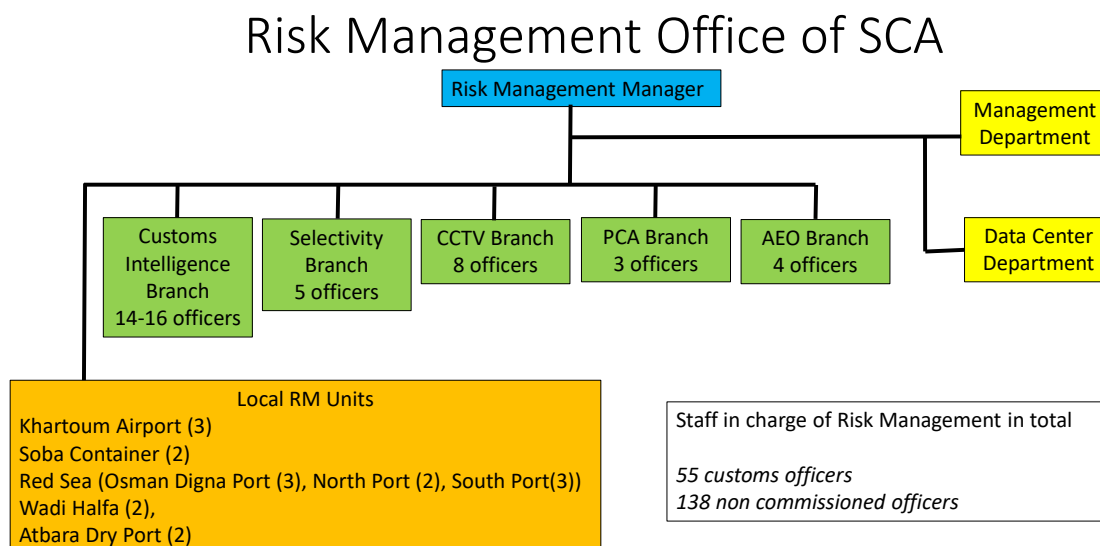
Risk management was identified as the most significant challenge, and the details of this are as follows:

### **1) Risk management by ASYCUDA World**

There are limited things that can be done with the Selectivity Module in ASYCUDA World. The Sudan Customs Authority (SCA) does have a risk management Policy. In accordance with the policy, the Selectivity Branch of the Risk Management Office develops the selectivity criteria. A local company has been commissioned to develop a tool for the development of ASYCUDA's review criteria. SCA plans to add (1) the ability to collect information and determine risk levels, and (2) the ability to create reports to assist in information analysis as functions of this tool. However, it will not be sufficient due to SCA funding and local vendor capacity constraints.

### **2) Sudan Customs' efforts in the area of risk management**

Sudan Customs started clearing customs declarations using the Risk System at Khartoum Airport on March 20, 2016. The system has been implemented in five areas, as indicated in Figure 2-2-1 in accordance with a plan approved by the Manager of the Risk Management Office as of August 2021.



Source: JICA Survey Team, based on interviews with officers of Sudan Customs

**Figure 2-2-1 Risk Management Organisation of SCA**

### 3) Cooperation needs for risk management

Sudan Customs has identified the need to develop data warehouses for risk management. These are required to perform functions such as data collection, Artificial Intelligence (AI) analysis, intelligence analysis, and targeting. However, due to lack of resources, such as human, technical, and financial resources, Sudan Customs has not yet developed these.

#### (3) Issues pointed out by clearing agents

The following challenges facing Sudan Customs were identified from interviews of the members of the Freight Forwarder Union at Khartoum Airport.

- Lack of coordination among customs authorities. For importing and exporting, procedures have to be carried out in addition to customs, but due to the lack of coordination between authorities, procedures have to be carried out in multiple government offices. This is why it takes so long to clear customs. Perishable goods can be processed before customs declaration, but this is an exception, and most goods must be processed after customs declaration. This is another reason why customs clearance is taking so long.
- Since the country is not a member of the WTO, it does not comply with the Agreement on Valuation, and the price actually paid or payable is not applied to the tax base, but is determined by customs (levy determination).
- The appeals system is inadequate, goods are held in customs, and an appeal is not allowed to the court.
- A time release study has not been conducted since 2015, and while there has been some improvement in customs procedures, it has not led to a reduction in clearance time.
- The customs clearance has been computerised and ASYCUDA World has been introduced, but the network is unstable and not easy to use. There is also a problem with updating.

Although screening standards have been set, effective screening standards have not been set, and the capacity of RM officers at Customs needs to be improved. In addition, basic IT training is required for all.

- NSW has been considered for some time, but this has not been implemented. If implemented, members of the Customs Union believe that this will have a positive impact on time and cost.
- Customs has a lot of room for improvement such as on item classification, customs valuation, X-ray inspection equipment, reagents for analysis, staff training including clearing agents, TRS (Time Release Study) implementation (support for it), risk management, and staff capacity building.
- There is no preliminary declaration procedure.
- There is no advance ruling system.
- Sudan has its own Golden List system similar to the AEO recommended by World Customs Organization (WCO), but only 12 companies have been certified.
- Consolidation cargo requires time and effort for customs clearance.
- Acceptance of the direct delivery system, which is a unique system in Sudan. For instance, perishable goods can be delivered to a cold storage place owned by a consignee before the issuance of import permit.
- Bribery is a problem. Because of the time it takes to clear customs, the only way to make the procedure quick is to bribe.

## **2-3 Overview of Trade in Sudan**

### **2-3-1 Time required for customs clearance in Sudan (days)**

Sudan Customs implements the time required for customs clearance (customs clearance time), measures the time required for import and export, and identifies bottlenecks. “Guide to Measure the Time Required for the Release of Goods,” (WCO TRS Guide) Version 3 2018 introduces the customs clearance times of 2015 and the challenges and recommendations derived from them. The results of the time release study in Sudan introduced in the WCO TRS Guide are as follows:

#### **(1) Sudan’s 2015 Time Release Study**

Sudan Customs had conducted a time release study before 2014, and in 2014 Sudanese Customs authorities decided to conduct another TRS for the following purposes (prompted by COMESA):

- Extract bottlenecks that hinder trade
- Identify opportunities to introduce trade facilitation measures
- Creating an environment that strengthens Sudan's competitiveness in the international market

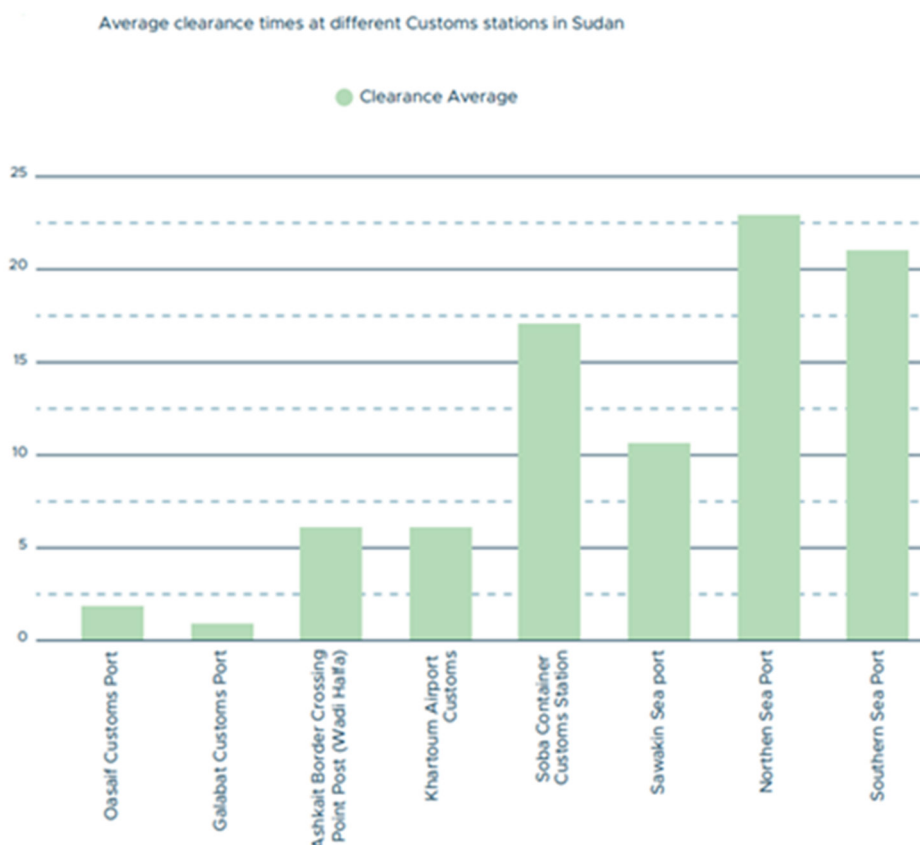


With technical cooperation from the WCO on the implementation of the TRS, Sudan Customs has established a national working group with the authority to carry out the investigation. In line with the WCO TRS methodology, other government agencies and the private sector other than customs authorities were involved in the investigation as well. Customs authorities have leveraged the WCO TRS software to calculate average customs clearance times.

The study sample was collected using the WCO TRS software based on the sampling method set forth by the WCO TRS Guide. The software collected customs clearance release time data or processing dates and times from a number of customs offices. Sufficient data were collected to calculate the average customs clearance time at the various customs offices.

The figure below shows the average customs clearance time at each government office where TRS was implemented. It is clear that the average customs clearance time for sea cargo was longer than 10 days compared to the other two means of transportation (land and air). The average customs clearance time for these two modes of transportation was less than 10 days. The average customs clearance time for container handling in customs offices took 17 days.

The decision to implement TRS was made in 2014, but the study began in 2015 and the final report was approved in 2015. After national approval of the TRS report, Sudan shared a copy of the report with the WCO.



Source: WCO TRS Guide Version 3 (2018)

**Figure 2-3-1 Average Customs Clearance Time for Each Customs Office in Sudan**

## **(2) Bottleneck overview**

### **1) Bottlenecks related to customs**

The TRS Working Group has identified many bottlenecks associated with particular customs offices, including:

- Operational problems in moving goods to Customs inspection areas, particularly in the case of goods handled at the Port Sudan;
- Delays with regard to verifying manifests submitted by transport companies, mostly related to Khartoum airport;
- Delays in sending original documents related to the consignment to local banks, a requirement stipulated in Sudan's national legislation

### **2) Bottlenecks related to procedures of OGAs**

Bottlenecks related to procedures of OGAs were also identified. The following bottlenecks were identified.

- As described in 2-2-3 (1) above, the SSMO procedure is a bottleneck. The SSMO screening itself needs improvement. Its main obstacle is inadequate inspection equipment. The main reasons for this are the lack of sufficient testing equipment and the inability of staff to utilize the equipment.

### **(3) Main reasons for customs clearance delays**

The main causes of delays in customs clearance are the following:

- Repetitive and unproductive processes in the clearance system;
- Documentary checks based on a transaction approach rather than risk management;
- Excessive controls on consignments, resulting in checking and rechecking of the same information by several different sections (e.g. valuation, assessment);
- Poor quality of some declarations lodged by clearing agents, resulting in rejection and queries in respect of the declarations at different levels;
- Delays in clearance procedures, due to lack of investment in infrastructure in certain cross-border regulatory agencies;
- Delayed payment of duties, taxes and other charges by importers or their clearing agents;
- Lack of interconnectivity between Customs and other agencies; and
- Lack of equipment for moving goods to the examination and offloading areas

### **(4) Summary of recommendations**

The following recommendations were made to mitigate or address the problem:

- Solving transportation problems when moving goods

- Single Window led by Sudan government speeding up project completion
- Revision of Sudan's Central Bank's Circular on the movement of goods to ensure smooth flow of goods

## **2-4 Overview of logistics infrastructure in Sudan (road, railway, port, border facility, dry port)**

### **2-4-1 Implementation status of National Transport Master Plan (issues, investment plans, and progress)**

#### **(1) National Transport Master Plan**

This section describes the issues, investment plans, and progress of planned projects in the transport sector with reference to the National Transport Master Plan (NTMP) prepared by the Government of Sudan with the support of multi-donor trust funds under the initiative of World Bank (WB) in 2010. The NTMP aims to define priorities between all the projects in all the sub-sectors, such as roads, railways, ports, rivers, aviation, pipelines, and multimodal transport. According to the result of demand forecast for passenger and freight as well as summary of issues, Sudan's transport policy and the priority investment strategy for infrastructure in the transport sector up to 2031 has been proposed. The following items have been identified as priorities for the road, railway, and port sectors in the NTMP.

#### **Issues raised by the NTMP**

It is stated that there is an urgent need to improve maintenance and service levels in the road sectors. This is expected to include the introduction of an efficient maintenance and management system to maintain the current road network, and the construction of new routes to increase transport capacity and speed. On the other hand, it is also an urgent issue to consider how to raise funds for continuous investment in maintenance and road construction.

In the railway sectors, one-third of the main lines are out of service due to insufficient investment in the maintenance and refurbishment of track and signaling systems. In order to expand the role of rail transport from limited financial resources, it is necessary to select priority investment projects more strategically. The need for economically rational future development of rail transport as well as reorganisation and effective use of existing stock are identified as issues.

In the port sectors, additional container berths are being built to improve cargo handling capacity, but the problem is that they are not planned based on appropriate demand forecasts and there is no master plan to realize strategic investments. In addition, the prolonged time required for inspections by customs has extended the time containers are held at ports, resulting in low productivity, prolonged port dwell time for container ships, and high logistics costs. Hence, development of the Inland Container Depot (ICD) and Osman Digna Port (Suakin Port) and the facilitation of procedures among stakeholders have been identified as issues.

Roads	Railways	Ports
1) The network classification and management responsibility	1) Rationally plan the development of rail transport in Sudan	1) Restructuring of SPC
2) Development of a Road Asset Management System	2) Organization of rail sector and definition of SRC role	2) Preparation of a Port strategy and of Master Plans
3) NHA Powers and Responsibilities for Road Management	3) Revise Tariff Structure and track access fee applied to private operator	3) Privatization of Port Sudan
4) Collecting Tolls as a Means of Financing Maintenance	4) Locomotive, Rolling Stock and Workshops to meet SRC requirement	4) Plan the Development of the Port of Suakin
5) Effective Management and Operation of Weighbridges	5) Training and Work Force Development	5) Development of efficiency oriented management and operation systems
6) Management of State Roads	6) Lack of Track Inspection, Maintenance & Production Equipment	6) Human Resource Planning and Development
		7) Improve Throughput by Improved Coordination among Stakeholders

Source: National Transport Master Plan (NTMP)

**Figure 2-4-1 Challenges in the Road, Railway, and Port Sectors Identified in the NTMP**

### **NTMP's Investment Plan (2010-2031)**

Table 2-4-1 shows the priority investment plans for the transport sector (roads, railways, ports, rivers, aviation, and multimodal transport) for the period 2010-2031. The Investment Plan aims to address the challenges identified in each sector with priority investments in infrastructure and capacity building planned for every five years.

In the road sectors, road widening projects are being undertaken on the National Highway, which could be a major route for road transport, the construction of a bypass road near Khartoum, the paving of the road connecting Renk to Juba in South Sudan, and the strengthening of connecting roads to South Sudan, Kenya and Uganda. There are also plans to invest in the construction of secondary roads in rural areas to act as feeder roads between markets and farms.

In the railway sectors, the Basic-Priority programme plans to invest in a 60 km/h link between Port Sudan and Khartoum, upgrading the line between Khartoum and Kosti Dry Port, improving the railway signaling system, upgrading the terminal and freight stations in Port Sudan, and upgrading and building new workshops to maintain the new rolling stock. As part of the ongoing complementary programme, investments are planned in the medium and long term to rehabilitate the Kassala Line, reconstruct the Port Sudan - Kosti and Babanusa (West Kordofan State) - Wau (South Sudan) Lines, build a bypass line near Khartoum, install a modern signaling system, and rehabilitate stations.

In the port sector, the policy in the short term is to improve the efficiency of operation and maintenance by improving the organisation of the Sea Ports Corporation (SPC), the port operator. In the long term, the government plans to run Port Sudan through the private sector with the aim of increasing productivity. To this end, the policy is to prepare a master plan based on appropriate demand volumes and forecasts, and to implement a database of information.

In the multimodal transport sectors, investment for construction of ICD is planned so as to relieve the congestion at Port Sudan.

In terms of capacity building of each sub-sector, a policy to invest in technical support to maintain the infrastructure in proper way has been announced.

**Table 2-4-1 Investments Recommended by NTMP Prioritised Investment Plan (2010-2031)**

Sector	Type of investment	Investment Plan (Mil USD)			
		By 2016	By 2021	By 2026	By 2031
Roads	• Pavement (National Highway)	495	569	107	239
	• Overlays (National Highway)	169	341	405	
	• Widening (National Highway)	10.0	108	133	250
	• Secondary roads	250	250	250	
	• Capacity building	7.0			
Railways	• Basic - Priority programme	741	834	1,121	609
	• Complementary programme				
	• Capacity building	3.9			
Ports	• Database and Master Plan	2.0	Policy decisions depending on the results of the master plan and the Port Privatisation Programme		
	• Communication system	3.0			
	• Reduction of SPC staff	55.0			
Rivers	• River ports	49.7	Largely private sector		
	• Hydrographic survey	9.1			
	• Training	1.9			
Aviation	• Infrastructure	135.6	59.9	53.3	143.4
	• Capacity building	21.8			
Multimodal	• Terminals	23.0	12.0	12.0	
	• Capacity building	0.6			
Total	• Infrastructure	1,942.4	2,173.9	2,081.3	1,241.4
	• Capacity building	35.4			

Source: National Transport Master Plan (NTMP)

### **Confirmation of NTMP implementation status**

According to the Ministry of Transport (MoT), the NTMP has not been approved by the Government of Sudan due to the fact that South Sudan gained independence (July 9, 2011) after the NTMP was formulated in 2010. Since then, the MoT has been planning to develop a new NTMP, but due to the unstable political situation and the global COVID-19 pandemic, no update of the existing NTMP or development of a new NTMP has been implemented.

Since the last time the WB conducted a study for the development of a master plan more than 10 years ago, the social conditions and the state of development of transport infrastructure in Sudan have changed significantly. In addition, given that the existing NTMP is based on the situation prior to the independence of South Sudan, it is necessary to develop a national transport master plan that is more in line with the current situation of the Sudanese state and to list priority infrastructure investment projects again. This is an urgent need in order to attract support from other countries and to promote the development and maintenance of transport infrastructure.

As the NTMP has not been approved by the government, it has not been fully funded and implemented. As for the implementation status of each sector, in the road sector, new construction and

expansion projects of national roads and branch lines, as well as paving of existing roads, have not been fully implemented due to budget shortage. In the railway sector, most of the projects identified as Basic-Priority programmes have not been implemented. In the port sector, a 20-year concession contract for a container terminal in Port Sudan with the Philippine port operator, International Container Terminal Services, Inc., has been under discussion. However, negotiations have been suspended due to repeated strikes by Port Sudan workers who are against the contract.

## (2) Related Projects

### **PPP Infrastructure Project**

The PPP Act came into effect in May 2021, and as of September 2021, a committee chaired by Prime Minister Hamdok is considering large-scale projects through private investment. In addition to the five ministries of the Ministry of Finance and Economic Planning, the MoT, the Ministry of Energy and Oil, the Ministry of Agriculture and Natural Resources, and the Ministry of Investment and International Cooperation, the committee will also be joined by private organisations depending on the project. According to the MoT, the following three projects have been proposed in this scheme, and a feasibility study (FS) has been completed in all of them.<sup>3</sup>

**Table 2-4-2 Overview of PPP Infrastructure Projects**

No.	Project Name	Project Cost	Summary
1	Port Sudan to Chad New Line Construction Project	USD 6 billion	The policy is to incorporate a standard gauge (1,435mm) of about 2,500 km in length.
2	Suakin Port Development Project	USD 4 billion	Located about 60 km south of Port Sudan, it handles passengers, livestock, cement, etc. New berths, renovation of entry routes, and new terminals dedicated to livestock farming are planned (the scope of the business in the PPP project is unknown).
3	Oseif Port Development Project	USD 2 billion	Located about 260 km north of Port Sudan, it is mainly responsible for exporting minerals such as iron ore (the scope of the business in the PPP project is unknown).

Source: JICA Survey Team

### **Port Sudan Corridor Project**

The Port Sudan Corridor Project is designed to strengthen trade between Sudan's ports facing the Red Sea, mainly in Port Sudan, and neighbouring landlocked countries. The project is being carried out by COMESA and has been agreed between Sudan, Ethiopia, Chad, the Central African Republic and South Sudan. The agreed documents include arrangements for port facilities, corridor routes, customs controls, rail transport, road transport, inland water transport, pipelines, multimodal transport, etc. At present, specific corridor routes and infrastructure development plans have not been decided.

The information obtained from the NTMP is described above, while the issues are discussed below.

<sup>3</sup> The committee evaluates and determines the bid method (whether to make an international bid or a special order) and the content of the concession on the ability and proposal of the bidder. Detailed information on the PPP act has not been obtained.

- In the case of developing a new NTMP, given the fact that the previous NTMP was not approved by the government, it is important to continue to provide support not only for the development of the Master Plan but also for the approval process by the Government of Sudan.
- In order to facilitate the development of transport infrastructure, a new NTMP should be approved by the Government of Sudan, and then a master plan should be developed by each transport sector (roads, railways, ports, rivers, and aviation) with the new NTMP as the superior plan.
- In the process of developing a new NTMP, it is necessary to provide technical transfer so that local officials in each transport sub-sector will develop the capacity to formulate sub-sector master plans for the next step.

## 2-4-2 Road transport

### (1) Status of road network development from major cities to Port Sudan

#### Road network and operational status

The total road length in Sudan is approximately 31,000 km as of 2019, which includes national roads, state roads and urban roads, of which approximately 12,000 km are paved roads<sup>4</sup>. The roads are mainly concentrated in the north-eastern part of Sudan. The northwestern part of the country is desert, so there is no road network. Ninety percent of freight transport utilised these roads<sup>5</sup>.



Source: Compiled by JICA Survey Team based on data from National Highway Authority (NHA)

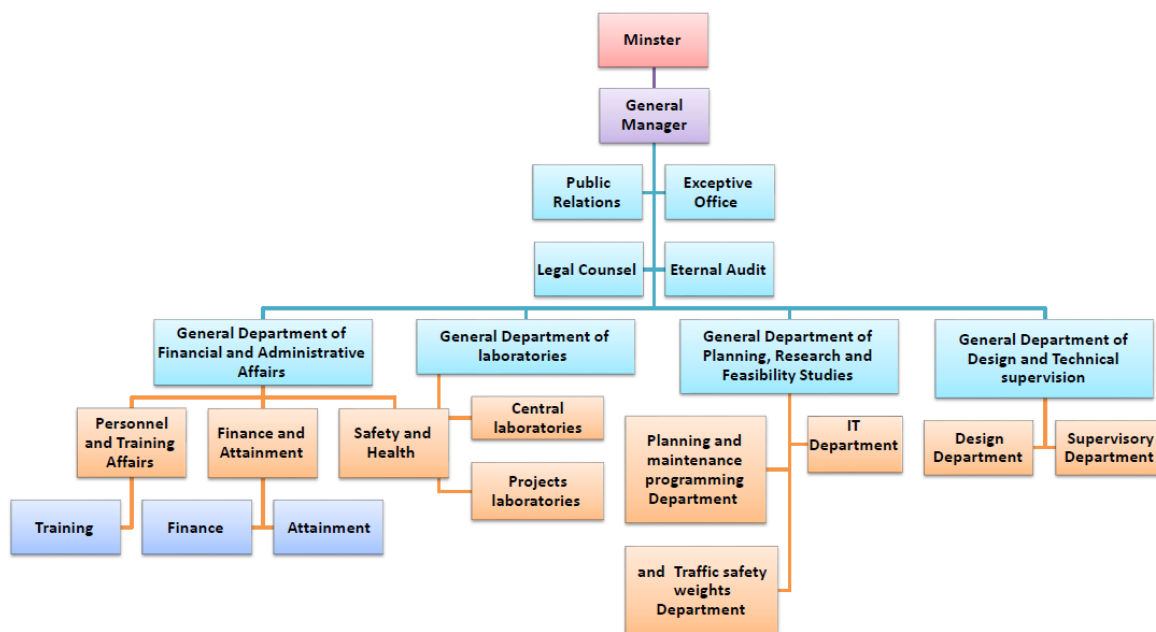
**Figure 2-4-2 Sudan Road Network and Location of NHA Headquarters and Regional Offices**

<sup>4</sup> The World Factbook

<sup>5</sup> According to the survey team's interview with the SRC, the share of rail transport in land transportation is about 3%, and the remaining 97% will be transported by road (river transport has been suspended as of August 2021).

In addition, looking at Figure 2-4-2, the road condition between Khartoum and Port Sudan is relatively good, as well as the road from Khartoum to South Sudan and the road to Egypt along the Nile River. Road density is 37 km/1,000 km<sup>2</sup> (approximately 50% of Sudan's land area is desert<sup>6</sup>), which is significantly lower than the average of 101 km/1,000 km<sup>2</sup> in Eastern Africa.<sup>7</sup>

National roads are managed by the National Highway Authority (NHA), a road public corporation owned by the Ministry of Urban Development, Roads and Bridges. On the other hand, state roads are managed by the state government. Figure 2-4-3 shows the organisation chart of Khartoum headquarters of NHA. Besides head office, local sector offices are located in seven regions, such as Port Sudan, Atbara, Dongola, El Gedaref, Sennar, El Obeid, and Nyala. Each local office owns a department for road maintenance.



Source: NHA

**Figure 2-4-3 Organisation Chart of NHA Headquarters**

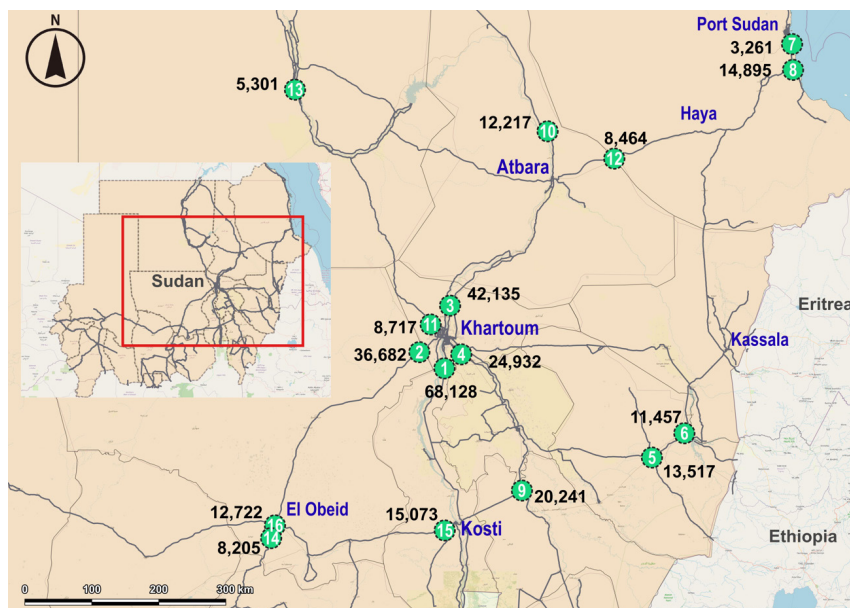
### Road Traffic Counting Survey (2016)

NHA conducted a traffic counting survey in the 16 locations shown in Figure 2-4-4 on November 20-27, 2016. The main roads in and around Khartoum, with the exception of western Sudan, were targeted. The route with the highest transit volume was the Khartoum - Kosti route with 68,128 vehicles. This was followed by the Khartoum-Atbara route with 42,135 vehicles.

<sup>6</sup> United Nations Office for the Coordination of Humanitarian Affairs (OCHA), Sudan: National Land Cover Atlas (as of 18 Apr 2012)

<sup>7</sup> Africa Infrastructure Country Diagnostic (AICD), 2011





Source: Compiled by JICA Survey Team based on data from NHA

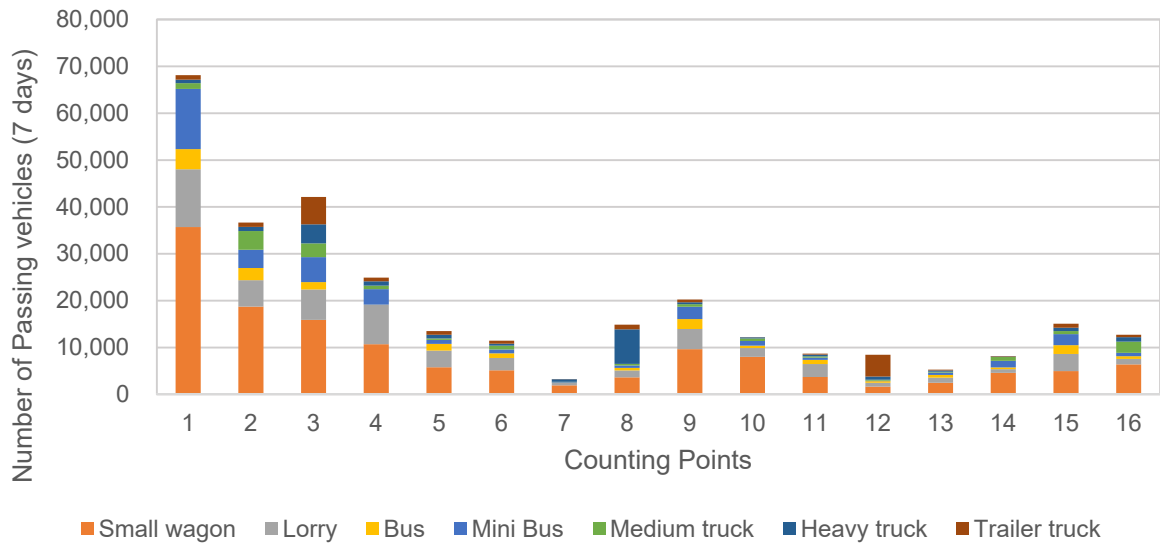
**Figure 2-4-4 Locations of Traffic Counting and Traffic Volume Survey on 20<sup>th</sup> to 27<sup>th</sup> November 2016**

Table 2-4-3 and Figure 2-4-5 show the measured through traffic volumes by vehicle type. The fact that nearly 80% of the vehicles on the Port Sudan - Kosti route, counting point 1, were passenger vehicles such as small wagons or mini buses, indicates that there was a large movement of people from Khartoum to the southern direction. On the other hand, counting points 3, 8, and 12 had higher volume of heavy truck traffic, indicating that there was a high level of import and export cargo movements from Khartoum to Port Sudan and Suakin Port. Counting points 10 and 13 were on the line leading to the Egyptian border, but there were more passenger vehicles than cargo vehicles.

**Table 2-4-3 Result of Traffic Counting Survey Classified by Vehicle Type**

Counting point	Passenger				Freight			Total
	Small wagon	Lorry	Bus	Mini Bus	Medium truck	Heavy truck	Trailer truck	
1	35,710	12,324	4,299	12,842	1,248	738	967	68,128
2	18,730	5,629	2,598	3,917	3,982	885	941	36,682
3	15,916	6,480	1,566	5,319	2,935	4,071	5,848	42,135
4	10,702	8,398	39	3,321	752	911	809	24,932
5	5,806	3,551	1,438	852	288	799	783	13,517
6	5,162	2,611	999	811	838	413	623	11,457
7	1,952	529	2	153	59	529	36	3,261
8	3,641	1,486	540	514	323	7,396	995	14,895
9	9,670	4,289	2,116	2,625	568	388	585	20,241
10	8,026	1,856	535	999	519	249	33	12,217
11	3,712	2,785	862	486	290	353	229	8,717
12	1,669	808	358	110	185	679	4,655	8,464
13	2,495	1,099	573	495	168	292	179	5,301
14	4,619	776	385	1,380	820	116	109	8,205
15	4,981	3,654	1,868	2,376	646	719	829	15,073
16	6,422	1,146	572	747	2,382	934	519	12,722

Source: Compiled by JICA Survey Team based on data from National Highway Authority

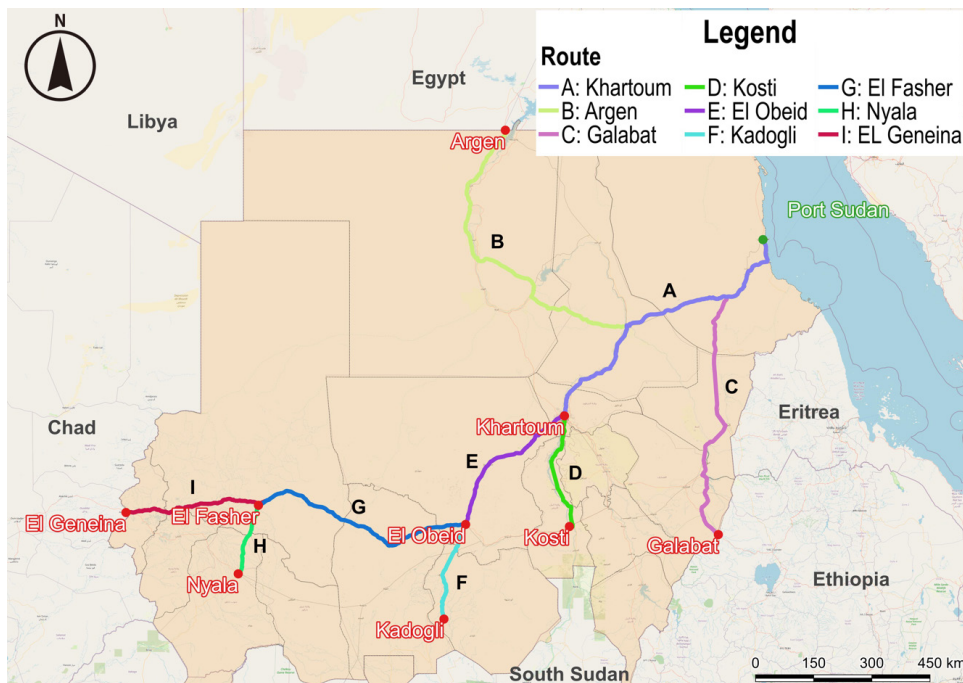


Source: Compiled by JICA Survey Team based on data from NHA

**Figure 2-4-5 Result of Traffic Counting Survey Classified by Vehicle Type**

**Transport time and cost from Port Sudan to major Sudanese cities**

By calculating the transport time and cost from Port Sudan to major cities in the country, the survey team clarified issues in domestic transport, taking into account geographical factors and examining the solutions. Figure 2-4-6 shows the routes, while Table 2-4-4 gives the transport time and cost for each route starting from Port Sudan to major cities in Sudan.



Source: Compiled by JICA Survey Team based on data from the Chamber of Land Transport Union

**Figure 2-4-6 Transport Routes between Port Sudan and Major Sudanese Cities**

**Table 2-4-4 Transport Time and Cost between Port Sudan and Major Sudanese Cities (2020)**

Route	Destination	Distance (km)	Transport time (Days)	Transport cost (USD)	Transport average speed (km/h)
A	Khartoum	798	2	995	16.6
B	Argen	1,330	4	1,524	13.9
C	Galabat	900	3	916	12.5
D	Kosti	1,120	3	1,345	15.6
E	El Obeid	1,207	3	1,898	16.8
F	Kadogli	1,485	7	2,486	8.8
G	El Fasher	1,809	5	2,095	15.1
H	Nyala	2,001	6	2,618	13.9
I	El Geneina	2,189	8	2,880	11.4

Note: The unit of transport cost is per truck with a 40-foot container.

Source: Compiled by JICA Survey Team based on data from the Chamber of Land Transport Union

It can be seen that the transport cost for Route A between Port Sudan and Khartoum (approximately 800 km), which is an important section of logistics in Sudan, is less than USD1,000 while the transport time is about two days.

Route F to Kadogli (South Kordofan State) in the southern direction, and Route I to El Geneina (West Darfur State) in the western direction have slower average transport speeds than the other routes.

In terms of transport time from Port Sudan to respective cities near border post, Route B (Egypt) is four days, Route C (Ethiopia) is three days, Route D (South Sudan) is three days, and Route I (Chad) is eight days.

### **Other Logistics Routes**

The major logistics routes apart from the main routes (Port Sudan, Dry Port, Khartoum Airport), are the northern route to Egypt, the southern route to South Sudan, the western route to Chad and the Central African Republic, and the eastern route to Ethiopia and Eritrea.

Egypt (Northern direction): For the northern route targeting Egypt, the border facilities with Egypt are still functioning and for bilateral cargo, road transport is an option by comparing cost and time instead of shipping from Port Sudan.

In the interviews with Japanese companies, it was pointed out that although there is a need on the part of shippers to avoid congestion at Port Sudan and to connect to the open sea, the long transport distance and time from Khartoum often makes it unprofitable in terms of cost.

South Sudan (Southern direction): At present, the situation for land transport to South Sudan is not easy because of the unstable political situation and other factors, and because security is still not sufficiently in place. In October 2021, an MOU was signed between the governments of Sudan and South Sudan (between customs authorities) to open the border from January 2022.

Chad and the Central African Republic (Western direction): As for Chad and the Central African Republic in the west, according to information from a local logistics company, road transport from Port Sudan to Chad is still being carried out, and border facilities are functioning partially. Referring to the

statistics received from SPC for fiscal year 2020, the volume of cargo bound for Chad accounts for more than 60% of the total volume of cargo imported at South Quays in Port Sudan bound for neighbouring countries. The volume of cargo transported to Chad has also increased from 656 TEU in 2016 to 2,438 TEU in 2020, and further growth in the volume of cargo transported to Chad is expected in the future.

On the other hand, with regard to Port Sudan - the Central African Republic, road transport is not utilised due to the unstable political situation and economic cost. Bangui's imports and exports in The Central African Republic are handled at the Douala Port in Cameroon.

Ethiopia and Eritrea (Eastern direction): There is a route to Ethiopia in the east via El Gedaref in eastern Sudan, which is accessed from the border facility in Galabat, but information from local forwarders indicate that the border is now closed.

There is information that the border on the access route to Eritrea via Kassala in eastern Sudan is also closed.

## (2) Status of development of local infrastructure for cross-border logistics

Realizing smooth border crossing to neighbouring countries is an important factor in promoting cross-border logistics. As shown in Table 2-4-5, the results show that the crossing time through the border infrastructure is as long as the transport time to the border, resulting in longer transport times. Especially at the border with South Sudan, it takes four days to cross the border, which significantly increases the transport time.

**Table 2-4-5 Border Crossing Time (Sudan to neighbouring countries)**

Border points	Galabat (Ethiopia)	El Geneina (Chad)	Jabaen (South Sudan)	Ashket (Egypt)	Argen (Egypt)
Crossing time (days)	3*	3	4**	2	2

Notes: \* Border facilities are closed,

\*\* No public vehicles are allowed to pass, only aid supplies from Sudanese side can be transported

Source: Compiled by JICA Survey Team based on data from the Chamber of Land Transport Union and interviews with local logistics companies.

In this section, the current status of cross-border logistics in Sudan is recognised from two perspectives: the status of development of cross-border facilities and the operational status of cross-border procedures.

### Current status of development of cross-border facilities

Cross-border facilities are managed and maintained by MoT. As of July 2021, the processing capacity of the existing cross-border facilities can handle congestion near the border without creating truck congestion, except in cases where security problems occur.

As for the current status of the border facilities, the most stable ones are Ashket and Argen on the Egyptian border<sup>8</sup>. The Ashket border is located 28 km north of the northern Sudanese city of Wadi Halfa. The Argen border is located 375 km north of the northern Sudanese city of Dongola. The other border facilities are in partial operation due to the unstable security situation.

<sup>8</sup> Interview with The Land Transport Unit of the MoT (July 2021)

The Argen border facility was upgraded in 2016 through the BOT method at a cost of approximately USD seven million. However, the construction work was suspended at about 76% of the planned level. It turned out that repair work is required because the floor has settled, and the building has been damaged in many places due to poor construction. As shown in Figure 2-4-7, the entrance gate to the border facility was also not yet in place, thus a fence at the entrance has been installed to prevent smuggling in May 2021. Furthermore, infrastructure such as water, electricity, and telecommunications systems are weak, and the lack of paved parking lots, unloading areas, and warehouses, as well as the limited office size, are also insufficient for the functioning of border facilities. If cross-border logistics with neighbouring countries become more active, and traffic volume increases in the future, truck congestion due to insufficient processing capacity is expected to cause congestion near the cross-border area.



Source: Land Transport Unit

**Figure 2-4-7 Entrance to Argen border facility (left), parking space for trucks (right)**

The demand for land transport to and from Egypt is relatively high, with around 100 freight trucks per day and 35 buses and passenger cars per day according to MoT, as shown in Table 2-4-6.

**Table 2-4-6 Average Traffic Volume and Transit Cargo Tariff at Ashket/Argen Border (2020)**

Border Name	Average Traffic Volume (vehicles/day)			Transit Charges (USD)		
	Heavy Truck	Light Truck	Bus & Private Vehicle	Crossing Fees/trip	20-foot container	40-foot container
Ashket	65	20	35	300	120	150
Argen	75	45	35			

Source: Land Transport Unit

Ashket/Argen border facilities do not have waiting spaces, and drivers wait for customs clearance in vacant spaces near the cross-border facility. The border gate is also only one lane on one side, but so far there is no long line of trucks in the cross-border area<sup>9</sup>.

As shown in Table 2-4-7 and Table 2-4-8, the main import and export items to and from Egypt via the land border are plastics, petroleum and chemical products as imports, while cattle and sesame are the main export items.

<sup>9</sup> According to the hearing with local logistics company

**Table 2-4-7 Import Items from Egypt by Land Transport (2020)**

Textiles	Transport	Machinery & Equipment	Plastic Products	Petroleum & Chemicals	Raw Materials	Drinks & Food	Total
9,843	1,189	19,683	275,767	121,721	36,504	31,508	496,315

\*unit: tons

Source: Land Transport Unit

**Table 2-4-8 Export Items to Egypt by Land Transport (2020)**

Agricultural Products	Meat	Cattle	Peanut	Sesame	Gum Arabic	Cotton	Total
25,273	24,814	167,914	7,973	106,257	792	32,468	366,212

\*unit: tons

Source: Land Transport Unit

### **Operational status of cross-border procedures**

Table 2-4-9 shows the Standard Operating Procedure (SOP) for transportation from Egypt to Sudan at the border crossing. Currently, the OSBP is not being implemented between Sudan and Egypt, as both exporters and importers need to go through the procedures. However, procedures on the export side are simplified, requiring only the preparation of a cargo manifest to be sent to the importing country.

In addition, import procedures are carried out at the border, but the payment of customs duties takes place in Khartoum, so it is necessary to wait at the border for those payments to be completed. In addition, the SSMO procedures are conducted separately from customs inspections. Given these procedures, there is no special waiting area for vehicles at the border, for waiting to complete these procedures.

In this section, the cross-border procedures between Sudan-Egypt only are described, but it is clear that the procedures are almost the same between neighbouring countries such as Chad, Ethiopia, and South Sudan according to a local logistics company.

**Table 2-4-9 SOP at the Sudan-Egypt Border Crossing (Transportation from Egypt to Sudan)**

- 1) All documents should mention that shipment is in transit to Khartoum. Documents must be sent in parallel.
- 2) Bollore Egypt should not move the cargo until ensuring all the procedure and paper works are duly completed.
- 3) Bollore Sudan gives approval for loading.
- 4) Cargo is loaded from Egypt and transported to Sudan.
- 5) All documents should mention that shipment is in transit to Sudan through Egypt.
- 6) Trucks arrive in Koston (Egypt border), whereby the customs will provide the Manifest to Eshkit (Sudan border).
- 7) Documents will start to be processed.
- 8) Examination will be done by customs at Eshkit.
- 9) Sudan Customs will provide a code from the system to pay taxes.
- 10) Taxes will be paid by the customer in Khartoum using the code.
- 11) SSMO\* will confirm that the goods are in order to enter Sudan after payment of the fees.
- 12) After all the releases and approvals, truck will move to Khartoum.

\*SSMO: Sudanese Standards and Metrology Organization

Source: Compiled by JICA Survey Team based on data provided by Bollore Transport & Logistics

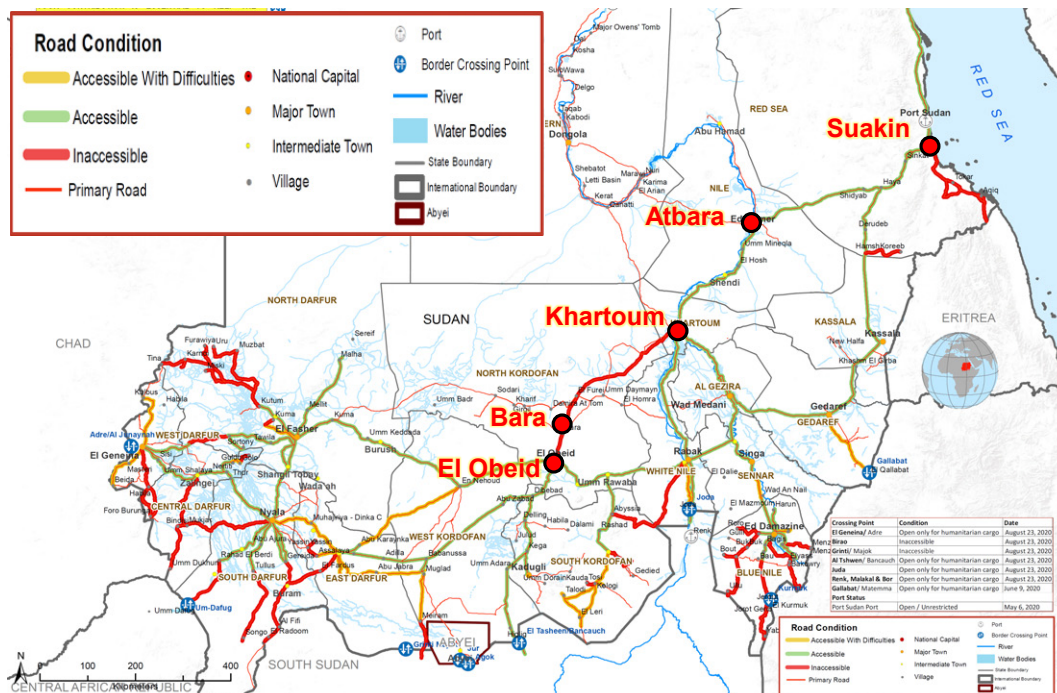
As an approach to simplifying customs clearance procedures, the introduction of the OSBP for the Sudan-Ethiopia border is being considered at the initiative of IGAD. In particular, a feasibility study has already been conducted on the Galabat (Sudan) – Metema (Ethiopia) border, and the study focuses on support in the area of soft components such as the development of laws and operational efficiency for the conclusion of a bilateral agreement.

**(3) Sections causing transport delays (potential for landslide and congested sections, and rehabilitation plans)**

The main factors causing delays in road transport in Sudan have been torrential rains during the rainy season, insufficient quality of pavement, insufficient maintenance, and poor passage environments due to unpaved road. The sections where the effect of heavy rain on roads is enormous and the poor traffic environment due to unpaved roads are as follows.

**Impact of heavy rain on road traffic**

The rainy season in Sudan is basically from May to October in most areas. Figure 2-4-8 shows the road traffic conditions in August, when the impact of rain on road traffic is particularly significant. One of the main roads, the Khartoum-El Obeid Road via Bara is inaccessible during this period. Although rehabilitation of this section has been implemented recently, drainage facilities do not have enough capacity. There are many places where branch roads from major cities become impassable, such as branch roads in rural areas with inadequate pavements and agricultural roads connecting agricultural and livestock producing areas.



Source: Logistics Cluster HP

**Figure 2-4-8 Road Traffic Conditions during the Rainy Season in August**

Atbara-Suakin road is accessible in Figure 2-4-8, but there are sections that are temporarily impassable due to heavy rain damage every year. As shown in the left figure of Figure 2-4-9, there are no gutters along the road, and there are places where culverts are provided, as shown in the right figure, but their number is small.



Source: NHA

**Figure 2-4-9 Road and Drainage Facilities (Atbara to Suakin)**

In many regions of Sudan, there are wadis (dried up rivers). These are dried up during the dry season and are sometimes used as a traffic route, but heavy rain during the rainy season causes a large amount of water to flow, causing severe floods and debris flows without being absorbed by the surface of the earth. On Sudan's main lines, there are temporary road closures, especially on the Atbara-Suakin roads, due to flood damage every year. On September 6, 2021, a flood occurred at a point 45 km east of Atbara in the same section, and the embankment and the roadbed were washed away, and a complete road closure occurred for two days. As shown in Figure 2-4-10, temporary restoration was performed after two days due to emergency repairs directly managed by NHA.



Source: NHA, JICA Survey Team

**Figure 2-4-10 The Section Where Pavement and Embankment Collapsed Due to Flooding and the Road after Emergency Repair of the Same Section (between Atbara and Suakin)**

The section plays a significant role as an important logistics network connecting Khartoum with the ports facing the Red Sea, and the temporary disconnection of roads due to flood damage is a factor hindering stable logistics services. There is a shortage of drainage facilities such as gutters and culverts, and maintenance is insufficient even in partially maintained areas, so sediment has accumulated, and drainage functions are not fully performed.



On mountain roads located in the hilly parts of the section, slope collapses, landslides, and rockfalls occur during the rainy season due to exposed mountain surfaces, and severe damage to road pavement due to flooding of rivers has occurred. In 2018, with the cooperation of the NHA, on-site surveys by Japanese companies were conducted, but specific disaster prevention and mitigation measures have not been realized.

### **Road surface properties**

The NHA is developing paved roads nationwide, mainly on roads between Port Sudan and Khartoum, which are the main routes in Sudan, but damage to cracks and holes has been observed in many places due to the passage of overloaded trucks and lack of maintenance after construction.

NHA has newly introduced a road Pavement Maintenance Management System (PMMS) that enables the search and analysis of road pavement conditions in the field of road maintenance and management. There is a movement to build a more efficient maintenance system within a limited budget and human resources. In the PMMS, road surface characteristics data are collected using three devices. It is possible to evaluate road surface properties by calculating the Pavement Condition Index (PCI).

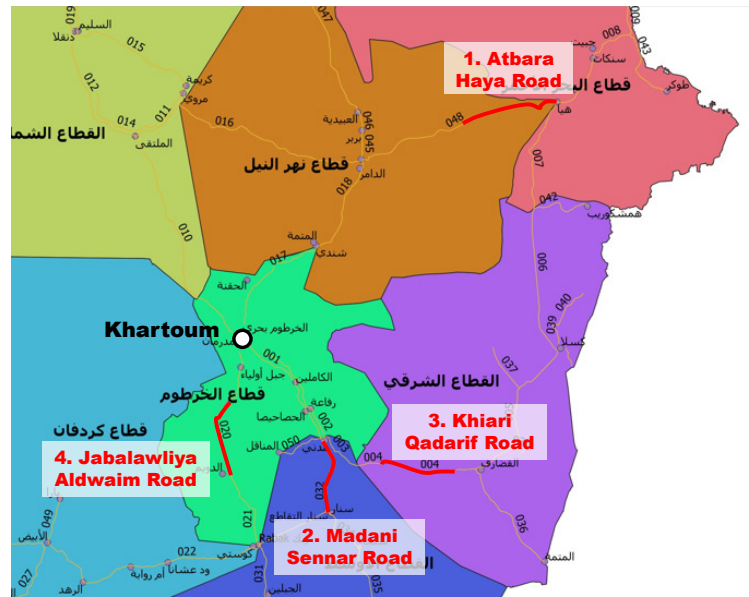
- Laser Crack Measures System (LCMS): A device that detects cracks and holes on road surfaces.
- Ground Penetrating Radar (GPR): Instrument for measuring pavement thickness.
- Falling Weight Deflecto-meter (FWD): A device that detects distortion of the pavement layer when a load is applied.



Source: NHA

**Figure 2-4-11 Field Survey Using GPR (left), Field Survey Using FWD (right)**

A trial project using PMMS has been implemented, and as shown in Figure 2-4-12, four main routes and paved roads with a total length of 1,030 km have been selected.



Source: JICA Survey Team created based on NHA-provided materials

**Figure 2-4-12 Route Map for Trial Projects Using PMMS**

In the pavement damage types according to the field surveys by NHA, the following damage on pavements have been observed. The main causes of these occurrences are the passage of overloaded trucks and insufficient pavement thickness.

- Cracking: Breaking of asphalt and concrete
- Raveling: The loss of pavement surface composite due to deterioration of asphalt and aggregate
- Depression: A place that is locally depressed lower than the surrounding pavement
- Polishing: The rough surface finish of the concrete slab surface is damaged and polished due to the deterioration of asphalt roads
- Potholes: round holes that can be made by the surface layer are sported off
- Patching: a temporary restoration part of the road pavement damaged part
- Rutting: a continuous dent in the road extension direction caused in the wheel passage position (rut part) of the car

In the road surface condition evaluation, the PCI, which is a numerical index determined for each road surveyed that indicates the average proportion and severity of the pavement condition and failure. The road is classified as Poor if this PCI value is 0 to 40%, Fair for 40 to 70%, Good for 70 to 90% and Excellent for 90 to 100%. Each target road is evaluated as shown in Table 2-4-10.

**Table 2-4-10 Evaluation Results of Target Routes and PCI for Trial Projects Using PMMS**

ID	Route Name	Length (km)	Evaluation Results (%)			
			Poor	Fair	Good	Excellent
1	Atbara - Haya Road	128	18	51	28	3
2	Madani - Sennar Road	102	14	35	27	24
3	Jabalawliya - Aldwaim Road	100	2	11	60	27
4	Khiari - Qadarif	100	0	7	77	16

Source: JICA Survey Team created based on NHA-provided data

Table 2-4-10 results suggest that the road IDs 2 to 4 are good, and since more than half of the sections are judged to be Good or Excellent, roads extending north and east, mainly in the capital Khartoum, have relatively good road surface properties. On the other hand, about 70% of the route connecting Atbara and Haya of road ID 1 is judged to be Poor or Fair, and the road surface condition is not good. In fact, the survey team also conducted on-site inspections of the route, and as shown in Figure 2-4-13, there are sections where sufficient road driving environment could not be maintained on paved roads, such as many cracks and potholes occurred that adversely affect driving speed and runnability and pavements were covered with sand that could cause vehicle slip accidents.

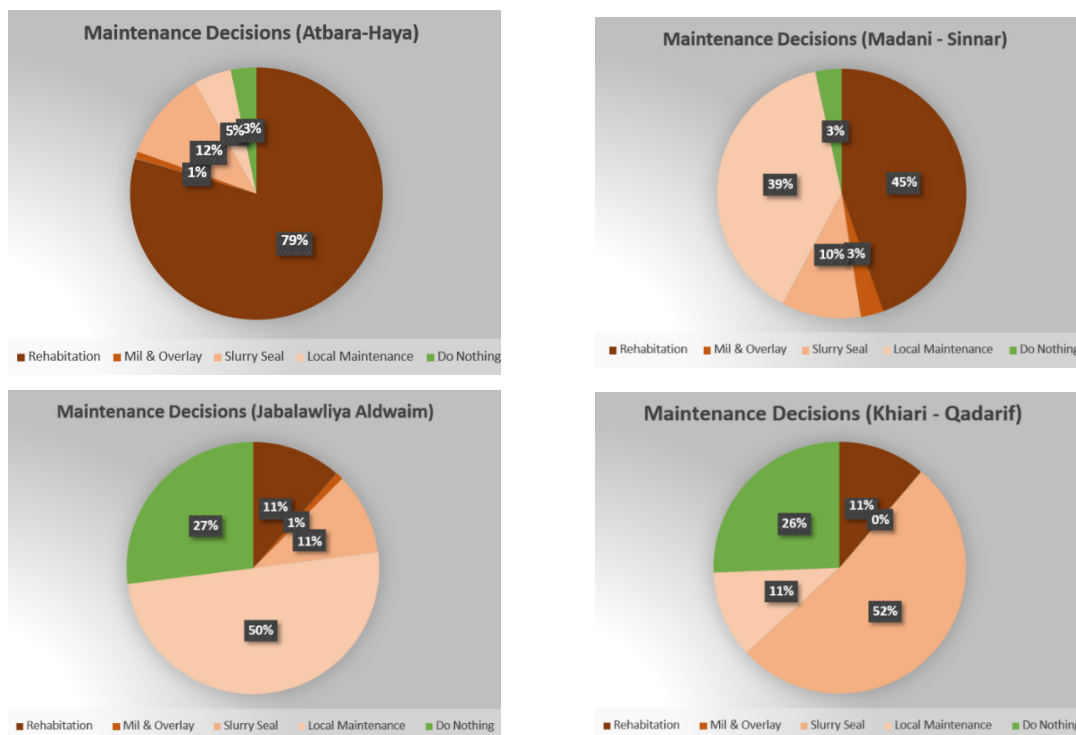


Source: JICA Survey Team

**Figure 2-4-13 Pavement Status of Atbara-Haya Road**

After evaluation of road surface properties by PMMS, the repair method for each road section is determined for improvement maintenance and routine maintenance based on PCI numerical values. Improvement maintenance is road improvement that includes "pavement overlay" in which heated asphalt mixture is placed on the pavement causing rutting and cracking. Routine maintenance includes "slurry sealing" that lays a suspension thinly on the road surface and penetrates cracks and hollows, "crack sealing" to repair gaps due to cracks on pavement surfaces due to deterioration, "pothole patching" that performs emergency repairs of holes made by the surface layer being detached, "patching" that performs emergency repair of damage on paved roads, and "shoulder repair" to repair damaged shoulder. Figure 2-4-14 shows a selection result example of the repair method on each route.

At present, there is no rehabilitation plan based on the budget, so it is necessary to examine the effectiveness of the rehabilitation plan in the future.



Source: NHA

**Figure 2-4-14 Selection Results of Repair Method Based on Road Surface Condition Evaluation of PMMS**

### Status of existing road rehabilitation plans

Road rehabilitation was planned under the WB's National Emergency Transport Rehabilitation Project (NETREP) in 2013 and the planned location of road rehabilitation by NHA in 2021.

Table 2-4-11 shows the planned investment in road projects as of 2021 according to NHA. It can be seen that investment is planned in projects aimed at widening and rehabilitating existing roads as well as a focus on the construction of new roads.

**Table 2-4-11 Investment Plan for Road Projects (2021)**

No.	Project Name	Number of Projects	Distance (km)	Projected Cost (mil USD)
1	Roads and Bridges Construction Projects	15	2,469.5	1,645.2
2	Widening of National Highway Projects	2	478	6.504
3	Mining Area Projects	2	300	0.81
4	Tourism Projects	2	268.5	170.2
5	Survey Projects	2	985	376.8
6	Rehabilitation Projects	4	1,052	210.4
7	Electronic Toll Fees Projects	1	0	10
<b>Total</b>		<b>28</b>	<b>5,553</b>	<b>2,419.9</b>

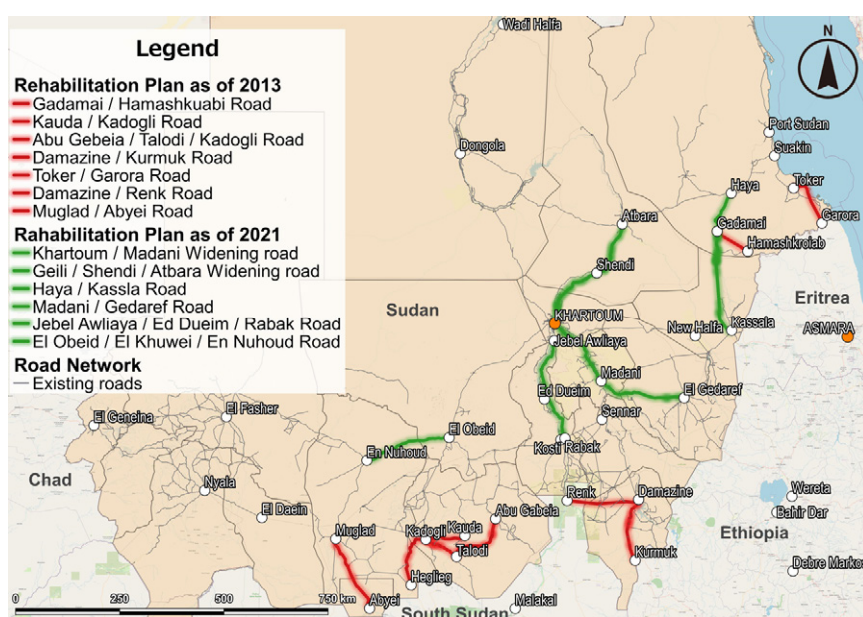
Source: NHA

Table 2-4-12 and Figure 2-4-15 show the status of road development in Sudan, specifically the planned road rehabilitation routes by the WB in 2013 and the planned road rehabilitation and widening by NHA as of 2021.

**Table 2-4-12 Road Widening and Rehabilitation Plans as of 2013 and 2021**

No.	Project Name	Distance (km)	Engineering Design	Feasibility Study	Projected Cost (mil USD)
<b>Rehabilitation Projects (by WB as of 2013)</b>					
1	Gadamai / Hamashkoriab Road	81	✓	✓	-
2	Kauda / Kadogli Road	135	✓	✓	-
3	Abu Gebeia / Talodi / Kadogli Road	310	✓	-	-
4	Damazine / Kurmuk Road	160	✓	-	-
5	Toker / Garora Road	200	✓	✓	-
6	Damazine / Renk Road	200	✓	✓	-
7	Muglad / Abyei Road	160	✓	✓	-
<b>Widening of National Highway Projects (by NHA as of 2021)</b>					
1	Khartoum - Madani Widening Road	170	✓	-	0.91
2	Geili / Shendi / Atbara Widening Road	308	✓	-	6.51
<b>Rehabilitation Projects (by NHA as of 2021)</b>					
1	Haya / Kassala Road	351	✓	-	70.2
2	Madani / Gedaref Road	228	✓	-	45.6
3	Jebel Awliaya / Ed Dueim / Rabak Road	267	✓	-	53.4
4	El Obeid / El Khuwei / En Nuhoud Road	206	✓	-	41.2

Source: Prepared by JICA Survey Team based on data provided by the National Emergency Transport Rehabilitation Project (NETREP) and NHA.



Source: JICA Survey Team

**Figure 2-4-15 Road Development Status and Road Rehabilitation Plan as of 2013 and 2021**

Many of the road rehabilitation routes planned back in 2013 were roads connecting regional cities located near the borders with Ethiopia, Eritrea, and South Sudan. On the other hand, the routes planned as of 2021 include Atbara-Khartoum, which is part of the main Sudanese transport section between Port Sudan and Khartoum, and the widening of the existing road that extends from the capital to El Gedaref in the southeast via Madani. Road upgrades are planned for the Haya-Kassala road, which connects Port Sudan to the Ethiopian and Eritrean borders, the road connecting the southern part of the capital to Rabak, where Kosti Dry Port is located nearby, and the road from El Obeid to En Nuhoud in the west. Most of the recent plans in the road sector are intended to further increase the volume of traffic between Port Sudan and Khartoum, which is regarded as an important route, and to improve connectivity to the eastern neighbouring countries.

According to the NHA, most of the WB's road improvement plans in 2013 covered roads near the border, and that road renovations had not been carried out due to unstable security. In the road improvement plan by the NHA in fiscal year 2021, it was confirmed that road expansion and renovation were not carried out as planned due to lack of funds.

### **Initiatives to improve operational efficiency**

The NHA's funding for road improvements and maintenance is obtained from toll road revenue, but it is not on the scale to meet the demand for rehabilitation of existing road infrastructure. It is difficult to raise tolls because the NHA may have a backlash from users, so NHA is struggling to raise funds for road rehabilitation work and maintenance. Overloading of trucks has also become a problem, and it is one of the causes of damage to pavements.

NHA is working to reduce labor costs by improving operational efficiency by introducing electronic systems. As a typical electronic system, the above-mentioned PMMS and Vehicle Load Management System (VLMS) have been introduced.

VLMS is a system for managing the data of shaft weightmeters installed in Atbara, Suakin, Khartoum, etc., and contributes to improvement in the efficiency of the work of confirming the 56 tons of the maximum weight limit specified in COMESA. Seven axial weighbridges are scheduled to be installed in the future, and as of September 2021, one weighbridge has been installed in the Dama area of the Atbara Region. It is possible to measure while slowing down and the result is displayed. NHA aims to deter overloading by collecting fines (excess 50 SDGs / km-ton).<sup>10</sup>

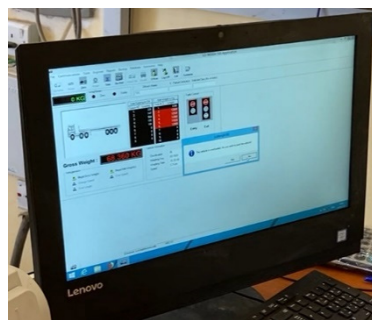
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<sup>10</sup> It is not in operation as of September 2021.



Equipment installation location: The target vehicle is weighed on the side lane (the left back is the main lane)

Source: JICA Survey Team



Example of result: Excess axle weights are displayed

### Figure 2-4-16 Overview of the Axle Weighbridge in Dama District

These systems are not fully functional at present due to the lack of human resources who can manage them appropriately. In order to formulate road maintenance and management plans using PMMS and realize appropriate operation and management by VLMS in the future, it is necessary to improve the capabilities of NHA engineers.

The information obtained about the road sector has been described above and the issues are described below.

- At present, since there is no congestion at the border except in cases where security problems occur, most of the cross-border time described in Table 2-4-5 depends on customs clearance procedures.
- In order to shorten the current cross-border time, it is necessary to simplify customs clearance procedures. This requires the development of laws and the promotion of border facilities necessary for the introduction of OSBP.
- In the future, it will be necessary to increase the number of lanes at the border gate for the purpose of expanding the processing capacity of cross-border facilities, and to build lanes and parking lots for waiting and for resting drivers, meals, refueling, etc.
- At present, with the exception of Egypt's two borders, the operation of border facilities is limited due to unstable security. Port Sudan-Chad is a relatively promising route for transport, and the MoT intends to improve the land border with Chad and Ethiopia, but there are routes where connecting roads to neighbouring countries become impassable during the rainy season. In the future, when security improves, strategic corridor plans, including those in neighbouring countries, are needed to establish smooth logistics routes.
- Many of the routes that become impassable during the rainy season are local branch roads, which cause roads connecting the markets of major cities from the source of agricultural and livestock products to malfunction and become a bottleneck in the logistics network. In order to promote cross-border logistics, it is necessary to rehabilitate these connecting roads.
- In the rainy season, slope failures, landslides, rockfalls, and river flooding causes damage to roads on the Port Sudan-Khartoum road, which is the main route of logistics in Sudan, temporarily cutting them off. Sudan's road network is fragile and there are no detour road

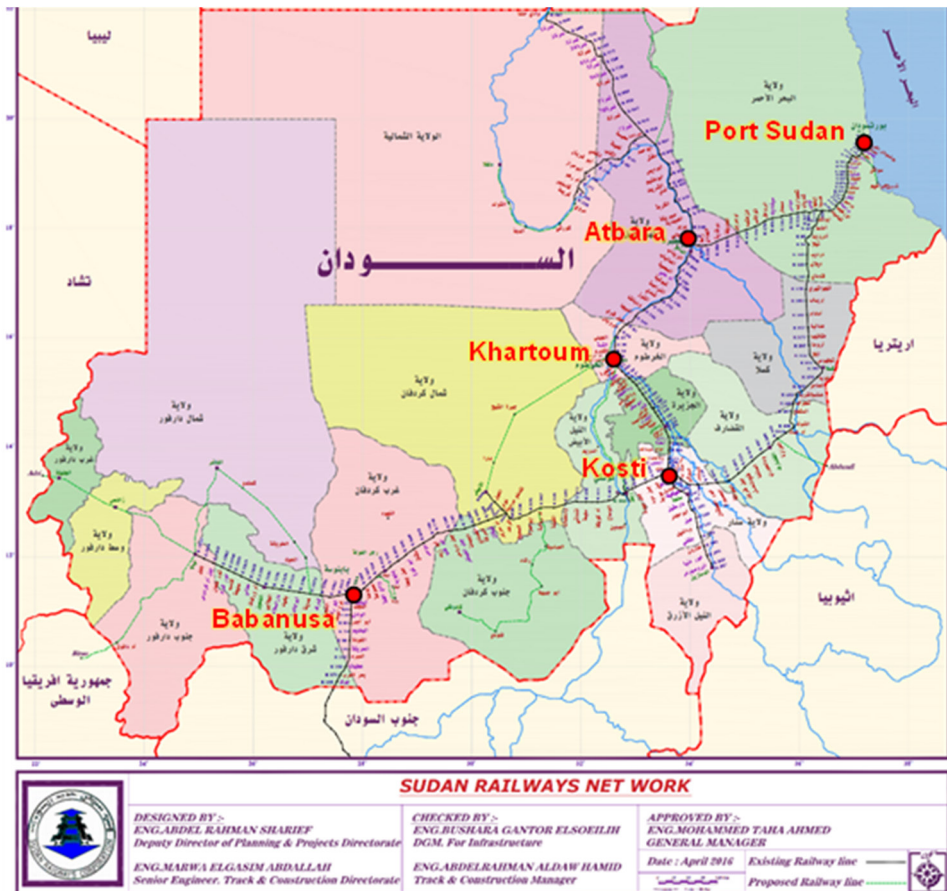
options to avoid bottlenecks. Measures for disaster prevention and mitigation in this section are urgent issues for ensuring sustainable logistics functions.

- In order to realize the efficiency of road maintenance and management operations using PMMS and VLMS, it is necessary to improve the road maintenance and management capabilities of NHA engineers and technical cooperation for making practical maintenance plans considering budget constraints.

### 2-4-3 Railway transport

#### (1) Status of railways network

Sudan has one of the longest railway networks in Africa at 4,180 km. The Sudan Railway Corporation (SRC) operates and manages 2,500 km of railways with a workforce of about 7,000 people. The main route of the railway is from Port Sudan via Atbara to reach Khartoum, with a parallel connecting route from Kassala to Sennar via Haya. There are branch routes to Karema and Wadi Halfa for the north, and Sennar to Nyala for the west via Kosti. Rail operations are managed in five regions: Port Sudan in the Eastern Region, Atbara in the Northern Region, Khartoum in the Central Region, Kosti in the Southern Region, and Babanusa in the Western Region, with Atbara having the headquarters functions and workshops.



Source: SRC

Figure 2-4-17 Railway Network in Sudan



As of 2021, SRC has 95 locomotives (of which 67 locomotives were manufactured before 1980 and 28 locomotives manufactured since 2006) of which about 17-18 are in operation.

The location of the workshop (repair shop) for each vehicle inspection type is as shown in the table below.

Maintenance is performed every one month, two months, six months, one year, two years, and four years. The maintenance up to every two years are called Light/Heavy Maintenance in which inspection and parts replacement without disassembling the car body is performed. The maintenance performed every four years are called Overhaul in which large-scale repairs are performed to disassemble the vehicle and perform maintenance such as inspection and parts replacement. Overhauling of locomotives can only be carried out in Atbara, and freight cars can be inspected and repaired at workshops in Atbara, Port Sudan and Khartoum.

**Table 2-4-13 Inspection Types and Available Workshop Locations**

Region	Location	Inspection type			
		Locomotive		Wagon	
		Light/ Heavy Maintenance	Overhaul	Light/ Heavy Maintenance	Overhaul
Northern Part	Atbara	✓	✓	✓	✓
	Shendi	✓	-	✓	
Eastern Part	Port Sudan	✓	-	✓	✓
	Haya	✓	-	✓	-
	Javette	✓	-	✓	-
Middle Part	Khartoum	✓	-	✓	✓
	Madani	✓	-	✓	-
West Part	Babanusa	✓	-	✓	-
	Nyala	✓	-	✓	-
Southern Part	Kosti	✓	-	✓	-
	Sennar	✓	-	✓	-
	Rabak	✓	-	✓	-
	El Obeid	✓	-	✓	-

Note: ✓ Indicates a workshop that can perform inspection and repair, - indicates the action is not possible.

Source: SRC

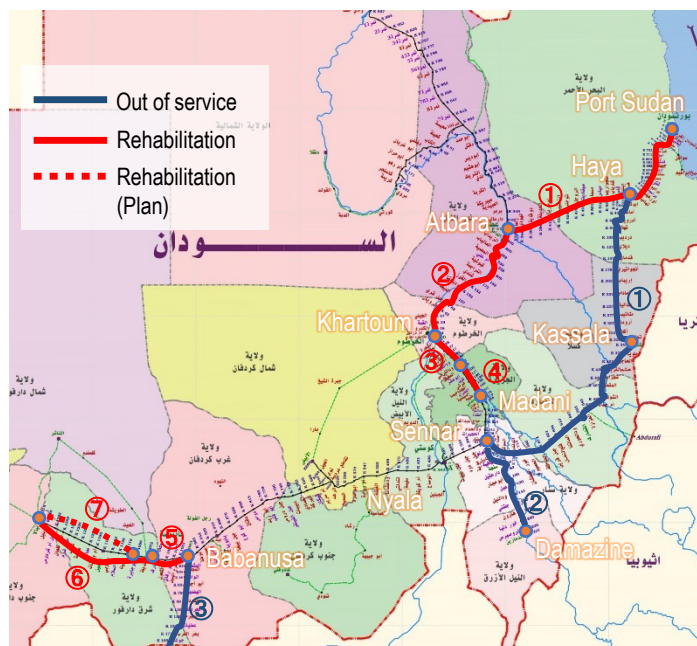
Atbara, the largest workshop, is managed by five engineers and has approx. 120 employees. Of these, 40% are technicians, and 60% are workers.

## (2) Railway operation and rehabilitation status

### Operating routes and rehabilitated routes

Many of the Sudanese railway lines are aging and deteriorating, and many of them have been operating at limited speed or suspended to prevent derailments and other operational accidents. Routes (1) through (3), depicted by the blue lines in Figure 2-4-18, are no longer in operation. These lines are (1) Port Sudan extending towards Haya - Kassala, 800 km; (2) Sennar - Damazine, 227 km; and (3) Babanusa

- Wau in South Sudan, 446 km. Also, the routes to the border areas of Ethiopia and South Sudan are not functioning<sup>11</sup>.



Note: Only 48 km of the planned 220 km route (7) of the rehabilitation project has been implemented.

Source: Compiled by JICA Survey Team based on data provided by Sudan Railway Corporation

**Figure 2-4-18 Rehabilitation Project Routes (2010-2019) and Out of Service Routes**

Prior to 2010, the number of accidents caused by the aging railway infrastructure exceeded 1,000 per year, and the trains were forced to travel at an average speed of 20 km/h. Against this background, over the period 2010-2019, the SRC executed a rehabilitation project divided into the seven sections (1) to (7), shown in red in Figure 2-4-18: (1) Atbara - Port Sudan: 502 km; (2) Khartoum - Atbara: 313 km; (3) Khartoum - Abu Ashr: 105 km; (4) Abu Ashr - Madani: 79 km; (5) Babanusa - Abu Jabura: 113 km; (6) Bakit - Nyala: 200 km; and (7) Abu Jabura - Nyala: 48 km, with a total length of 1,363 km. As a result of this project, the number of accidents was reduced to less than 50% of the previous level, and at the same time, the speed of operation on the sections was increased. In 2020, there were 461 accidents and 85 deaths, mainly between Madani and Sennar, which are undeveloped sections.

The main line locomotives owned by SRC are in a state where the locomotive often breaks down suddenly during operation, and regular operation cannot be performed. It has not been possible to secure enough spare parts from the U.S., China, Germany, and India, where the locomotives were manufactured, and it has not been possible to repair many locomotives. Atbara's workshop is a facility scale that can handle up to approximately 15 vehicles at a time, but it has been confirmed that due to chronic shortage of parts, several vehicles have been left unrepaired. The availability factor for locomotives is less than 20%, which is one of the factors preventing an increase in the number of trains.<sup>12</sup>

<sup>11</sup> According to interviews with SRC, there is information that a budget will be secured for the renovation of (3) and the development of the track will begin soon, but no information about the detail.

<sup>12</sup> Five locomotives and freight cars were inspected and repaired during the visit.

Table 2-4-14 shows the target values of transport tonnage, actual values, and number of trains that operated. The volume of transportation and the number of operations is decreasing year by year, and in 2020 it has fallen to about 40% of the level in 2016. In 2020, the operating balance of income and expenditure was 529 million SDG (approximately 132 million yen), and improving the financial situation is an urgent issue. The damage caused by the annual floods is also remarkable. At one site observed, the ballast and roadbed were washed away by the flood that occurred the day before, and only the rails and sleepers were left, and all routes were suspended on the relevant route (Figure 2-4-19). The SRC needs to improve its financial position by increasing the number of operations and transportation volume by procuring maintenance parts for vehicles, while preparing the existing infrastructure to resist damage from natural disasters.<sup>1314</sup>

**Table 2-4-14 Rail Traffic Volume and Number of Trains (2016-2020)**

Year	Transport volume (tons)		Percent complete (%)	Number of trains
	Target	Actual		
2016	2,000,000	618,016	31	7,345
2017	2,000,000	635,464	31.8	7,468
2018	2,000,000	430,563	21.5	6,895
2019	1,800,000	437,744	24.5	5,778
2020	2,000,000	216,575	10.8	2,979

Note: JPY 1 = SDG0.25 conversion (equivalent to September 2021 rate)

Source: SRC



Source: JICA Survey Team

**Figure 2-4-19 Flood Damage during the Rainy Season**

### **(3) Plan for the development of railways in Sudan and neighbouring countries**

#### **Progress of the railway development project connecting Addis Ababa to Port Sudan**

A new railway linking Addis Ababa to Port Sudan is being planned by the governments of Ethiopia and Sudan. The length of the line is 1,522 km, and the plan is to connect the routes shown in

<sup>13</sup> Interview with SRC (August 2021)

<sup>14</sup> The filming location is in the Haya region, about 200km west of Port Sudan. According to a hearing with the on-site supervisor, damage was caused by the flood that occurred on the day before the shooting (September 14, 2021).

Figure 2-4-20. In the future, it is planned that connections to Addis Ababa, Juba (South Sudan), Kampala (Uganda), Djibouti and Lamu (Kenya) will be examined.



Source: JICA Survey Team

**Figure 2-4-20 New Railway Plan Connecting Addis Ababa to Port Sudan**

The AfDB's USD 1.2 million financing to the Government of Ethiopia was finalised in January 2020 and currently a feasibility study is being implemented over a two-year period (expected to end in 2021). Details of the feasibility study are shown in Table 2-4-15, which shows that passenger and freight demand forecasts, basic design, and economic analysis are underway. According to SRC, this project is being implemented by a Canadian consulting company.

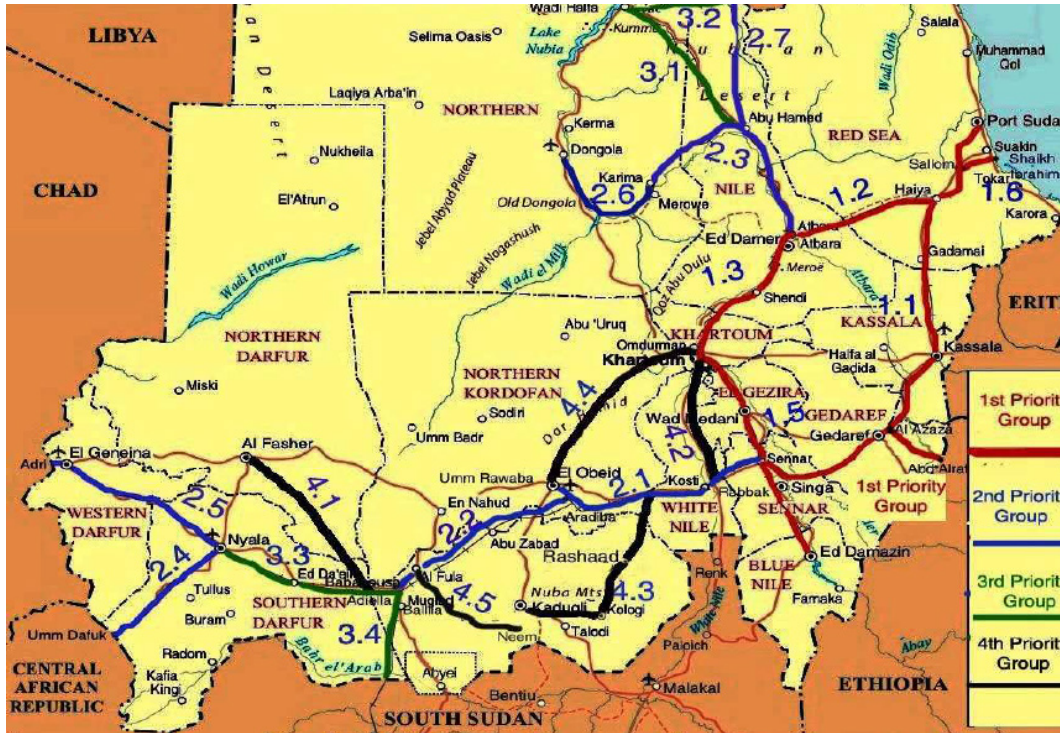
**Table 2-4-15 Summary of Feasibility Study Components of Addis Ababa-Port Sudan railway**

Component	Cost (USD mil)	Component description
Feasibility study	3.198	<ul style="list-style-type: none"> <li>• Preliminary design</li> <li>• Environmental and social impact assessment</li> <li>• Economic analysis</li> <li>• Detailed engineering design</li> <li>• Financing options</li> </ul>
Support to study management	0.167	<ul style="list-style-type: none"> <li>• Survey coordination between Ethiopia and Sudan</li> <li>• Survey management of the elements of design in Ethiopia and Sudan</li> <li>• Reporting and providing secretarial services to the survey coordination committee</li> </ul>
Audit	0.035	<ul style="list-style-type: none"> <li>• Provide financial and management audit of the survey</li> </ul>
<b>Total</b>	<b>3.400</b>	

Source: African Development Fund, 2019

## Other railway development plans

The planned rail improvements by priority, as planned by the SRC's Strategic Plan (2016 - 2029), are shown in Figure 2-4-21 and Table 2-4-16. The planned routes are classified as Priorities 1 to 4, with 22 projects totaling about 8,000 km in length and costing about USD150 billion. At present, Sudan's railways use a narrow gauge of 1,067 mm, but the government is planning to introduce a standard gauge of 1,435 mm, which is designed to connect railways with neighbouring countries<sup>15</sup>.



Source: Sudan Railways Strategic Plan (2016-2029)

**Figure 2-4-21 New Railway Development Plan with Priorities 1 to 4**

Priority 1 is concentrated in eastern Sudan, where there are plans to develop a line between Khartoum and Port Sudan, a line extending from Port Sudan to Kassala near the Eritrean border and El Gedaref near the Ethiopian border.

Priority 2 focuses on selecting routes that connect major cities south and north of Khartoum. There are also plans for a route from Nyala, located in the Darfur region of western Sudan, to Adri, near the Chad border, and another route to the Central African Republic border.

Priority 3 sees routes connecting Babanusa, the SRC's western base, to Nyala and to the South Sudan border area. There are also plans for a line connecting to Wadi Halfa, near the Egyptian border.

Priority 4 sees plans for a bypass line from Khartoum to El Obeid and Kosti, and branch lines extending from the main railway line to the regional cities.

<sup>15</sup> When survey team confirmed the source of funding to the SRC, at the time of the formulation of the plan, there were candidates for funding sources, but at this time, we did not have secured a source of funding for the development of new railway routes (August 2021).

**Table 2-4-16 New Railway Development Plan with Priorities 1 to 4**

No.	Project	No. of stations	Period (year)	Length (km)	Gauge type	Cost (mil USD)	Source of funds
<b>Priority 1</b>							
1	Haya - Kassala - El Gedaref - Sennar - Damazine*1	37	3.5	1,104	DUAL	1,454	CCECC*2
2	Port Sudan - Atbara*1	27	4	598	STG	1,017	CNEEC*3
3	Atbara - Khartoum	20	2	350	STG	745	-
4	Al Azaza - Abdarrafi (Ethiopia border)	6	2	220	STG	560	-
5	Khartoum - Sennar	10	2	300	STG	590	-
6	Salloum - Sheikh Ibrahim	5	1.5	100	DUAL	245	-
<b>Priority 2</b>							
1	Sennar - El Obeid	15	3	434	DUAL	781.2	-
2	Aradieba - Babanusa	30	3	400	DUAL	720	-
3	Atbara – Abu Hamed	22	4	492	STG	885.6	-
4	Nyala - Umm Dafoug (The Central African Republic border)	9	2	280	DUAL	504	-
5	Nyala - Adri (Chad border)	12	3	350	DUAL	630	-
6	Karema - Dongola	10	2	310	STG	620	-
7	Abuhamed - Sudan Egypt border*1	11	2.5	340	STG	1266.5	-
<b>Priority 3</b>							
1	Abu Hamed - Wadi Halfa	15	2	350	STG	630	-
2	Wadi Halfa - Sudan-Egypt Border	7	2	22	STG	475.2	-
3	Babanusa - Nyala	16	2	365	STG	365	-
4	Babanusa - Bahr Alarab	5	2	195	DUAL	351	-
<b>Priority 4</b>							
1	Adiella – El Fasher	9	3	340	STG	734.4	-
2	Khartoum – Rabak	8	2.5	320	STG	691.2	-
3	Umrwaba - Kadogli	12	3	480	STG	1036.8	-
4	Omdurman - El Obeid	10	3	397	STG	857.5	-
5	Wadi Algalla - Neem	3	1.5	106	STG	190.8	-
<b>Total</b>		<b>299</b>	<b>-</b>	<b>8,051</b>	<b>-</b>	<b>14,967</b>	<b>-</b>

Note: \*1 Feasibility study has already been conducted

\*2 CCECC: China Civil Engineering Construction Corporation

\*3 CNEEC: China National Electric Engineering Co.

Source: Sudan Railways Strategic Plan (2016-2029)

A summary of the information obtained on rail infrastructure has been provided above and the issues are described below.

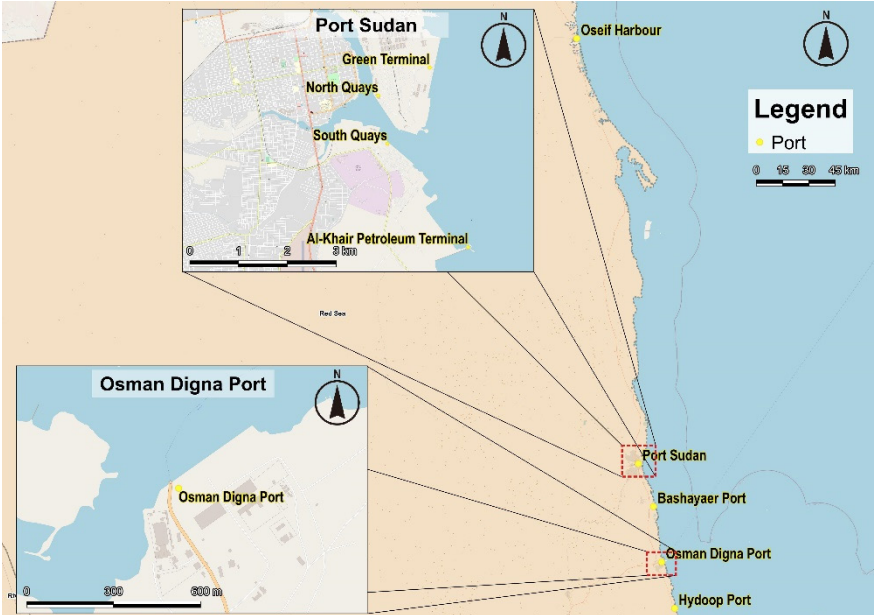
- The availability rate of locomotives owned by SRC is approximately 20%, and sufficient locomotives have not been secured to maintain a regular train service. Procurement of spare parts for locomotive repair is a problem.
- Major track rehabilitation works were carried out from 2010 to 2019, but not including the route from Madani to Babanusa. It is necessary to ensure the connectivity of the rail network from Port Sudan to western Sudan.

**2-4-4 Port transport**

**(1) Outline of Ports on the eastern side of Sudan**

The eastern part of Sudan faces the Red Sea and ports are developed as shown in Figure 2-4-22. The major ports are Port Sudan, where about 90% of Sudan's imports and exports are handled; Oseif Port located about 260 km north of Port Sudan, which is mainly responsible for the export of minerals such as iron ore; Osman Digna Port (Suakin Port) located about 60 km south of Port Sudan, which handles passengers, livestock, cement, etc.; and Hydoop Port located about 25 km south of the Osman Digna Port (Suakin Port), which mainly handles agricultural and livestock products. These four representative ports are operated and managed by the SPC.

This survey focuses on Port Sudan, where approximately 90% of the imports and exports are handled.



Source: JICA Survey Team

**Figure 2-4-22 Location of Ports along the Red Sea in Sudan**

The headquarters of SPC is located in Port Sudan, Red Sea State. SPC handles the ports and dry ports in Sudan with the organisation shown as Figure 2-4-23.

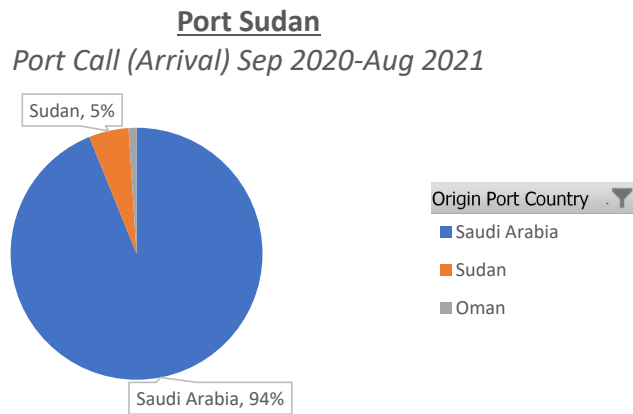


Source: SPC

**Figure 2-4-23 Organisation Chart of SPC**

**(2) Port Sudan Overview**

Port Sudan is the centre of the Sudanese economy and logistics hub and has been in commercial shipping service since 1907. At present, the port mainly connects Jeddah Port in Saudi Arabia to Sudan by small vessel routes. Apart from cargo, it also serves as a passenger terminal for pilgrimages to Mecca. As shown in Figure 2-4-24, about 95% of vessels entering Port Sudan are feeder ships from Saudi Arabia.



Source: SPC

**Figure 2-4-24 Country Ratio of Arrival Ships at Port Sudan (2021)**



90% of imports and exports are made from Port Sudan, with USD 4 billion in exports and USD 7 billion in imports. However, the security situation in the area where Port Sudan is located is not stable, and the effects of tribal conflict and strikes have led to repeated delays in port operations. In addition, cargo handling operations in the yard are often delayed due to repeated breakdowns of cargo handling equipment, and containers cannot be picked up according to the original vessel schedule, which is an inconvenience to shippers.<sup>16</sup>

### **Overview of each berth**

The terminal at Port Sudan consists of North Quays, South Quays, Green Terminal, and Al-Khair Petroleum Terminal as shown in Figure 2-4-25.



Note: \*Al-Khair Petroleum Terminal is omitted as it is located about 3 km south.

Source: Sudan Sea Ports Handbook 2016~2018

**Figure 2-4-25 Overview of Port Sudan (North Quays, South Quays, Green Terminal)**

North Quays currently has 12 berths in operation, with a berth length of 1,866 m. The total length of B1 to B5 is 597 m with water depth of 8.5 m, and this is where general cargo, bulk cement, and molasses are handled. General cargo imports are mainly handled at berths B6 to B9, with a total length of approximately 730 m and a water depth of 10.7 m. B11 and B12 have a total length of 310 m and a depth of approximately 8.5 m, and they are used by barges handling bulk cargo and export animals. Overall, the port has 27 storage areas and warehouses out of a total port area of 57,000 m<sup>2</sup> and it has a handling capacity of 5 million tons per year, which is 48% of its total capacity. Handling cargo from neighbouring countries is also one of Port Sudan's major strategies. To meet the increasing demand for cargo, Port Sudan opened the new B5A, which is approximately 230 m long and 9.5 m deep. A new crane and a mobile crane and terminal tractor were installed on B5A, enabling it to handle general cargo and cement.

<sup>16</sup> Sea Ports Corporation Handbook 2016~2018

South Quays consists of seven berths (two new berths and five old berths), with B15 handling grain and B13 to B18 handling containers. B17 and B18, located at the old berths, are equipped with four gantry cranes and 15 Rubber Tired Gantry (RTG) cranes. On the other hand, B13 and B14, located at the new berths, are equipped with four gantry cranes and eight RTG cranes.

Green Terminal is a multipurpose terminal located in the east of Port Sudan. It is mainly responsible for handling bulk grain, bulk cargo, general cargo, and containers. B21 and B22 were developed as Phase 1. The total berth length is 548 m, and the berth depth is 14.2 m. Later, two more berths B23 and B24 were developed with the aim of promoting economic opening to neighbouring countries. The total berth length is approximately 680 m and the berth depth is 14.7 m.

Al-Khair Petroleum Terminal was built in 2003 and this terminal mainly handles light oil and ethanol. The berth length is 310 m and the berth depth is 14.6 m. It has an annual processing capacity of 2.6 million tons. A 2.7 km-long unloading pipeline has been laid to connect the ships to the oil storage tanks.

**Table 2-4-17 Specifications of Each Berth in Port Sudan**

Port name	Berth number	Berth length (m)	Draft (m)	Remarks
North Quays	1, 2, 3, 4, 5	597	8.5	General cargo, molasses, bulk cement
	5A	229.8	9.5	Molasses, cement, general cargo
	6, 7	365.7	10.7	Bulk cement, general cargo
	8, 9	365.7	10.7	Edible oil, general cargo
	11	106.7	8.5	General cargo, bulk cement
	12	201.8	8.5	
South Quays (New)	13	781	16	Container (equipped with 4 Gantry cranes)
	14		16	
South Quays (Old)	15	205	10.7	Grain
	16	143	10.7	Container (equipped with 4 Gantry cranes)
	17	210	12.6	
	18		12.6	
	Ext.18	-	-	
Green Terminal	21	274	14.2	Bulk
	22	274	14.2	
	23	339	14.7	
	24	339	14.7	
Al-Khair Petroleum Terminal	-	310	14.6	Light oil, ethanol

Source: Compiled by JICA Survey Team based on data provided by Sea Port Corporation and the Port Authority's website

Since it is assumed that the agricultural and livestock products targeted for export promotion will be transported in containers, this survey focuses on container terminals to organise the information.

## Capacity of container terminal and facilities

In 2011, the new container terminal at South Quays had port capacity of 700,000 TEU. Later in 2016, port capacity reached 1.2 million TEU. Table 2-4-18 shows the container handling volume in Port Sudan for the period 2010-2020.

**Table 2-4-18 Container Handling Volume in Port Sudan**

Year	Handling Volume (TEU)
2010	444,660
2011	444,226
2012	401,566
2013	449,714
2014	436,204
2015	481,773
2016	465,100
2017	487,707
2018	453,083
2019	423,443
2020	398,042

Source: Compiled by JICA Survey Team based on data provided by Sea Port Corporation

As of 2020, the port's designed capacity was 1.2 million TEU. The actual handling volume, however, was 398,042 TEU, which is only one-third of its designed capacity.

Regarding cargo handling equipment, Table 2-4-19 shows the installation of handling equipment at container terminals in Port Sudan. The equipment required for cargo operations, such as gantry cranes and mobile cranes, are installed in the same way as in general ports, but SPC indicates that the gantry cranes at the old container berth at South Quays are not functioning well due to aged equipment. The old berth was built in 1997, while the new one was built in 2010. Both berths have four gantry cranes. The availability rate for equipment other than gantry cranes is about 50%, making efficient cargo handling work difficult.

**Table 2-4-19 Installation of Handling Equipment at South Quays**

Equipment Name	Number	Availability Rate
Gantry Cranes	8	50%
RTG Cranes	23	50.7%
Mobile Yard Cranes	2	50%
Full Containers Equipment (35) tons	26	42.5%
Empty Containers Equipment (8-15) tons	18	44.6%
Equipment to Unload the contents of container (3) tons	8	54.6%
Pulling Tugmaste Tractors	33	65.6%
Pulling Tugmaste Tractors (Man Company)	9	49.4%
Trailers	35	68%
Hired Pulling Tractors	45	44.4%

Source: Sudan Sea Ports Handbook 2016~2018

**Container berth usage schedule**

Figure 2-4-26 shows the usage schedule of container berths as of April 17, 2021. It describes the port entry date (Arrival Time Actual: ATA), berth docking date (Arrival Time to Berth: ATB), expected berth docking date (Expected Time to Berth: ETB), and expected departure date (Expected Time to Departure: ETD) of each container berth. Figure 2-4-26 shows that four ships are in berth, and the bottom nine are waiting for a berth. In the actual loading and unloading situation, the waiting time for a berth (time to the actual berth docking) is long, and the container handling time is not short. There are long waiting times for berthing and large "variability" in waiting times.

Port Sudan South Quay Berth Plan							
17-Apr-2021							
No.	Vessel At Berth	Berth No.	ATA	ATB	ETD	Import	Export
1-	NORTHERN DEPENDANT-( MAERSK)	14	3-Mar	5-Apr	----	37	1096
2-	CATALONIA-(SAUDI. MARTIME)	13	9-Mar	8-Apr	----	2	412
3-	EF EMMA-(POLARIS)	17	15-Mar	9-Apr	----	2	329
4-	KIEL TRADER-(SAUDI MARTIME)	18	24-Mar	9-Apr	----	49	1100

No.	Vessel Waiting Berth	Berth No.	ATA	ETB	ETD	Import	Export
1-	IBN ALWALEED-(BAC)	13	20-Mar	----	----	178	245
2-	GH CHINOOK-( MAERSK )	14	23-Mar	----	----	1600	1530
3-	MOZART- ( ARWA )	13	24-Mar	----	----	800	1500
4-	ALREEDY STAR-(POLARIS)	17	24-Mar	----	----	705	730
5-	CAPE MARIN- ( MAERSK )	14	27-Mar	----	----	1410	1410
6-	KOTA JOHAN-(PIL)	13	31-Mar	----	----	482	860
7-	HANSA ROTENBURG-(POLARIS)	14	7-Apr	----	----	895	945
8-	SCIO SKY- (BAY)	13	13-Apr	----	----	1440	1150
9-	MSC PAOLA-( MSC)	18	14-Apr	----	----	1633	1750

Note: ATA = Arrival Time Actual, ATB = Arrival Time to Berth, ETB = Expected Time to Berth, ETD = Expected Time to Departure

Source: Bollore Transport & Logistics

**Figure 2-4-26 Example of Berth Schedule for Container Ships Calling at South Quays**

As of April 17, 2021, the vessels No.1 to No.4 in the upper table of Figure 2-4-26 had already arrived at the port. It took 33, 31, 25 and 16 days from the scheduled arrival of the vessels until berthing, and 13, 10, 9 and 9 days after the berthing. The vessels had not left the port because the cargo handling works were not completed.

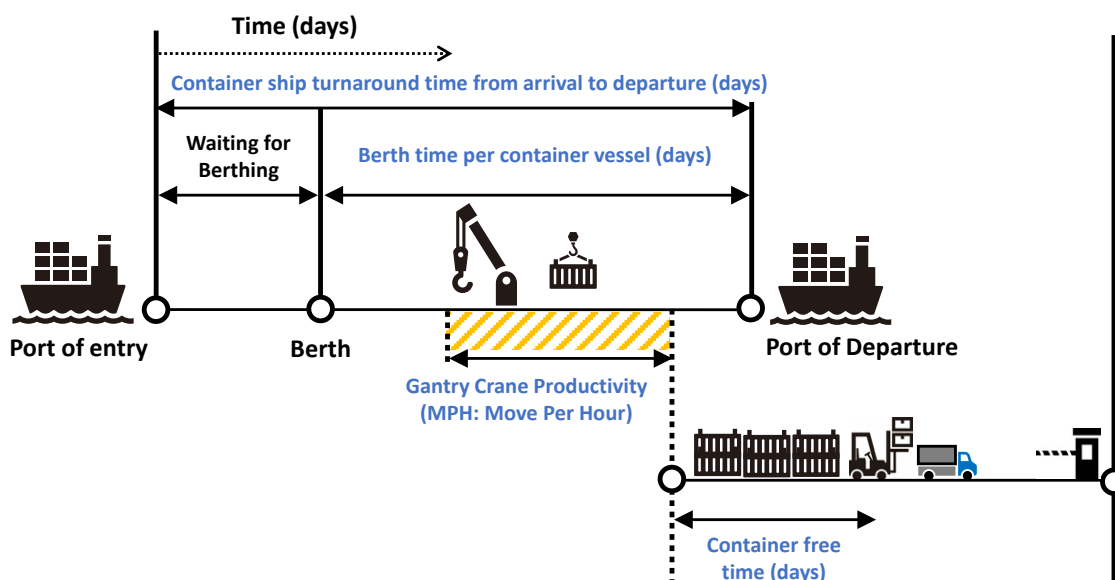
The lower table shows the vessel schedule after the upper table. No.1 arrived on March 20, but the berthing schedule was still unknown more than one month after the schedule.

**Port performance of container berths**

Container ship turnaround time from arrival to departure (days), berth time per container vessel (days), berth occupancy ratio (%), productivity of gantry crane (MPH) and container free time (days) were selected as performance indicators of port facilities with the aim of assessing the operational conditions at

container berths in Port Sudan. Each of the selected performance indicators are used in this report with the following definitions.

- Container ship turnaround time from arrival to departure (days):  
The time it takes for a container ship to enter a port, complete berth operations, and leave the port.
- Berth time per container vessel (days):  
Time required for cargo handling operations at container berths
- Berth occupancy ratio (%):  
Ratio of berthing operation time to container ship port dwell time
- Productivity of gantry crane (MPH):  
Number of moves per hour per gantry crane
- Container free time (days):  
Period in which containers can be stored free of charge when waiting handling operations or when that are completed



Source: JICA Survey Team

**Figure 2-4-27 Port performance indicators for Port Sudan**

**Table 2-4-20 Port Performance Indicators for Port Sudan**

Performance Indicators	Numerical Value
Container ship turnaround time from arrival to departure (days)	30 to 55 days
Berth time per container vessel (days)	10 to 15 days
Berth occupancy ratio (%)	89 %
Productivity of gantry crane (MPH)	8 MPH
Container free time (days)	Export: 30 days, Import: 20 days, Empty container: 10 days

Note: MPH=Move Per Hour

Source: Compiled by JICA Survey Team based on data provided by Sea Port Corporation

Container ship turnaround time from arrival to departure (days): Extremely long, ranging from 30 to 55 days. Waiting time at the port of entry is the most important factor to avoid because it is an opportunity loss cost. In terms of global benchmarks, container ships have a fixed weekly schedule, and docking berths are determined in advance to accommodate this schedule. The waiting time to enter a port is about one day at most. Compared with the global benchmark, waiting times at Port Sudan are at an unusually long level. Another issue is that the delay is not consistent. If delays are kept within a certain range, it is easy for shippers to set import and export schedules, but if there is a lot of variation, individual measures must be taken, and this is a factor that requires time and effort.

Berth time per container vessel (days): This takes 10-15 days, compared to the global benchmark of one to two days at most. With regard to waiting for berths, Port Sudan's performance is very poor.

Berth occupancy ratio (%): 70% to 80% is generally considered to be a reasonable level. If this value is above 80%, the port is considered to be congested. While, if this value is below 70%, it is considered to be oversupplied. In the case of Port Sudan, the value is as high as 89%, which classifies it as a congested port.

Productivity of gantry cranes (MPH): It remains at eight moves per hour. Compared to the global benchmark of 40 MPH, it is only 20%. This is because the availability rate of the cranes is low, and there are many cases where they are not operated due to failure. It is also due to the long time required for repair.

Container free time (days): This value is 30 days in case of export and 20 days in case of import, which are quite long. Exports are generally shorter because port administrators do not want containers to be left at the port too long. There are many factors that cause import customs clearance in Sudan to take a long time, such as the large number of items that require quality inspections, and the long time required for import customs clearance is one of the causes of the long container standby storage period.

The container free time is set for a long time, but if this value can be shortened, container storage space can be reduced for ports, which will contribute to efficient port operations.

### **Status of Port Management System and IT**

SPC has introduced the following port management system, which allows shippers and port administrators to monitor the location of vessels and containers in real time on its website.

- Vessel Traffic Management Systems (VTMS): A system that enables communication with vessels within a certain area around the port.
- Containers Locator System: A system that allows users to search for the location of containers by entering the container number or B/L (bill of lading) on a website platform.
- Ship Position System: This system can be used to confirm the date of arrival and berthing status of a ship and can be used to schedule cargo loading and unloading.

In order to improve operational efficiency at Sudanese ports, the Ministry of Trade and Supply is leading a study to introduce a single window system that will consolidate the contact points for procedures.

### (3) Other Ports

#### Osman Digna Port (Suakin Port)

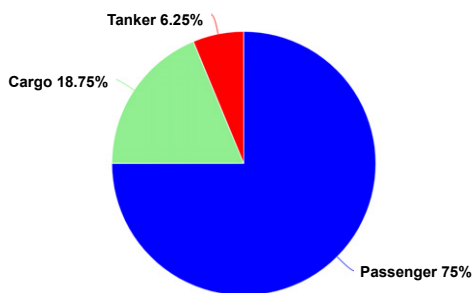
The Osman Digna Port (Suakin Port) is located about 60km south of Port Sudan and opened in 1991. Nine berths are in place, and it is used by passengers, as well as general cargo, livestock, lubricating oil, and asphalt. It is possible to accommodate ships up to 100,000 DWT (deadweight tonnage). The specifications of each berth are shown in Table 2-4-21.

**Table 2-4-21 Specifications of Each Berth at Osman Digna Port (Suakin Port)**

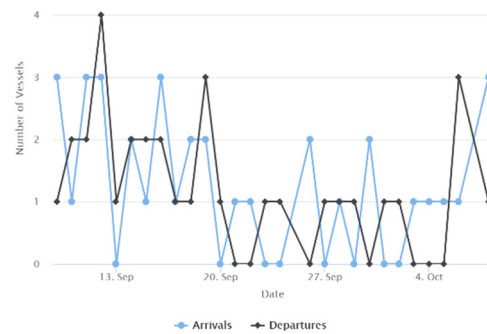
Berth No.	Berth Length (m)	Draft (m)	Remarks
1	67	6	Passenger, general cargo
2, 3	393	9	
4A	50	8	Livestock
4B	60	8	
5	100	12	
6	104	8	Livestock (formerly cement)
7	36	8	Livestock
8	36	8	
9	24	8	Lubricating oil, asphalt

Source: JICA Survey Team created based on SPC-provided data

Figure 2-4-28 shows the types of port calls at Osman Digna Port (Suakin Port) and the number of port calls. Passenger ships, cargo ships and tankers call at the port. As of September 2021, it is a small port that docks 32 ships per month and 0-3 ship calls per day. There are many passenger ships calling at the port, and only about 40% of port calls are freight.



Port of Call by Type (September 2021)



Number of port calls (September-October 2021)

Source: JICA Survey Team

**Figure 2-4-28 Basic Information on Port Calls at Osman Digna Port (Suakin Port)**

#### Oseif Port

This is located about 260 km north of Port Sudan and is mainly responsible for the export of minerals such as iron ore.

### **Haydoop Port**

This is located about 25 km south of the Osman Digna Port (Suakin Port), and opened in 2018 as a port specializing in the handling of agricultural and livestock products and marine products. One berth is currently in operation, with a berth length of 60m and a draft of 8m.

### **Bahayer Port**

This is located about 18 km south of Port Sudan and under the jurisdiction of the Ministry of Energy and Oil. In 1999, there were 1,610 km of pipelines in place, and in 2006, there were 1,400 km.

## **(4) Port rehabilitation and development plans**

As shown in Table 2-4-18, the container throughput in Port Sudan is approximately one-third of the capacity that can be unloaded. The cause is a low availability rate due to frequent failures of gantry cranes and cargo handling equipment, and long time for repairs. According to a hearing with a Japanese company undertaking grant aid projects in Sudan, ships are delayed due to the failure of the gantry cranes, causing a wait for a berth<sup>17</sup>, which has led to the inability to load the feeder ship at Jeddah Port in Saudi Arabia. The Sudanese government plans to improve the following facilities and operations. In the future, SPC plans to strategically develop not only feeder ships from Saudi Arabia, but also regular routes for large ships.<sup>18</sup>

### **Port Sudan Operational Improvement Plan**

In June 2021, Germany's Hamburg Port Consulting (HPC) undertook a six-month project commissioned by MoT and SPC aimed at improving the operation of South Quays container terminals. Efficiency improvement of cargo handling equipment, improvement of procedures (process engineering), and staff training are being carried out. The contract stipulates that improvements of 50% or more will be achieved from the current level. According to the explanation of MoT and SPC, the following improvements have been made as of August 2021.

**Table 2-4-22 Port Sudan Operational Improvements**

<b>Improved Items</b>	<b>Descriptions</b>
Berth Waiting	Previously there were cases where ships were waiting for a berth for approximately 40 days, but improvements have been made so that in some cases ships can enter the port without waiting for the berth.
Cargo Handling Capability	The company is looking for a 1.5-fold improvement in efficiency (12 MPH) under the contract but is expected to improve to 24 MPH at the end of the contract (December 2021). The international benchmark is 35 to 50 MPH.
Operating Hours	Currently, it operates 24 hours a day on a three-shift system.
Customs Clearance Time	By making it a two-shift system, the available time for customs clearance was extended.

Note: It should be noted that the improvements were confirmed based on interviews, and the actual situation in Port Sudan has not been checked.

Source: JICA Survey Team

<sup>17</sup> According to a hearing with Japanese importers, it was confirmed that cargo ship luggage scheduled for November 2020 was delivered in February 2021.

<sup>18</sup> By hearing with the person in charge of the Ministry of Transport



### **Port Sudan rehabilitation and development plan**

As part of the refurbishment and expansion of Port Sudan, the Maritime Research & Consultation Center (MRCC), a consultant appointed by SPC, is preparing a master plan for the development of North Quays and Green Terminal. The project plans to improve the roads in the port area along with berth expansion to improve operational efficiency.

- Extension of berth length at Green Terminal and North Quays
- Extension and widening of roads in the port to improve connectivity between Green Port and North Quays

An image of the development plan is shown in Figure 2-4-29.



Source: Maritime Research & Consultation Center HP

**Figure 2-4-29 North Quays, Green Terminal Development Plan Perspective**

At Al-Khair Petroleum Terminal, SPC is constructing a new berth with a berth length of 330 m and a water depth of 19 m, which will be able to accommodate 150,000 DWT tankers.

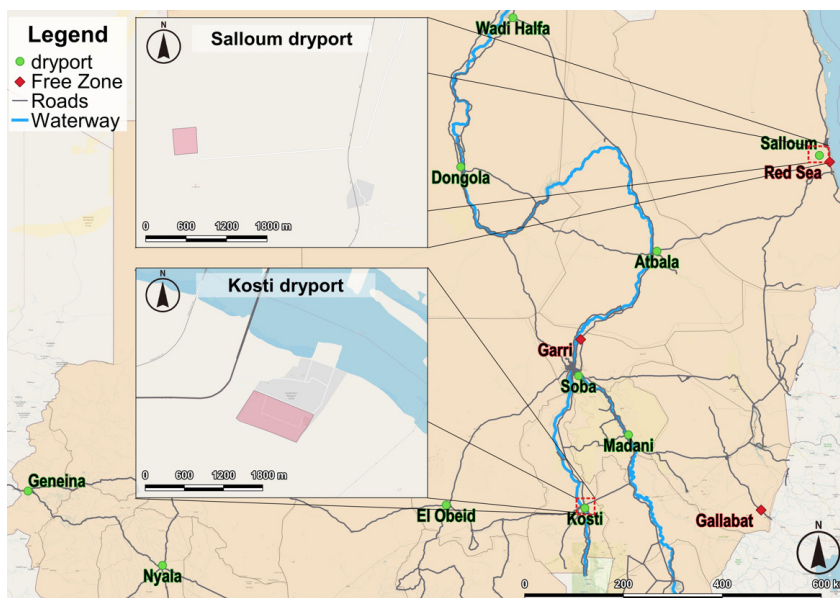
### **Other port rehabilitation and development plans**

- Osman Digna Port (Suakin Port): Currently, Osman Digna Port mainly handles passenger, livestock, and cement with nine berths. With the aim of further expanding the cargo handling volume, it is planned to establish a new berth, rehabilitate the entry route, and establish a new terminal dedicated to livestock. In the COMESA-led Port Sudan Corridor project, SPC aims to develop an international transshipment port that will serve as a logistic hub linked to other modes of transport and plans to develop 24 new berths in the future, including permanent and temporary installations. A container handling berth with a length of 800 m has already been developed, and the work of dredging is now in the process of being completed as of June 2021.
- Haydoop Port: This is located about 35 km south of Osman Digna Port. New berths are being developed by a Chinese company in 2020 as a port for export of livestock, vegetables and fruit trees in the first phase of the project. In the following Phases 2 and 3, four new berths with a total length of 900 m and a depth of 12.5 m are planned to be constructed.

**(5) Status of development and utilisation of dry ports and free zones**

Dry ports and free zones in Sudan are shown in Figure 2-4-30. The main dry ports are Soba, south of the capital; Salloum dry port near Port Sudan; and Kosti dry port, located along the White Nile River in southern Sudan. In addition relatively large dry ports are maintained along roads and rivers around major cities, taking advantage of the huge land. However, many dry ports do not have pavements such as concrete, and do not have functions other than temporary storage of cargo. The dry port is mainly operated and managed by Sudan Customs, while Salloum dry port and Kosti dry port are operated and managed by SPC. In recent years, the SRC's track and dry port connectivity has been enhanced. Port Sudan and Soba dry ports already connected, and plans are underway for Kosti and Atbara dry port.

Three free zones are in operation, such as Red Sea Free Zone (Red Sea State), the Garri Free Zone (Khartoum State) and the Galabat Free Zone (Gedaref State). Free zones are operated and managed by the Sudanese Free Zone and Market Co. Ltd. established in 1993. In the free zones, it is possible to enjoy preferential treatment such as tax exemption measures, and they function as bases that create added value not only by storing cargo but also by processing services and products.



Source: JICA Survey Team

**Figure 2-4-30 Location of the Main Dry Ports and Free Zones in Sudan**

## **Kosti dry port**

Kosti dry port is located in Kosti, White Nile State. It serves as a regional hub for southern, central and eastern Sudan, and a transport hub for rail, water and road transport. The plant has been operated by SPC since 2006 and it has a processing capacity of 150,000 TEU per year on a site area of two million m<sup>2</sup>.

It is also possible to handle import cargo directly from Port Sudan and perform customs procedures.<sup>19</sup>

Facilities include a 50-ton crane, two reach stackers, four 10-ton forks, one 100 m × 40 m warehouse, and two 50 m × 20 m warehouses. However, only one reach stacker

and one forklift were in operation during the site survey in June 2021. Warehouse rates are discounted by 25%, and cargo bound for South Sudan can be cleared here. In addition, the company is offering a further 25% discount on warehousing charges for import and export shipments to South Sudan. It also serves as a nexus to southern Sudan and South Sudan. Before South Sudan's independence, it was mainly a port service providing river transport to Juba and Malakal using the White Nile River. However, as of the time of the site survey in June 2021, it is a transport hub from Port Sudan to southern, western and central Sudan.

Kosti dry port used to handle a lot of cargo, but due to the change of government and the decline in trade with surrounding industries and South Sudan, the volume of cargo handled has decreased significantly to an average of two to three containers per day at present.

On October 27, 2020, the governments of Sudan and South Sudan agreed to open 10 border checkpoints to promote border trade between the two countries. Two ceremonies were held in Kosti and Jabaein in White Nile State to inaugurate free trade zones and reopen river traffic. In addition, on October 21, 2021, the customs authorities of the two countries signed an MOU for mutual cooperation, which will open the border checkpoints from January 2022.

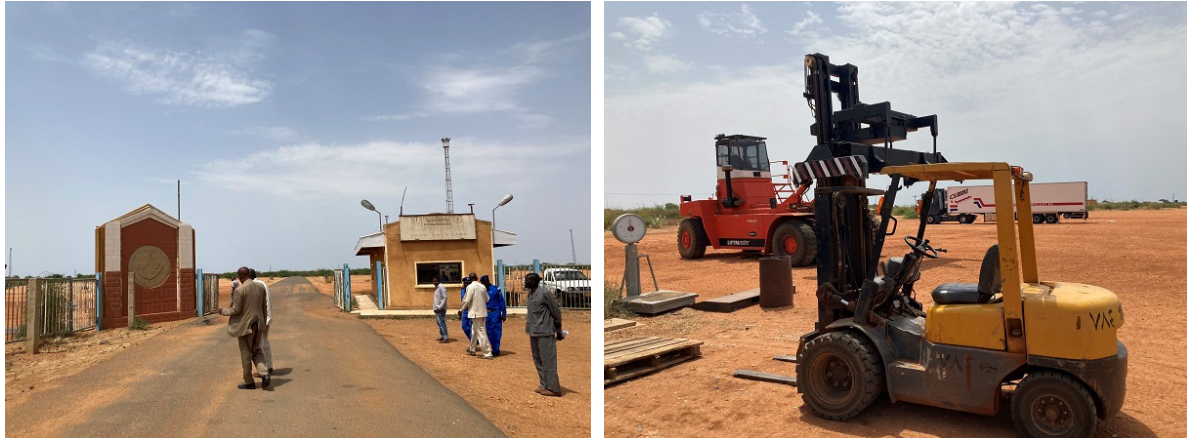
Kosti dry port aims to improve its services by connecting to the river port and railway station located in the vicinity in the future.

**Table 2-4-23 Summary of Kosti Dry Port Information**

<b>Location</b>	Kosti, White Nile
<b>Site area (m<sup>2</sup>)</b>	2,000,000
<b>Processing capacity (TEU)</b>	15,000
<b>Equipment/Facility</b>	Crane: 50 tons: 1 unit
	Reach Stacker: 2 machines
	Forklift: 10 tons: 4 units
	Warehouse: 100 m × 40 m: 1 50 m × 20 m: 2
<b>Availability of preferential treatment</b>	Warehouse charges: 25% discount Up to 50% discount for import and export shipments
<b>Customs procedures</b>	Manifest presentation is 72 hours earlier Apply for bonded transportation within 48 hours of arrival at the port

Source: Prepared by JICA Survey Team based on Sea Port Corporation Handbook 2016~2018

<sup>19</sup> Manifest presentation is 72 hours in advance, and bonded transport application within 48 hours of arrival at the port.



Source: JICA Survey Team

**Figure 2-4-31 Kosti Dry Port (left) and Cargo Handling Equipment (right)**

**Salloum dry port**

Salloum dry port is located 18 km southwest of Port Sudan and it is conveniently located for road and rail connections between Port Sudan and Khartoum.

Construction is divided into Phases 1 and 2, with Phase 1 completing a facility that can handle 75,000 TEU per year. Phase 2 has been completed in 2017.

The facility has container storage areas, warehouses, and customs clearance functions. It serves as an alternative to the container terminal at Port Sudan South Quays, relieving congestion at the port.

It is managed and operated by 27 SPC and related staff. The storage cost of empty containers is 33 euros (20 feet containers), 47 euros (40 feet containers), 59 euros (45 feet containers), and the storage cost of containers with cargo is 40 euros (20 feet container), 60 euros (40 feet container), 75 euros (45-foot container).

By using this ICD, it can be expected to reduce the inconvenience in customs procedures for cargo that is strictly retained at designated port locations. In addition, a project is planned to carry out the following improvements to strengthen the cargo transport function.

- Storage area, warehouse
- Roads in and around the facility and connecting roads to the railway
- Logistics area and power plant

**Soba dry port**

Soba dry port handles most of the cargo bound for Khartoum due to its good location near

**Table 2-4-24 Summary of Salloum Dry Port Information**

<b>Location</b>	Salloum, Red Sea State	
<b>Site area (m<sup>2</sup>)</b>	500,000	
<b>Processing capacity (TEU)</b>	75,000	
<b>Equipment/Facility</b>	Crane:	The required equipment will be provided.
	Reach Stacker:	
	Forklift:	
	Warehouse:	
<b>Availability of preferential treatment</b>	There is no information regarding availability of preferential treatment so far.	
<b>Customs procedures</b>	The customs procedure will be functional in future.	

Source: Prepared by JICA Survey Team based on Sea Port Corporation Handbook 2016-2018

Khartoum city and industrial parks. It has a customs clearance function, but X-ray scanning is not maintained, so physical inspection is carried out as shown in Figure 2-4-32. The inspection takes an average of 1 to 1.5 hours per container. The container handling capacity is approximately 100 to 150 (the total of 20 and 40 feet containers) per day. The SRC's track is connected into the dry port area, and it is also possible to handle rail freight. Currently, it is located about 20 km south of Khartoum city, but with the support of Turkish companies, it is planned to move to the north of Khartoum city.



Source: JICA Survey Team

**Figure 2-4-32 Physical Inspection of Container at Soba Dry Port**

### **Atbara dry port**

Due to its location in River Nile State, Atbara dry port handles about 90% of the cargo from Port Sudan to Khartoum. The land area is 700 m × 300 m, and the facility has one gantry crane (40 tons) and one forklift. They are considering purchasing additional gantry cranes, but it has not been realized due to lack of funds. The average time it takes between receiving and dispatching a container is about six hours. The total container handling volume from January to September 2021 was 1,181 units, and in both 2019 and 2020, it was about 200 per year.<sup>20</sup>



Source: JICA Survey Team

**Figure 2-4-33 Atbara Dry Port**

<sup>20</sup> Political judgment has led to a low handling volume because it was not operating properly.

### **Other Dry Ports**

In addition to those mentioned above, dry ports have been established in major cities in Sudan, such as Wadi Halfa, Madani, Geneina, Dongola, El Obeid, and Nyala as shown in Figure 2-4-30.

### **Garri free zone**

The Garri free zone opened in 2007 and is located on the Port Sudan-Khartoum road, about 70 km north of Khartoum. Since the SRC's track is connected into the free zone areas, there is also a high connectivity to the railway. There are five factories and 10 warehouses on the site of approximately 26 km<sup>2</sup>, enabling it to provide added value such as cargo storage, service, and product processing. The annual container handling volume is about 3,000 TEU.



Source: JICA Survey Team

**Figure 2-4-34 Garri Free Zone**

A summary of the information obtained on port infrastructure has been provided above and the issues are described below.

- Cargo handling equipment, including gantry cranes in the old container berth of South Quays in Port Sudan, is aging and has a remarkably low availability rate, which has led to a prolonged container ship turnaround time from arrival to departure. Upgrading of gantry cranes and other cargo handling equipment for improving the efficiency of cargo handling work is a problem.
- Many port-related infrastructures are planned, led by Port Sudan, Osman Digna Port (Suakin Port) and Salloum dry port, but there is no master plan that comprehensively summarizes each development. It is necessary to conduct surveys to examine comprehensive adjustments in the functional sharing and priorities of each port infrastructure, as well as reasonable budget allocation and financing plans.
- From the viewpoint of logistics, there are ports and dry ports (e.g., Suakin Port and Kosti dry port, etc.), but the strengths are not fully utilized due to insufficient connectivity with other transport infrastructure. A comprehensive plan to promote the development of logistic hubs linked to other modes of transportation, including railways and roads, is necessary.

## **2-5 Trade Environment between Japan and Sudan**

### **2-5-1 Means of remittance**

According to interviews of companies doing business in Sudan, there are no restrictions on remittances from Japan to Sudan as a system. Sudan will join the IBAN in June 2021 and there should be no institutional barriers to remittances. However, each bank responds differently to such remittances, fearing that the funds may be seized in the process of remittance as regarded for money laundering purposes, and some of the companies interviewed were told by their banks that they could not handle remittances to Sudan. On the other hand, a certain Japanese bank is able to send money in euros without any problem.

In addition to regular interbank remittances, there are international remittances by Western Union. Western Union (English name: The Western Union Company) is a financial and telecommunications company based in the United States. It handles personal remittances, corporate payments and trade operations in about 200 countries around the world. It is possible to send money from Japan to Sudan using Western Union. It should be noted that even if remittances are sent from Japan in a key currency such as USD, the money in USD will be converted into SDGs upon arrival in Sudan. Remittance counters from Japan include (1) Online, (2) Western Union App, (3) Agencies, (4) Seven Bank (a Japanese commercial bank), and (5) FamilyMart (a Japanese convenience store operator). It should be noted that the required documents, remittance available time, payment method, and remittance limit differ for each remittance window.

### **2-5-2 Transport insurance**

In the course of trading with foreign countries, trade goods are often lost or damaged by various accidents during transportation from the seller to the buyer's hands, resulting in economic loss to the shipper. If the carrier who performed the transportation or the person who handled the cargo is responsible for the damage that occurred, the shipper may receive some compensation for the damage. Therefore, by using transport insurance, traders can proceed with their trade with peace of mind.

However, as of August 2021, despite the absence of any specific restrictions, there are no insurance companies in Japan that underwrite transport insurance for trade with Sudan. In practice, since there are corresponding insurance companies on the Sudanese side, the insurance is attached via Sudanese forwarders.

### **2-5-3 Relevant regulations**

As of August 2021, there are no restrictions on financial transactions with Sudan by Japan's Ministry of Finance, Ministry of Economy, Trade and Industry, and Bank of Japan, other than measures such as freezing of assets based on UN Security Council resolutions.<sup>21</sup>

### **2-5-4 Findings from interviews with interested company**

Interviews were conducted with eight Japanese and local public institutions and 10 private companies during the survey. The following is a list of trade issues identified from the interviews.

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<sup>21</sup> [https://www.meti.go.jp/policy/external\\_economy/trade\\_control/01\\_seido/04\\_seisai/Sudan.html](https://www.meti.go.jp/policy/external_economy/trade_control/01_seido/04_seisai/Sudan.html)

**(1) The number of Japanese companies operating in the region is small**

By August 2021, the survey team was aware of only two companies that have established operations in Sudan. As mentioned above, this is largely due to the lack of information on Sudan, transaction and other legal restrictions. For example, a company said that there was a lack of information on the actual state of the automobile industry (i. e., there is no automobile industry association and it is difficult to determine the actual state of the industry), and the Sudanese government's policy on its low foreign exchange reserves and high external debt.

**(2) Shutdown of logistics due to shutdown of operations in Port Sudan**

Vessels could not enter Port Sudan in January 2021 due to the failure of the ageing gantry crane to function, and they waited for several months outside the port. Furthermore, transport from Sudan was delayed due to a strike of the employees.

The survey team interviewed the SPC, which confirmed that the ongoing projects were being implemented under the Port Sudan Development Plan developed before 2011. Development projects, including container-based projects, have been underway since the same year, and that data on Port Sudan's performance can be shared in due course.

**(3) Remittances from Sudan to Japan**

A company said that it is difficult to remit money directly from Sudan to Japan due to the shortage of foreign currency and other reasons. One company said that they had asked another company with an account in Dubai to send money to Japan.

**(4) Traffic on main roads**

A company interviewed said that the main road from Khartoum to Port Sudan is poor and in flood during the rainy season. The company also mentioned that there are challenges in the road conditions from Port Sudan to Khartoum and around the Grant Aid irrigation projects sites (Ariab and Kitab in River Nile State). On the other hand, despite the above-mentioned issues, the reliability of trucks to transport cargo is higher than that of the railway. The transportation routes to neighbouring countries of Sudan, other than Egypt, are sometimes available or unavailable in unstable circumstances due to security reasons around national border.

**(5) Other laws and regulations**

The survey team interviewed Bureau Veritas Japan, the Japanese surveyor company registered with the SSMO, regarding pre-shipment inspection regulations, and found that there were some unclear points in the regulations. The company proceeds with certification by checking with the SSMO as appropriate each time there was an inquiry from a Japanese exporter. Furthermore, the company said that some of the problems were caused by the exporters' lack of understanding of the standard.



## (6) Cooperation with local partner companies

It is an important issue for Japanese companies to seek collaboration with reliable partner companies in Sudan. Based on the results of interviews with Japanese and other companies operating in Sudan or doing business with Sudanese companies, the following measures are proposed:

- Major local companies (conglomerates, etc.)  
There are large groups of companies in Sudan such as DAL, GIAD, Golden Arrow, and others. Detailed company information is provided in section "4-3 Information on Major Local Companies".
- Chamber of Commerce  
The Chamber of Commerce was founded in 1923. In terms of relations with Japan, there has been comprehensive exchange since 1987. The organisation consists of six chambers:
  - 1- Exporters Chamber
  - 2- Importers Chamber
  - 3- Economic Services Chamber
  - 5- Health, Educational and Training Services Chamber
  - 4- Contractors and Engineering Services Chamber
  - 6- Information and Communications Technology Chamber
- Industry unions (various unions)

## 2-6 Initiatives of international organisations and other donors

The trends of international organisations and other donors apart from JICA since 2015 are shown in Tables 2-6-1 and 2-6-2 below. Of these, only the WCO's Mercator Programme and the EU's Enhancing Trade Governance in Sudan provide trade-related support. The WCO's Mercator Programme and the EU's Enhancing Trade Governance in Sudan are described below.

**Table 2-6-1 International Organisations' Economic Cooperation with Sudan**

(Based on total disbursement, unit: million dollars)

Calendar year	First Donor	Second Donor	Third Donor	Fourth Donor	Fifth Donor	Of which Japan	Total
2015	USA 271.9	UAE 93.94	United Kingdom 83.42	Kuwait 57.38	Japan 40.82	40.82	777.19
2016	America 227.58	United Kingdom 87.66	Japan 36.82	Germany 32	Sweden 23.85	36.82	516.76
2017	UAE 132.63	USA 111.17	United Kingdom 81.1	Kuwait 53.57	Germany 46.86	23.68	586.95
2018	USA 227.09	United Kingdom 119.31	Germany 60.77	UAE 43.29	Sweden 38.48	29.65	640.99
2019	UAE 286.16	USA 275.8	United Kingdom 118.98	Germany 77.14	Sweden 42.46	28.13	1,238.26

Source: OECD / DAC [DAC2a]

**Table 2-6-2 Major Donors' Achievements in Economic Cooperation with Sudan**

(Based on total disbursement, unit: million dollars)

Calendar year	First Organization	Second Organization	Third Organization	Fourth Organization	Fifth Organization	Other	Total
2015	EU 64.36	Global Fund 57.29	GAVI 44.03	AFESD 18.14	UNICEF 15.52	3.17	202.51
2016	EU 94.75	Global Fund 82.25	GAVI 34.24	AFESD 33.52	UNICEF 14.02	33.54	292.32
2017	EU 112.77	AFESD 40.12	CERF 29.63	GAVI 28.16	Global Fund 24.25	40.53	275.46
2018	EU 166.65	GAVI 49.71	Global Fund 44.2	CERF 20	AfDF 12.53	33.41	326.50
2019	EU 55.9	Global Fund 53	GAVI 49.02	AFESD 45.16	CERF 43.37	50.66	297.11

\* GAVI: Global Alliance for Vaccines and Immunization

AFESD: Arab Fund

CERF: Central Emergency Response Fund

AfDF: African Development Fund

Source: OECD / DAC [DAC2a]

**2-6-1 WCO Mercator Programme****(1) What is the WCO Mercator Program?**

The Mercator Programme is a support measure launched by the WCO in June 2014 to ensure the uniform implementation of the WTO's Trade Facilitation Agreement (TFA) using the WCO's instruments and tools. Under the framework of the Mercator Programme, the WCO provides tailor-made support for the implementation of trade facilitation measures, taking into account the local context and environment. The WCO provides tailor-made support to countries in need of strategic advice in the following ways.

- Provides analysis of previous needs assessments by various organisations and integrates a comprehensive plan and roadmap for implementing the TFA
- Engages Customs, other government agencies, and the private sector to conduct TRS to establish baseline data for future improvements
- Supports the establishment of a Trade Facilitation Committee as a platform for coordination, including planning, analysis and reform plans for the implementation of TFA involving various stakeholders
- Monitoring and evaluation of beneficiary countries' progress in TFA implementation. Adopting performance measurement, including TRS, to deliver results-oriented support
- Uses the WCO's forum to work with the WTO to collect and share TFA implementation practices
- Holds regional/national donor meetings tailored to host country needs and donor funding

The basic flow (plan) of the Mercator Programme support implementation plan is shown in Figure 2-6-1 below.



*Mercator Programme Implementation Plan*

Source: WCO Report and Recommendation of the Mercator Programme Assessment Mission to Sudan, August 2018

**Figure 2-6-1 Implementation Plan for the WCO Mercator Programme**

**(2) WCO Mercator Program investigation into Sudan Customs**

As part of the Mercator Programme, the WCO, together with United Nations Conference on Trade and Development (UNCTAD), the South African Revenue Service (SARS), the Mauritius Revenue Authority (MRA), Her Majesty’s Revenue and Customs (HMRC), and Jordan Customs, conducted a diagnostic study and made recommendations to Sudan Customs on WTO TFA-related issues. First, a Sudanese consultant conducted an initial assessment through desk research and interviews with key institutions in the public and private sectors during 2012 and 2013. The resulting Trade Facilitation Implementation Plan was validated at a stakeholder meeting held in March 2013. This validation was reviewed and updated in December 2015 as a prelude to the TFA implementation programme under the auspices of the joint HMRC-WCO-UNCTAD TFA Implementation Capacity Building Programme.

The WCO supported the implementation of the TRS by the Sudan Customs Service and prepared a report in October 2015. The TRS study examined customs clearance turnaround times at three seaports, one inland container port, three land borders, and Khartoum International Airport, and identified challenges such as lack of coordinated border management, inter-customs cooperation with neighboring countries, and proactive submission of key documents by traders.

In order to establish a baseline for assessing Sudan's readiness to implement the TFA, a WCO evaluation mission was sent in December 2015 to update the 2013 UNCTAD TFA Needs Assessment to reflect current realities and recommendations were made. The recommendations were provided to the National Working Group on Trade Facilitation (NWGTF) established in Sudan and identify measures (Categories B and C) that require additional time and capacity building support. Category 'C' measures were the focus of discussions to prioritise future Mercator Programme initiatives and the following key areas were identified

- Expanding the scope of risk management to other borders
- Continuing work to measure and publish the average time required for customs clearance
- Streamlining customs laboratories to help improve inspection methods in the future
- Introduction of advance instruction system
- Establishment of the foundation for Single Window.
- Improve and streamline training and professional development, including the use of e-learning tools

A needs assessment mission was conducted in July 2016 to review the progress of the initiative to date. In addition, a support plan was proposed for Sudan and the WCO until the end of 2018 based on the WCO Mercator Tailored Approach (Figure 2-6-2). This proposal is specific to Sudan Customs, but the views and perspectives of other border agencies were also taken into account.



Source: Sudan Customs Authority

**Figure 2-6-2 WCO's Support Plan for Sudanese Customs**

## 2-6-2 EU Enhancing Trade Governance Project in Sudan

The EU is supporting "Enhancing Trade Governance in Sudan" for the period 2021-2027. The specific details of the support are shown in Table 2-6-3 below.

**Table 2-6-3 EU Support for Enhancing Trade Governance in Sudan**

<b>Background of Support</b>	<p>The 2019 revolution established a technocratic transitional government with a mandate to carry out sweeping reforms to reverse decades of economic, social and political decline. The transitional government established by the military leaders, which toppled Bashir, and the civilian opposition, that orchestrated the protests against him, faces a host of economic, social and political challenges. To this end, the Prime Minister has declared as his government's top priorities; the building of sustainable peace, addressing the severe economic crisis, and reforming state institutions.</p> <p>International trade is an important driver of growth, social development, job creation and peace. This is a means to facilitate Sudan's development and contributing to the stability of the country and the region as it emerges from years of economic stagnation. The process of accession to the WTO integrates countries into the multilateral trading system and paves the way for further economic growth and development, which are fundamental elements for national, regional and international peace and security.</p>
<b>Field of Support</b>	Trade Governance (WTO Accession and Trade Facilitation)
<b>Support Target</b>	<p>Three major objectives on inclusive and sustainable economic growth, by</p> <ul style="list-style-type: none"> <li>(i) Supporting Sudan's WTO/African Continental Free Trade Area (AfCFTA) accession</li> <li>(ii) Complying with trade facilitation regulation by strengthening institutional capacity</li> <li>(iii) Enhancing awareness of stakeholders about WTO accession and diversification of green sectors</li> </ul>

Source: JICA Survey Team based on the information provided by Delegation of the European Union to Sudan

## 2-7 Information on support tools that can be used for Sudan

### 2-7-1 Japan's Country Assistance Policy

The Country Assistance Programme for the Republic of the Sudan, compiled in May 2018, is as follows (excerpts):

The Republic of the Sudan is located on the border between the Arab world and the Sub-Saharan Africa, is also adjacent to the region of Horn of Africa which is constantly affected by droughts and food crisis. Instability of Sudan could threaten the surrounding regions, the Red Sea, and off the Somali coast which are a part of the important sea lane for Japanese trades. Therefore, stable development of Sudan is a significant issue for peace and stability of the entire region.

Sudan is not only an oil-producing country with a production of 110,000 barrels per day, but also it richly produces other mineral resources such as diamond and gold. In addition, Sudan, with its vast land, has significant potential for agricultural development.

On the other hand, with the experience of protracted conflicts, while Sudan has many conflict-affected areas, a shortage of the basic infrastructure and reintegration of internally displaced persons (IDPs) which amounts to 2,420,000 people, are the issues to be tackled.

In line with the aforementioned approach, the major goal is to establish peace and support economic development. That means promote reconstruction and the consolidation of peace in conflict-affected areas, and improve the lives of the people through the development of basic infrastructure and the strengthening of administrative services. In addition, assistance is being provided to contribute to economic and social development by promoting industrial diversification, infrastructure development, and human resource development, with a focus on development in the agricultural sector.

Under this major goal, three intermediate goals have been set, of which number three is to support industrial diversification and agriculture. In the same medium-term goal, Sudan is emphasising the development of industries and the promotion of trade and investment to replace the oil revenues lost with the independence of South Sudan, and is taking the opportunity of the lifting of U.S. economic sanctions to accelerate these moves. Sudan has a high potential for agricultural development, and agriculture is a key industry in which a large part of the working population is engaged, accounting for about 30% of GDP. Support will be provided for industrial diversification to replace the oil industry and for the promotion of trade and investment, which will be important for future economic development, with a focus on the agricultural sector.

## 2-7-2 Support Achievements

**Table 2-7-1 Japan's Assistance to Sudan by Type (1969-2018)**

(Unit: million dollars)

Scheme	Official Development Assistance									
	Aid					Government loans, etc.				
calendar year	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	total	total
	Grant Aid	Through International Organisations Aid	Grant Aid	Technical cooperation	Total	Loan execution amount	Recovery amount	Total	(Net Disbursement)	(Total Disbursement)
			(A + B)		(C + D)			(FG)	(E + H)	(E + F)
1969				0.02	0.02				0.02	0.02
1970				0.04	0.04				0.04	0.04
1971				0.05	0.05				0.05	0.05
1972				0.04	0.04				0.04	0.04
1973	0.02		0.02	0.07	0.09				0.09	0.09
1974				0.12	0.12				0.12	0.12
1975	0.01		0.01	0.24	0.25				0.25	0.25
1976				0.34	0.34				0.34	0.34
1977	0.57		0.57	1.44	2.01				2.01	2.01
1978	3.17		3.17	1.64	4.81	18.36		18.36	23.17	23.17
1979	5.8		5.8	0.72	6.52	15.02		15.02	21.54	21.54
1980	5.91		5.91	1.35	7.26	3.66		3.66	10.92	10.92
1981	5.78		5.78	1.79	7.57				7.57	7.57
1982	8.75		8.75	1.17	9.92				9.92	9.92
1983	24.58		24.58	0.93	25.51				25.51	25.51
1984	17.22		17.22	1.34	18.56	10.22		10.22	28.78	28.78
1985	24.56		24.56	0.98	25.54	0.28		0.28	25.82	25.82
1986	31		31	1.72	32.72				32.72	32.72
1987	73.76		73.76	2.27	76.02	1.68		1.68	77.7	77.7
1988	55.89		55.89	3.68	59.57				59.57	59.57
1989	37.55		37.55	4.25	41.8				41.8	41.8
1990	35.22		35.22	3.72	38.94				38.94	38.94
1991	47.5		47.5	3.52	51.02				51.02	51.02
1992	25.05		25.05	2.39	27.44				27.44	27.44
1993	14.61		14.61	0.62	15.22				15.22	15.22
1994	20.15		20.15	0.45	20.6				20.6	20.6
1995	20.62		20.62	0.57	21.19				21.19	21.19
1996	17.83		17.83	0.81	18.64				18.64	18.64
1997				0.47	0.47				0.47	0.47
1998				0.17	0.17				0.17	0.17
1999	0.42		0.42	0.18	0.6				0.6	0.6
2000	0.08		0.08	0.59	0.67				0.67	0.67
2001	0.22		0.22	0.46	0.69				0.69	0.69
2002	0.42		0.42	0.75	1.17				1.17	1.17
2003	0.6		0.6	0.87	1.47				1.47	1.47
2004	0.87		0.87	0.67	1.55				1.55	1.55
2005	0.48		0.48	1.64	2.11				2.11	2.11
2006	0.78	37.42	38.2	4.53	42.72				42.72	42.72
2007	0.74	43.87	44.61	6.97	51.58				51.58	51.58
2008	2.7	97.81	100.51	9.14	109.64				109.64	109.64
2009	43.21	81.87	125.09	13.57	138.65		27.63	-27.63	111.03	138.65
2010	22.46	70.46	92.92	26.16	119.08				119.08	119.08
2011	1.29	72.15	73.45	23.82	97.26				97.26	97.26
2012	11.65	54.31	65.96	33.22	99.18		4.57	-4.57	94.6	99.18
2013	17.34	40.77	58.11	18.19	76.31				76.31	76.31
2014	17.8	21.6	39.4	13.1	52.51				52.51	52.51
2015	20.28	11.84	32.11	8.7	40.82				40.82	40.82
2016	12.98	9.3	22.28	14.54	36.82				36.82	36.82
2017	6.75	4.59	11.34	12.34	23.68				23.68	23.68
2018	8.11	6.77	14.88	14.77	29.65				29.65	29.65
Total	169.18	552.76	721.95	204.21	926.16	0	32.2	-32.2	893.96	926.16

Source: JICA Survey Team based on information from the Ministry of Foreign Affairs Japan  
<https://www.mofa.go.jp/mofaj/gaiko/oda/shiryo/jisseki/kuni/afrika.html>

## Chapter 3 Comparison of Sudan's trade situation with neighbouring countries

### 3-1 Overview of intra-African trade (trade situation and trade environment among neighbouring landlocked countries and member countries of the Economic Community)

#### (1) Trade Situation

Table 3-1-1 shows the trade relations with the top five trading partner countries of Sudan, as well as neighbouring Sub-Saharan countries and Middle Eastern countries. A positional relation of each country is illustrated in Figure 3-1-1.

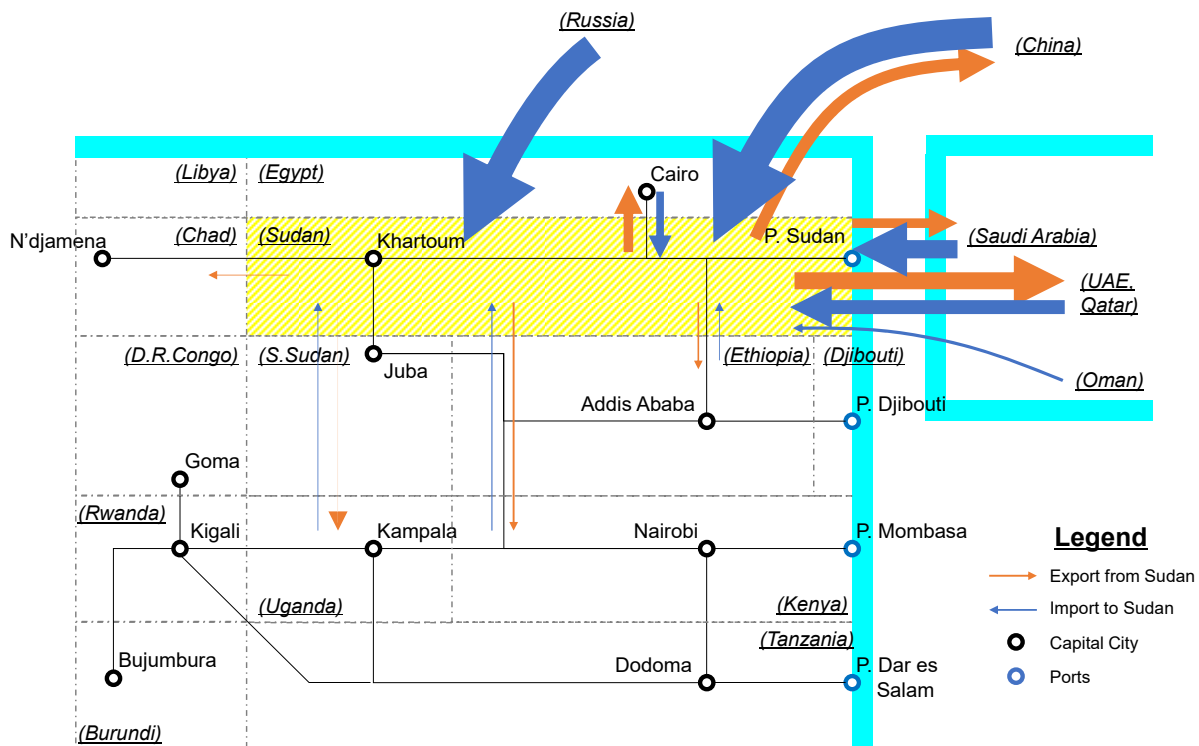
**Table 3-1-1 Sudan's Trade Relations (Value Basis), 2018**

Country Name	Region	Export (A)			Import (B)			Import / Export (A+B)		
		Transaction value in USD mil	Transaction value rank	Rate	Transaction value in USD mil	Transaction value rank	Rate	Transaction value in USD mil	Transaction value rank	Rate
Saudi Arabia	Middle East	588	3	16%	1,071	3	10%	1,659	3	12%
United Arab Emirates	Middle East	994	1	27%	787	5	8%	1,781	2	13%
Qatar	Middle East	34	10	1%	31	37	0%	65	26	0%
Oman	Middle East	2	43	0%	190	12	2%	192	12	1%
Yemen	Middle East	5	32	0%	0	118	0%	5	68	0%
Subtotal	Middle East	1,623	-	45%	2,079	-	20%	3,702	-	26%
Egypt	Neighbouring Country	580	4	16%	460	7	4%	1,040	5	7%
Ethiopia	Neighbouring Country	90	6	2%	41	31	0%	131	17	1%
South Sudan	Neighbouring Country	9	21	0%	0	148	0%	9	57	0%
Chad	Neighbouring Country	6	30	0%	0	110	0%	6	64	0%
Libya	Neighbouring Country	0	52	0%	3	70	0%	3	75	0%
Central African Rep.	Neighbouring Country	0	84	0%	1	92	0%	1	100	0%
Subtotal	Neighbouring Country	685	-	19%	505	-	5%	1,190	-	8%
Djibouti	Surrounding Country	2	41	0%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Kenya	Surrounding Country	11	19	0%	66	23	1%	77	22	1%
Uganda	Surrounding Country	8	25	0%	48	28	0%	56	29	0%
Rwanda	Surrounding Country	0	62	0%	1	89	0%	1	95	0%
United Rep. of Tanzania	Surrounding Country	0	107	0%	0	114	0%	0	120	0%
China	Other	736	2	20%	1,823	1	17%	2,559	1	18%
India	Other	97	5	3%	874	4	8%	971	6	7%
Russian Federation	Other	1	47	0%	1,582	2	15%	1,583	4	11%
Japan	Other	2	40	0%	548	6	5%	550	7	4%
Top five countries subtotal transactions		2,995	1~5	83%	6,137	1~5	59%	8,622	1~5	61%
World		3,619		100%	10,484		100%	14,103		100%

Note: Surrounding Country means countries on the African continent scoped in this survey

Source: UN Comtrade





Note: The width of the arrow shows relative trade value in the countries

Source: JICA Survey Team drawing based on UN Comtrade

**Figure 3-1-1 Trade Relations in Sudan, 2018**

The top five trade partner countries for Sudan are China, the UAE, Saudi Arabia, Russia and Egypt, which account for about 61% of total trade. Sudan has a large amount of trade with China, Russia and India, and by region, the amount of trade with Middle Eastern countries is about 26% of the total and the amount of trade with surrounding African countries is about 8%, and economic ties with Middle Eastern countries are large. By land, trade with neighboring Egypt is about 7% of the total (16% of total exports and 4% of imports), while other neighboring countries, such as Ethiopia, South Sudan, Chad, Libya and the Central African Republic only account for about 1%.

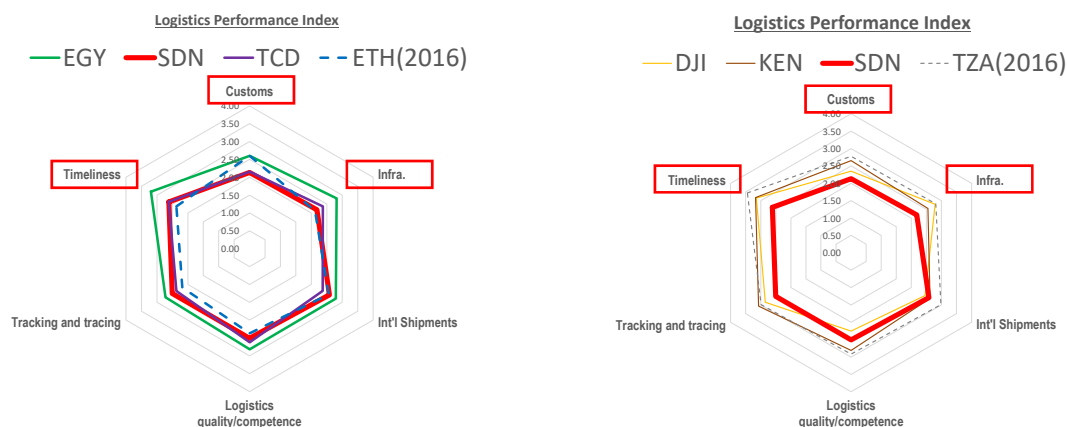
In terms of maritime transport, there is a need to improve the logistics environment in light of relations with neighboring Middle Eastern countries, China, Russia and India, which have large trade volumes. With regard to land routes, it is necessary to emphasize relations with Egypt, which has a large amount of trade, and to improve the logistics environment with other neighboring countries.

## (2) Logistics Environment

Figure 3-1-2 shows six logistics performance indices<sup>22</sup> in Sudan and its neighbouring countries: 1) Customs, 2) Infrastructure, 3) International shipments, 4) Logistics competence, 5) Tracking and tracing, 6) Timeliness, a chart comparing the degree of achievement of the schedule between neighbouring countries and neighbouring ports (the larger the chart, the higher the logistics performance). Sudan is the

<sup>22</sup> An indicator that the World Bank evaluates six indices: (1) efficiency of customs clearance procedures, (2) infrastructure quality, (3) transportation price competitiveness, (4) quality of logistics services, (5) achievement of schedules, and (6) capacity of track packages. It is surveyed and published every two years in 160 countries around the world.

lowest level in any of the countries concerned, with relatively low points in terms of customs clearance, infrastructure, and schedule achievement, and it is desirable to improve customs clearance and logistics infrastructure.



LPI: Comparison of surrounding countries

LPI: Comparison of major surrounding ports

Note: LPI: Logistics Performance Index, EGY: Egypt, SDN: Sudan, TCD: Chad, ETH: Ethiopia, DJI: Djibouti, KEN: Kenya, TZA: Tanzania

Each item is out of 5 points. Figures for Ethiopia and Tanzania in 2016 and others in 2018.

Source: World Bank

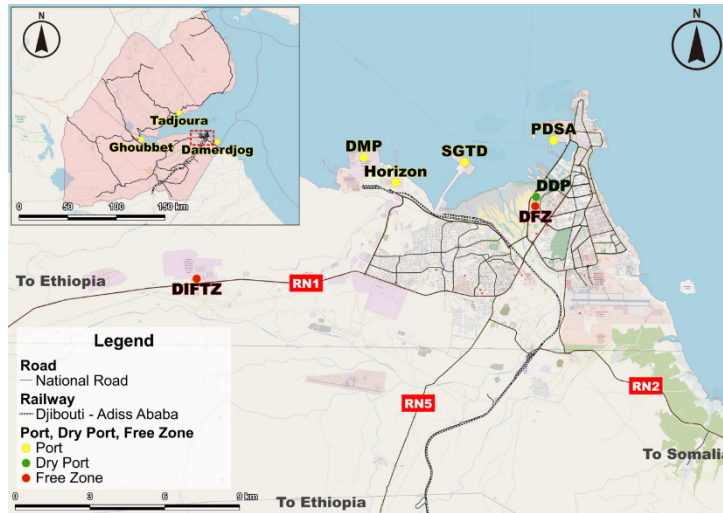
**Figure 3-1-2 Comparison of Logistics Performance Index (LPI) in Sudan and Surrounding Countries**

### 3-2 Status of infrastructure development contributing to improved connectivity with major countries in Eastern Africa (OSBP, cross-border, customs clearance)

#### 3-2-1 Port of Djibouti and International Roads

##### (1) Overview of Port of Djibouti (Equipment Capacity, Port Management System, IT)

Djibouti serves as a regional hub for east-west trade and a gateway to the Red Sea thanks to its favorable location in the Horn of Africa. The Port of Djibouti consists of Port de Djibouti SA (PDSA) in the old port, the Société de Gestion du Terminal à conteneurs de Doraleh (SGTD) dedicated to containers, the Horizon Terminal for oil, and the Doraleh Multi-Purpose Port (DMP) for containers, bulk, livestock, etc. As a function of the container terminal of the Port of Djibouti, PDSA started services in 1985. Since then, due to an increase in container handling volume, SGTD was opened in 2009, and DMP was inaugurated in 2017.



Note: PDSA: Port de Djibouti SA, SGTD: Société de Gestion du Terminal à conteneurs, DMP: Djibouti Multi-purpose Port, DDP: Djibouti Dry Port, DFZ: Djibouti Free Zone, DIFTZ: Djibouti International Free Trade Zone  
 Source: JICA Survey Team

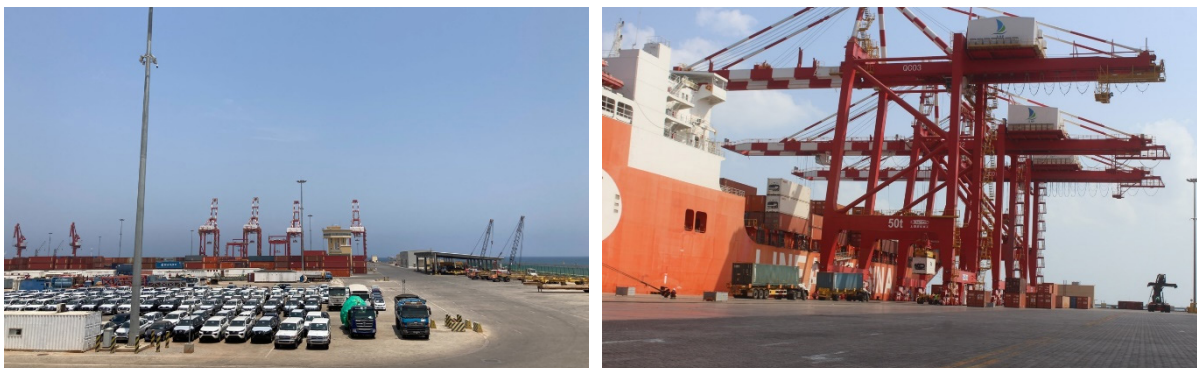
**Figure 3-2-1 Location of Ports, Dry Ports, and Free Zones in Djibouti**

**SGTD**

SGTD is equipped with a container berth with a berth length of 1,050 m and a maximum draught of 18 m and has a design capacity of 1.6 million TEU. The UAE's DP World had a 30 year concession for port operation starting in 2006 and had been operating the port since 2008, but the contract was terminated in 2018 due to a motion by the Djibouti government.

**DMP (Container Terminal)**

DMP is a multipurpose port with a site area of 192 hectares, complete with container terminals, general cargo terminals, bulk terminals, vehicle terminals, railway terminals, livestock, and comprehensive spare areas. With a design capacity of approximately eight million tons (general cargo and bulk) and 400,000 TEU (containers), the maximum water depth of the berths is 16 m, and it is a port where ships of up to 100,000 DWT can call.



Source: DMP, JICA Survey Team

**Figure 3-2-2 DMP Container Terminal (left), Gantry Crane (right)**

### **Container Terminal Equipment Capacity**

In 2010, shortly after the start of SGTD's business, the port capacity reached about 400,000 TEU, and in 2017 after the opening of DMP, it reached about 900,000 TEU. Table 3-2-1 shows the container handling volume of the Port of Djibouti from 2010 to 2019.

**Table 3-2-1 Container Handling Volume at the Port of Djibouti (Container Terminal), 2010-2019**

Year	Container throughput (TEU)	
	SGTD, PDSA*	DMP
2010	424,917	-
2011	742,835	-
2012	793,117	-
2013	794,731	-
2014	856,064	-
2015	910,165	-
2016	987,189	-
2017	865,497	57,551**
2018	815,093	49,032
2019	873,648	45,643

Note: \* PDSA container handling is until 2017.

\*\* DMP will open in 2017, so total amount with PDSA will be totaled in 2017

Source: JICA Survey Team created based on DMP and SGTD provided data

Table 3-2-2 shows the installation status of handling equipment in the container terminals of SGTD and DMP. SGTD is operated with eight gantry cranes capable of super post-Panamax ships. Both SGTD and DMP have railway terminals in place that enable cargo to be loaded on the Djibouti-Addis Ababa Railway, and have two Rail Mounted Gantry (RMG).

**Table 3-2-2 Installation Status of Handling Equipment at the Port of Djibouti (Container Terminal)**

Equipment name	Number of installations	
	SGTD	DMP
Ship-to-shore gantry crane	8	4
RTG (Rubber Tired Gantry) cranes	30	8
RMG (Rail Mounted Gantry)	2	2
RS (Reach Stacker)	10	6
Forklift	6	21
ITV (Internal Transfer Vehicle)	70	-

Source: SGTD, JICA Survey Team created based on DMP provided data

### **Container berth utilization schedule**

Figure 3-2-3 shows the berth schedule (PDSA, DMP, SGTD) for the Port of Djibouti on September 22, 2021. This includes port call ship (shipping company), arrival date, voyage number (VOY), total length of the port call ship, landing berth (depth), berth work contents, number of days of call, etc., at each terminal of the Port of Djibouti. In terms of the number of days of call at the SGTD, all container

ships port for 10 to 48 hours, after which they finish berth work and set sail within two days at most. Looking at DMPs and PDSA, the number of calls for bulk and general cargo is planned for up to 10 days.

PORT DE DJIBOUTI SA										
ARRIVAL DATE	SHIP NAME	VOY	LOA	DRAFT	FLAG	AGENT	LINE	BERTH	OPERATIONS	CALL
23/1200	BOLD EXPLORER	V01	68.28	4.4	VANUATU	EACS	RT MARINE LTD	PDSA	FOR REPAIRS AND SUPPLIES	04 DAYS
23/PM	SEA HELIOS	TBC	179.88	?	MALTA	EACS	/	PDSA	FOR LIN INSPECTION	24 HRS
24/1500	INCE PACIFIC	V07-21	185.74	9.95	SINGAPORE	INTER	INCE DENIZLIK VE TICARET	PDSA	FOR LIN INSPECTION	24 HRS
24/PM	TRUST	V06/2021	108.7	7.55	HONDURAS	IMGS	TRUST MARINE CO,SUEZ	PDSA	FOR LIN INSPECTION	24 HRS
28/AM	FILIA	DRO3	189.99	12.95	MALTA	ASSA	YANGZHOU DAYANG SHIPBUILDING	PDSA	D 49 500 MT CLINKER IN BULK	10 DAYS
DORALEH MULTI - PURPOSE PORT										
ARRIVAL DATE	SHIP NAME	VOY	LOA	DRAFT	FLAG	AGENT	LINE	BERTH	OPERATIONS	CALL
23/2200	MORNING PILOT	V067	199.97	5.6	MARSHALL ISLANDS	DSS	EUKOR	DMP	D 223 UNITS (VEHICLES)	24 HRS
23/1800	ISKENDERUN M	V0421	176.82	10.05	PANAMA	KOTH	ISKENDERUN SHIPPING LTD	DMP	30 000 MT OF WHEAT IN BULK+690,44 KGS/61200 PCS EMPTY BAG	10 DAYS
23/1800	JOLLY VANADIO	V302	240	9.4	ITALY	SAV	IGNAZIO MESSINA	DMP	D 34 UNITS (VEHICLES)+3 VRAC+259 CNTRS + L 126 CNTRS	24 HRS
24/1718	SEMERA	V31WB	166.49	10.1	ETHIOPIA	MTS	ESLSC	DMP	TO BE CONFIRM	24 HRS
26/1500	CYGNUS	V21606	183.06	12.75	MARSHALL ISLANDS	GAS	GONG GU CYGNUS LLC	DMP	D 7 318.143 MT OF PALM OIL	03 DAYS
28/0800	PICES LEADER	V053	199.98	7.8	PANAMA	SAV	NYK LINE	DMP	D 130 UNITS (VEHICLES)	10 HRS
28/AM	JOLLY CRISTALLO	V278	239	?	ITALY	SAV	IGNAZIO MESSINA	DMP	TO BE CONFIRM	24 HRS
DMP OCTOBER										
ARRIVAL DATE	SHIP NAME	VOY	LOA	DRAFT	FLAG	AGENT	LINE	BERTH	OPERATIONS	CALL
01/1000	NASCO JADE	V2105	189.99	11	HONG KONG	GAS	SOAR BRIGHT SHIPPING LIMITED	DMP	D 15 875.246 MT OF GC	10 DAYS
03/1743	HARAR	V39WB	166.5	?	ETHIOPIA	MTS	ESLSC	DMP	TO BE CONFIRM	24 HRS
07/AM	JOLLY VANADIO	V21302A	240	?	ITALY	SAV	IGNAZIO MESSINA	DMP	TO BE CONFIRM	24 HRS
10/0800	NAVIGR UNIVERSE	TBC	183	12.15	MARSHALL ISLANDS	GAS	/	DMP	TO BE CONFIRM	24 HRS
SOCIETE DE GESTION DU TERMINAL A CONTENEURS DE DORALEH										
ARRIVAL DATE	SHIP NAME	VOY	LOA	DRAFT	FLAG	AGENT	LINE	BERTH	OPERATIONS	CALL
23/0300	KOTA CARUM	KCRM005E	299.95	12.3	HONG KONG	PIL/DI	PIL	SGTD	2000 MVTS	24 HRS
26/0001	KOTA NILAM	KNLM015E	179.7	?	PANAMA	PIL/DI	PIL	SGTD	1000 MVTS	10 HRS
26/1300	MERKUR ARCHIPELAGO	V137W	262.07	?	LIBERIA	MAERSK/DI	MAERSK	SGTD	2461 MVTS	48 HRS
26/2300	GFS PRIDE	V0015E	222.15	?	SINGAPORE	IMSS	/	SGTD	TO BE CONFIRM	24 HRS
26/2330	MSC EMILIE	XA138A	176.96	?	LIBERIA	MSC/DI	MSC	SGTD	1500 MVTS	24 HRS
28/2000	SEAMAX GREENWICH	IP134A	334.06	?	MARSHALL ISLANDS	MSC/DI	MSC	SGTD	1500 MVTS	24 HRS

Source: PDSA

Figure 3-2-3 Berth Schedule for the Port of Djibouti

### Port performance indicators for container berths

Similar to Port Sudan in Chapter 2, berth time per container vessel (days), berth occupancy ratio (%), productivity of gantry crane (MPH), and container free time (days) of container facilities are summarized below as performance indicators of port facilities.

Table 3-2-3 SGTGD Port Performance Indicators

Performance Indicators	Numerical Value
Berth time per container vessel (days)	1 day
Berth occupancy ratio (%)	50 %
Productivity of gantry crane (MPH)	35 MPH
Container free time (days)	3 days (Domestic cargo), 8 days (Transit cargo)

Source: JICA Survey Team Prepared based on SGTGD

The berth time per container vessel is as short as one day, which is equal to the global benchmark of a day or two, and it is performing well for berthing work. The berth occupancy ratio is 50%, and generally 70 to 80% is considered to be an appropriate value, and if it is below this number, it is considered to show excessive supply capacity, so there is room for the cargo handling volume of SGTGD to grow. Gantry crane productivity is 35 MPH, and the container free time for waiting is three days for domestic cargo and eight days for transit cargo.

### Status of port management system and IT

Djibouti Port Communications System (DPCS): In the Port of Djibouti, DPCS is exclusively used as a comprehensive management system for logistics. DPCS is managed and operated by the DPCS company, a group company of the Djibouti Port & Free Zone Authority (DPFZA). DPCS is used to share

vessel documentation and to link users in Djibouti with users in other countries such as Ethiopia. DPCS enables the tracking of cargo location and the tracing of documents.

DPCS issues three types of certificates: the Port Clearance Certificate, the Djibouti Corridor Road Pass, and the Electronic Pre Gate. These have QR codes printed on them, and the information (location of the cargo and progress of procedures) can be accessed by scanning these QR codes. This information is encrypted to prevent unauthorized rewriting and unauthorized access.

The users of DPCS are shipping companies, port authorities, warehouse operators, customs, shipping companies, banks, etc., and all parties involved in trade participate. In particular, all banks in Djibouti participate in this initiative, and payments can be made online.

Truck Tracking is based on the Radio Frequency Identification (RFID) system. There are two main reasons for not adopting GPS-based real-time tracking. One is a roaming problem that Djibouti Telecom, a telecom company of Djibouti has. More specifically roaming is possible in Ethiopia, but it is very expensive. Charges cannot be passed on to users and cannot be borne by DPCS company. The second reason is that Ethiopian truck drivers do not want to be managed.

Navis N4: This system is adopted as a terminal operation system in the Port of Djibouti. Navis is a terminal operation system (TOS) that has been deployed in more than 80 countries, and which enables efficient control of the movement and storage of port cargo. The main functions are optimization of terminal operation processes and visualization of terminal operations. In the optimization of terminal operation processes, there is automation and optimization of the RTG used for container transportation in the container yard, and productivity can be improved by automating business orders and cargo handling work. In terms of the visualization of terminal operation, operators visualize where containers, cranes, and trucks are in the container yard, and this enables efficient cargo handling operations in the control room, which is responsible for the monitoring and maintenance of cargo handling work. The time it takes for SGTD trucks from gate entry to gate exit of the port terminal for container unloading (Truck Turnaround Time (TTT)) was less than an hour in 2020, and efficient port operations are being carried out so as not to cause congestion in the terminal.

## **(2) Project for Renovation and Development of the Port of Djibouti**

### **Project for Renovation and Development of the Port of Djibouti**

SGTD: The company has a development plan to expand the storage of 40,000 TEU container vans to a scale of 200,000 TEU. In addition, plans to construct an ICD with the function of Container Freight Station (CFS), a facility for container filling and consolidation, and to expand gantry cranes are being considered.

DMP: A dedicated terminal for livestock such as camels, goats and cows is located on the site, and a site has been secured for the construction of a processing facility for re-exporting organisms imported from Ethiopia in the future with added value. This plan is under discussions between the port operator of DMP and the Ministry of Agriculture and Natural Resources.

PDSA: The Old Port of Djibouti is still in operation, but in the future its functions will be completely shifted to the DMP, SGDT and Horizon terminals. A redevelopment at a cost of about USD3.5 billion will be carried out as a Djibouti business district (residential area, bay area development, cruise terminals, etc.).

### **Other Port Renovation and Development Plans**

Ghoubbet Port: Located in the northwestern part of Djibouti, it was opened in 2017 as a port responsible for transporting salt from Lake Assal. The capacity of the port is 6 million tons (bulk: 5 million tons. Salt: 1 million tons). Djibouti is also focusing on electric power projects and is developing wind power generation facilities in the area around Ghoubbet Port which are scheduled to be completed in December 2021.

Damerdjog Port: Djibouti Damerdjog Industrial Development (DDID) plans to build an industrial zone in southeastern Djibouti which will be specialised in oil, gas and agriculture and livestock. Construction work began in 2018.



Source: DPFZA

**Figure 3-2-4 Overview of the Djibouti Damerdjog Industrial Development Plan (DDID)**

### **(3) Status of Development and Utilization of Dry Ports and Free Zones**

#### **Djibouti Dry Port**

Djibouti Dry Port (DDP) is adjacent to the Djibouti Free Zone (DFZ) and has a land area of 22 hectares. It is now only named differently and integrated into the DFZ. It is operated and managed by DPFZA along with the DFZ and the Djibouti International Free Trade Zone (DIFTZ) described below.

#### **Djibouti Free Zone**

The Djibouti Free Zone (DFZ) was launched in 2004 and covers 40 hectares. There are office spaces, warehouses (614 m<sup>2</sup>, 1,340 m<sup>2</sup>), etc., on the premises, and companies can enjoy various tax benefits such as corporate tax and income tax exemption. Examples of companies that have moved in can

be seen in the table below. At present, it does not maintain functions that bear added value such as processing and packaging.



Source: JICA Survey Team

**Figure 3-2-5 Djibouti Free Zone**

**Table 3-2-4 Examples of Companies Moving into the Djibouti Free Zone**

Omar, International Co. (Electronics)	Red Sea Automotive
Coubeche logistics	Sumaya General trading
Soram Industries (Manufacturing)	Valiant Integrated Services
Baitak (Manufacturing)	First Electrical development

Source: JICA Survey Team

### **Djibouti International Free Trade Zone**

Located about 20 km from Djibouti city, this has a site area of 240 hectares, and it is a base for international trade in Djibouti which started operations in 2018. Chinese companies are conspicuously expanding into the market, and their roles are different from the DFZ.



Source: JICA Survey Team

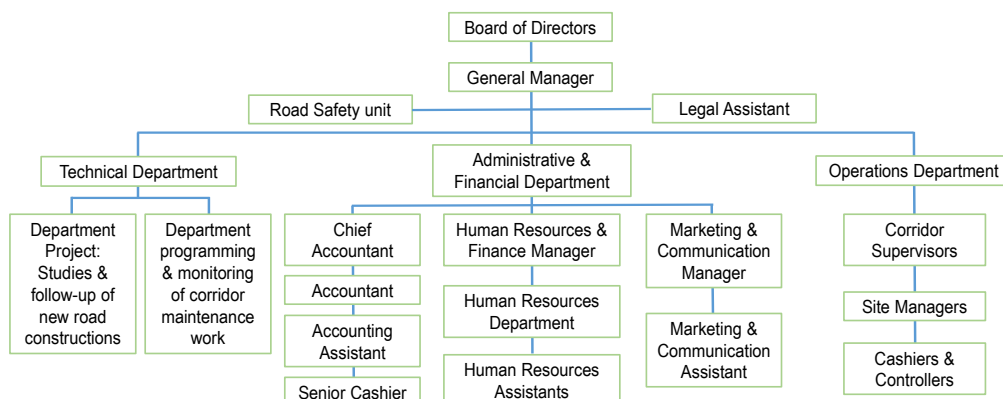
**Figure 3-2-6 Djibouti International Free Trade Zone**

#### **(4) Djibouti International Road**

Djibouti road operators are Djibouti Port Corridor Road SA (DPCR SA) and Agence Djiboutienne de Routes (ADR). DPCR SA has 122 staff members (four General Managers, 17 employees in the Administrative and Financial Department, six employees in the Technical Department, and 95

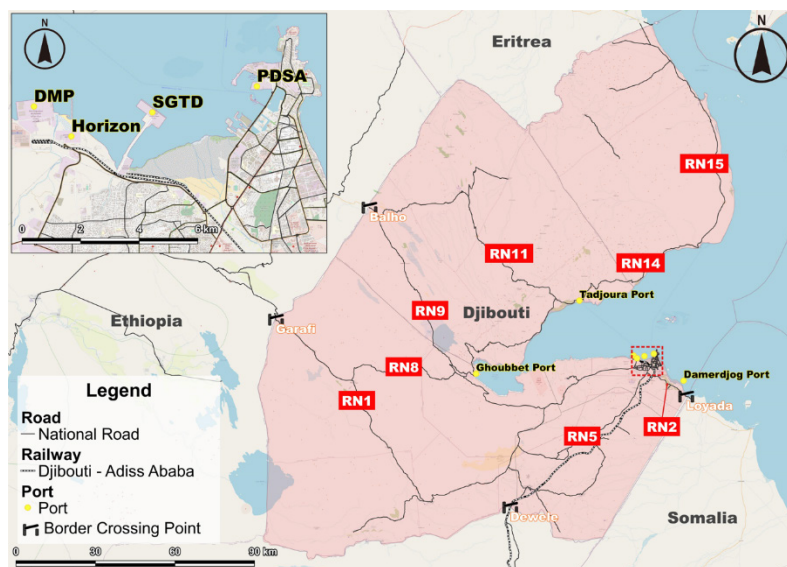


employees in the Operations Department) who manage National Highways 1, 2, 5, 9, 11, and 17 (total length of 570 km). On the other hand, ADR mainly has jurisdiction over urban roads. For the purpose of grasping the connection status with neighbouring countries, corridor roads are mainly described below.



Source: JICA Survey Team created based on DPCR SA provided data

**Figure 3-2-7 DPCR SA Organisation Chart**



Source: JICA Survey Team

**Figure 3-2-8 Overview of Djibouti International Road Network**

### Road traffic

Approximately 90% of road transport is aimed at trade with Ethiopia, and most traffic is on national highways 1, 5, and 11. National Route 1 accounts for 80% of road transport to and from Ethiopia, and the daily traffic volume is about 1,600 vehicles between Ethiopia and Djibouti. The distribution of registered trucks is 6,000 to 8,000 vehicles (Ethiopia) and 200 to 250 vehicles (Djibouti).

### Road maintenance

Road pavement maintenance work is entrusted to ADR and private companies (Morocco, France). DPCR SA itself does not own inspection vehicles. DPCR SA also lacks budget, so there is no room to change the standard for road thickness for the purpose of improving road durability.

Djibouti's road pavement rate is around 20% of the total, and DPCR aims to increase the pavement rate to up to 60% by 2025. On the other hand, the road pavement rate of corridor roads is as high as 91.5%, and the road surface characteristics of road pavements have been evaluated. Road surface properties are classified as "Good" or "Bad", but the overall proportion of "Good" roads is only half.

**Table 3-2-5 Road Pavement Status of Corridors**

Route Name	Total Length (km)	Paved Road Assessment (km)			Non-paved Roads (km)	Pavement Rate (%)
		Good	Bad	Total		
NR 1	218	98	120	218	0	100
NR 2	27	27	0	27	0	100
NR 5	65	0	17	17	48	73.8
NR 9	122	0	122	122	0	100
NR 11	124	124	0	124	0	100
NR 17	5	5	0	5	0	100
NR 19	9	9	0	9	0	100
Total	570	280	259	522	48	91.5

Source: DPCR SA

DPCR SA aims to improve the proportion of "Good" evaluated road surfaces up to 100%. As a problem of road maintenance and management work, the evaluation of road surface properties is performed only through visual inspections by engineers. This depends on the experience and knowledge of these engineers, and it is inefficient.

### 3-2-2 Comparison with major ports

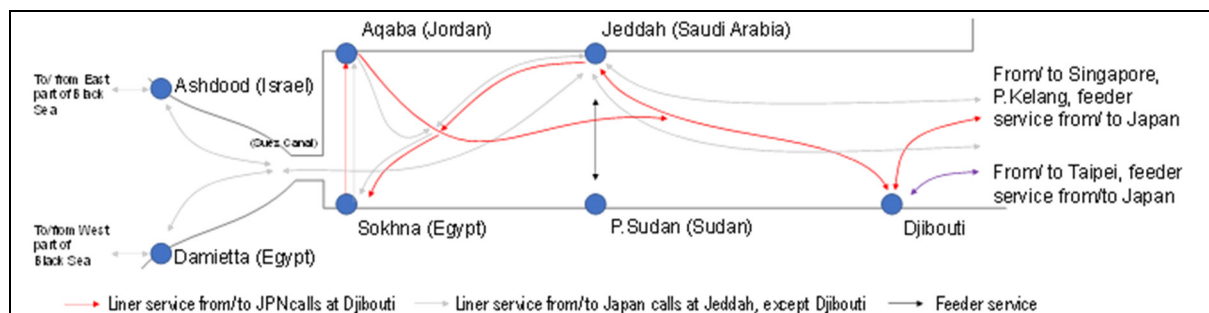
Based on the current situation described in Chapter 2, the competitiveness of Port Sudan can be grasped by comparing it with ports in neighbouring countries. The ports used for comparison are those of Dar Es Salaam (Tanzania), Mombasa (Kenya), Djibouti, and Lamu, using planned values (Kenya).

The shipping routes, container throughput (TEU), capacity to handle large vessels, lead time, and availability and operation of preferential measures were selected for comparison with neighbouring major ports. By comparing it with those of ports in neighbouring countries, Port Sudan's challenges can be identified, and countermeasures considered.

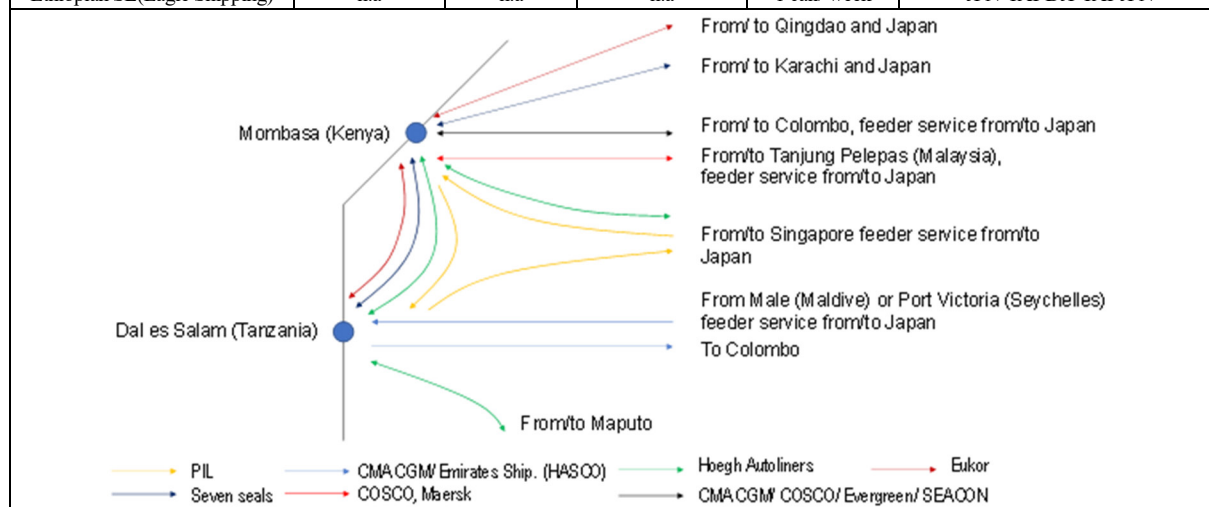
#### (1) Shipping routes

Table 3-2-6 shows the main scheduled routes from Japan to Port Sudan, the Port of Djibouti, the Port of Mombasa and the Port of Dar es Salaam. There are no regular routes from Japan to Port Sudan, and cargo is transported via Jeddah Port. Container ships call from Jeddah once a week, but it takes about a month to enter the port, which is more than the time it takes from Japan to Jeddah Port. The route schedule between Jeddah and Port Sudan is not constant, and as it is decided on a case by case basis the shippers cannot know when a container ship will arrive in Port Sudan.

**Table 3-2-6 Major Container Ship Routes from Japan**



Shipping Company	Port call schedule (days departing from Japan)			Frequency	Stops
	Route	Day of call	Days from Japan		
CMA CGM COSCO Evergreen OOCL PIL(Mariana)	SIN-DJI-JED: DJI-JED (Transship to PSD, from JED) AQA-DJI-SIN:	THU/FRI SUN/TUE (n.a.) FRI/SAT	21 days 24 days (+30days) n.a.	1 call/ week (1 call/ week*)	SHA-NIN-TPI-XIA-SHE-SIN-DJI- JED-SOK-AQA-DJI-SIN-SHA (PSD Feeder service operated by PIL)
Ethiopian SL(Eagle Shipping)	n.a	n.a	n.a	1 call/ week	JPN-TAI-DJI-TAI-JPN



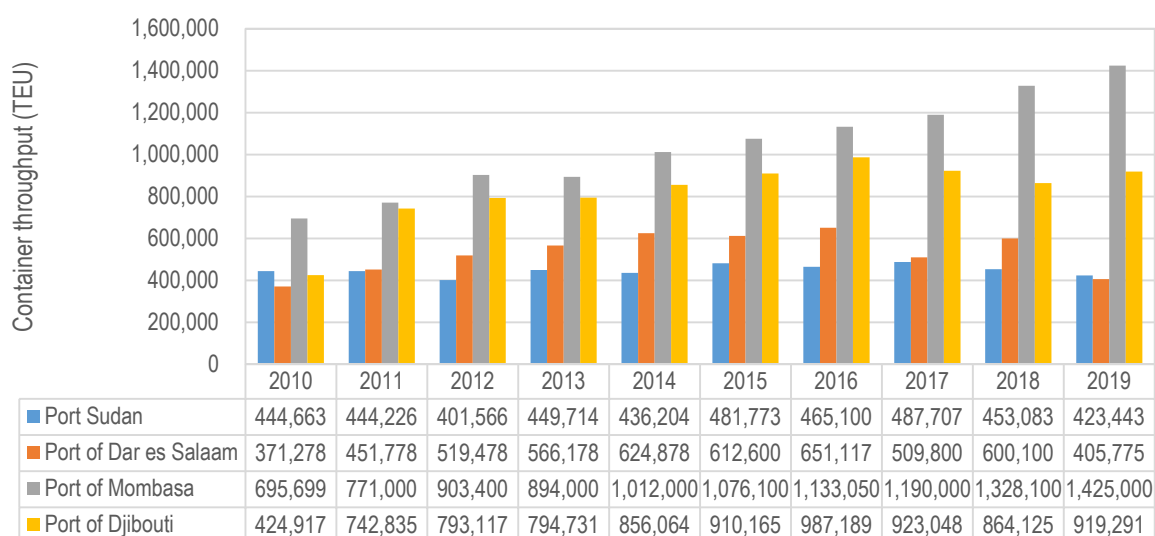
Shipping Company	Port call schedule (days departing from Japan)			Frequency	Stops, etc.
	Route	Day of call	Days from Japan		
CMA CGM COSCO Evergreen SEACON	COL-MOM- COL	SUN/WED	24 days	1 call/ week	SHA-NIN-SHE-SIN-TJP-PKL-COL- MOM-COL-PKL-TJP-SIN-SHA
CMA CGM Emirates Ship. (HASC0)	MAL or PVT- DES-COL	THU/SAT	25 days	1 call/ week	SIN-TJP-PKL-COL-MAL-(PVT*)- DES-COL-SIN
COSCO	TJP-MOM-TJP	FRI/MON	22 days	1 call/ week	SHA-NIN-NAN-SIN-TJP-MOM- TJP-SIN-SHA
Eukor	QIN-MON- DES-DBN	n.a.	n.a.	3 call/ month	JPN-PYE-QIN-MOM-DES-MOM- QIN-PYE-JPN
Maersk	TJP-MOM-TJP	THU/MON	21 days	1 call/ month	SHA-NIN-NAN-SIN-TJP-MOM- TJP-SIN-SHA
PIL	SIN-MOM- -DES-SIN	THU/SUN SUN/SAT	26 days 29 days	1 call/ month	DAL-QIN-SHA-NIN-NAN-SIN- MOM-DES-SIN-NAN-DAL
Seven Seals	KAR-MOM- DES	n.a.	n.a.	1 call/ month	JPN-SUB-SIN-COL-JAB-KAR- MOM-DES
Hoegh Autoliners	SIN-MOM- DES-MAP	n.a.	n.a.	1-2 call/ month	SIN-MOM-DES-MAP-DUR-SIN

AQA	Aqaba, Jordan	COL	Colombo, Sri Lanka	DAL	Dalian, China	DES	Dal es Salaam, Tanzania	DJI	Djibouti
DUR	Durban, S.Africa	JAB	Jabel Ali, UAE	JPN	Major ports in Japan	KAR	Karachi, Pakistan	MAL	Male, Maldives
MAP	Maputo, Mozambique	MOM	Mombasa, Kenya	NAN	Nansha, China	NIN	Ningbo, China	PKL	Port Kelang, Malaysia
PSD	Port Sudan, Sudan	PVT	Port Victoria, Seychelles	PYE	Pyeongtaek, S.Korea	QIN	Qingdao, China	SHA	Shanghai, China
SHE	Shekou, China	SIN	Singapore	SUB	Subic Bay, Philippine	TJP	Tanjung Pelepas, Malaysia	TPI	Taipei, Taiwan
XIA	Xingang, China								

\* Call at about 5 ports per month. The port call schedule is decided by consultation between port officials each time (PIL provides feeder service).  
 \*\* Operates every other week. Note: The main routes via Port Sudan, the Port of Djibouti, the Port of Dar es Salaam, and the Port of Mombasa were extracted.  
 Source: 2021 International Transport Handbook, Shipping Company Website, JICA Survey Team

## (2) Container cargo throughput

Figure 3-2-9 shows a graph comparing the volume of container cargo handled by each port. There was no significant change in trend over the period 2010-2019, with the Port of Mombasa handling the highest volume of cargo, followed by the Port of Djibouti.



Source: JICA Survey Team created based on SPC, PDSA, and CEIC data

**Figure 3-2-9 Comparison of Container Cargo Throughput at Each Port (2010-2019)**

## (3) Capacity to handle large vessels

Port Sudan is a feeder port for Jeddah Port and King Abdullah Port (both in Saudi Arabia), and as of August 2021, there are no main routes. MoT plans to develop the Osman Digna Port (Suakin Port) and has said that large ships with a depth of 18 meters can call in anticipation of stopping not only feeder ships but also main routes<sup>23</sup>.

The DWT, which indicates the scale of a container ship, can basically be calculated from the relationship between the length of the berth and the water depth, as shown in Table 3-2-7.

**Table 3-2-7 Correspondence Between Berth Specifications and Container Ship Size**

DWT (ton)	Berth Length (m)	Berth Draft (m)	Number of Loadable Containers (TEU)
10,000	170	9.0	500 ~ 890
20,000	220	11.0	1,300 ~ 1,600
30,000	250	12.0	2,000 ~ 2,400
40,000	300	13.0	2,800 ~ 3,200
50,000	330	14.0	3,500 ~ 3,900
60,000	350	15.0	4,300 ~ 4,700
100,000	400	16.0	7,300 ~ 7,700
140,000	440	17.0	11,500 ~ 12,400
165,000	470	18.0	13,700 ~ 14,500

Source: Ministry of Land, Infrastructure, Transport and Tourism, Japan

<sup>23</sup> Interview with the MoT (August 2021)

Table 3-2-8 shows the capacity of each port to handle large vessels calculated by berth length and berth depth. The length of the berth can be temporarily extended by using an adjacent berth, but since the depth of the berth cannot be increased, the weight tonnage and the number of containers that can be loaded is determined by the depth of the berth.

**Table 3-2-8 Comparison of the Capacity of Each Port to Handle Large Vessels**

	Port Sudan	The Port of Dar es Salaam	The Port of Mombasa	The Port of Djibouti	Lamu Port (Planned value)
DWT (ton)	100,000	30,000	60,000	165,500	165,000
Berth Length (m)	781*1	735*2	350	350	400
Berth Draft (m)	16	12.5	15	18	18
Number of Containers that can be Loaded (TEU)	7,700	2,400	4,700	14,500	14,500
Number of Container ships at Ports of Call per year	98	285	452	397	-
Average DWT (ton)	33,901	40,735	42,344	63,003	-

\*1 Total length of container berths 13 and 14    \*2 Total length of container berths 8 to 11

Note: The number of containers at call at the port per year and the average loading tonnage are the figures for the number of actual units in the past year.

Source: JICA Survey Team

Port Sudan has a higher capacity per berth compared to the Port of Dar es Salaam and the Port of Mombasa, and it is highly competitive from the viewpoint of capacity for large ships. Compared to the ports of Djibouti and Lamu, the maximum water depth of the berths is two meters lower, and large vessels of over 100,000 tons cannot physically call at Port Sudan. Currently, the container ships calling at Port Sudan are small ships of about 30,000 tons, while Djibouti receives ships of over 60,000 tons, the smallest of the comparisons. In comparison with the number of port-calling container ships per year, Port Sudan (98) has only about a quarter of the volume of the Port of Djibouti (397), which faces the same Red Sea. This is thought to be due to the small volume handled at Port Sudan, and it is necessary to not only make a port where large ships can call, but also to increase the volume of cargo that can be handled.

**(4) Lead time**

As the lead times at port, the following are compared: "container ship turnaround time from arrival to departure (days)," which is the time it takes for a ship to berth and leave port, and "berth occupancy time (days)", as well as the "import container free time (days)," which is the free storage period for import containers after unloading.

Table 3-2-9 shows the container ship turnaround time for each port. The global benchmark is two days, which the ports of Dar es Salaam and Mombasa nearly have. Port Sudan has a significantly lower level of service compared to other ports, ranging from 30 to 55 days.

**Table 3-2-9 Comparison of Container Ship Turnaround Time from Arrival to Departure at Each Port (2020)**

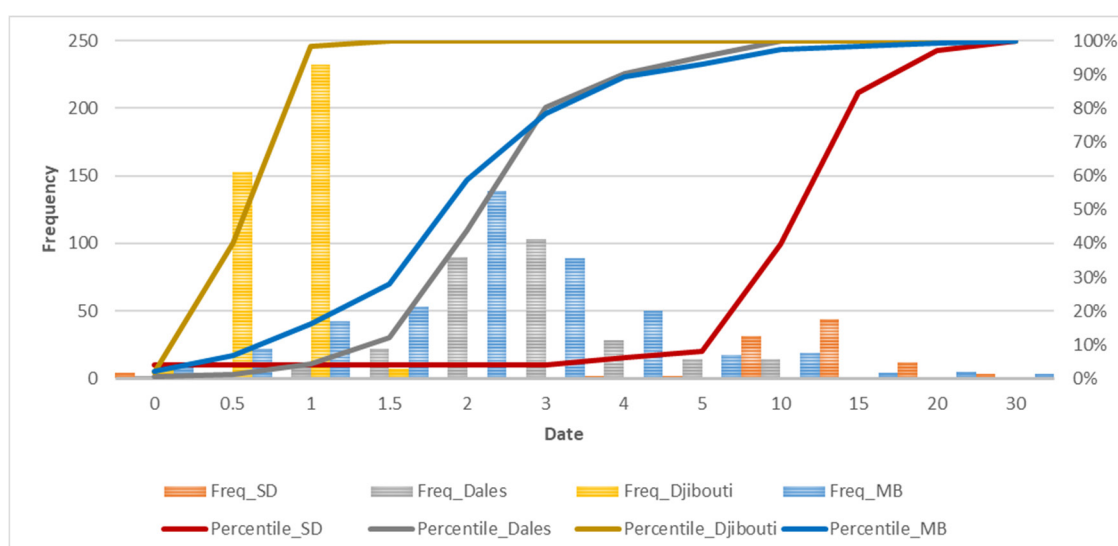
	Port Sudan	The Port of Dar es Salaam	The Port of Mombasa	The Port of Djibouti
Container ship turnaround time from arrival to departure (days)	30 ~ 55	3 ~ 7	4 ~ 5	-
Berth Occupancy Time (days)	1.9 ~ 20.6	~ 5.7	~ 9.0	0.3 ~ 1.4
Most Frequent Value	14	3.0	2.0	1.0
Standard Deviation	4.7	1.4	3.0	0.3
Sample	98	283	452	399

Note: Displays the 95% confidence interval (average ± standard deviation x2) days for port-of-call ship data over the past year. Statistically, 95% of samples are present in this range.

Source: Compiled by JICA Survey Team, Northern Corridor Transport Observatory Report Issue No.16, CCTO ANNUAL REPORT 2020

Comparing the most frequent values, the Port of Djibouti has the shortest (1 day), followed by the Port of Mombasa (2 days) and the Port of Dar es Salaam (3 days), all of which are more than 10 days shorter than Port Sudan's 14 days. In addition, the number of berth occupancy days at the Port of Djibouti is almost within the range of 0.3 to 1.4 days, while Port Sudan requires more than 20 days in the longest of cases, making it extremely difficult to schedule ships. In terms of ship transit days and their "variability", the Port of Djibouti is the quickest and reliably handles ports of call.

Figure 3-2-10 shows the results of the number of berth occupancy days (the number of days required from the time of call to departure) for Port Sudan, the Port of Dar es Salaam, the Port of Mombasa and the Port of Djibouti. In Djibouti, more than 95% of ships departed within one day. At the ports of Dar es Salaam and Mombasa, ships departed within two to three days, while Port Sudan requires more than 80% of ships don't depart within 15 days, which is also significantly longer than other ports.



Source: JICA Survey Team

**Figure 3-2-10 Comparison of Berth Occupancy Days (Port Sudan, the Port of Dar es Salaam, the Port of Mombasa, and the Port of Djibouti)**

Table 3-2-10 shows the container free time for waiting import containers at each port. Since the container free time at Port Sudan is longer than at other ports, it is necessary to prepare a place to store containers for long periods. In addition, a JICA survey conducted in 2012 found that in 2005, at the urging of the importers' union, the then Minister of Finance and Economic Planning created a regulation that allowed containers to be stored at the port for up to 20 days free of charge<sup>24</sup>.

**Table 3-2-10 Comparison of Import Container Free Time at Each Port (2020)**

	Port Sudan	The Port of Dar es Salaam	The Port of Mombasa	The Port of Djibouti
Container free time (days)	20	7	9	8

Source: Compiled by JICA Survey Team based on data provided by SPC, PDSA, KPA, TPA

### (5) Outline and operation of preferential treatment measures

Preferential treatment for shippers by port operators is expected to include reductions in terminal facility usage fees, port entry fees, and volume discounts. As shown in Table 3-2-11, preferential treatment is applied only at the Port of Djibouti, where it was confirmed that usage fees are reduced according to the volume of a shipper's transportation.<sup>25</sup>

**Table 3-2-11 Summary of Preferential Measures and Operation Status of Each Port**

	Port Sudan	The Port of Dar es Salaam	The Port of Mombasa	The Port of Djibouti
Availability of preferential treatment	None	None	None	Yes

Source: Compiled by JICA Survey Team based on data provided by SPC, PDSA, KPA, TPA

A summary of information for the comparison of major East African ports has been presented above, and the issues are described below.

- Port Sudan is equipped with berths of the necessary size to handle large vessels, and the capacity per berth is high compared to other major ports in Eastern Africa. However, container ship turnaround time is taking a significant amount of time due to prolonged cargo handling operations. The challenge is to improve the efficiency of cargo handling operations and reduce lead times.
- Port Sudan serves as a feeder port for Saudi Arabia. Middle Eastern countries are the largest trading regions of Sudan's neighbors, and it is important to make them attractive ports to shippers by reducing lead times.

### 3-2-3 Status of corridors and major transportation roads

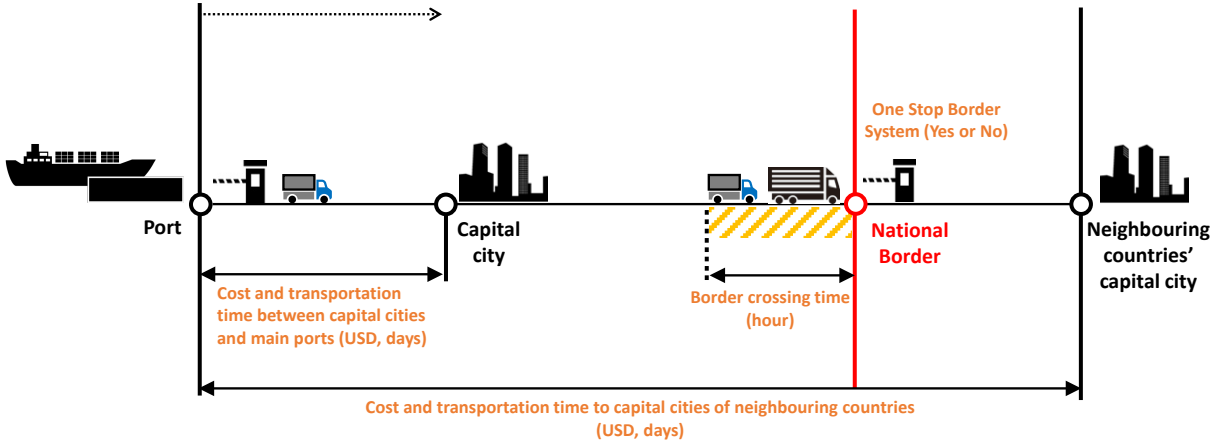
In order to understand the advantages of road transport from Port Sudan to major cities within the country and in major cities of neighbouring countries, as well as the status of cross-border facilities with neighbouring countries, the following performance indicators for road transport were selected as shown in

<sup>24</sup> JICA. Data Collection Survey for Trade and Investment Promotion in Sudan Final Report. 2012.

<sup>25</sup> Depending on the volume, incentives such as preferential implementation of cargo handling work are presented.

Figure 3-2-11: cost (USD/day) and transport time to major cities within the country, cost (USD/day) and transport time to major cities in neighbouring countries, border crossing time (hours), and whether OSBP is applied or not. By comparing these performance indicators with those of neighbouring ports, the challenges of road transport from Port Sudan can be identified. Each of the performance indicators established here is defined and used in this report as follows:

- Cost and transport time between capital cities and main ports (USD, days):  
     Cost and transport time from port to major domestic cities
- Cost and transport time to capital cities of neighbouring countries (USD, days):  
     Cost and transport time from the port to major cities in neighbouring countries
- Border crossing time (hours):  
     Time required to cross the border into a neighbouring country
- With or without OSBP:  
     Whether OSBP has been implemented in the cross-border facility



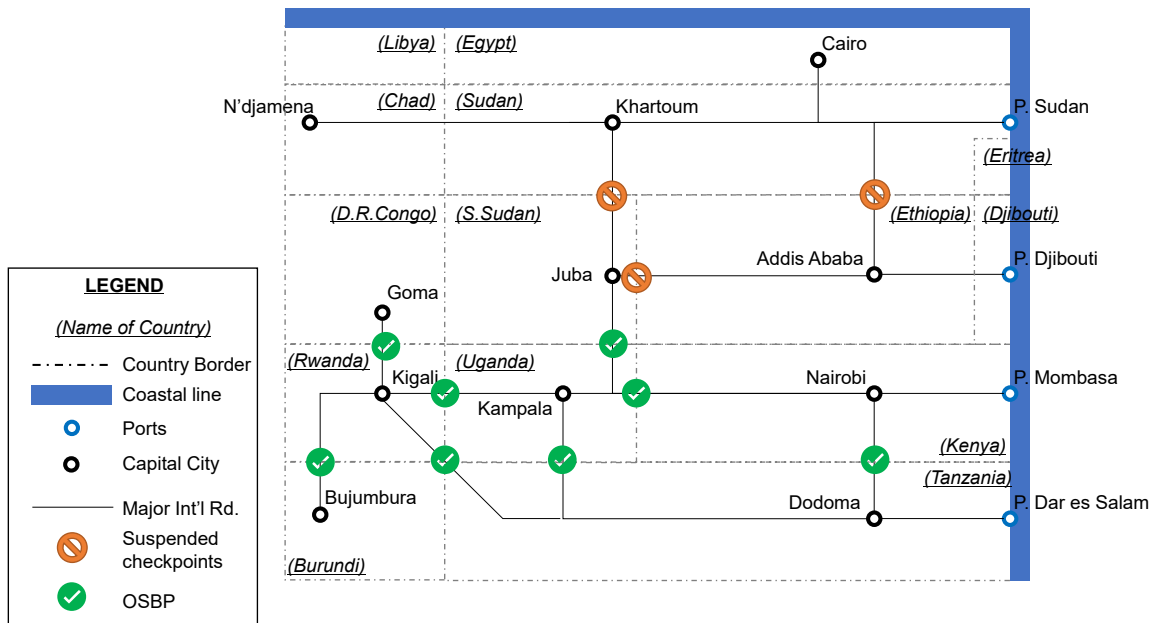
Source: JICA Survey Team

**Figure 3-2-11 Road Transport Performance Indicators for Comparison with Neighbouring Countries**

**(1) Access to major cities and surrounding countries (distance, time, cost, and OSBP)**

The ports used for comparison with Port Sudan are those of Dar es Salaam, Mombasa and Djibouti, and the transport speed (km/h) and transport cost (USD/km) of the transport performance (transport distance, transport time and transport cost) from each port to major cities within the country and neighbouring countries were calculated. The positional relationship between each port and major cities is shown in Figure 3-2-12. Only relief goods are transported to points where the border is closed.





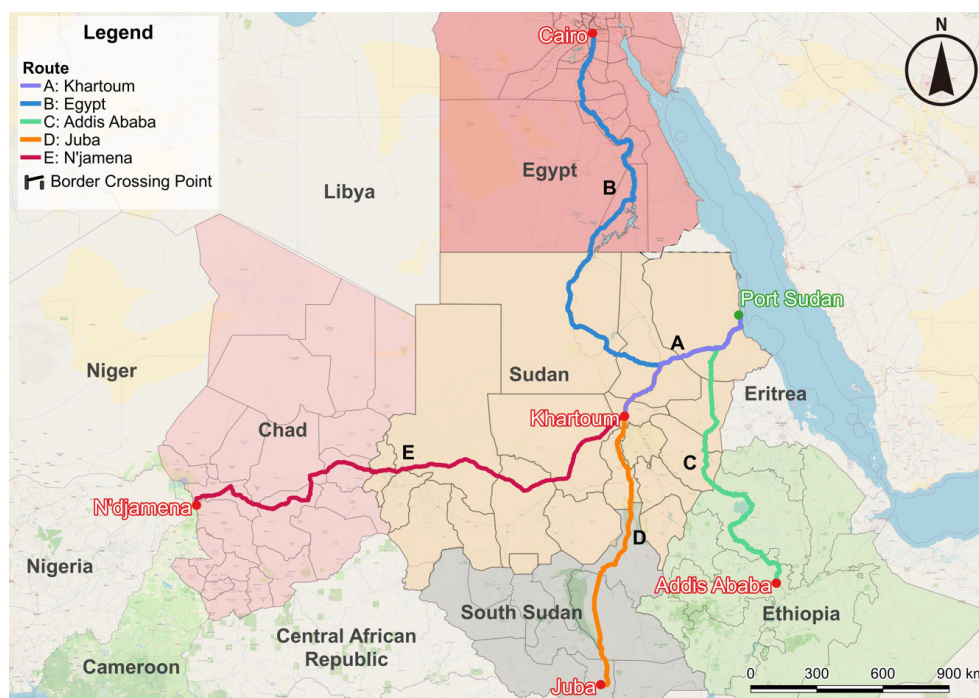
Note: It is not completely closed and can be transported with relief goods.

Source: JICA Survey Team

**Figure 3-2-12 Location Relationships and Border Operations with Ports and Major Cities in Neighbouring Countries**

**Routes from Port Sudan**

Route A is a domestic transport route to Khartoum, Route B is to Cairo in Egypt (only Route B partially uses the route to Khartoum because Cairo is relatively close to the port and there is no direct land transport to Port Sudan), Route C is to Addis Ababa in Ethiopia, Route D is to Juba in South Sudan, and route E is to N'djamena in Chad.

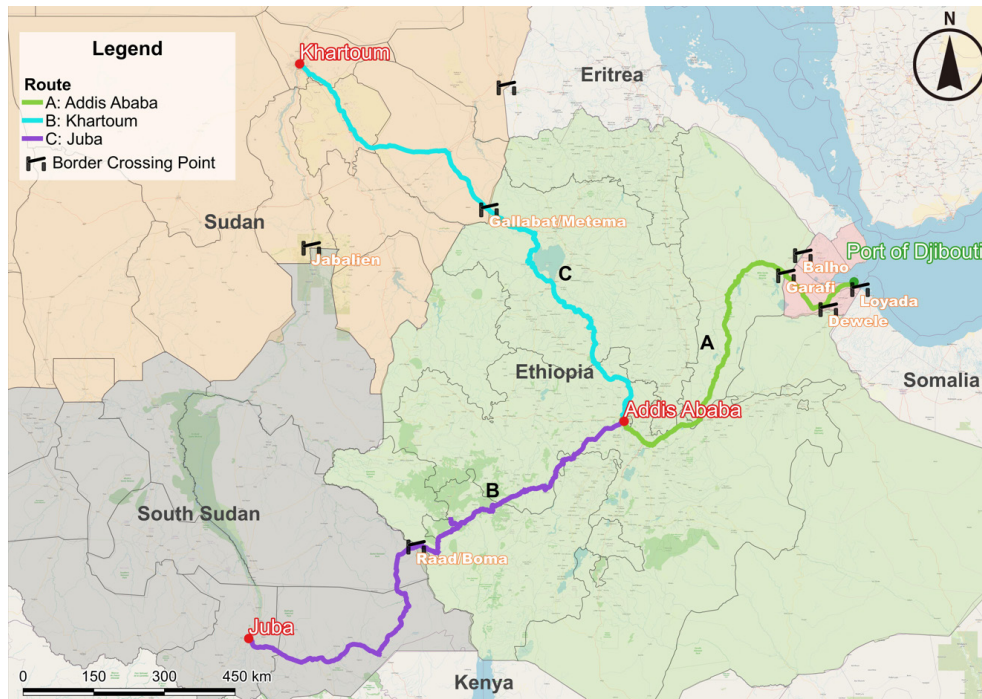


Source: JICA Survey Team

**Figure 3-2-13 Routes from Port Sudan to Major Cities**

### Routes from the Port of Djibouti

Route A is to Addis Ababa in Ethiopia, Route B is to Juba in South Sudan, and Route C is to Khartoum in Sudan.

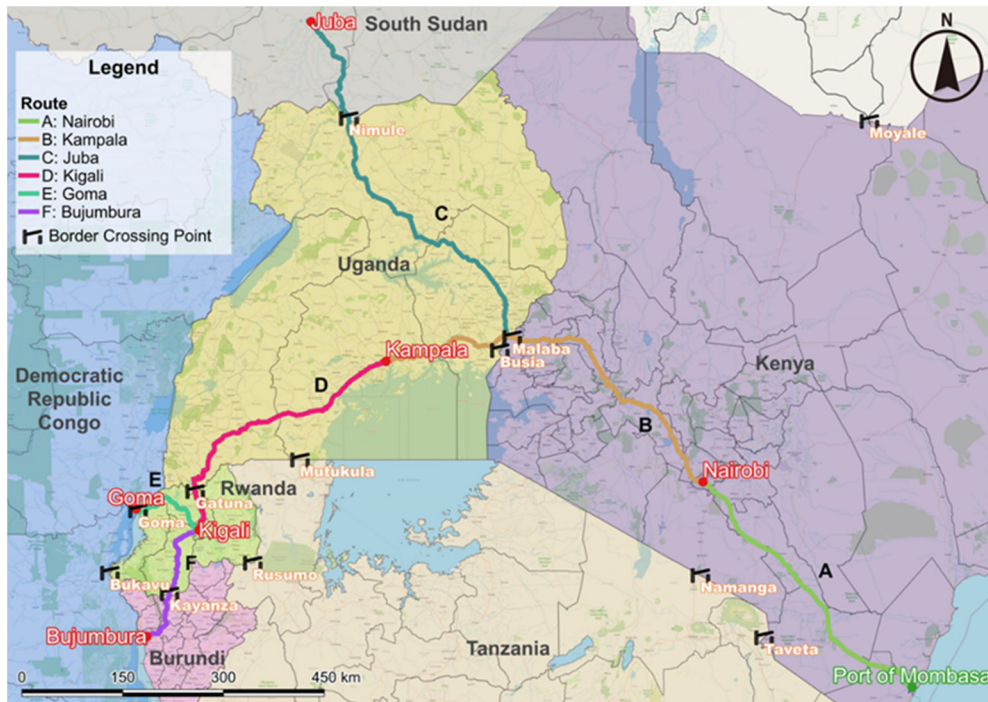


Source: JICA Survey Team

**Figure 3-2-14 Routes from the Port of Djibouti to Major Cities**

### Routes from the Port of Mombasa

The Port of Mombasa is referred to as the Northern Corridor, which consists of several modes of transportation, such as roads, railways, pipelines, and inland water transportation from Kenya through Uganda to South Sudan, Rwanda, Burundi or the Democratic Republic of the Congo, Route A is a domestic transport route to the Kenyan capital Nairobi, Route B is to the Ugandan, capital Kampala, Route C is to Juba in South Sudan, Route D is to the Rwandan, capital Kigali, Route E is to Goma in the Democratic Republic of the Congo, and Route F is to Bujumbura in Burundi.

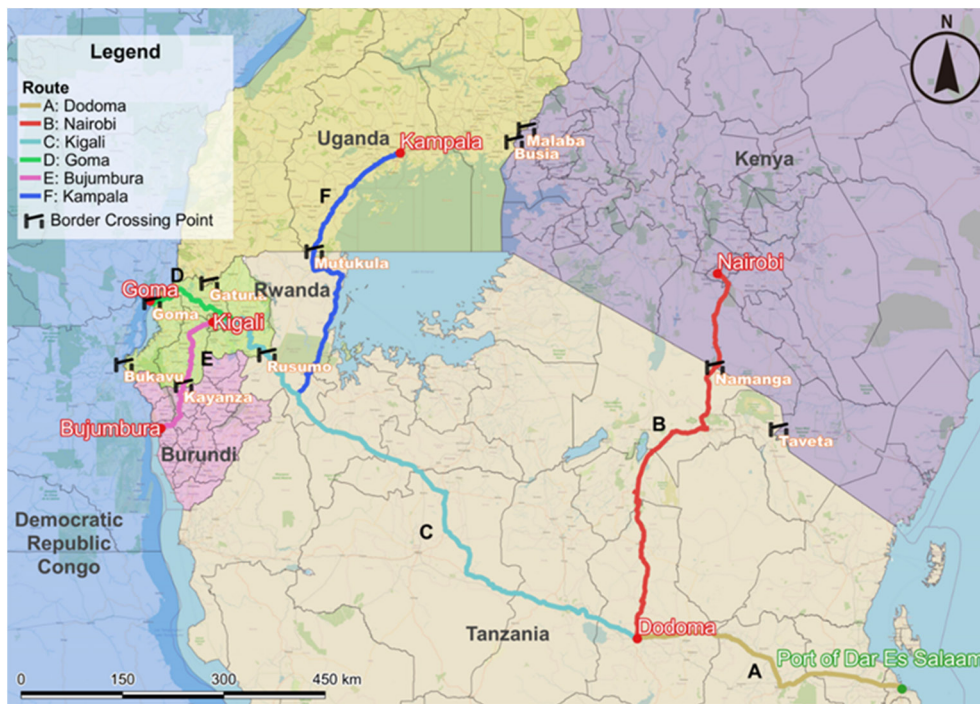


Source: JICA Survey Team

**Figure 3-2-15 Routes from the Port of Mombasa to Major Cities**

**Routes from the Port of Dar es Salaam**

The Port of Dar es Salaam is referred to as the Central Corridor, which consists of multiple modes of transportation, such as roads, railways, pipelines, and inland water transportation from Tanzania through Rwanda to Burundi, the Democratic Republic of the Congo or Uganda, Route A is a domestic transport route to Dodoma, the capital of Tanzania, Route B is to Nairobi in Kenya, Route C is to Kigali in Rwanda, Route D is to Goma in the Democratic Republic of the Congo, Route E is to Bujumbura in Burundi, and Route F is to Kampala in Uganda.



Source: JICA Survey Team

**Figure 3-2-16 Routes from the Port of Dar es Salaam to Major Cities**

The values of the performance indicators obtained for the routes from each port to major cities are shown in Table 3-2-12.

The transport rates for Routes B, C, D, and E from Port Sudan are USD 10,000, USD 9,800, USD 12,000, and USD 8,571, respectively, which are high rates. Routes B to E have higher transport costs than Route A and lower mileage per hour (average speed). Among other things, the cost and transport time to Chad is excellent. On the contrary, Ethiopia and South Sudan cannot be rated well because the cross-border time shows that it takes a long time, from two to four days. In addition to Routes A to E, the survey team attempted to collect data for Eritrea and the Central African Republic but found that the routes are not currently being used as they are less cost competitive than using Eritrean and Cameroonian ports. Therefore, it was not possible to collect data on overland transport time and costs.

For Route A, from the Port of Djibouti to Addis Ababa, the container transport cost and transport time are USD 5,000 and 120 hours, respectively, which are about half of that for the Port Sudan - Addis Ababa route. The border crossing also takes only one day, which is also shorter than in the case of Port Sudan - Addis Ababa.

Both of the ports of Mombasa and Dar es Salaam compete with each other as gateways to inland EAC countries. For example, comparing the transport time to Uganda, the Port of Mombasa has a transport distance of 1,169 km and a transport cost of USD 2,198, while the Port of Dar es Salaam has a transport distance of 1,780 km and a transport cost of USD 3,257, a difference of about USD 1,000. Similarly, the route from the Port of Dar es Salaam to Kigali and Bujumbura is a more economical one. If there is "competition," transport costs will be reduced, and customers will have multiple choices. The OSBP system is in place at border facilities on the route from the Port of Mombasa to Uganda and this allows passage in about six hours.

Comparing the average speeds of each port, the Port of Dar es Salaam is at a higher level on both routes than other ports. For the Port of Djibouti, there are only results for routes to Ethiopia, but it has the same service level of the Port of Dar es Salaam. In Sudan, while the service level to Khartoum and Chad is slightly lower than other ports, the service level to Ethiopia, South Sudan and Egypt is extremely low, and improvements in infrastructure and logistics systems for these routes is needed.

**Table 3-2-12 Performance Indicators for Road Transport from Each Port to Major Cities**

Destination	Distance (km)	Transport time (hours)	Transport cost (USD)	Average speed (km/h)	Unit transport cost (USD/km)	Border post	OSBP (Yes/No)	Border crossing time (hours)
<b>Port Sudan</b>								
A: Khartoum (Sudan)	798	48	995	16.6	1.25			
B: Cairo (Egypt)*1	2,300	504	10,000	4.56	4.35	Argen Ashket	No	48
C: Addis Ababa (Ethiopia)	1,750	240	9,800	7.29	5.60	Galabat*	No	72
D: Juba (South Sudan)	2,100	360	12,000	5.83	5.71	Jabaein*	No	96
E: N'djamena (Chad)	3,150	288	8,571	10.9	2.72	Adri*	No	72
Bangui (Central African Republic)*2	3,725	-	-	-	-	-	-	-
Asmara (Eritrea)*3	987	-	-	-	-	-	-	-

\*1Destination: Khartoum; \*2Via Douala Port in Cameroon; \*3Via Massawa Port in Eritrea

<b>The Port of Djibouti</b>								
A: Addis Ababa (Ethiopia)	1,100	120	5,104	15.3	4.64	Garafi	No	6
B: Khartoum (Sudan)	1,700	-	-	-	-	Gallabat	-	-
C: Juba (South Sudan)*4	3,130	-	-	-	-	Raad/Boma	-	-

\*4The route from the Port of Mombasa in Kenya is not used because this route is more economical.

<b>The Port of Mombasa</b>								
A: Nairobi (Kenya)	481	24	798	20.0	1.66			
B: Kampala (Uganda)	1,169	138	2,198	8.47	1.88	Malaba Busia	Yes Yes	6
C: Juba (South Sudan)	1,662	-	4,005	-	2.41	Nimule	Yes	-
D: Kigali (Rwanda)	1,682	184	3,499	9.14	2.08	Gatuna	Yes	-
E: Goma (DRC)	1,725	229	5,502	8.03	2.99	Goma	Yes	-
F: Bujumbura (Brundi)	1,957	-	6,008	-	3.07	Kayanza	Yes	-

<b>The Port of Dar es Salaam</b>								
A: Dodoma (Tanzania)	454	-	-	-	-			
B: Nairobi (Kenya)	831	-	-	-	-	Namanga	Yes	-
C: Kigali (Rwanda)	1,495	90	2,813	16.6	1.94	Rusumo	Yes	-
D: Goma (DRC)	1,635	111.5	4,202	14.7	2.57	Goma	Yes	-
E: Bujumbura (Burundi)	1,640	100.5	3,100	16.3	1.89	Kayanza	Yes	-
F: Kampala (Uganda)	1,780	103.9	3,257	17.1	1.83	Mutukula	Yes	-

\*The border is only in partial operation due to security issues.

Note: The unit of transport cost is per truck in a 40-foot container.

Source: Prepared by JICA Survey Team based on data provided by Bollere Transport & Logistics, Chamber of Land transport Unit, Northern Corridor Transport Observatory Report Issue No.16, CCTO ANNUAL REPORT 2020

## (2) Status of port import cargo being transported to the hinterland zone

With the aim of understanding the characteristics of the amount of cargo transported to the Port Sudan hinterland with other ports, such as the Port of Djibouti, the Port of Mombasa, and the Port of Dar es Salaam, 1) the ratio of domestic and transit cargo in the imported cargo of each port, and 2) the final destination of transit cargo at each port have been identified.

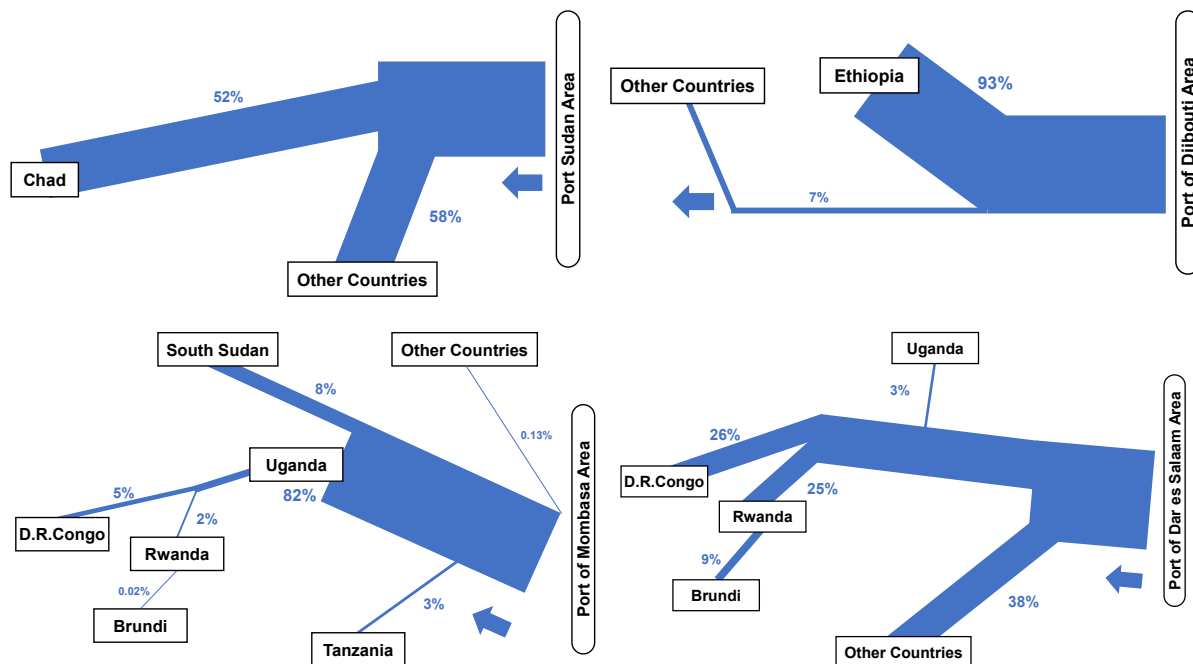
Table 3-2-13 shows the volume of imported cargo for domestic and transit ports. The Port of Djibouti has a very high ratio of 87% for transit cargo volume. The Port of Mombasa and the Port of Dar es Salaam account for a ratio of approximately six to four for domestic and transit cargo. Port Sudan's import volume is slightly below that of the Port of Djibouti and the Port of Dar es Salaam, but most of this volume is domestically oriented and there is little international transit. This is because the security situation with neighbouring countries is not stable, so only a small number of relief goods are transported.

Figure 3-2-17 shows the percentage of transit cargo to the final destination for each port. At the Port of Djibouti, more than 90% of cargo is delivered to Ethiopia. At the Port of Mombasa, about 80% of the total is for Uganda, while other cargo is delivered to South Sudan, the Democratic Republic of the Congo, and Tanzania. At the Port of Dar es Salaam, 50% of cargo is bound for the Democratic Republic of the Congo and Rwanda, while other cargo is delivered to Burundi and Uganda. Port Sudan accounts for half of the total to Chad.

**Table 3-2-13 Percentage of Cargo Volumes Imported by Each Port ('000 tons) for Domestic and International Transit, 2019**

	<b>Port Sudan</b>	<b>The Port of Djibouti</b>	<b>The Port of Mombasa</b>	<b>The Port of Dar es Salaam</b>
Domestic Cargo	10,270 (99%)	1,877 (13%)	17,611 (64%)	8,147 (63%)
Transit Cargo	95 (1%)	12,360 (87%)	9,947 (36%)	4,842 (37%)
Total	10,365 (100%)	14,237 (100%)	27,558 (100%)	12,989 (100%)

Source: Compiled by JICA Survey Team based on SPC, PDSA, Northern Corridor Transport Observatory Report Issue No.16, CCTO ANNUAL REPORT 2020



Source: Compiled by JICA Survey Team based on SPC, PDSA, Northern Corridor Transport Observatory Report Issue No.16, CCTO ANNUAL REPORT 2020

**Figure 3-2-17 Final Destinations for Transit Cargo from Each Port**

A summary of the information obtained for the corridors and major transportation routes has been provided above, and issues are noted below.

- Short-distance transportation has a strong influence on transport cost which is difficult for long-distance transportation to beat. For example, Port Sudan has a distance disadvantage compared to the Port of Djibouti for handling cargo to Addis Ababa, which is a hurdle from a competition perspective. It is necessary to strategically plan international logistics corridors after understanding the characteristics of logistics corridors in neighbouring ports.
- The average speed of transport in Sudan is slightly lower on routes to Khartoum and Chad compared to other ports, but it is extremely low on routes to Ethiopia, South Sudan, and Egypt. The infrastructure and logistics systems of these routes need to be improved.
- The border crossing time for the border facility from the Port of Mombasa to Uganda, where OSBP is in place, is short at about six hours. On the other hand, the cross-border time from Port Sudan to neighbouring countries takes two to four days. Cooperation in establishing bilateral agreements is necessary to reduce transportation time.
- In the case of routes from Port Sudan to neighbouring countries, cross-border transit takes up a significant amount of transport time. Compared to neighbouring countries, and despite a lack of congestion at border points, the cross-border time is longer. The bottlenecks identified in the WCO TRS Guide in 2.3 (1) above have resulted in a lot of time-consuming cross-border procedures. Therefore, it is necessary to clarify which specific procedures are bottlenecks and to take measures to facilitate these procedures.
- Out of the seven countries that have land borders with Sudan, most trade volume is Egypt. Only fully functioning border facilities, Argen and Ashket, are between Sudan and Egypt.

In addition to improving the facilities and operational aspects of border facilities, it is hoped that the government will strategically develop border facilities with northern Ethiopia and Chad, which could be the hinterland of Port Sudan.<sup>26</sup>

- In order to organize the transport status of import cargo to the hinterland zone, Sudan needs to develop infrastructure and improve its systems to promote transit trade to the hinterlands such as Chad and the Central African Republic, since the ratio of transit cargo is extremely low compared to neighbouring ports.

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<sup>26</sup> In an interview with the MoT, it is confirmed that MoT intends to enhance connectivity with Chad and Ethiopia (August 2021). There is no record of information on the volume of goods transported with these two countries, and it is necessary to reconfirm the actual situation in the future.



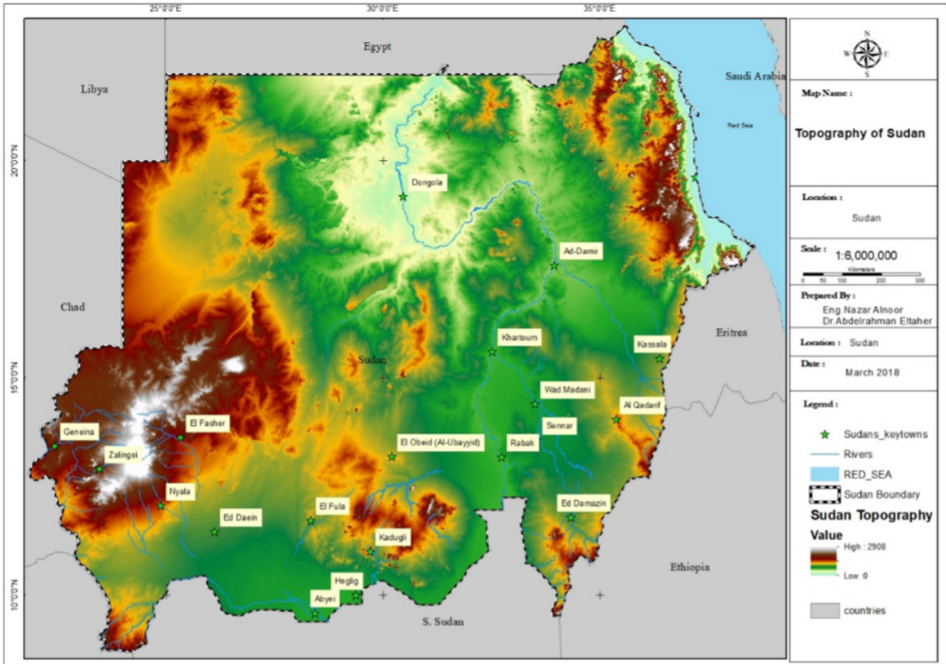
# Chapter 4 Overview of industries for which export promotion measures are being considered

## 4-1 Overview of the Agriculture and Livestock Sector in Sudan

### 4-1-1 Natural conditions

#### (1) Terrain

The topography of Sudan can be classified into vast plains and deserts, mountainous areas in the east, west and south, and the large and small rivers that flow through them, as well as the marshlands of the Nile River basin, and the coastal plain.



Source: Ministry of Agriculture and Forests, "Strategic Environmental and Social Assessment Final Report", 2018.

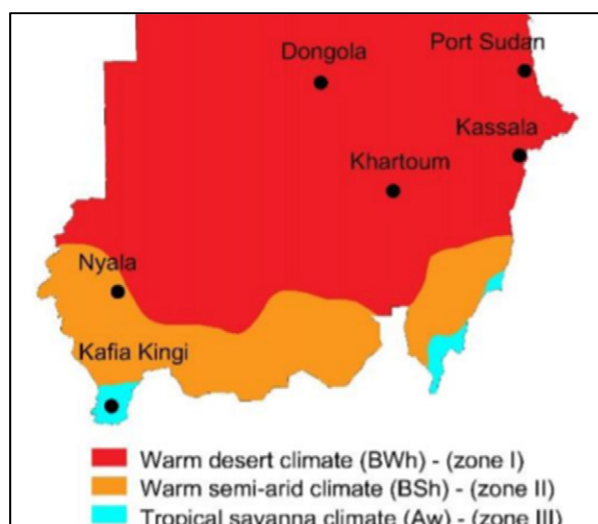
Figure 4-1-1 Topography of Sudan

#### (2) Climate (rainfall and temperature)

The climate of Sudan can be classified into three categories from the north: desert climate, semi-arid climate, and tropical savanna climate.

Rainfall near the border with Egypt, the largest area of extreme aridity, is 25 mm per year, while the tropical savanna climate zone in the south receives 350-800 mm of rainfall. The rainy season lasts for two to three months, with rainfall patterns varying in duration from region to region and also varying greatly from year to year.

The average temperature is 30-40°C in the summer and 10-25°C in the winter. Evaporation is as high as 3,000 mm per year in the north and about 1,700 mm in the south.



Source: S Ismail Ahmed Ali and Z Szalay, "Towards developing a building typology for Sudan," 2019 IOP Conf. Ser.: Earth Environ. Sci. 323 012012

**Figure 4-1-2 Climate Zones in Sudan**

### (3) Soil conditions

Sudanese soils are classified as alluvial clay soils, consolidated soils, alluvial soils and sandy soils, of which consolidated soils and sandy soils with low fertility are widespread. On the other hand, highly productive clay soils are distributed from Kassala to South Kordofan. In addition, fertile alluvial soils are distributed along the Nile River, where traditional rainfed and irrigated agriculture are practiced.

### (4) Agricultural production under natural conditions

Agriculture in Sudan is classified into irrigated agriculture, mechanised rainfed agriculture and traditional rainfed agriculture.

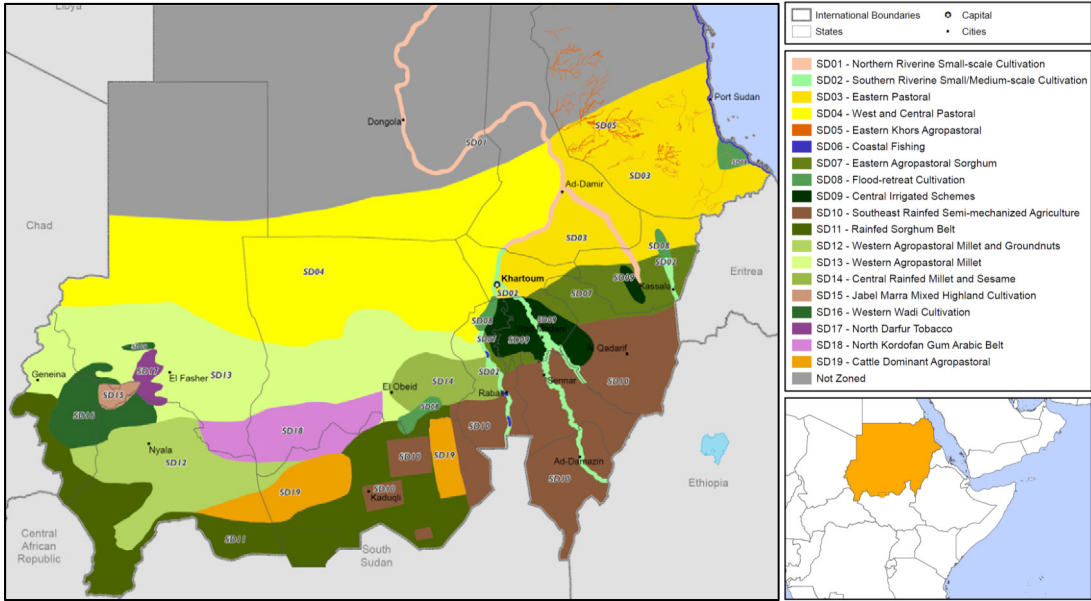
The areas that can be irrigated year-round using river water from the Nile River are extremely limited, accounting for about 10% of the total cultivated area. Irrigated agriculture is practiced in the states of Gezira, Kassala, Northern, River Nile, Khartoum, Sennar, Gedaref and White Nile. In addition to wheat and sorghum, the national irrigation scheme produces cotton, groundnut and sesame for export. On the other hand, a variety of crops such as cereals, legumes, vegetables and fruit trees are produced in the state irrigation schemes along the Nile River.

Mechanised rainfed agriculture accounts for 44% of the total cultivated area, with sorghum and sesame being produced mainly in the central area where clay soils are prevalent.

Traditional rainfed agriculture is a farming method practiced in all states, this mainly uses rainfall water but some groundwater is also used for farming. Most staple foods, such as sorghum and millet, are produced through traditional rainfed agriculture, hence droughts can affect the food security of the entire country.

**4-1-2 Production areas and distribution channels of agricultural and livestock products**

An overview of the agriculture and livestock industry (including fisheries) in Sudan is shown in the figure below.

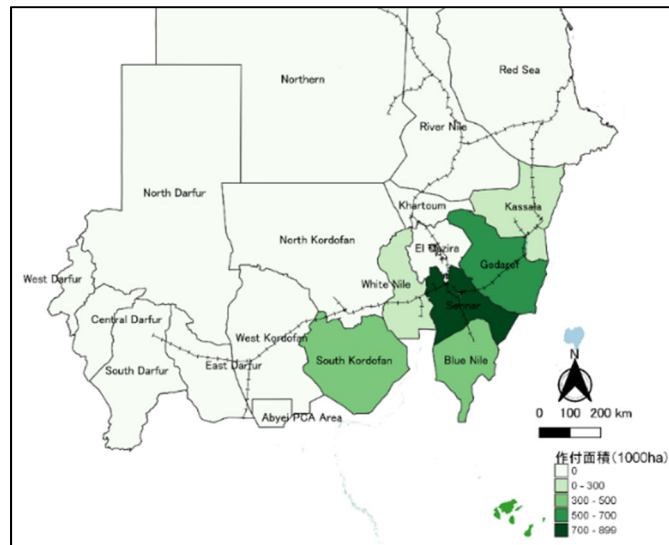


Source: FEWS NET Data Center, <https://fews.net/fews-data/335>

**Figure 4-1-3 Distribution of Agriculture, Livestock and Fisheries in Sudan (as of 2014)**

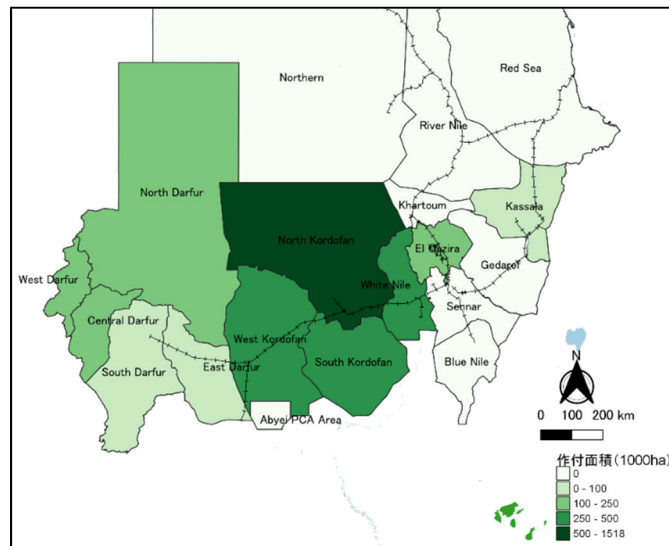
**(1) Sesame**

In the mechanised rainfed areas, the highest number of crops are planted in Sennar, followed by Gadaref. In addition, North Kordofan State accounts for about half of all traditional farming areas. Production in mechanised rainfed areas are carried out by farmers and large companies that can obtain loans from the federal government and banks, while the remaining production is carried out by family farming in traditional agriculture using rainfed methods. The crop area was 3.26 million hectares in 2017, 4.5 million hectares in 2018, and 6.21 million hectares in 2019. While there is an increasing trend, the cropping ratio between mechanised rainfed areas and traditional farming areas changes from year to year. In recent years, efforts to cultivate sesame in irrigated areas in River Nile State and other areas have been progressing, and it is expected that yields and production volumes will increase.



Source: JICA Survey Team compilation from FAO CFSAM 2020, p. 35.

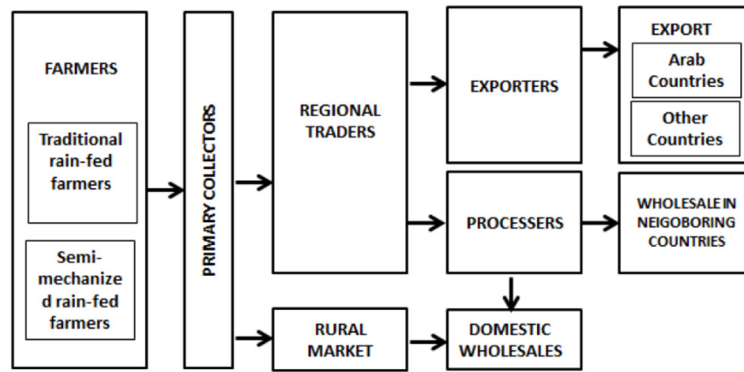
**Figure 4-1-4 Sesame Crop Area by State in Mechanised Rainfed Areas (19/20)**



Source: JICA Survey Team compilation from FAO CFSAM 2020, p. 35.

**Figure 4-1-5 Sesame Crop Area by State in Traditional Farming Areas (19/20)**

Sesame gathered at local markets are purchased by local wholesalers. Wholesalers in these regions have the capacity to handle large volumes of sesame. Most of them are exported in an unprocessed state, but some are processed into fats, oils, confectionery, etc., and sold domestically or exported to neighbouring countries. In addition to sesame, wholesalers also deal in local grains and legumes. Most exporters and processors are based in Khartoum State and Port Sudan.

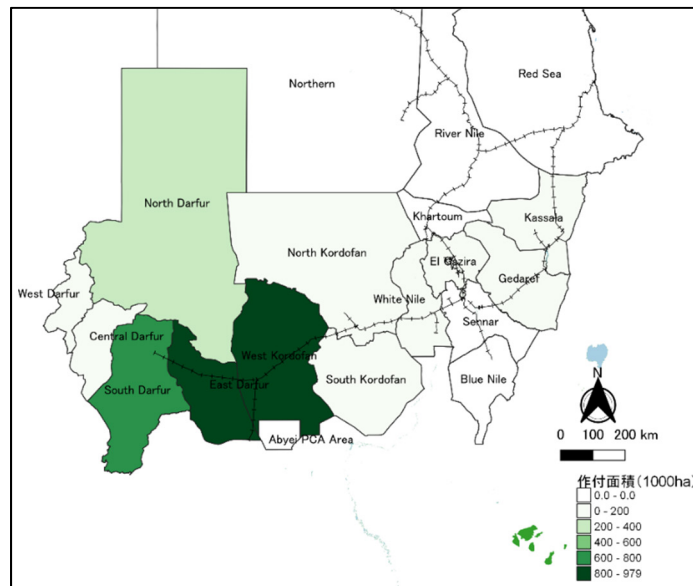


Source: UNIDO, “Upgrading the Sudanese Sesame Seeds Value Chain,” 2017.

**Figure 4-1-6 Distribution Channels for Sesame**

**(2) Groundnut**

Groundnut is grown mainly in southwestern Sudan, with particularly high production in the states of West Kordofan and East Darfur. The crop area is about 3.6 million hectares, and only about 10 hectares are planted in irrigated areas.

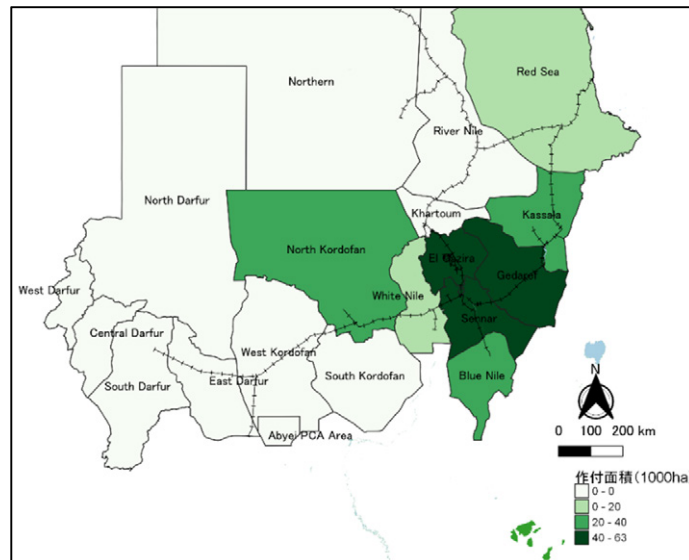


Source: JICA Survey Team compilation from FAO CFSAM 2020, p. 36.

**Figure 4-1-7 Groundnut Crop Area by State in Rainfed and Irrigated Areas (19/20)**

**(3) Cotton**

Cotton is produced mainly in Gezira, and in North Kordofan, Sennar and other states, but in smaller areas than oil crops. The total crop area is about 240,000 ha, of which 150,000 ha are produced in irrigated areas.



Source: JICA Survey Team compilation from FAO CFSAM 2020, p. 38.

**Figure 4-1-8 Cotton Crop Area by State in Rainfed and Irrigated Areas (19/20)**

#### (4) Vegetables and Fruits

The main production areas for horticultural crops are along the Nile River and in the irrigation scheme areas, as shown in the table below. Vegetables and fruits are mainly produced by small-scale farmers.

**Table 4-1-1 Major Production Areas for Vegetables and Fruits**

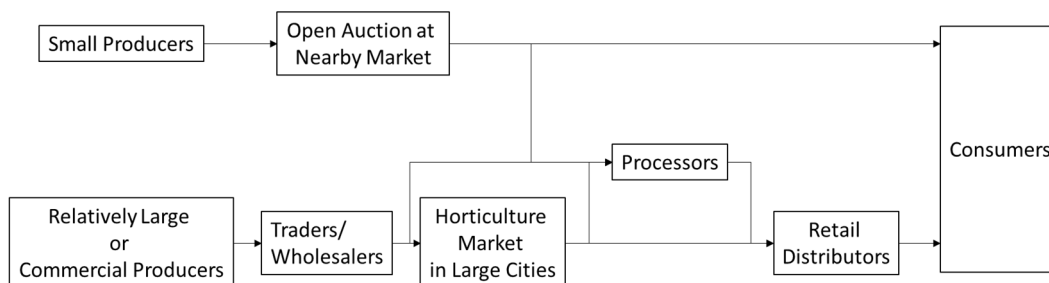
Crop	State
<b>Vegetables<sup>a</sup></b>	
Eggplant	Gezira, Khartoum, Northern, and River Nile
Okra	Khartoum, Northern, River Nile, Sennar, and White Nile
Onion	Kassala, Khartoum, Northern, River Nile, and Sennar,
Potato	Darfur, Khartoum, Northern, River Nile, and Sennar,
Tomato	Blue Nile, Gezira, Kassala, Khartoum, Northern, River Nile, and White Nile
<b>Fruits</b>	
Banana	Blue Nile, Gezira, Kassala, Khartoum, and Sennar
Dates	Northern and River Nile
Grapefruit	Northern
Mango	Khartoum, Northern, Southern Kordofan, and Western Darfur
Orange	Darfur, Northern, River Nile, and Western

Source: World Bank, “Sudan Agriculture Value Chain Analysis,” June 2020.

Small-scale farmers sell the fruits and vegetables they produce at nearby markets by auction. On the other hand, relatively large or commercial producers sell directly to merchants and wholesalers either on farms or in markets. Merchants and wholesalers sell to retailers and consumers in the larger urban vegetable and fruit markets.

Export Development and Logistics Group, a subsidiary of GIAD, is the largest processor and exporter of processed fruits and vegetables, with two processing plants in Japan for tomatoes and tomato

paste. In addition, the Sudanese Centre for the Sterilization of Horticultural Exports was established by the same company in 2013 and it is being used as a GAP (Good Agricultural Practices)-based post-harvest and packaging facility. Bananas, dates, grapefruit, mung beans, green lemons, mangoes, onions and watermelons are processed and exported.



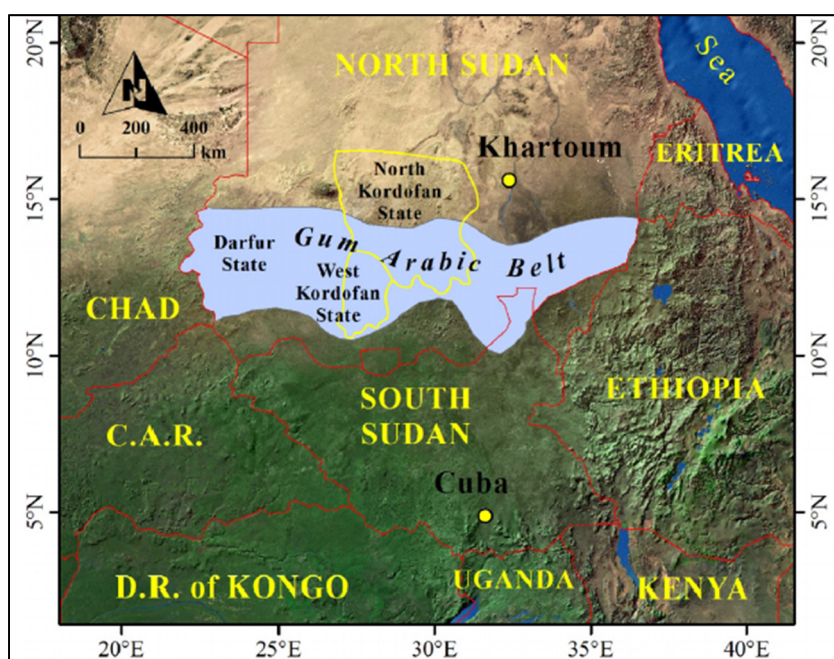
Source: JICA Survey Team compiled from “Sudan Agriculture Value Chain Analysis,” World Bank, June 2020.

**Figure 4-1-9 Value Chain for Fruits and Vegetables**

**(5) Gum Arabic**

The 12 states of Sudan are included in the gum belt that crosses the northern part of Africa. However, in the 1970s and 1980s, a combination of factors such as severe drought, conflict, and migration affected production in the regions of Kordofan and Darfur, which are the main production areas for gum arabic. The gum belt has have a tendency to move further south, which has better rainfall patterns and clay soils. As of 2007, the Kordofan region was the producer for more than half of the country's gum arabic production, while the Darfur region for around 20%.

North Kordofan State (El-Obeid) is by far the largest market, but Blue Nile State (Damazine) and White Nile State (Kosti) are also important markets.



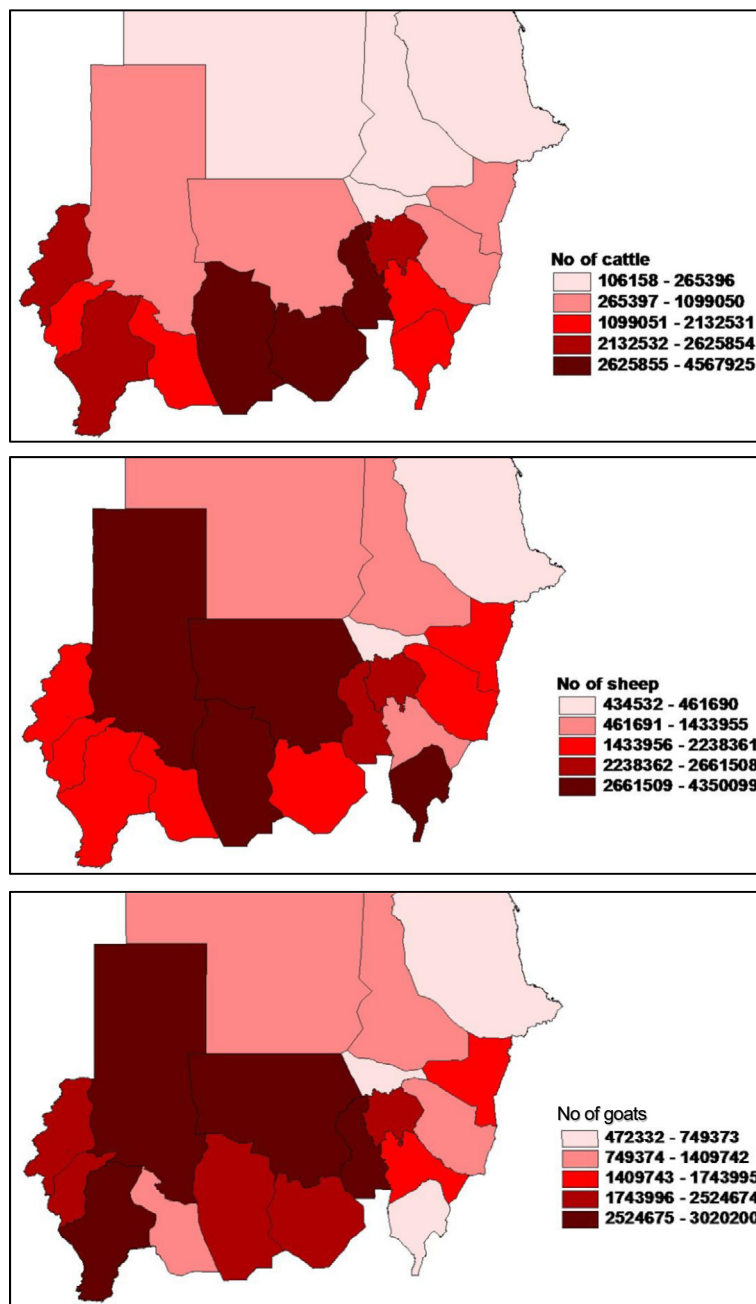
Source: Yasseen, G. et al., “Competitiveness and profitability of gum arabic in North Kordofan State, Sudan, Procedia - Social and Behavioral, 2014.

**Figure 4-1-10 Production Areas for Gum Arabic**

**(6) Livestock**

Livestock production in Sudan is dominated by grazing, which is responsible for the livelihoods of about 26 million people, especially in rural areas. Grazing can be classified as long-distance or short-distance travel. Long-distance migrants move for several months or more in search of grass during the dry and rainy seasons, while short-distance migrants move for one to several days in the grazing areas around their settlements.

The four states with the highest number of cattle, sheep, goats and camels are South Kordofan, West Kordofan, North Darfur and South Darfur. The states of Blue Nile and Gadaref have the largest number of sheep, and they are also important regions for the export of these animals.



Source: Statistical Bulletin for Animal Resources (11/2018)

**Figure 4-1-11 Number of Cattle Tended by State (2018)**



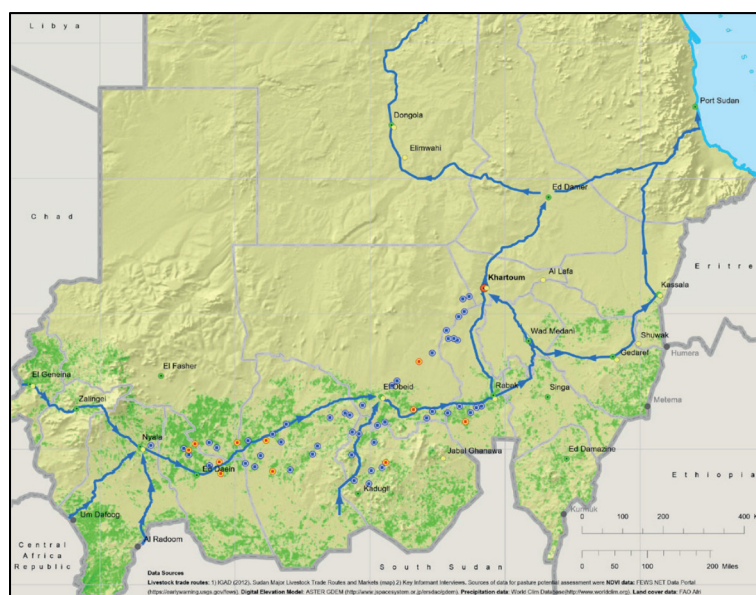
Livestock distribution is complex and involves many small players. Livestock is sold mainly by grazers and farmers to local wholesalers (at the village level) before being transported to the main livestock markets where intermediaries buy it. Intermediaries then sell the meat to meat processors and exporters for the domestic market, where it is transported to the final point of consumption. The transportation of livestock is generally done by truck. Large livestock markets are as follows:

**Table 4-1-2 Large-scale Livestock Markets**

Market name	Location	Administered state
Omdurman	Khartoum State	River Nile, Khartoum, Kassala
El Obeid	North Kordofan State	Kordofan, White Nile
Sennar	State of Sennar	Sennar, Gezira, Gadaref
Kosti	White Nile State	White Nile, South Kordofan
Madani	Gezira State	Gezira, North Kordofan, White Nile
Rabak	White Nile State	Sennar, White Nile, Blue Nile
Nyala	South Darfur State	Darfur

Source: “Republic of Sudan, Data Collection Survey on Agriculture Sector” (March 2012).

The distribution channels for livestock within Sudan are shown as follows.



Source: IGAD, PROMISING RESILIENCE PRACTICES- Demarcation of livestock routes, n.d.

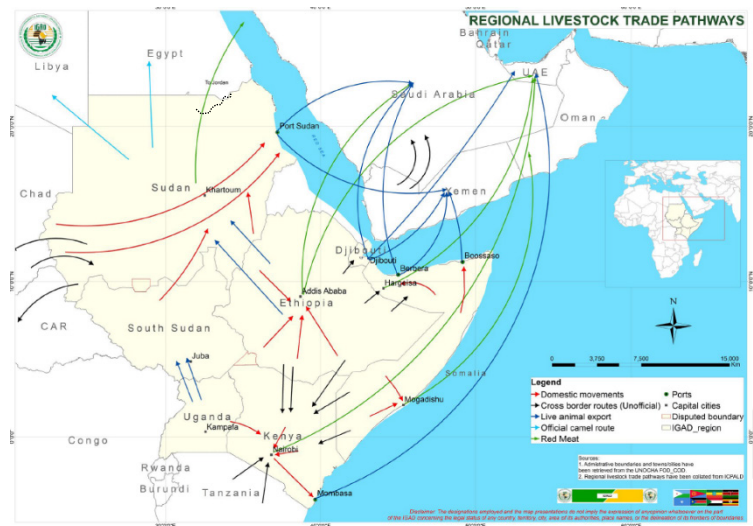
**Figure 4-1-12 Livestock Distribution Channels in Sudan**

As of 2017, companies and authorised individuals were responsible for exports. There were 122 bio-exporting entities, of which two entities were dealing in cattle, 53 in sheep, 16 in goats and 51 in camels. In addition, there were 64 meat exporting entities: 20 for beef, 22 for sheep, 18 for goat and four for camel meat.

As of 2016, there were nine medium-sized slaughterhouses that provided meat for export, with a daily production capacity of 110,000 tonnes of beef and 310,000 tonnes of mutton, but these were insufficient to expand export volumes. In addition, although there were 13 livestock quarantine stations,

there had been cases where export restrictions were imposed because meat processing did not meet the requirements of importing countries, and it can be said that there have been many issues related to meat processing, packaging, and refrigeration facilities.

The main livestock distribution channels in Sudan and neighbouring countries are as follows.



Source: Mercy Corps, August 2020, <https://www.mercycorps.org/sites/default/files/2020-08/MC-HoA-COVID-Impact-Livestock-Mrks-Aug-2020.pdf>

**Figure 4-1-13 Main Livestock Distribution Channels in Sudan and Neighbouring Countries**

### 4-1-3 Production of agricultural and livestock products

In 2019, the CBOS estimated that the share of the agricultural sector (including livestock) in GDP was 20%, of which 60% was shared by livestock and 40% by agricultural products. In recent years, the country's overall GDP has declined by about three % due to economic recession, high inflation, effects of the COVID-19 pandemic, floods, seven-spotted grasshoppers, and shortages of agricultural inputs. The impacts of these have left the agricultural and livestock sectors in a difficult situation.

#### (1) Production of agricultural products

Agricultural production by commodity for the last five years is shown in the following table. Note that only those commodities with production of 100,000 tons or more in 2019 are included.

The staple foods of sorghum, millet, and wheat were highly variable in production.

There has been a steady increase in the production of sesame, and 1.2 million tons would make Sudan the world's number one producer in 2019, surpassing Myanmar and India. Groundnut production increased 2.7 times from 1.04 million tons to 2.82 million tons, making the country the world's fourth largest producer in 2019, ahead of neighbouring Chad and Tanzania. Sunflower and seed cotton production were also on the rise.

Among other produced crops, sugarcane, onion, banana, tomato, mango, potato and date are significant.

**Table 4-1-3 Agricultural Production by Commodity in Sudan**

Unit: 000 tons

	2015	2016	2017	2018	2019
<b>Items in the Five-Year Programme</b>					
Sorghum	2,744	6,466	4,249	5,435	3,714
Millets	486	1,449	878	2,647	1,133
Wheat	779	516	463	702	726
Cotton	131	109	104	160	187
Sesame	329	525	781	960	1,210
Groundnuts (with shells)	1,042	1,826	1,648	2,884	2,828
Sunflower	70	87	153	108	107
Gum arabic*	62	92	64	84	81
<b>Other agricultural products</b>					
Sugarcane	5,900	6,000	6,482	6,084	5,449
Onion	1,583	1,584	1,600	1,717	1,133
Banana	910	910	928	913	919
Tomato	617	617	620	648	677
Mango, mangosteen, guava	1,086	786	644	656	663
Potato	414	415	419	440	466
Date	439	439	442	414	439
Other fruits	325	350	375	400	425
Other vegetables	314	325	328	341	353
Lemon, lime	270	270	281	309	324
Okra	287	287	293	302	309
Cucumber, gherkin	235	249	216	226	293
Sweet potato	237	240	241	244	254
Grapefruit	219	220	225	238	252
Yam	170	177	181	187	193
Orange	152	152	155	160	166
Soya bean (dried)	106	121	147	157	165
Cowpea (dried)	47	165	165	175	161

Note: \*Gum Arabic figures is for 2014-2018

Source: FAOSTAT, 58th Annual Report 2018 (CBOS) (Gum Arabic)

**(2) Production of livestock products**

The number of livestock tended by category is shown in the following table, with all categories showing an increasing trend.

**Table 4-1-4 Number of Livestock by Category in Sudan**

Unit: 000 head

	2017	2018	2019
Cow	30,632	31,223	31,489
Sheep	40,612	40,846	40,896
Goat	31,481	31,837	32,032
Camel	4,830	4,872	4,895

Source: FAO Crop and Food Supply Assessment Mission (CFSAM) to the Sudan (2017, 2018, 2019)

#### 4-1-4 Processing Industries (Agriculture and Livestock Sectors)

##### (1) Production volume of processing industries

While the production of sugar and vegetable oil has had a slight downward trend, the production of cottonseed and cotton lint has increased about fivefold and threefold, respectively.

**Table 4-1-5 Processed Products (Agricultural Sector) Production by Commodity in Sudan**

Unit: 000 tons

	2014	2015	2016	2017	2018
Sugar	1,027	961	971	1,014	961
Refined sugar	657	591	601	644	586
Molasses	370	370	370	370	375
Cotton	132	158	169	498	540
Cottonseed (mainly for oil)	70	86	109	325	353
Cotton lint	62	72	60	173	187
Vegetable oil	283	272	228	264	247
Groundnut oil	194	199	165	196	178
Sunflower oil	31	22	25	32	30
Sesame oil	49	40	29	26	25
Cottonseed oil	9	11	9	10	14

Source: FAOSTAT

Dairy production has remained at around 100,000 tons.

**Table 4-1-6 Production of Processed Products (Livestock Sector) by Commodity in Sudan**

Unit: 000 tons

	2014	2015	2016	2017	2018
Beef	967	972	980	994	1011
Lamb meat	251	253	261	263	265
Goat meat	115	116	117	118	119
Camel meat	143	143	144	144	145
Leather*	25,889	26,078	26,559	26,745	26,930
Dairy products	110	104	107	109	109
Goat's milk	88	88	90	90	91
Sheep's milk	14	13	13	14	14
Powdered skim (nonfat) milk of cattle	8	3	4	5	4
Cow's milk	1	0	0	0	0
Cow butter	0	0	0	0	0

Note: \*Unit: thousand sheets

Source: Statistical bulletin for Animal Resources (11/2018) (beef, mutton, goat meat, camel meat and hides), FAOSTAT (dairy products)

## **(2) Overview of processing industries**

### **1) Processed agricultural products**

The agricultural sector is important as a source of raw materials for processed agro-industrial products, but there is no stable supply of agricultural products throughout the year, and the sector is dependent on imports for processing.

As for jams, Sudan processes strawberries, mangoes, oranges, carrots, etc. For the procurement of raw materials, companies import strawberries, etc., from Egypt during the off-season and from Japan during the season when these fruits can be harvested there.

For juices, companies do not use domestically produced fruits because of problems with transporting them from production areas, and also because of probable damage during transport. For this reason, companies import oranges from Brazil and mangoes from India, and imported sugar from India and Saudi Arabia is also used to make juices. Therefore, by building processing plants in the suburbs of each production area and introducing special trucks, it would be possible to secure raw materials in Japan and reduce post-harvest losses.

### **2) Cooking oil**

Many companies involved in edible oils are concentrated in the states of Khartoum and North Kordofan, which are major producers of raw materials. Edible oil is mainly made from groundnuts, although sunflower and sesame are also used. Within Sudan, unrefined oil (made by simply squeezing the raw material and filtering the extract) is commonly sold by weight and accounts for half of all cooking oil in local markets.

One of the challenges facing the edible oil sector is a shortage of oilseeds, which could be addressed by expanding groundnut production and switching to other varieties of oilseeds. Since mechanical extraction with a low recovery rate is common, it is possible to improve the recovery rate by adopting a solvent extraction method, but comprehensive measures including sales channels and raw material procurement are necessary to make these operations worth the investment.

### **3) Sugar**

The 2020 FAO report states that Sudan has one state enterprise, two private enterprises and six factories engaged in sugar production.

In around 2012, Sudan planned to build new plants and expand existing ones, which would have expanded domestic production and generated excess exports. However, the production of sugar in Sudan at various factories has been gradually decreasing, from about 730 thousand tons in 2005 to about 530 thousand tons in 2019.

Factors behind this decline in production include the deterioration of equipment, labor shortages, poor sugarcane harvests and a lack of suppliers. In addition, one of the biggest challenges for the sugar sector is financing. China and Middle Eastern countries are sugar importers and potential sources of investment, and the lifting of the SSTL is expected to attract investment from a wider range of countries.

#### **4) Spinning**

Spinning and textile mills have been operating since the 1970s to process domestically produced cotton, but the government's designation of cotton as an export commodity and the ban on cotton yarn imports led to the successive bankruptcy of the spinning and textile industries.

In the 2000s, the revival of the textile industry became a goal, but the renovation of facilities and retraining of employees have been challenges. In 2011, a Chinese company and other foreign companies from Syria, Qatar, and Turkey began to invest, suggesting that Sudan's spinning and weaving industries will grow significantly in the future.

Sudanese raw cotton is of high quality and in the past it was often exported to Egypt and then re-exported as Egyptian cotton. But in 2019, Sudan expanded its sales channels to China, Turkey, Pakistan, India and other countries. Therefore, in order to promote both the export of cotton and the supply of raw materials for domestic spinning and weaving industries in parallel, it is necessary to further increase production volume by expanding the cotton planting area and promoting the introduction of improved varieties.

#### **5) Meat**

Meat is exported in carcass form, which is brought to slaughterhouses by exporters, paid to be dismembered, and then packaged in the slaughterhouse for export. Sudanese meat is kept in natural conditions (as certified by Farm Animal Welfare) and, therefore, has a high reputation in terms of quality among exporting countries.

In 2020, meat was exported from three slaughterhouses in Alkadro, Jimo and Shaheen districts to Saudi Arabia, the largest exporter of livestock. The first export of meat from Sudan (Alkadro area) to Saudi Arabia took place in May 2020, with an export volume of 20 tons on the first day.

There are also several relatively large meat processing companies in Khartoum State, which produce about 30 refrigerated and frozen food items, including sausages, patties for hamburgers, and nuggets.

However, the meat processing sector faces challenges at every stage of procurement, processing and shipping. In procurement, pastoralists generally regard livestock as property, making it difficult for traders to procure livestock on a stable basis. In order to promote exports, the development of feedlots near slaughterhouses and the development of distribution and contracting systems for stable procurement are possible.

In terms of facilities at the slaughtering and processing stages, few slaughterhouses are equipped with appropriate waste disposal systems, refrigeration rooms, incinerators, etc., and there is a lack of processing plant facilities such as vacuum packaging equipment and quality analysis equipment. In terms of human resources, there is a lack of personnel and skills for meat inspectors, and efforts toward HACCP certification have not been sufficiently promoted. At the shipping stage, reefer containers and refrigerated storage facilities are inadequate. It was learned that even at the time of the 2021 field survey, refrigerated storage facilities at Khartoum Airport were still not in place.

## **6) Leather**

The leather industry is one of the few sectors with excess exports, producing hide from cow, camel, sheep and goat. Although the exact amount of raw hides produced is not known, it can be said that the production of the leather industry is low compared to the number of livestock.

The volume of leather exports ranged from USD 16.29 to 69.24 million from 2014 to 2018, with high fluctuations from year to year. In 2019, the highest volume of tanned sheepskins was exported to Turkey, Italy, China and Spain, while the next highest volume of raw cattle skins was exported to Nigeria.

The work processes of the leather industry can be divided into breeding, slaughtering, leather-making and leather product manufacturing. Disease, wounds caused by insects, and nutritional deficiencies were cited as problems in the rearing process, and there is a need to create awareness of skin quality among farmers and to expand veterinary services. In the slaughtering process, inappropriate skinning and storage of hides were cited as challenges, and maintenance of slaughterhouse facilities and equipment, and training for meat disposers, are considered to be possible measures. Capital investment is the most important factor for the improvement of the leather and leather product manufacturing processes.

### **4-1-5 Development Policy on Agriculture and Livestock Industries**

#### **(1) The Five-Year Programme**

##### **1) Agriculture**

In the Five-Year Programme, production targets were set for the commodities listed in the table below. Among staple grains, wheat had a target of achieving a 3.4 fold increase in production (from 1,000,000 tons to 3,400,000 tons), the highest rate of increase. The plan was not only to expand the planting area but also to increase the yield by about 1.5 times.

In terms of other products, the plan was to increase the production of sesame by 4.5 times (from 400,000 tons to 1,800,000 tons) and to increase the unit yield by 3.7 times, while implementing technological innovations.

**Table 4-1-7 Production Targets - Agriculture (Five-Year Economic Reform Plan)**

item name	2015		2019	
	Yield (kg/10a)	Production (000 tons)	Yield (kg/10a)	Production (000 tons)
Sorghum	68	5,600	106	9,500
Millet	37	890	42	1,200
Wheat	294	1,000	400	3,400
Cotton	247	500	247	882
Sesame	33	400	123	1,800
Groundnut	49	1,000	62	1,500
Sunflower	123	125	296	1,100
Gum arabic	-	150	-	300

Note: Unit yield is calculated by converting per acre to per 10a

Source: The Five-Year Programme for Economic Reform 2015- 2019

## 2) Livestock industry

The livestock industry is a major one in Sudan. The target value of livestock head shows that there had been no extreme plans to increase production. On the other hand, the export target value had been set about 1.5 times, indicating that there was a plan to promote exports.

**Table 4-1-8 Production Targets - Livestock (Five-Year Economic Reform Plan)**

	2015 (000 heads)	2019 (000 heads)
Cow	30,200.	31,500
Sheep	40,000.	41,000
Goat	31,000	32,000
Camel	4,800	4,900

Source: The Five-Year Programme for Economic Reform 2015- 2019

**Table 4-1-9 Export Targets - Livestock (Five-Year Economic Reform Plan)**

	2015 (000 heads)	2019 (000 heads)
Cow	23	34
Sheep	5,300	7,700
Goat	250	366
Camel	192	282

Source: The Five-Year Programme for Economic Reform 2015- 2019

## 3) Processing Industry (Agriculture and Livestock Sectors)

For agro-processing, the following production targets were set.



**Table 4-1-10 Production Target - Processing Industry  
(Agriculture and Livestock) (Five-Year Economic Reform Plan)**

	2015 (t)	2019 (t)
Sugar	984,000	1,500,000
Vegetable oil	280,000	360,000
Wheat flour	1,700,000	2,000,000
Meat	1,480,000	1,540,000
Dairy products	4,900,000	7,900,000
Fish	1,100	1,300
Chicken meat	600	800
Egg	500	700
	<b>2015 (hides)</b>	<b>2019 (hides)</b>
Leather	26,000,000	26,900,000

Source: The Five-Year Programme for Economic Reform 2015- 2019

Export targets had been set only for meat and leather, with the goal of increasing exports of meat and leather by about 1.2 and 1.5 times, respectively.

**Table 4-1-11 Export Targets - Processing Industry (Livestock)  
(Five-Year Economic Reform Plan)**

	2015 (t)	2019 (t)
Beef	13,860	16,846
Lamb meat	16,170	19,655
Goat meat	693	842
Camel meat	138	168
	<b>2015 (hides)</b>	<b>2019 (hides)</b>
Leather	12,520,000	18,330,000

Source: The Five-Year Programme for Economic Reform 2015- 2019

## **(2) Relevant Policies including Food Security**

Sudan's Five-Year Programme (2015-2019) set out policies for reforming various industries, and policies were formulated for the agriculture and livestock sectors, and the food sector.

For the agriculture and livestock sectors, the government aims to improve the excess import situation by substituting imports and increasing exports, and to increase supply to stabilise food prices. Production of staple grains such as sorghum, millet, and wheat will be increased, while retaining production areas to improve yield. The government also plans to increase the yield of oil plants such as sesame, groundnut and sunflower in the same way. In order to achieve this, the Ministry of Agriculture and Natural Resources and the agriculture production management system will be reformed, while support will be provided to improve the efficiency of agricultural production, including modernisation of irrigation projects and rainfed agriculture (traditional and mechanical agriculture), and the reduction of losses at each stage. These include encouraging wheat production by offering prices in advance of planting, improving cotton varieties and increasing the area planted, and increasing the production of value-added fruits.

In the food industry, increased production of sugar, edible oil and flour; increased production of processed food such as biscuits and juices; and increased production and export of meat have been indicated as some of the strategies for industrial revival and development. The plan is to strengthen the capacity of the private sector to contribute to these efforts, and to create parallel lines between those for domestic consumption and those for export. In addition, specific policies have been formulated to add more value to agricultural products by introducing a reward system, to modernise equipment and technology in edible oil production, and to promote canning and packaging industries through public-private partnerships.

The National Investment Plan for the Agricultural Sector (2016-2020) allocates 10% of the national budget to the agricultural sector with the aim of increasing productivity, promoting agricultural and livestock exports, and improving food and nutrition security. It has put forward seven investment programmes: sustainable agriculture; capacity building in the agricultural sector; modernisation of agriculture and improvement of management systems; enhancement of agricultural support services and establishment of knowledge and information networks; industrialisation of agriculture and establishment of value chains and market access; conservation of agricultural land and natural resources; and realisation of food and nutrition security and quality control and safety measures.

In particular regard to the industrialisation of agriculture and the establishment of value chains, about 40% of food imports in 2014 were processed products such as sugar, edible oils, dairy products, flour, fruit trees and vegetables, etc., and the government is committed to investing in such products to meet domestic demand. For agro-product processing, the government aims to expand small-scale processing plants and market access, but first it needs to invest funds to update and modernise materials and equipment.

## **4-2 Potential for New Entry and Expansion of Sales Channels for Sudanese Products in Overseas Markets**

### **4-2-1 Value of imports and exports in Sudan**

In order to extract information for Sudan's main export items, the HS codes (category: 2 digits) of the UN Comtrade Database were organised for the agricultural and livestock sectors, specifically for items with a transaction value of USD 5 million or more in 2018.

The export value of oilseed crops (HS Code 12) and livestock (HS Code 01) is several times larger than that of other crops. In addition, there is a noticeable upward trend in cotton and a downward trend in sugar (HS Code 17). For other commodities, the export value increases and decreases, indicating that they are not stable.

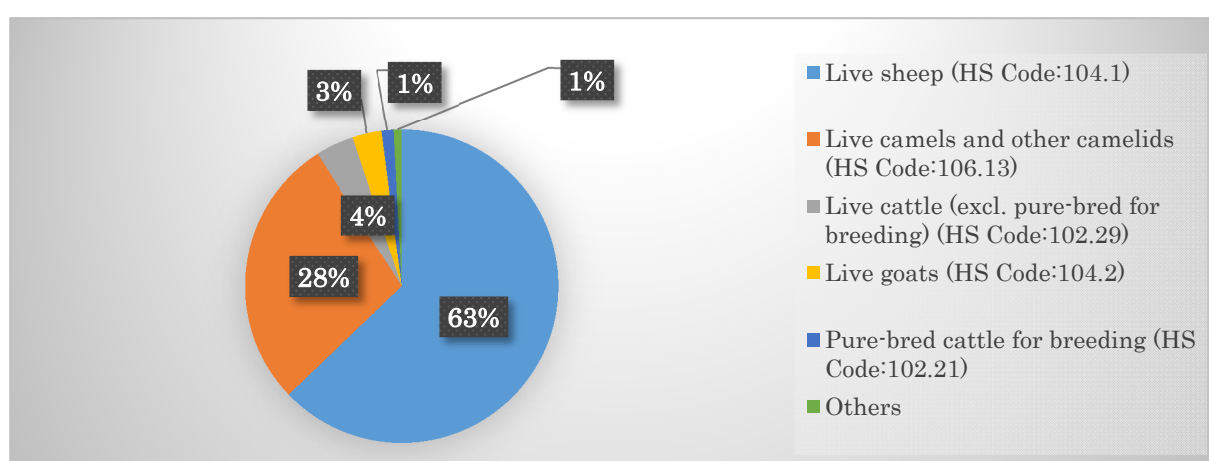
**Table 4-2-1 Sudan's Agriculture and Livestock Export Commodities and Trade Values (HS Code 2-digit)**

Unit: thousands USD

HS Code	HS Code Contents	2014	2015	2016	2017	2018
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruits; industrial or medicinal plants; straw and fodder	510,389	916,452	617,664	607,453	820,351
01	Live animals	504,641	501,847	726,064	833,520	765,039
52	Cotton	34,889	39,423	80,306	138,265	156,284
13	Lac; gums, resins and other vegetable saps and extracts	94,350	988	111,726	114,689	115,047
02	Meat and edible meat offal	117,351	140,158	180,336	61,405	66,641
07	Edible vegetables and certain roots and tubers	35,315	15,393	58,082	41,595	55,759
10	Cereals	5,779	122	30,711	112,726	27,922
23	Residues and waste from the food industries; prepared animal fodder	11,334	489	52,874	24,141	24,635
41	Raw hides and skins (other than furskins) and leather	42,927	33,173	69,243	24,692	16,289
17	Sugars and sugar confectionery	94,412	90,087	64,473	17,211	13,814
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	10,625	6,045	327,301	41,879	11,390
03	Fish and crustaceans, molluscs and other aquatic invertebrates	797	995	1,673	3,064	7,490
08	Edible fruit and nuts; peel of citrus fruit or melons	7,609	1,852	11,216	7,928	5,228

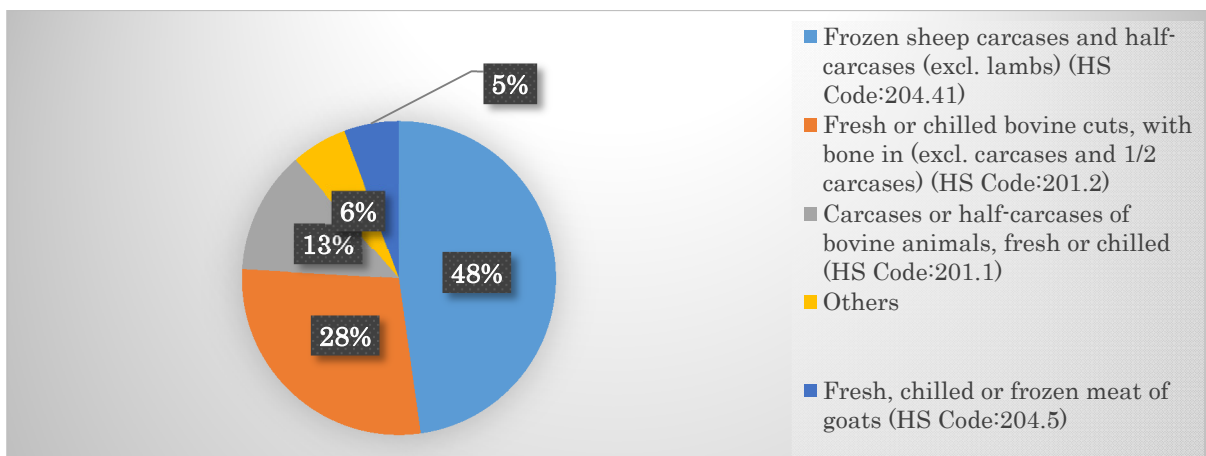
Source: UN Comtrade Database

Oil crops, livestock, meat, vegetables, and fruits, which are the most frequently exported commodities, were organised by 6-digit HS codes.



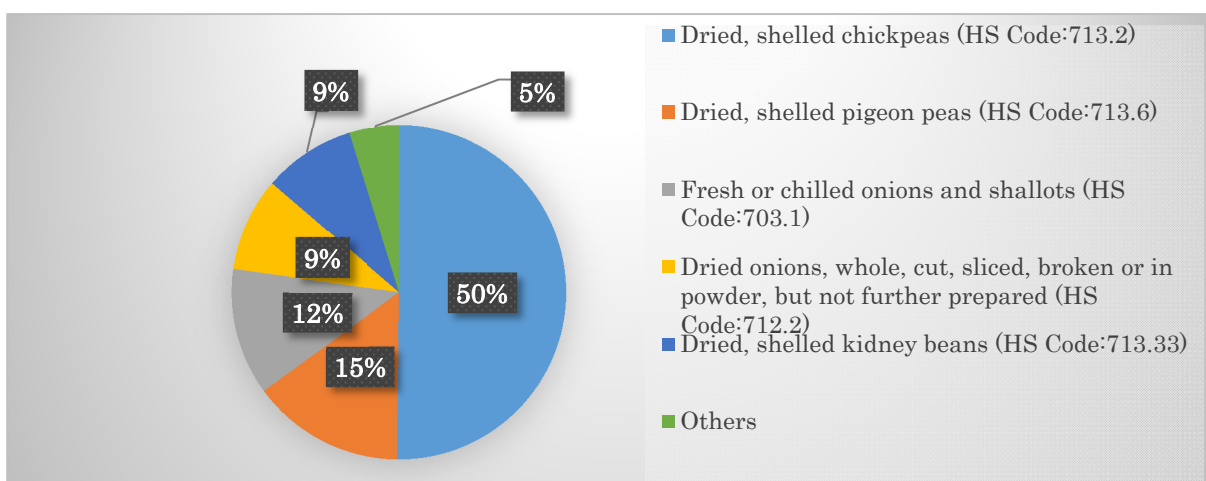
Source: UN Comtrade Database

**Figure 4-2-1 Detailed Export Items for Livestock (2014~2018 Total, Export Value Basis)**



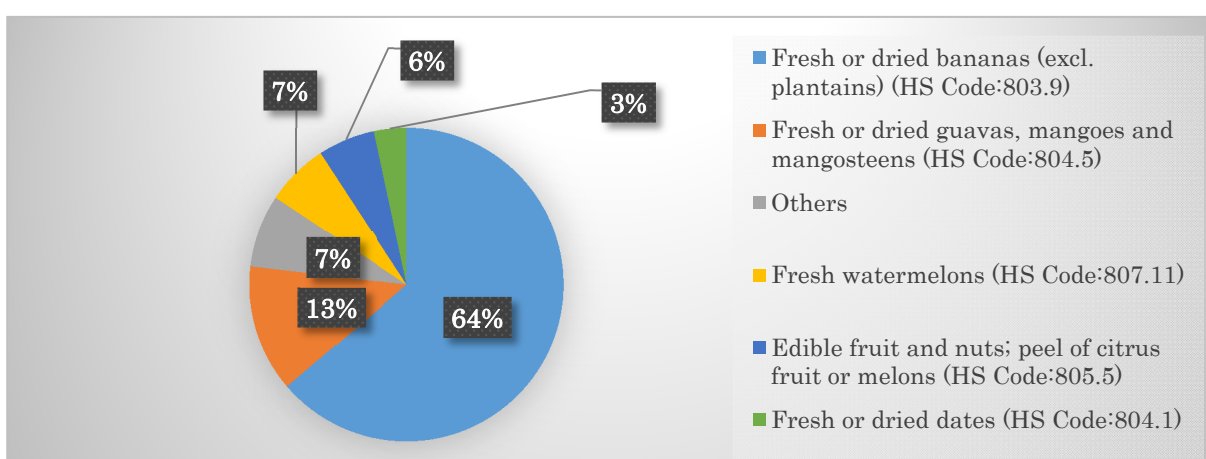
Source: UN Comtrade Database

**Figure 4-2-2 Detailed Export Items for Meat (2014-2018 Total, Export Value Basis)**



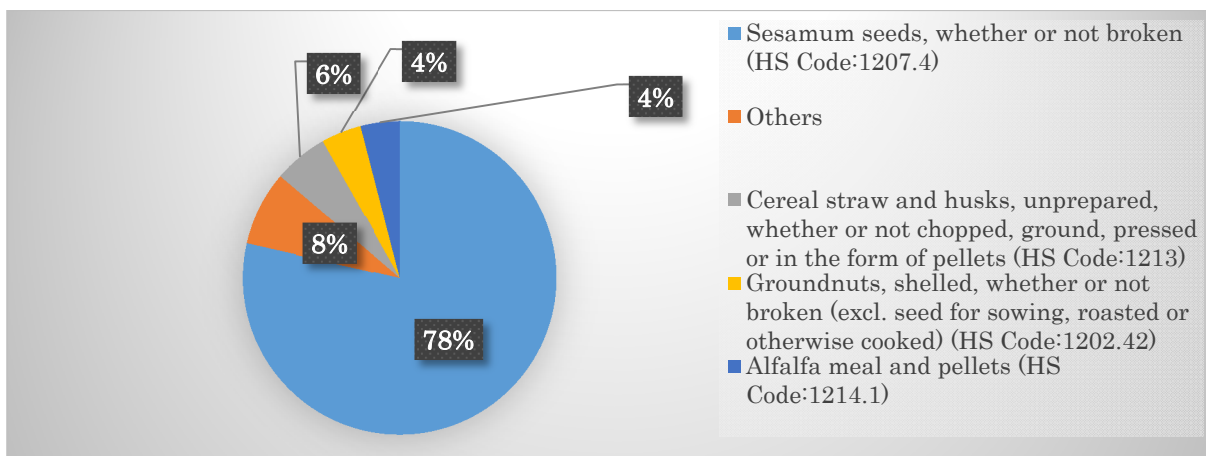
Source: UN Comtrade Database

**Figure 4-2-3 Detailed Export Items for Vegetables (2014-2018 Total, Export Value Basis)**



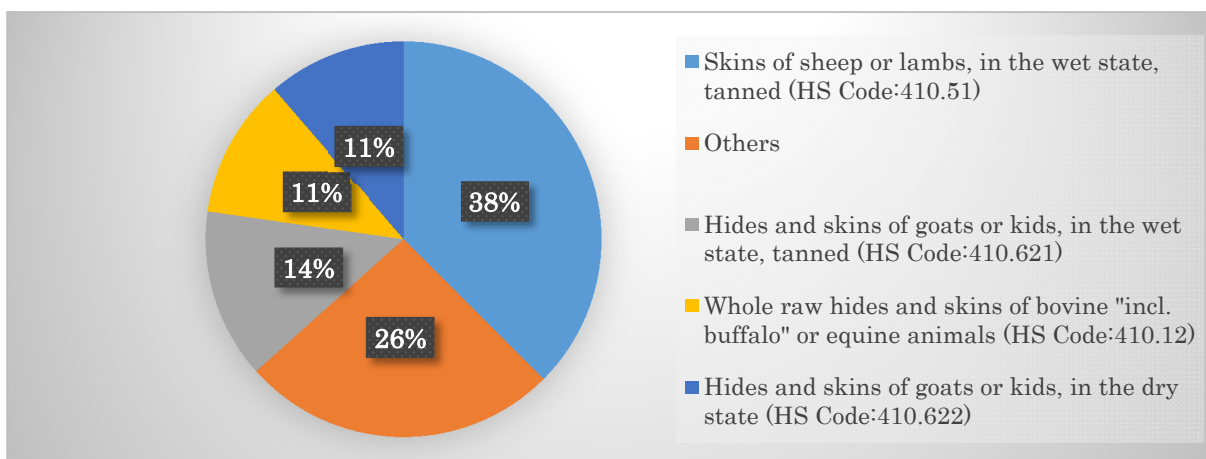
Source: UN Comtrade Database

**Figure 4-2-4 Detailed Export Items for Fruits (2014-2018 Total, Export Value Basis)**



Source: UN Comtrade Database

**Figure 4-2-5 Detailed Export Items for Oil Crops (2014~2018 Total, Export Value Basis)**



Source: UN Comtrade Database

**Figure 4-2-6 Detailed Export Items for Leather (2014~2018 Total, Export Value Basis)**

In order to extract information for Sudan's main import commodities, the HS codes (category: 2 digits) of the UN Comtrade Database were organised for the agricultural and livestock sector, specifically for the top 10 commodities in terms of trade value in 2018. As major foodstuffs such as cereals, sugar, edible oil, and vegetables are imported in excess, the balance between increasing export volume and self-sufficiency policies will be important.

On the other hand, oilseed crops, livestock, cotton, meat, and other products are in excess of exports, and plans to increase production and investment in facilities can be made with export expansion in mind.

**Table 4-2-2 Sudan's Import Commodities (Agriculture and Livestock Sectors) and Trade Values**

Unit: thousands USD

HS Code	HS Code Contents	2014	2015	2016	2017	2018
10	Cereals	32,332	2,072,966	659,866	1,758,319	1,154,577
17	Sugars and sugar confectionery	563,923	514,674	410,404	645,077	493,514
09	Coffee, tea, maté and spices	100,421	120,634	141,679	141,284	114,219
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	237,789	223,282	328,118	132,027	204,978
07	Edible vegetables and certain roots and tubers	131,180	100,936	122,723	124,970	90,823
21	Miscellaneous edible preparations	126,424	124,986	119,065	121,558	110,020
04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included	160,399	93,358	91,187	79,383	63,966
23	Residues and waste from the food industries; prepared animal fodder	37,366	37,621	38,984	34,190	30,638
20	Preparations of vegetables, fruits, nuts or other parts of plants	43,110	48,790	40,248	32,239	44,171
24	Tobacco and manufactured tobacco substitutes	28,349	35,077	37,130	29,617	38,345

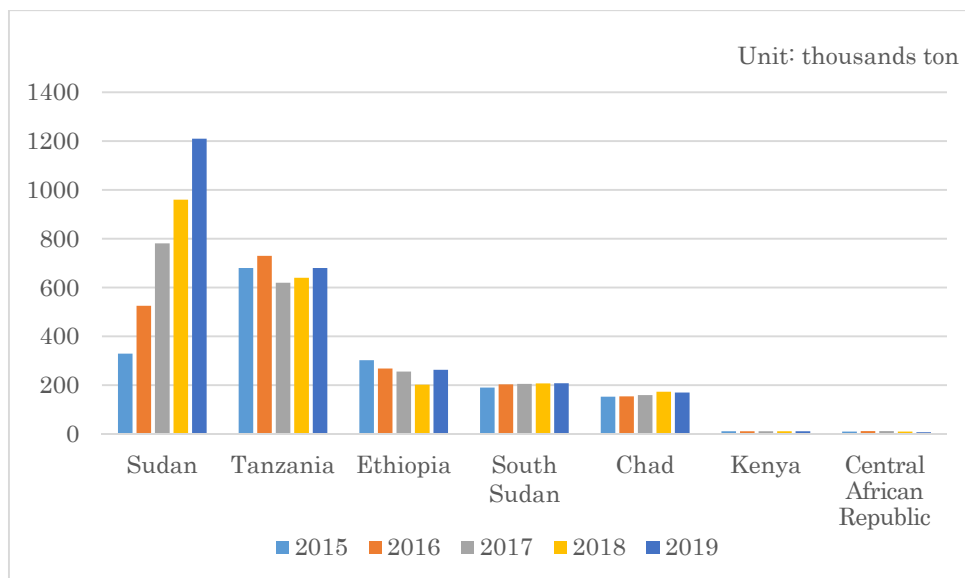
Source: UN Comtrade Database

**4-2-2 Trading conditions in markets of neighbouring countries**

The following is a summary of the production and import status of neighbouring countries (Kenya, Tanzania, Djibouti, Ethiopia, South Sudan, Chad and the Central African Republic) with regard to Sudan's major export products such as sesame, groundnuts, cotton, gum arabic, livestock, meat, vegetables and fruits.

**(1) Sesame**

Sudan is the world's largest producer of sesame, but Tanzania and Ethiopia are also leading producers and they provide supplies for surrounding countries.



Source: FAOSTAT

**Figure 4-2-7 Production in Neighbouring Countries - Sesame**

In order to examine the expansion of Sudan's export sales channels, a valid comparison would be to look at Kenya's import partners, which is a nation that imports a large amount of sesame. At the moment, it can be said that Sudan's competitiveness is not high because Uganda, which is a neighboring country, accounts for most of the sesame exports into Kenya. Moreover, an increasing amount is imported from India, and therefore there is a possibility for expanding the volume of exports from Sudan by taking advantage of the corridor and intra-regional agreements.

**Table 4-2-3 Kenya Import Situation - Sesame**

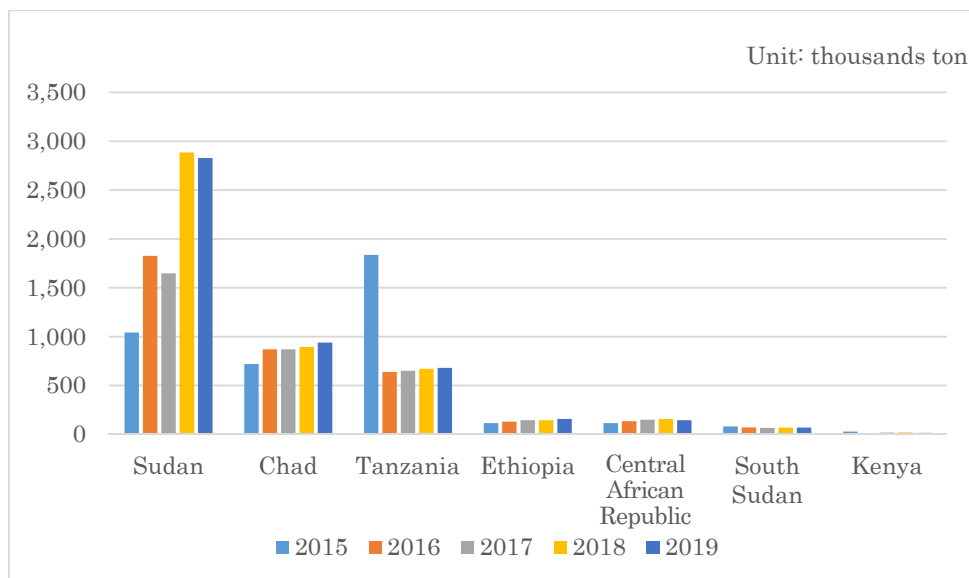
Unit: thousands USD

2017		2018		2019	
Country	Amount	Country	Amount	Country	Amount
Uganda	6,890	Uganda	1,941	Uganda	319
India	69	India	109	India	188
United Kingdom	6	USA	35	United Kingdom	7
South Africa	0	United Kingdom	3	China	3
China	0	China	1	United Arab Emirates	1

Source: UN Comtrade Database (HS Code: 1207.40)

## (2) Groundnut

Compared to neighbouring countries, Sudan ranks first for groundnut production, followed by Chad and Tanzania.



Source: FAOSTAT

**Figure 4-2-8 Production in Neighbouring Countries - Groundnut**

In examining the expansion of Sudan's export sales channels, looking at Kenya's import partners, as it is a nation which imports a large amount of groundnuts, it can be seen that the neighboring countries of Tanzania and Malawi are top exporters, which makes it difficult for Sudan to capture export share in a short period of time.

**Table 4-2-4 Kenya Import Situation - Groundnut**

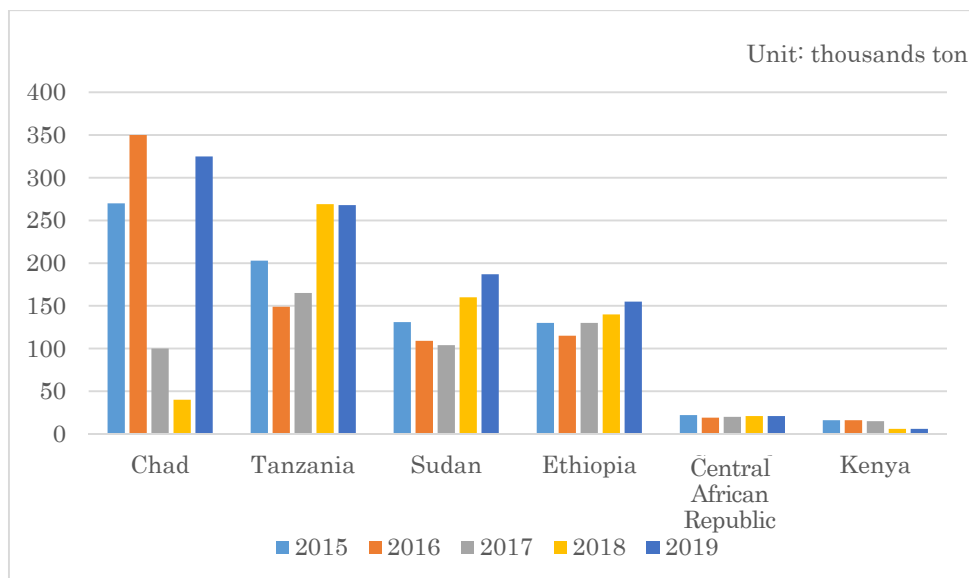
2017		2018		2019	
Country	Amount	Country	Amount	Country	Amount
United Rep. of Tanzania	542	Malawi	2,730	Malawi	4,747
Malawi	513	United Rep. of Tanzania	273	United Rep. of Tanzania	2,649
India	22	Bulgaria	8	Argentina	28
China	2	China	2	China	3
				United Arab Emirates	2

Source: UN Comtrade Database (HS Code: 1202.42)

### (3) Cotton

Chad and Tanzania are the largest producers of cotton, and Sudan is also expanding its cotton production.





Source: FAOSTAT

**Figure 4-2-9 Production in Neighbouring Countries - Cotton**

A valid comparison for examining the expansion of Sudan's export sales channels is to look at Ethiopia's import partners, a nation which is one of the largest importers of cotton. India accounts for the majority of imports, and with the spread of genetically modified cotton, India has become one of the world's top producers and exporters. In addition, Indian cotton is sufficiently differentiated for export items for a variety of uses (e.g., baby clothes, T-shirts, underwear). In addition, Ethiopia is a long-term target because it can benefit from the African Growth and Opportunity Act (AGOA).

Ethiopia's spinning industry is a growing industry, with over 130 currently active companies. In addition, Ethiopia's low wages, electricity prices that are considered among the lowest in Africa, and government support (e.g., tariff and income tax exemptions, training subsidies) have attracted many foreign companies to the country. As a result, Ethiopia's cotton imports are likely to continue to increase. In the future, Sudan will need to improve the quality of cotton that can meet the needs of the Ethiopian spinning industry by investing in cotton mills and increasing the production of cotton.

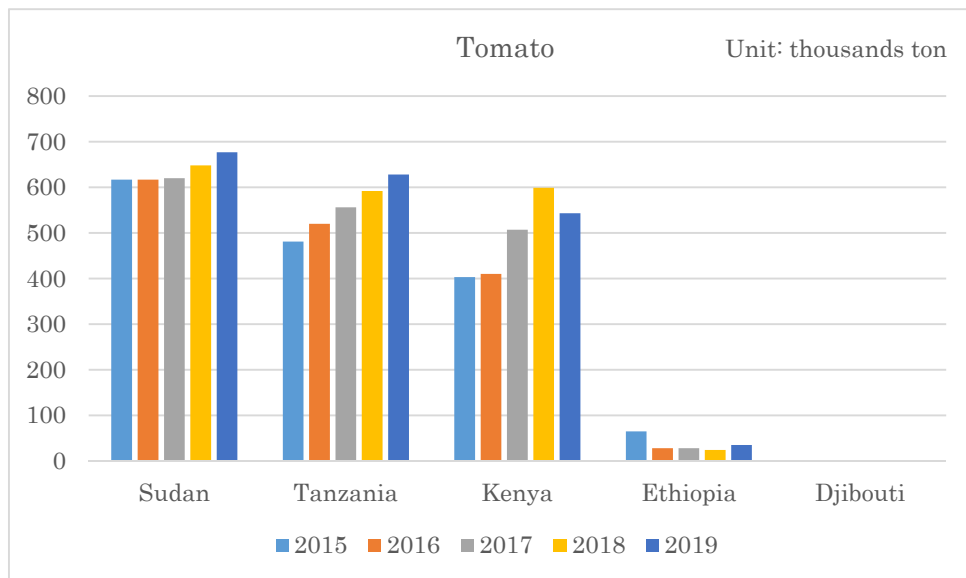
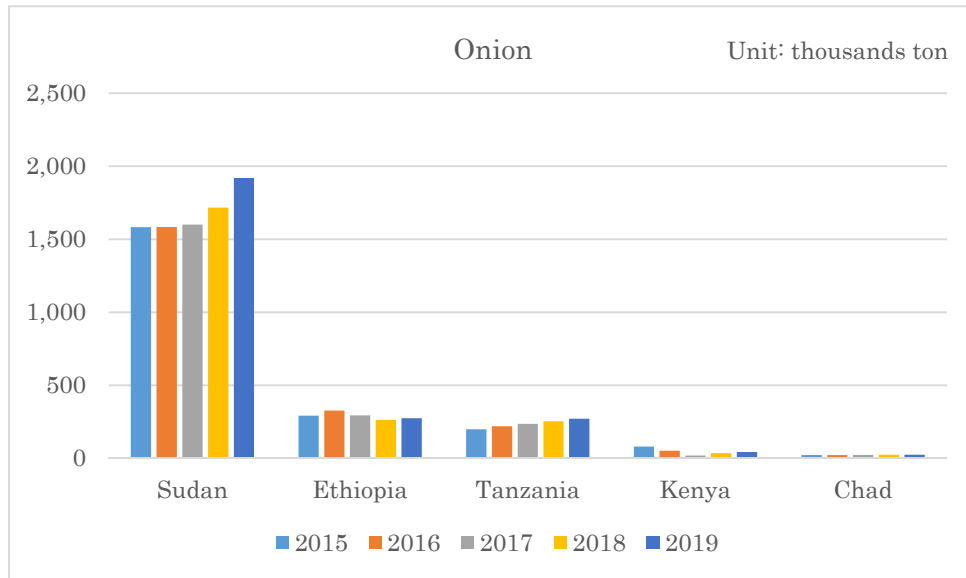
**Table 4-2-5 Ethiopia import Situation – Cotton**

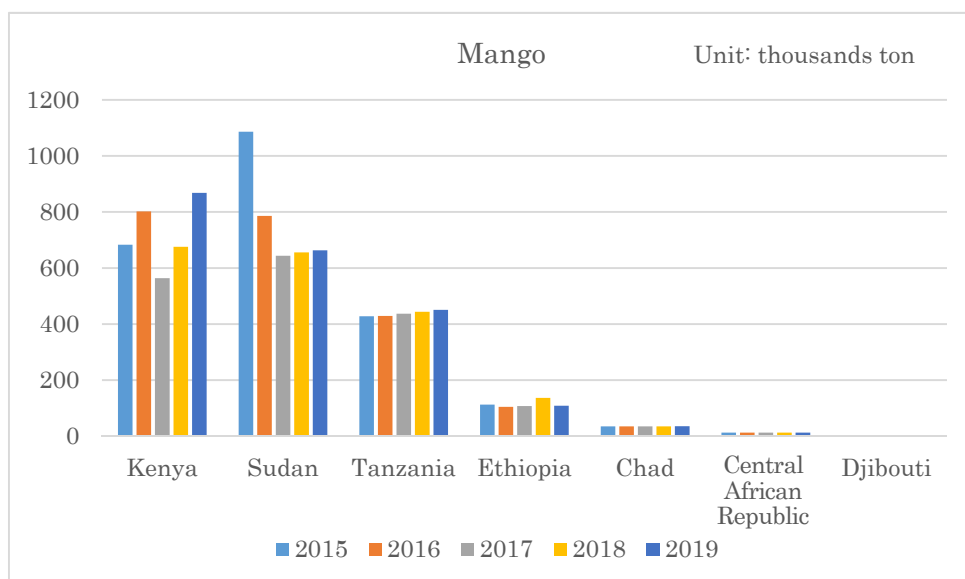
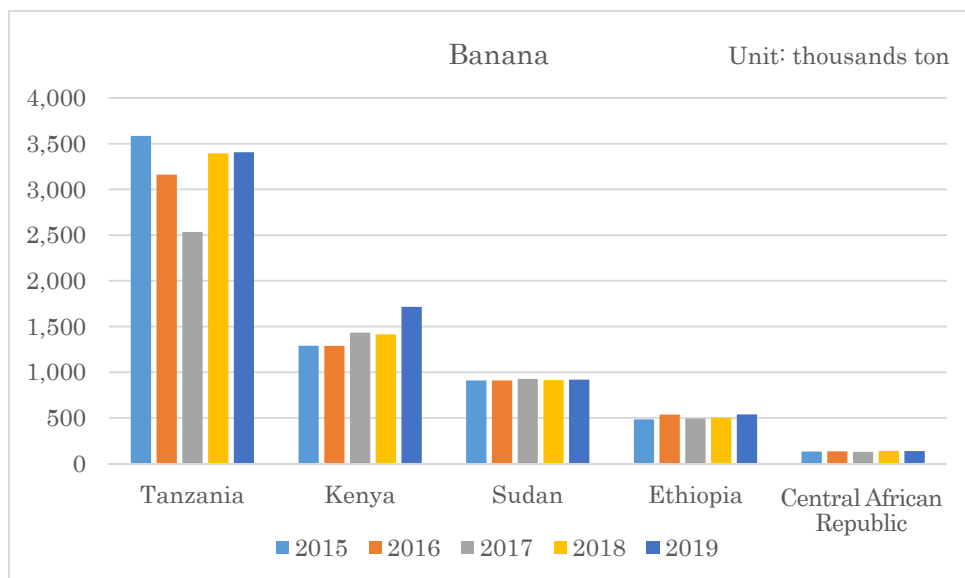
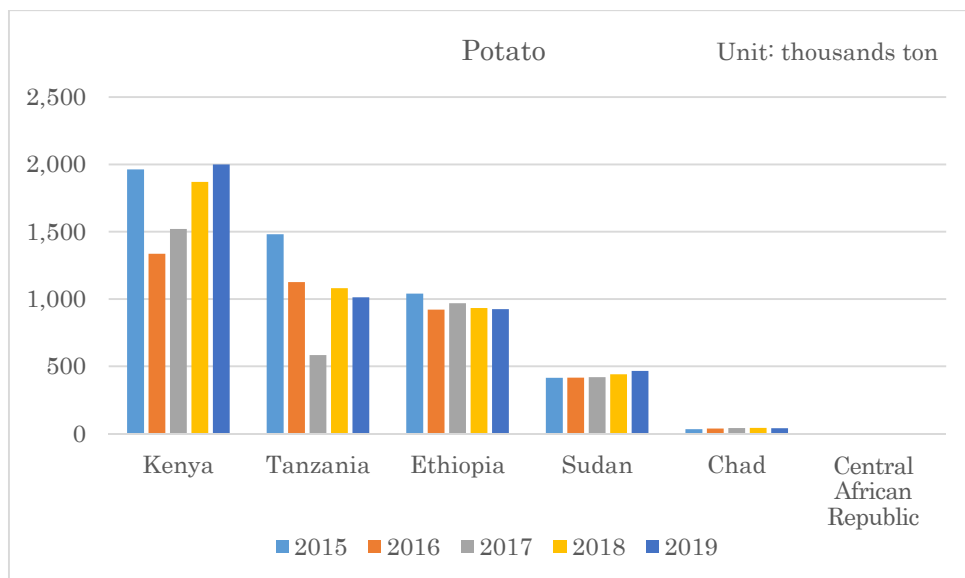
2016		2017		2018	
Country	Amount	Country	Amount	Country	Amount
India	1,551	India	1,978	India	3,289
United Kingdom	0	China	0	China	11
China	0		0	Japan	0

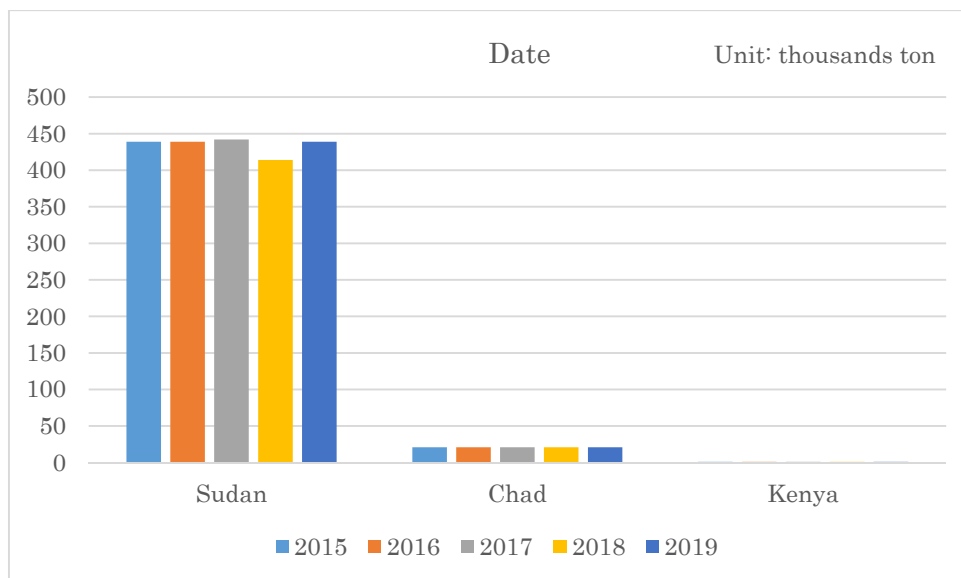
Source: UN Comtrade Database (HS code: 52.01)

#### (4) Vegetables and fruits

To grasp the trade situation of vegetables and fruits in the countries surrounding Sudan, the countries with the largest production volumes for vegetables and fruits were targeted. Sudan ranks first in the production of onions and dates, and is in fact, far ahead of other countries. However, the majority of potatoes and bananas are produced in Kenya and Tanzania, and these nations are also close competitors in terms of tomatoes and mangoes. The following charts present the production volumes for Sudan and its neighbours.







Source: FAOSTAT

**Figure 4-2-10 Production Situation in Sudan and Neighbouring Countries - Vegetables and Fruits**

Tomatoes are mostly exported from Ethiopia to neighbouring Djibouti, but not much else is traded, and only a very small amount is exported from Sudan. At the moment, tomatoes and other vegetable crops are likely to be difficult to be exported from Sudan, where cold chain challenges are significant, so in this regard value-added fruit exports should be developed first.

Kenya is the largest exporter of mangoes, but its exports are mainly to the Middle East, and not to countries around Sudan. In addition, exports of Mangoes from Ethiopia to neighbouring Djibouti are high, indicating that, as with tomatoes, the trade is taking advantage of geographical conditions. Thus, it can be said that the mango market in the countries surrounding Sudan is not large.

On the other hand, compared to Kenya, where mango production has not changed significantly, Sudan's mango export volume has remained at a very low level, and it is necessary to develop ways to expand sales channels in the Middle East and the EU.

**Table 4-2-6 Top Five Export Destinations for Sudan and Neighbouring Countries - Tomatoes**

Unit: thousands USD

	2016		2017		2018	
Ethiopia	Djibouti	2,285	Djibouti	1,720	Djibouti	1,804
	United Arab Emirates	44	United Arab Emirates	26	Somalia	1,633
	Saudi Arabia	66	Saudi Arabia	17	Saudi Arabia	12
	Somalia	1	Nigeria	4	Nigeria	8
	Sudan	0			Guinea	1
Kenya	Somalia	90	Uganda	81	Somalia	42
	South Sudan	67	Somalia	97	Uganda	7
	Bunkers	8	Country / Region unknown	7	Bunkers	6
	China, Hong Kong SAR	4	South Sudan	1	South Sudan	1
	Uganda	2	United Arab Emirates	1	Netherlands	1
Tanzania	Kenya	18	Kenya	88	Kenya	17
	Dem. Rep. of the Congo	8	Dem. Rep. of the Congo	0	Netherlands	4
			Qatar	0	Comoros	4
					Mozambique	2
					United Arab Emirates	2
<i>Sudan</i>			<i>Qatar</i>	<i>1</i>	<i>Qatar</i>	<i>0</i>

Source: UN Comtrade Database (HS Code: 07.02)

**Table 4-2-7 Top Five Export Destinations for Sudan and Neighbouring Countries - Mangoes**

Unit: thousands USD

	2016		2017		2018	
Kenya	United Arab Emirates	11,182	United Arab Emirates	10,295	United Arab Emirates	10,266
	Saudi Arabia	4,940	Saudi Arabia	3,959	Saudi Arabia	4,172
	Qatar	555	Qatar	862	Oman	2,062
	Bahrain	431	Uganda	761	Uganda	1,504
	Oman	206	Oman	642	Qatar	1,278
Ethiopia	Djibouti	465	Djibouti	446	Djibouti	319
	Somalia	15	Saudi Arabia	67	Saudi Arabia	33
	Saudi Arabia	6	Somalia	1	United Arab Emirates	21
			United Arab Emirates	0	Somalia	0
					Sweden	0
<i>Sudan</i>	<i>Qatar</i>	<i>805</i>	<i>Jordan</i>	<i>23</i>	<i>Saudi Arabia</i>	<i>205</i>
	<i>Eritrea</i>	<i>195</i>	<i>Saudi Arabia</i>	<i>18</i>	<i>Jordan</i>	<i>167</i>
	<i>Saudi Arabia</i>	<i>35</i>	<i>Qatar</i>	<i>10</i>	<i>Qatar</i>	<i>96</i>
	<i>United Arab Emirates</i>	<i>21</i>	<i>United Arab Emirates</i>	<i>1</i>	<i>United Arab Emirates</i>	<i>41</i>
	<i>Jordan</i>	<i>13</i>	<i>Turkey</i>	<i>0</i>	<i>Kuwait</i>	<i>33</i>
Tanzania	China, Hong Kong SAR	0	United Kingdom	7	United Arab Emirates	16
	United Arab Emirates	0	United Arab Emirates	5	United Kingdom	10
			Botswana	1	Australia	3
			Oman	0	Czech Republic	3
			Japan	0	Kenya	3

Source: UN Comtrade Database (HS Code: 0804.50)

## (5) Gum Arabic

Statistical information on the status of the gum arabic trade in countries surrounding Sudan are lacking, and data for Chad, which is included in the so-called Gum Belt (an area located in the latitudinal zone of high gum arabic production), are not available. As shown in the table below, Ethiopia and Kenya are importing gum arabic, but not in large amounts, so their markets are limited.

In an interview with NIPPON FUNMATSU YAKUHIN Co., LTD., which has been using Sudanese gum arabic as a raw material for more than 40 years, and Taka Corporation, which imports it, it was revealed that the value of Sudanese gum arabic is recognized worldwide, and that it is desirable to expand the market to emerging countries such as China and Indonesia, where population growth is remarkable.

**Table 4-2-8 Import and Export Status of Neighbouring Countries - Gum Arabic**

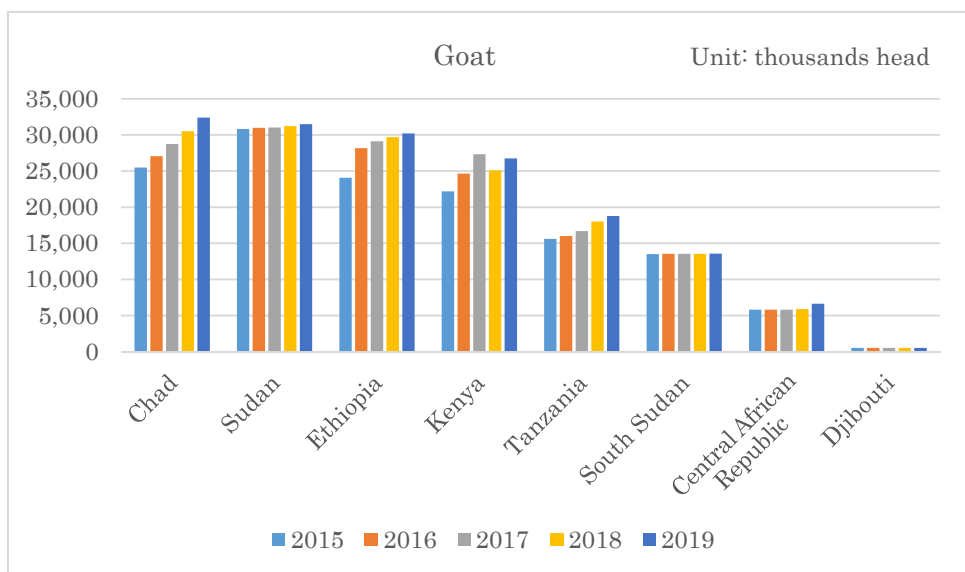
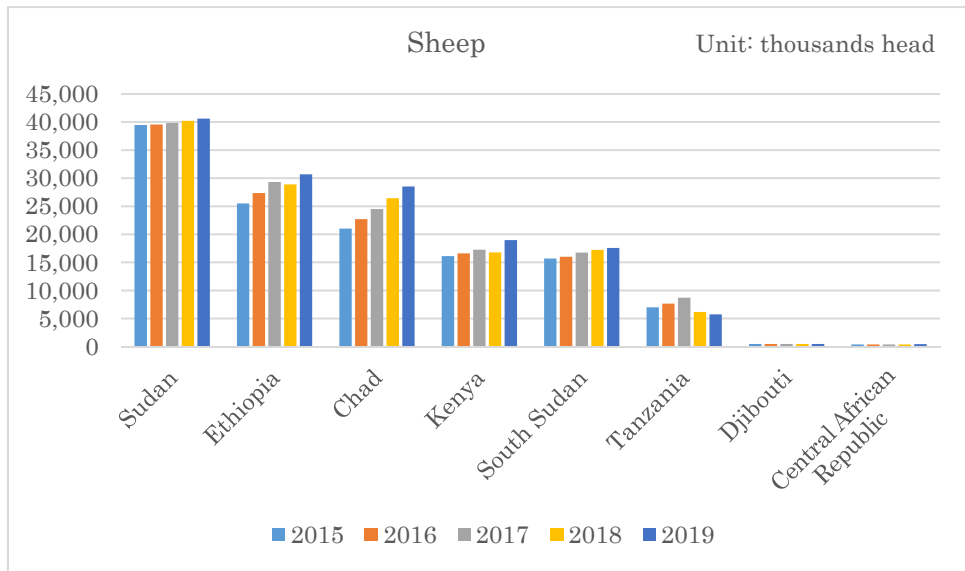
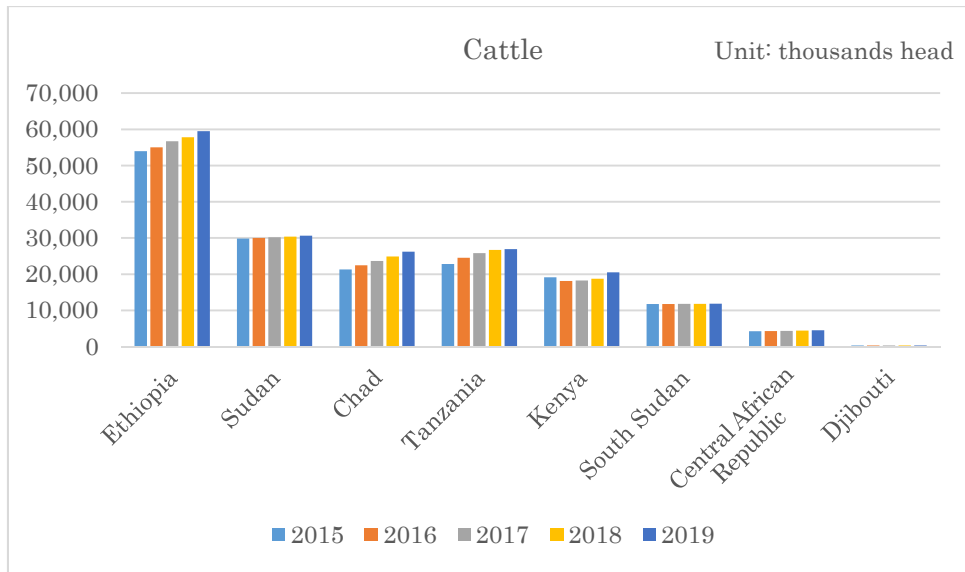
Unit: thousands USD

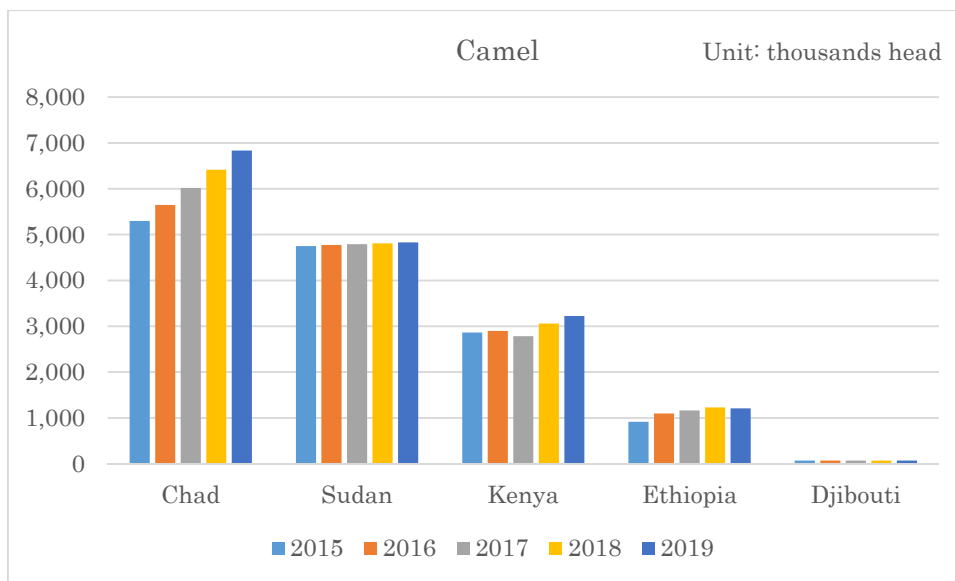
	2016	2016	Export and import difference	2017	2017	Export and import difference	2018	2018	Export and import difference
	Imports	Exports		Imports	Exports		Imports	Exports	
<i>Sudan</i>	<i>No statistics</i>	<i>No statistics</i>	<i>No statistics</i>	482	114,034	113,552	366	114,634	114,268
Ethiopia	392	309	-83	320	169	-151	872	269	-603
Kenya	42	98	56	81	0	-81	57	111	55
Tanzania	12	195	183	10	61	51	12	0	-12

Source: UN Comtrade Database (HS Code: 1301.20)

## (6) Livestock

In terms of livestock in Sudan and surrounding countries, Ethiopia ranks first for cattle production, Sudan for sheep, and Chad for goats and camels. Livestock head for the majority of these countries are rising, particularly in Ethiopia and Chad, and goats became Sudan's most numerous livestock head in 2019. Djibouti and the Central African Republic have a small number of head but also small populations, and they are not considered to be countries to which Sudan will actively expand the export of livestock.



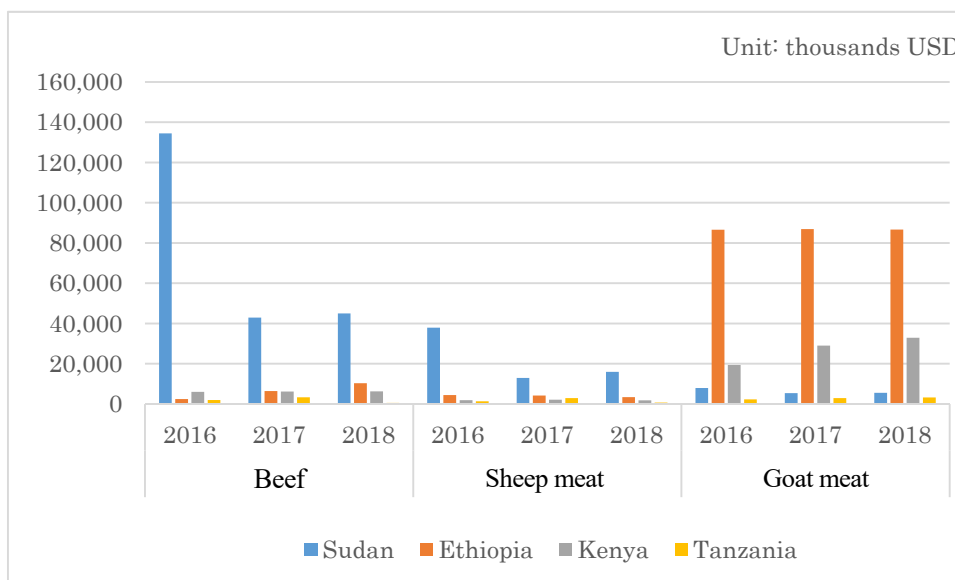


Source: FAOSTAT

**Figure 4-2-11 Production Situation in Sudan and Neighbouring Countries - livestock**

**(7) Meat**

In regard to the status of the meat trade in Sudan and the countries surrounding it, the majority of the trade in Sudan is for beef and sheep meat, and in Ethiopia it is goat meat. Kenya and Tanzania have some exports, but Chad and the Central African Republic are almost net importers. Statistics were not available for Djibouti and South Sudan.



Source: UN Comtrade Database [HS codes: 02.01; 02.02 (beef), 02.04 (goat meat deducted and sheep meat calculated), 0204.50 (goat meat)]

**Figure 4-2-12 Export and Import Situation of Sudan and Neighbouring Countries - Meat**

A valid comparison is to examine the expansion of Sudan's export sales channels by looking at Tanzania's import partners, which is a nation that has a large volume of beef imports. The majority of beef imports are from neighboring Kenya, which means that Sudan's competitiveness is not high at the moment.



In addition, statistics were not available for the Central African Republic's import partners, a nation which is a major importer of sheep meat.

**Table 4-2-9 Tanzania's Import Situation - Meat (Beef - Frozen)**

Unit: Thousands of dollars

2014		2015		2016		2017		2018	
Kenya	3,654	Kenya	2,387	Kenya	2,890	Kenya	1,910	Kenya	1,529
Namibia	13	South Africa	368	South Africa	33	South Africa	24	South Africa	0
Turkey	10	Denmark	10	Brazil	9	United Arab Emirates	3	USA	0
Canada	9	Jordan	4	United Kingdom	1	United Kingdom	1	United Kingdom	0
Brazil	9	United Kingdom	1	China	0	Italy	0		0

Source: UN Comtrade Database (HS Code: 202 (Beef - Frozen))

The majority of Sudan's meat exports go to Egypt and the United Arab Emirates. In addition, Ethiopia, which is a larger exporter of meat than Sudan, exports 90% of its meat to the United Arab Emirates and Saudi Arabia, so that it is realistic Sudan will target these and neighboring countries for exporting meat. As a result of the field survey in Sudan, it is understood that the absolute number of slaughterhouses for export is insufficient compared to Ethiopia, and that there is a lack of disease control programs.

**Table 4-2-10 Sudan's Top Five Export Destinations - Meat**

Unit: Thousands of dollars

2014		2015		2016		2017		2018	
Jordan	47,498	United Arab Emirates	81,566	Egypt	149,701	Egypt	30,201	Egypt	29,892
United Arab Emirates	32,194	Qatar	33,696	United Arab Emirates	14,929	United Arab Emirates	13,459	United Arab Emirates	18,123
Bahrain	17,347	Egypt	19,133	Qatar	11,606	Qatar	10,726	Qatar	10,550.
Qatar	16,636	Jordan	2,542	Saudi Arabia	2,793	Saudi Arabia	3,903	Bahrain	5,024
Egypt	2,872	Kuwait	1,074	Kuwait	1,039	Bahrain	1,911	Kuwait	2,400

Source: UN Comtrade Database (HS Code: 2)

**Table 4-2-11 Ethiopia's Top Five Export Destinations - Meat**

Unit: Thousands of dollars

2014		2015		2016		2017		2018	
United Arab Emirates	51,802	United Arab Emirates	59,880	United Arab Emirates	56,402	United Arab Emirates	54,933	United Arab Emirates	62,480
Saudi Arabia	28,244	Saudi Arabia	34,177	Saudi Arabia	34,192	Saudi Arabia	37,030	Saudi Arabia	32,593
China, Hong Kong SAR	1,637	Viet Nam	1,595	Bahrain	2,142	Bahrain	4,234	Bahrain	3,929
Viet Nam	421	Egypt	181	Viet Nam	1,447	Viet Nam	2,305	Viet Nam	1,380
Turkey	313	China, Hong Kong SAR	128	Comoros	273	Bangladesh	754	Oman	436

Source: UN Comtrade Database (HS Code: 2)

## (8) Leather

Looking at the situation in Sudan and Sudan's neighbouring countries for leather, Tanzania exports more raw hides, Kenya exports more tanned hides, and Ethiopia exports more leather. In addition Sudan is exporting a lot of raw cattle hides and tanned sheep and goatskin, but it is not exporting leather at all.

**Table 4-2-12 Imports and Exports of Sudan and Neighbouring Countries - Leather**

Unit: Thousands USD

	2016	2016	Export and	2017	2017	Export and	2018	2018	Export and
	import	export	import	import	export	import	import	export	import
			difference			difference			difference
<b>Cow and horse rawhide</b>									
Tanzania	0	452	452	0	1,507	1,506	0	2,646	2,646
<i>Sudan</i>	<i>0</i>	<i>3,590</i>	<i>3,590</i>	<i>1</i>	<i>3,893</i>	<i>3,892</i>	<i>0</i>	<i>2,353</i>	<i>2,352</i>
Kenya	2,531	1,657	-874	1,962	457	-1,505	1,077	605	-473
Ethiopia	6	0	-6	719	0	-719	2,456	0	-2,456
<b>Sheep rawskin</b>									
<i>Sudan</i>	<i>0</i>	<i>117</i>	<i>117</i>	<i>0</i>	<i>719</i>	<i>719</i>	<i>1</i>	<i>127</i>	<i>126</i>
Tanzania	0	8	8	0	0	0	9	11	2
Kenya	289	0	-289	478	7	-471	557	1	-557
Ethiopia	434	0	-434	4,091	0	-4,091	1,499	49	-1,450
<b>Other rawhide/skin</b>									
Tanzania	6	641	636	17	317	300	12	320	308
<i>Sudan</i>	<i>2</i>	<i>0</i>	<i>-2</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Ethiopia	97	0	-97	527	0	-527	359	2	-357
Kenya	2,477	24	-2,452	2,726	27	-2,699	2,522	49	-2,473
<b>Cow and horse tanned hide</b>									
Kenya	671	23,428	22,756	494	22,967	22,473	482	16,666	16,184
Tanzania	12	1,471	1,459	2	2,245	2,244	38	243	205
<i>Sudan</i>	<i>10</i>	<i>36,024</i>	<i>36,014</i>	<i>2</i>	<i>124</i>	<i>122</i>	<i>9</i>	<i>22</i>	<i>12</i>
Ethiopia	10	0	-10	2,759	0	-2,759	117	0	-117
<b>Sheep tanned skin</b>									
Kenya	2	6,502	6,500	90	9,653	9,563	66	13,725	13,659
<i>Sudan</i>	<i>0</i>	<i>8,302</i>	<i>8,302</i>	<i>0</i>	<i>11,651</i>	<i>11,650</i>	<i>1</i>	<i>10,270</i>	<i>10,269</i>
Tanzania	0	120	120	0	513	513	3	3	1
Ethiopia	4,697	143	-4,554	10,318	151	-10,167	4,837	115	-4,722
<b>Other tanned hide/skin</b>									
<i>Sudan</i>	<i>11</i>	<i>21,210</i>	<i>21,199</i>	<i>7</i>	<i>8,138</i>	<i>8,130</i>	<i>23</i>	<i>3,103</i>	<i>3,080</i>
Tanzania	8	734	727	0	1,349	1,349	33	138	106
Ethiopia	2,293	217	-2,076	7,812	126	-7,686	5,467	5	-5,461
Kenya	3	14,997	14,993	0	16,170	16,170	12,572	63	-12,510
<b>Cow and horse leather</b>									
Ethiopia	2,508	937	-1,570	2,088	1,467	-621	1,366	2,920	1,554
Kenya	133	76	-58	12	177	165	0	142	142
Tanzania	12	0	-11	7	0	-7	3	11	8
<i>Sudan</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>0</i>	<i>-1</i>

	2016	2016	Export and import difference	2017	2017	Export and import difference	2018	2018	Export and import difference
	import	export		import	export		import	export	
Sheep leather									
Ethiopia	1,238	37,254	36,016	1,257	35,588	34,331	1,411	32,617	31,206
Kenya	0	8	8	0	0	0	32	383	351
Tanzania	0	0	0	0	0	0	0	0	0
<i>Sudan</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

Source: UN Comtrade Database (HS codes: 4101, 4102, 4103, 4104, 4105, 4106, 4107, 4112)

Raw cattle hides are exported mainly to Nigeria, while tanned sheep and goat hides are exported mainly to Ethiopia and Saudi Arabia, which are in a position to provide raw materials from their respective countries. Sudan's neighboring country, Ethiopia, has become a leading leather exporter in Africa due to high demand for high quality Ethiopian sheepskin and low labor costs, which has led to a high level of foreign investment. In the future, the goal in Sudan will be to add high value by tanning raw cattle hides and producing sheep and goat leather, but it is important to invest in the development of facilities and train human resources in parallel with the expansion of meat exports.

**Table 4-2-13 Sudan's Top Five Export Destinations - Leather**

Unit: Thousands USD

2016		2017		2018	
Rawhide					
Nigeria	1,539	Nigeria	2,618	Nigeria	1,962
India	1,242	India	409	India	269
United Arab Emirates	398	Syria	377	Syria	83
Egypt	376	Egypt	305	Egypt	29
Turkey	21	Kenya	143	Country / Region unknown	10
Tanned animal hide					
Saudi Arabia	6,168	Saudi Arabia	4,835	Saudi Arabia	6,479
Turkey	1,140	Ethiopia	3,090	China	1,248
China	578	China	1,915	Ethiopia	964
Italy	58	Turkey	951	Turkey	909
Burundi	0	Italy	427	Italy	523
Tanned goat skin					
Saudi Arabia	1,661	Ethiopia	2,843	Ethiopia	1,562
Italy	172	Saudi Arabia	2,585	China	625
China	122	China	1,599	Saudi Arabia	439
Ethiopia	98	Turkey	355	Turkey	289
Turkey	82	Italy	297	Italy	131

Source: UN Comtrade Database (HS codes: 410120, 410510, 410621)

#### 4-2-3 Trade situation of Sudanese products in the Middle East, Europe and Japan markets

The import status of Sudanese products in the Middle East, Europe and Japan is summarised in the following tables. For Europe and the Middle East, the countries with the largest transaction value were selected. The shaded items were analysed in detail.

**Table 4-2-14 Sudan's Major Export Commodities and Trade Values by Country (Agriculture)**

Unit: Thousands USD

	Sesame	Groundnut	Cotton	Gum Arabic	Other agricultural items
<i>Japan</i>	1,830	0	0	2,738	390
<i>France</i>	0	27	0	56,693	5
Germany	68	0	573	8,383	1,381
Greece	12,655	113	0	223	4
Italy	1,535	0	0	4,428	0
Switzerland	88,671	44,872	13,589	811	149
Turkey	57,729	1,172	23,482	384	258
<i>Egypt</i>	106,257	7,973	32,468	792	18,917
Jordan	88,217	934	0	83	65
Lebanon	24,453	36	287	32	389
Qatar	8,338	1	0	48	88
Saudi Arabia	64,427	151	0	660	1,603
Syria	27,513	3,285	0	148	0
<i>United Arab Emirates</i>	22,475	3,656	0	1,893	1,519
Others	266,765	143,476	90,363	32,187	20,744
Total amount	770,956	205,696	160,762	109,503	45,512

Source: Central Bank of Sudan\_Foreign Trade Statistical Digest 2019\_Provisional data

**Table 4-2-15 Sudan's Major Export Commodities and Trade Values by Country (Livestock)**

Unit: Thousands USD

	Livestock	Meat	Leather
Japan	2	0	0
France	0	0	0
Germany	0	0	0
Greece	0	0	0
<i>Italy</i>	0	0	450
Switzerland	5	1	230
Turkey	0	0	1,215
<i>Egypt</i>	167,914	24,814	0
Jordan	11	0	160
Lebanon	2	0	0
Qatar	4,521	4,162	0
Saudi Arabia	410,879	2,321	5,850
Syria	15	0	0
<i>United Arab Emirates</i>	237	9,069	0
Others	4,367	6,367	1,730
Total amount	587,953	46,734	9,635

## (1) Middle East

For Egypt and the United Arab Emirates, the sources of imports of vegetables, fruits, livestock, and meat have been summarized.

### 1) Vegetables

Egypt mostly imports vegetables from the UK, Australia, and Canada, and amongst countries around Sudan, Ethiopia is a bigger exporter than Sudan is. As shown in the table below, beans, such as string beans and fava beans, are exported from Ethiopia.

On the other hand, the United Arab Emirates imports more vegetables from India, Canada, and Australia, while amongst countries around Sudan, Ethiopia, Tanzania, and Kenya export more vegetables than Sudan does. As shown in the table below, Ethiopia exports legumes such as chickpeas and beans, in comparison Tanzania and Kenya also export mainly legumes.

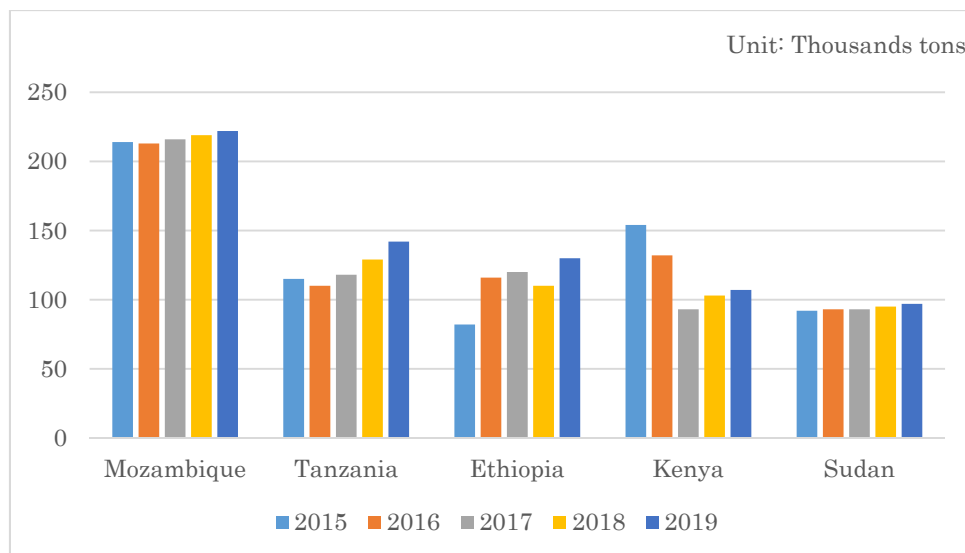
**Table 4-2-16 Ethiopia's Export Value to Egypt and UAE (Vegetables)**

Unit: Thousands USD

	2014	2015	2016	2017	2018
<b>Egypt</b>					
String beans	494	586	1,254	0	478
Broad beans	1,364	142	0	0	882
Others	66	126	0	365	17
<b>United Arab Emirates</b>					
Chickpeas (Cicer arietinum)	5,494	4,429	8,535	11,004	10,052
String beans	1,537	186	1,013	4,771	1,291
Others	1,954	1,367	1,624	314	308

Source: UN Comtrade Database (HS codes: 071320, 071333, 071350, 07)

Figure 4-2-13 shows the production performance of pulses within Africa, and it can be assumed that there is a strong correlation between production volume and export volume. Therefore, the volume of exports from Sudan to Egypt and the United Arab Emirates can be expanded by increasing production areas and improving productivity.



Notes: Arranged by top five countries in 2019

Source: FAOSTAT

**Figure 4-2-13 Top Five Countries in Africa in Terms of Legume Production**

## 2) Fruit

Egypt mostly imports fruits from Italy, Greece and Lebanon, but Kenya exports more than Sudan does. As shown in the table below, avocados are mainly exported from Kenya.

Most fruits in the United Arab Emirates are imported from the United States, India and South Africa, and amongst countries around Sudan, Kenya, Tanzania and Ethiopia export more than Sudan does. Ethiopia mainly exports strawberries; Kenya mainly exports avocados, mangoes, guava, and mangosteen; and Tanzania mainly exports cashew nuts.

**Table 4-2-17 Major Fruit Imports to Egypt and UAE (Neighboring Countries)**

Unit: Thousands USD

Country	Items	2014	2015	2016	2017	2018
Egypt						
Kenya	Avocado	944	1,147	115	857	2,136
Sudan	Banana	69	0	351	1,931	698
	Mango, etc.	283	129	0	0	4
United Arab Emirates						
Ethiopia	Strawberry	520	530	1,111	642	566
Kenya	Avocado	13,310	17,836	17,848	17,387	17,064
	Mango, etc.	12,577	14,343	10,742	10,865	9,449
Tanzania	Cashew nuts	2,088	1,161	2,209	2,251	4,416
Sudan	Lemon	98	196	161	137	137

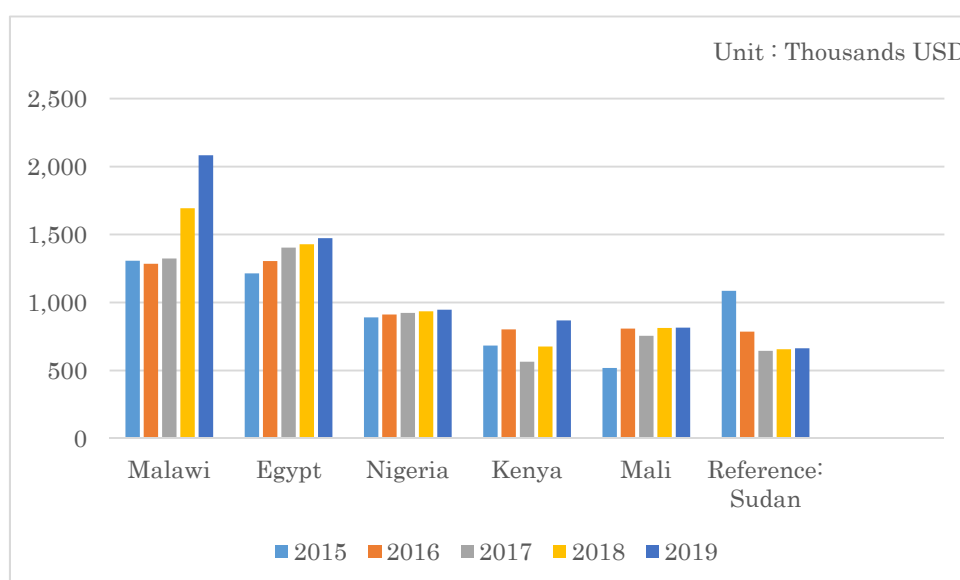
Source: UN Comtrade Database (HS codes: 80440, 80390, 81010, 80450, 80132, 80550)

According to statistics, in terms of the types of fruits exported to Egypt and the United Arab Emirates, avocados, strawberries and cashews are not produced in Sudan. The production of mangoes in Sudan has one of the highest volumes in the African region as shown in Figure 4-2-14. However, as shown

in Table 4-2-18, the volume of exports to the United Arab Emirates remains at a very low level. No data were available for Egypt.

Among the countries surrounding Sudan, Kenya is the most competitive exporter of mangoes. One of the reasons that Kenya is highly active in mango exports is the financial and institutional support provided by the government. The Kenyan Ministry of Industrialization, Trade and Enterprise Development is investing heavily in mango processing facilities for export to the United Arab Emirates. In addition, the International Centre for Insect Physiology and Ecology (ICIPE), headquartered in Kenya, provides training to farmers in Integrated Pest Management (IPM), which has contributed to the control of weevils and the creation of fruit fly-free zones. In addition, the government has been active in promoting mangoes to the United Arab Emirates and has established an active mango export umbrella organisation called the Fresh Produce Exporters Association of Kenya, which has resulted in efficient distribution for producers and exporters. Furthermore, since the main shipping season is from October to March, Kenya has the advantage of being able to stagger its shipping season from that of its competitors, India and Pakistan (whose main shipping season is from April to June).

On the other hand, the environment surrounding mangoes in Sudan is that there is very little support from the government. There is little interaction between the CBOS, the Ministry of Agriculture and Natural Resources, the SSMO, research institutions, etc., and little investment in the export industry, so that the development of mango exports is left pretty much to the private sector's autonomy. Price competitiveness are suffers in comparison to Kenya due to fees for interstate transfers and an insufficient packaging industry. Furthermore, according to the field survey, only 15~30% of cultivated mangoes in Sudan are in high demand by importing countries, and the post-harvest loss is 30%. Against this background, the number of mangoes that meet the quality standards of overseas markets has been very limited.



Notes: Arranged by top five countries in 2019, but Sudan is ranked 3 in 2015 and 5 in 2017

Source: UN Comtrade Database

**Figure 4-2-14 Top Five Mango-producing Countries in Africa**

**Table 4-2-18 Top 5 Exporters of Mangoes to the United Arab Emirates**

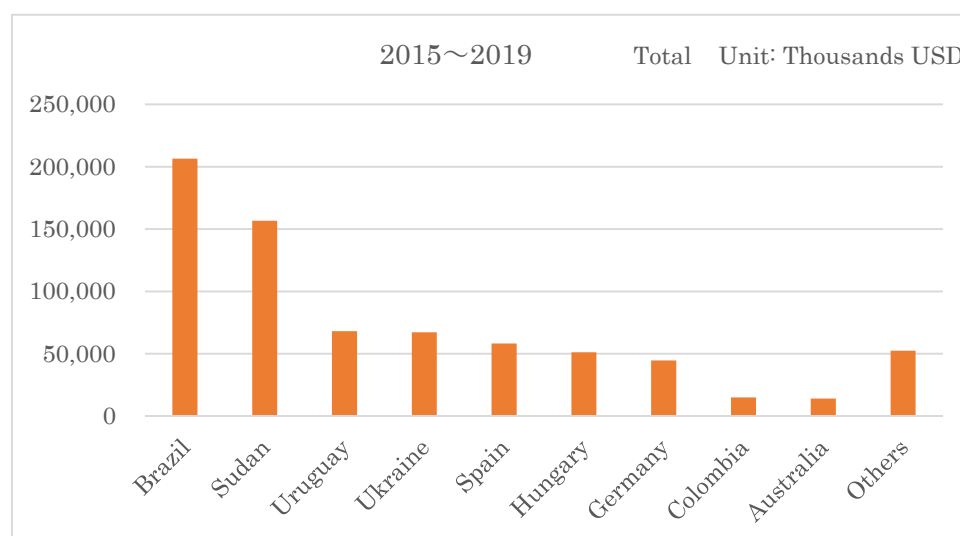
Unit: Thousands USD

2014		2015		2016		2017		2018	
Country	Amount	Country	Amount	Country	Amount	Country	Amount	Country	Amount
India	38,907	India	33,440	India	36,988	India	39,009	India	26,434
Pakistan	22,233	Pakistan	19,327	Pakistan	30,479	Pakistan	16,878	Pakistan	21,522
Kenya	12,577	Kenya	14,343	Kenya	10,742	Kenya	10,865	Kenya	9,449
Egypt	6,778	Thailand	6,719	Egypt	7,582	Egypt	8,970	Thailand	5,497
Thailand	6,525	Egypt	5,867	Thailand	6,429	Thailand	6,674	Egypt	4,739
<i>Sudan</i>	<i>40</i>	<i>Sudan</i>	<i>21</i>	<i>Sudan</i>	<i>13</i>	<i>Sudan</i>	<i>6</i>	<i>Sudan</i>	<i>48</i>
	<i>:20th</i>		<i>:26th</i>		<i>:29th</i>		<i>:33rd</i>		<i>:20th</i>

Source: UN Comtrade Database

### 3) Livestock

Egypt imports most of its cattle from Brazil and Sudan, but its main import partners include Brazil, Uruguay, and other countries that require long-distance transportation. These countries are promoting the formation of disease-free zones through active vaccination. Sudan needs to increase its export competitiveness by improving its vaccination capacity and upgrading the quality of its markets and quarantine stations while taking advantage of its distance strengths.<sup>27</sup>



Source: UN Comtrade Database (HS code: 01.02)

**Figure 4-2-15 Top Exporters of Livestock Products (Cattle) to Egypt**

The United Arab Emirates imports live sheep and goats from Australia, India and other countries.

Australia is the world's largest exporter of livestock, ranking first for live sheep and third for live cattle. The government has invested in transport, shipping and port infrastructure, for example, and there are more than 20 dedicated ships in service to transport cattle, sheep and goats to their export destinations. In addition, the regional office of Meat and Livestock Australia, an organisation funded by Australian

<sup>27</sup> [https://www.city.kikuchi.lg.jp/dl?q=65751\\_filelib\\_5e1c4a59ddd743972e8e1b7e7d3e7c5c.pdf](https://www.city.kikuchi.lg.jp/dl?q=65751_filelib_5e1c4a59ddd743972e8e1b7e7d3e7c5c.pdf)

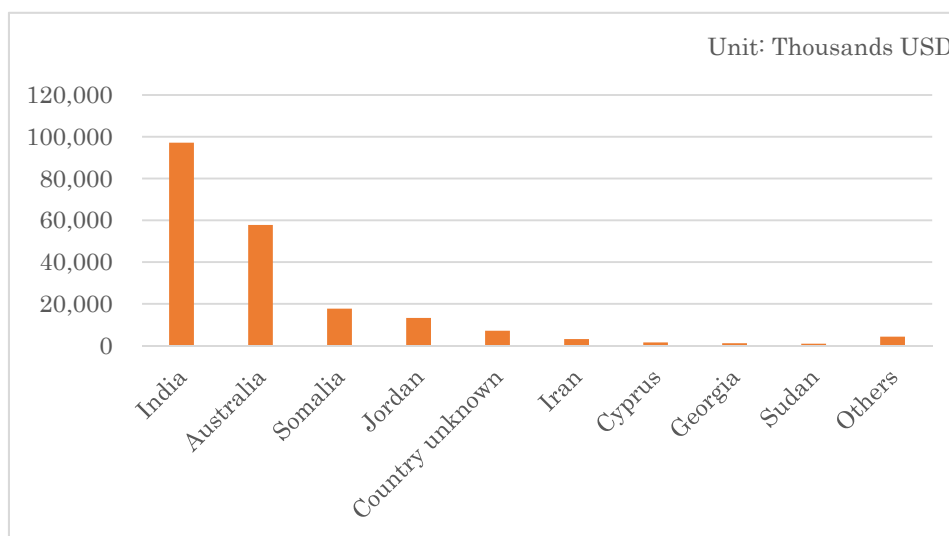


livestock producers, is located in Dubai, and this office conducts market entry and development activities for the export of red meat and livestock to the Middle East and Africa. Australia's livestock export industry is managed by a system of government control, with federal, state, territory and local government laws and regulations interacting with each other.

In India, traders are able to provide maintenance data on livestock health records, which has successfully increased the confidence of livestock buyers in the United Arab Emirates. In addition, the Department of Animal Husbandry, Dairying, and Fisheries of the Government of India, is assisting state governments through its Livestock Health and Disease Control Program. In terms of trade, foot-and-mouth disease is a concern, but India provides safety measures against disease under an official program approved by the International Epizootic Office (OIE).

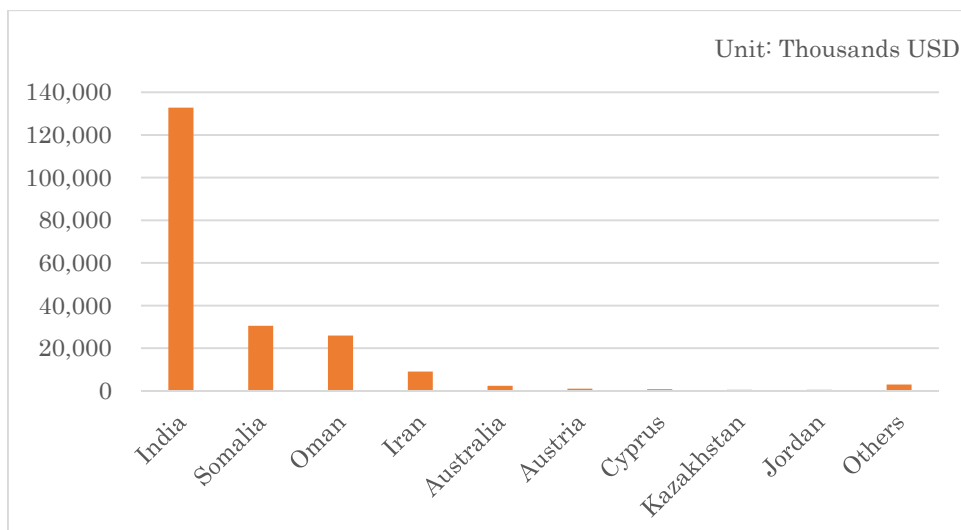
On the other hand, one of the soft challenges in Sudan is the presence of multiple intermediaries in the supply chain, and the high transaction costs due to multiple state government taxes on the journey to the port (Darfur region is a large and distant production area which inflates costs). Another medium- to long-term issue is the lack of a formal traceability system and the fact that livestock are being supplied using traditional grading and trading systems. In terms of hardware, asphalted roads and livestock quarantine stations need to be upgraded and maintained.

In addition, Sudan's export partners frequently suspend livestock exports from Sudan due to livestock diseases. Weak livestock health services are arguably the biggest bottleneck to livestock export promotion in Sudan



Source: UN Comtrade Database (HS Code: 0104.10)

**Figure 4-2-16 Top Exporters of Livestock Products (sheep) to the United Arab Emirates**

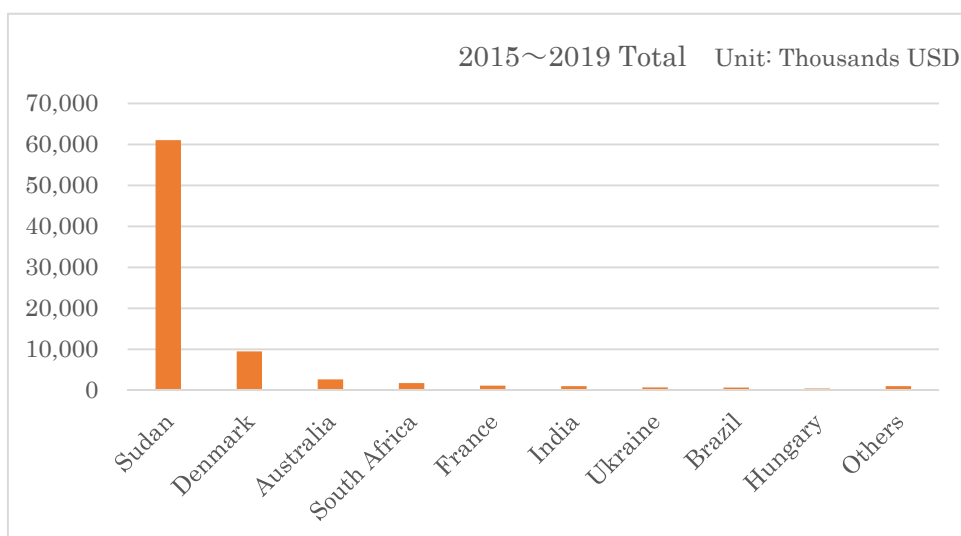


Note: Sudan is in 10<sup>th</sup> place at 465,000 USD  
 Source: UN Comtrade Database (HS Code: 0104.20)

**Figure 4-2-17 Top Exporters of Livestock (Goats) to the United Arab Emirates**

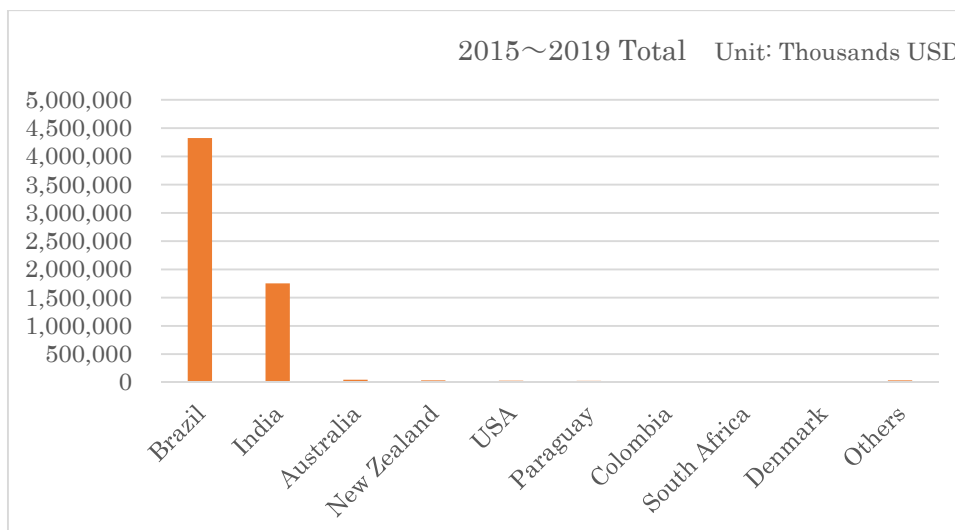
#### 4) Meat

Egypt is a major importer of beef, with the majority of imports coming from Sudan. Since the population of Egypt will continue to grow, it is necessary to improve production and distribution aspects so that supply can meet demand.



Source: UN Comtrade Database (HS code: 02.01)

**Figure 4-2-18 Top Exporters of Meat (Cattle - Fresh or Chilled) to Egypt**



Note: Sudan is in 29<sup>th</sup> place at 228,000 USD  
 Source: UN Comtrade Database (HS code: 02.02)

**Figure 4-2-19 Top Exporters of Meat (Cattle - Frozen) to Egypt**

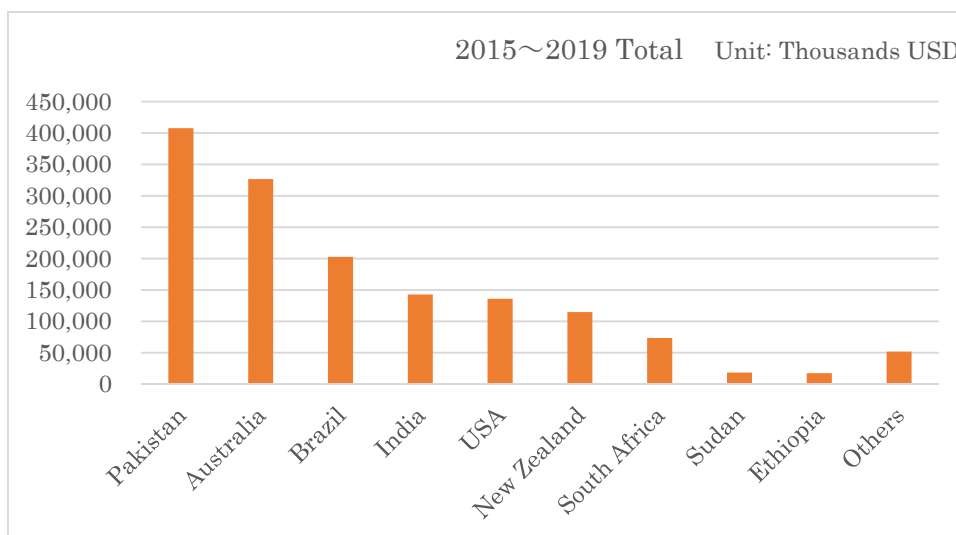
The United Arab Emirates imports a lot of beef from Pakistan, Australia and Brazil, sheep meat from Australia and India, and goat meat from Sudan's neighboring countries Ethiopia and Kenya.

Sudan's neighbouring countries that are highly competitive for meat trade are Ethiopia and Kenya. The Ethiopian Meat Producer-Exporters Association (EMPEA) is a membership-based organisation that was established in 2003 to ensure that Ethiopian meat products meet international standards and to promote exports. The Ethiopian goat meat export slaughterhouses are private and Halal-certified, and have automatic and semi-automatic mechanical slaughtering and processing equipment, a chilling room, air-conditioned deboning facilities, packaging equipment, freezing facilities and wastewater treatment. In addition, many of Ethiopia's goat meat exporters are HACCP certified by international third-party certifiers, and an increasing number of slaughterhouses are ISO 22000 and ISO 9000 certified. In the near future, EMPEA aims to achieve 100% HACCP/ISO certification in all goat meat slaughterhouses in Ethiopia. In addition, the Ethiopian government's investment policy offers attractive incentives to the private sector, including exemption from import duties on materials and equipment, duty-free access for up to five years, and exemption from some export duties.

The first reason for Kenya's thriving goat meat exports is its investment in modern slaughterhouses that meet international quality standards in the United Arab Emirates, including Halal certification. Fifteen of the slaughterhouses are licensed to export, and every year more and more are certified to export goat meat. Also Kenya has established a traceability system, which is important in the goat export market (especially in the United Arab Emirates), where livestock are named at birth, earmarked and branded. A radio frequency (RF) tagging system is also being piloted to enhance traceability. The Kenya Meat Commission is the largest and most modern slaughterhouse in East and Central Africa, supplying high quality meat products to the United Arab Emirates and other Middle Eastern countries.

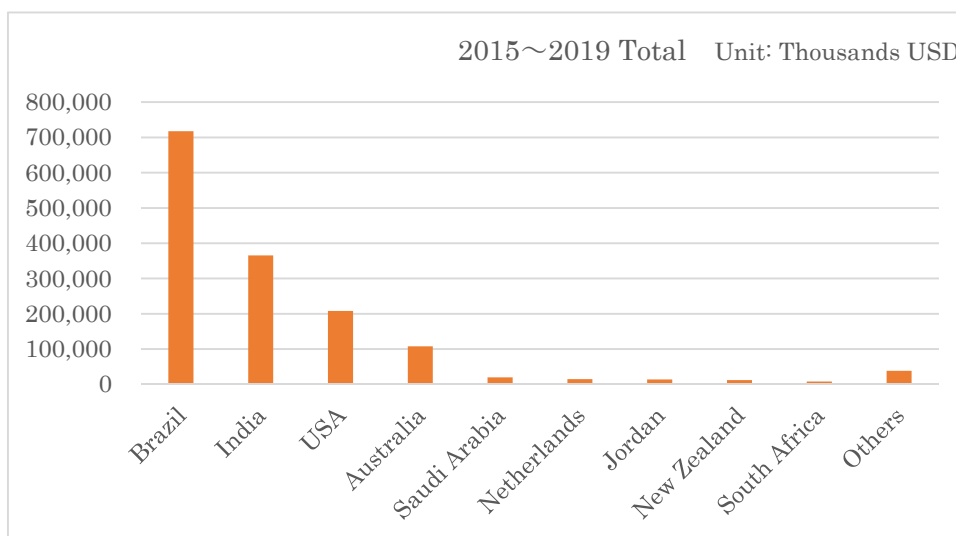
On the other hand, field research in Sudan shows that the number of slaughterhouses and processing facilities for export in Sudan is very low and there is little investment. Measures in the livestock

health sector are also lagging behind, and although foot-and-mouth disease is one of the biggest diseases hampering meat exports, no serious programmes for disease control have been implemented. This has also delayed the formation of disease-free zones, which are important for meeting the export requirements of the United Arab Emirates. In addition, various other support measures are required, such as the provision of incentives including tariff exemptions and duty exemptions, the introduction of traceability systems, and the updating of quarantine stations.



Source: UN Comtrade Database (HS code: 02.01)

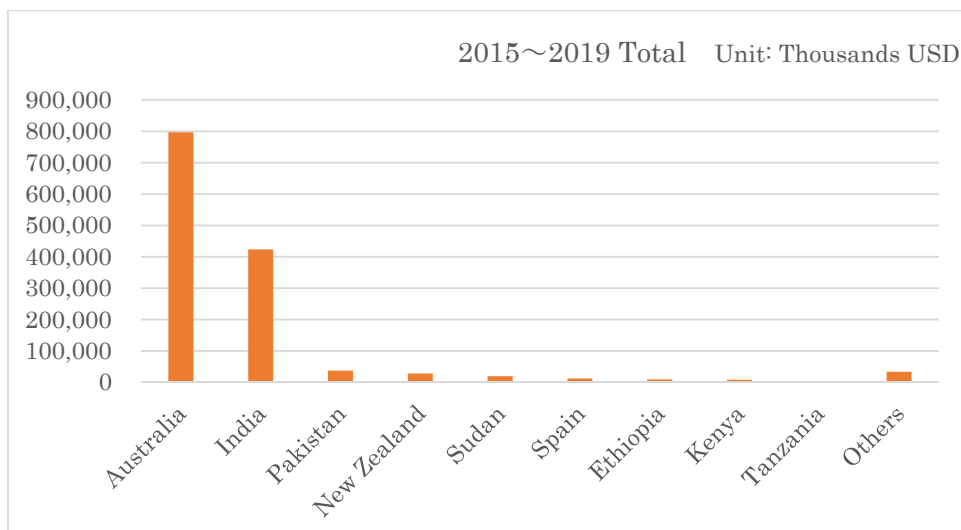
**Figure 4-2-20 Top Meat (Cattle - Fresh or Chilled) Exporters to the United Arab Emirates**



Note: Sudan is in 19<sup>th</sup> place at 614,000 USD

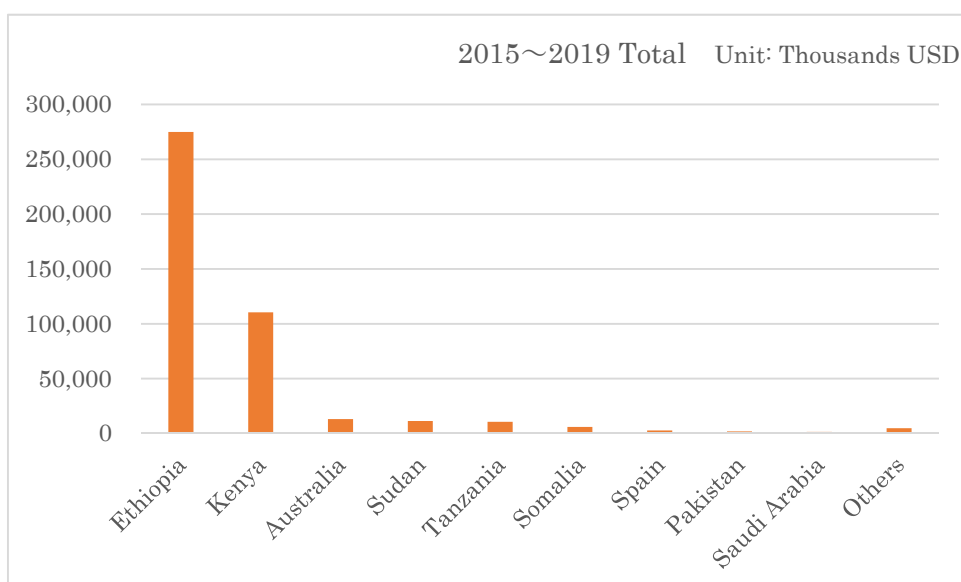
Source: UN Comtrade Database (HS code: 02.02)

**Figure 4-2-21 Top Meat (Cattle - Frozen) Exporters to the United Arab Emirates**



Source: UN Comtrade Database [HS code: 02.04 (goat meat deducted to calculate sheep meat)]

**Figure 4-2-22 Top Meat (Sheep) Exporters to the United Arab Emirates**



Source: UN Comtrade Database (HS Code: 0204.50)

**Figure 4-2-23 Top Meat (Goat) Exporters to the United Arab Emirates**

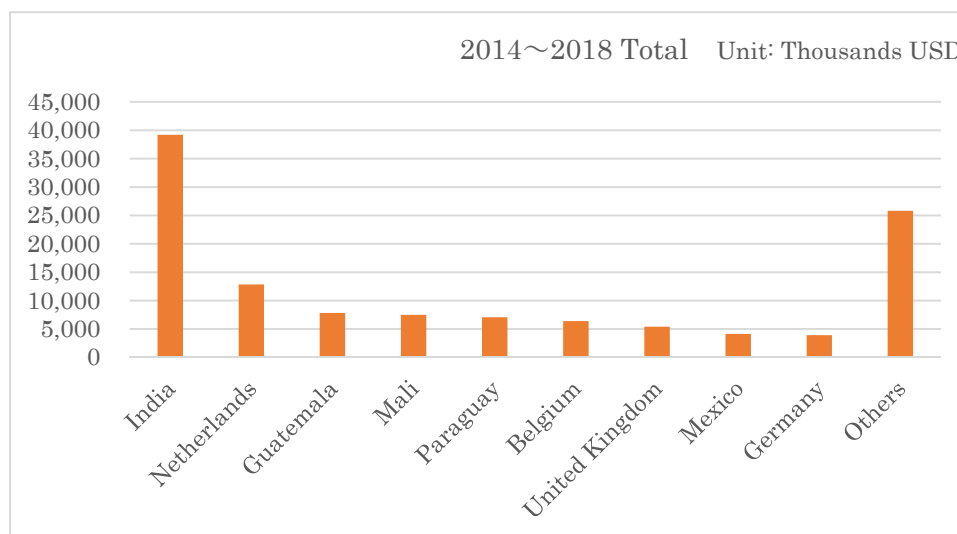
## (2) Europe

In Europe, Switzerland has a lot of trade with Sudan, but France is considered to have high potential for future export expansion because France imports the largest amounts of gum arabic in the European region, so the JICA survey team investigated who are the exporters of imports of sesame, groundnuts, and cotton to France. In addition, Italy is a major importer of leather, and also receives imports from Sudan, so Italy's import partner countries have also been identified.

### 1) Sesame

France imports a lot of sesame from India, the Netherlands and Guatemala. However, since the Netherlands imports sesame and exports it to other European countries, there is a possibility that it is re-

exporting. In terms of sesame exports from Africa, Burkina Faso, Uganda, and Ethiopia are ranked higher than Sudan, although Sudan is ranked about 15<sup>th</sup> overall.



Note: Sudan is in 14<sup>th</sup> place at 1,916,000 USD  
 Source: UN Comtrade Database (HS Code: 1207.40)

**Figure 4-2-24 Top Exporters of Sesame to France**

EU implemented new rules, Regulation 2017/625 (Official Control Law) and Regulation 2016/2031 (Plant Health law) on 14th December 2019, and also Regulation 2016/429 (Animal Health law) on 21st April 2021. This has led to the addition of import-prohibited plants in regard to plant quarantine, the addition of plants for which a phytosanitary certificate must be attached, and the addition of special conditions for regulated non-quarantine pests.

Among them, sesame seeds from Sudan were added to the "List of food and feed of non-animal origin subject to temporarily tightened official controls on entry into the EU", and the Sudanese Ministry of Agriculture and Natural Resources has a strong sense of crisis.<sup>28</sup>

The JICA survey team interviewed a company called Green Zone for Trading & Investment which is affiliated with GIAD and exports sesame, groundnuts, cotton, etc., and they said that the EU requires test results for Salmonella in addition to normal quarantine for sesame. Also the Sudanese Ministry of Agriculture and Natural Resources has suggested that, "In addition to pesticide residues and aflatoxin, salmonella has become a big challenge for sesame exports in recent years."

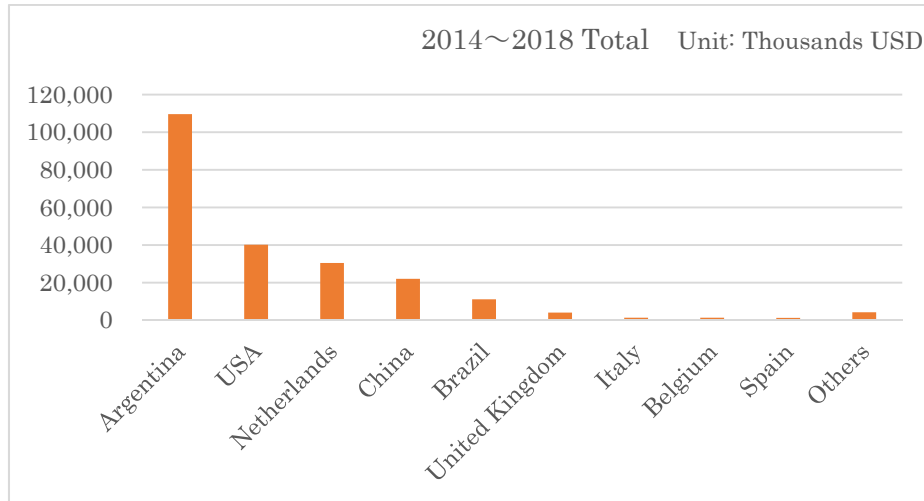
In the EU, demand for organic sesame seeds is increasing due to growing health awareness. In the states of Sennar and Gedaref, where the field survey was conducted, the use of pesticides during cultivation is almost non-existent. Major issues are pesticide residues due to the use of pesticides for pests after harvest, and the occurrence of aflatoxin and salmonella during transportation and storage. Therefore, appropriate post-harvest management must be implemented by farmers, traders, and markets in a coordinated manner.<sup>29</sup>

<sup>28</sup> [https://www.jetro.go.jp/ext\\_images/\\_Reports/02/2021/1f230e3f203106e4/eu\\_quarantine\\_reg2108.pdf](https://www.jetro.go.jp/ext_images/_Reports/02/2021/1f230e3f203106e4/eu_quarantine_reg2108.pdf)

<sup>29</sup> <https://www.dipasa.nl/an-overview-of-the-sesame-seed-market-trends-across-europe-18-10-2019/>

## 2) Groundnut

Argentina, the United States, and the Netherlands account for the majority of groundnut exports to France, and the top 10 exporting countries are all either developed or emerging nations. The JICA survey team interviewed Green Zone for Trading & Investment, and they reported that the EU requires test results for aflatoxin for groundnuts.



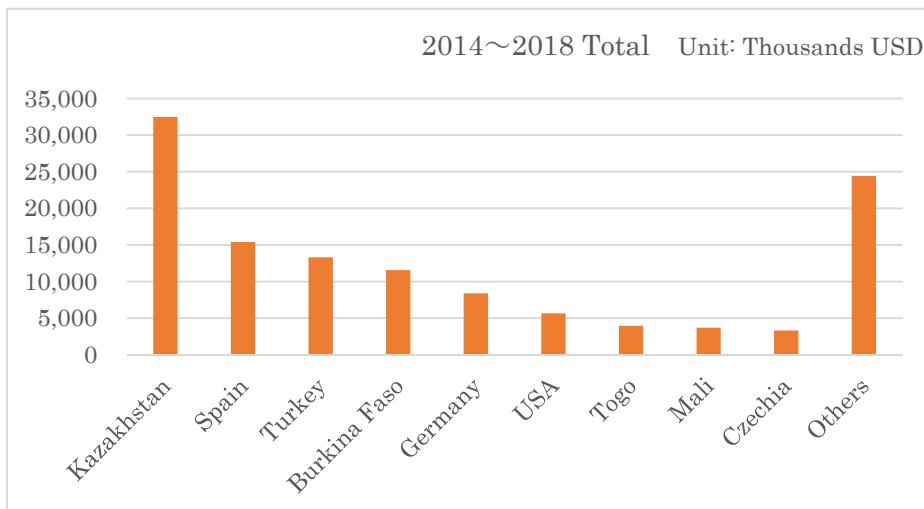
Note: No export record from Sudan

Source: UN Comtrade Database (HS Code: 1202.42)

**Figure 4-2-25 Top Exporters of Groundnuts to France**

## 3) Cotton

France imports cotton from Kazakhstan, Spain, Turkey and other countries. From Africa, Burkina Faso, Togo, and Cameroon are among the top ten exporters in terms of value. Sudan is expanding its cotton planting area, but in an interview with the Ministry of Agriculture and Natural Resources, it was mentioned that capacity expansion through the renovation or construction of cotton mills is necessary to expand exports.



Note: Sudan is in 57<sup>th</sup> place at 1,000 USD

Source: UN Comtrade Database (HS code: 52.01)

**Figure 4-2-26 Top Exporters of Cotton to France**

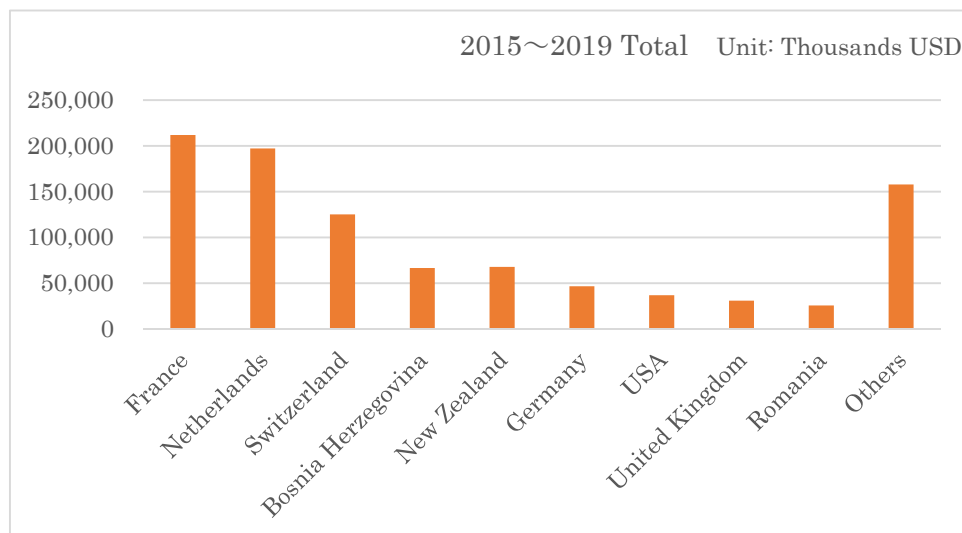
#### 4) Leather

Italy imports raw cattle and horse hides predominantly from developed countries such as France, the Netherlands and Switzerland. Tanned sheep leather is also imported from Tunisia and Nigeria from African countries. For tanned goat leather, it is mainly imported from Kenya, Nigeria and Uganda.

Italy is the world's second largest importer of leather, and in the countries surrounding Sudan, most exports come from Kenya. Kenya has a leather development plan called the Diagnostic Strategy and Action Plan (2015), which promotes the industrialization and export expansion of the leather sector. In addition, based on this development plan, support is being given by the WB and technical support is being provided by the Kenyan Ministry of Agriculture and Livestock, with active development actually being underway. In addition, leather is produced in leather factories that comply with the standards set by the Kenya Bureau of Standards (KEBS) and related organisations, which guarantees high quality.

In terms of marketing, Kenya has contracted an economic development consultancy firm, The Economic Transformations Group, Inc. (ETG) of the United States, to make the leather industry internationally competitive. With such strong government backing, Kenyan traders have been able to aggressively market their leather products to the EU and North America.

Sudan's leather sector, on the other hand, has not received sufficient government support and investment has been slow. From a technical point of view, quality is deteriorating due to insect damage, damage during slaughtering, and inappropriate storage and transportation. On the hardware side, the infrastructure of slaughterhouses and quarantine stations has not been developed in line with international standards, partly due to more than 20 years of economic sanctions. Since the leather sector is based on the development of the livestock and meat sectors, it is necessary to promote the development of these sectors, as well as support measures, and attract investment in the leather sector.

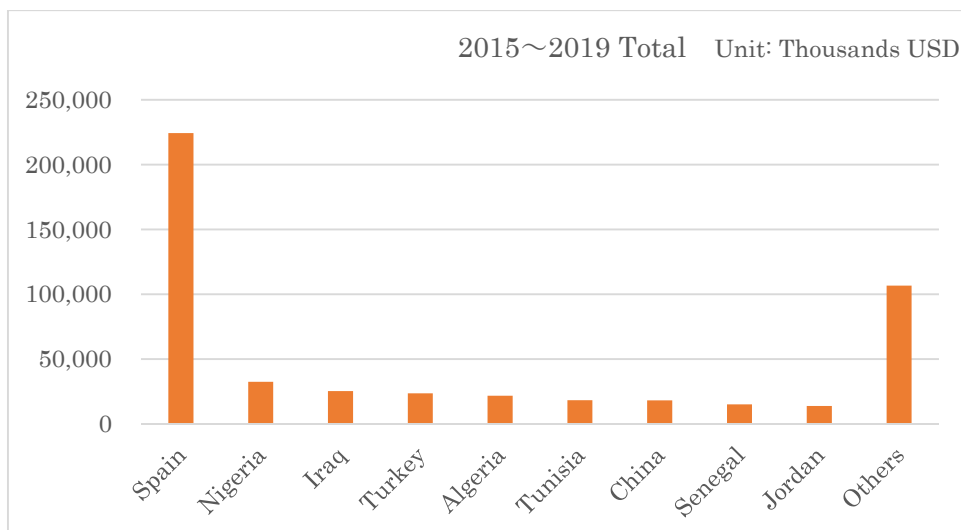


Note: No export record from Sudan

Source: UN Comtrade Database (HS Code: 4101.20)

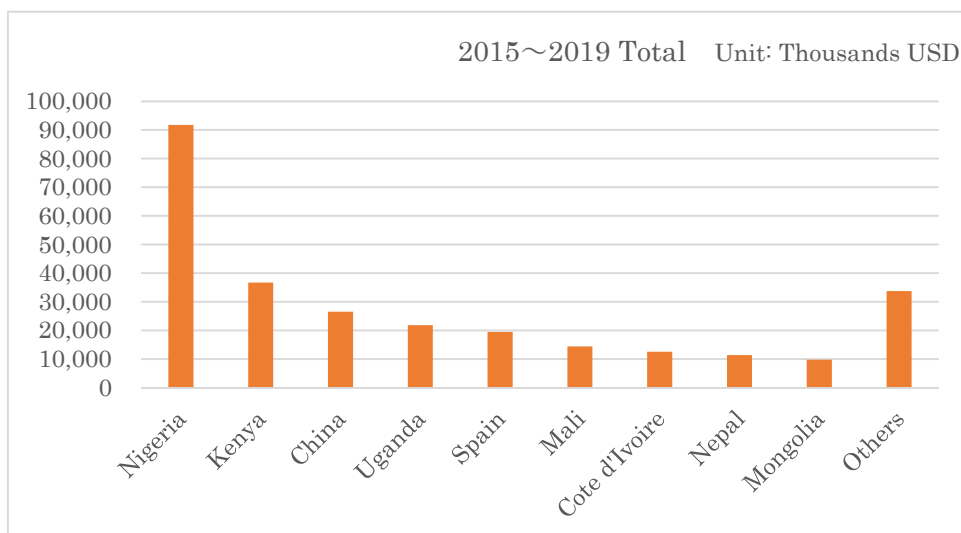
**Figure 4-2-27 Top Exporters of Hides (All-form Raw Hides of Cattle and Horses) to Italy**





Note: Sudan is in 10<sup>th</sup> place at 13,712,000 USD  
 Source: UN Comtrade Database (HS Code: 4105.10)

**Figure 4-2-28 Top Exporters of Hides (Tanned Sheep Leather) to Italy**



Note: Sudan is in 13<sup>th</sup> place at 1,851,000 USD  
 Source: UN Comtrade Database (HS Code: 4106.21)

**Figure 4-2-29 Top Exporters of Hides (Tanned Goat Leather) to Italy**

### (3) Japan

Japan has been importing sesame and gum arabic from Sudan, and its importing countries have been summarized.

#### 1) Sesame

For sesame, Sudan is not among the top five countries that export to Japan, and it is losing market share to other African countries such as Nigeria, Ethiopia and Burkina Faso.

**Table 4-2-19 Top Five Exporters of Sesame to Japan**

Unit: Thousands USD

2015		2016		2017		2018		2019	
Country	Amount	Country	Amount	Country	Amount	Country	Amount	Country	Amount
Nigeria	97,072	Nigeria	58,229	Burkina Faso	39,923	Nigeria	62,514	Nigeria	106,840
United Rep. of Tanzania	57,160	Paraguay	24,479	Nigeria	31,364	Burkina Faso	41,439	Burkina Faso	43,430
Burkina Faso	40,819	United Rep. of Tanzania	23,815	Myanmar	26,545	United Rep. of Tanzania	16,610	Mozambique	24,248
Paraguay	29,787	Myanmar	21,503	United Rep. of Tanzania	20,304	Paraguay	13,783	Ethiopia	23,105
Guatemala	24,662	Guatemala	13,489	Guatemala	12,137	Myanmar	13,050	United Rep. of Tanzania	16,641

Source: UN Comtrade Database (HS Code: 1207.40)

The importation of agricultural products and foodstuffs is handled by Plant Protection Stations of the Ministry of Agriculture, Forestry and Fisheries and Quarantine Stations of the Ministry of Health, Labour and Welfare (Table 4-2-20). Work in relation to the importation of sesame seeds is carried out at the Quarantine Station. The importer submits in advance an importation of foodstuffs, etc., notification, a description of the raw materials and manufacturing process, and a sanitation certificate and test report (if necessary), and the cargo is examined at Quarantine Stations upon arrival. If it is determined that an inspection is required, then this is carried out in accordance with the instructions of an order inspection, guidance inspection, or administrative inspection, and importation will not be permitted until the results are known. If the type of inspection is determined to be a monitoring inspection, the product can be imported without waiting for the inspection results, but if it is later found to be in violation of the law, it must be promptly collected.

As for sesame seeds from Sudan, the results of monitoring inspections at Quarantine Stations have shown that carbaryl I (an insecticide and plant growth regulator) was detected in excess of standard values in 2009. In addition, 2,4-D (herbicide) was detected in 2013 and 2018. Salmonella and aflatoxin have also been detected in EU countries (Table 4-2-21).

According to interviews with Japanese companies that have been importing sesame seeds from all over the world for many years, the power structure of African countries in terms of sesame exports has changed drastically over the past 20 to 30 years, and Sudan's presence has become smaller. In addition, the oil content of Sudanese sesame is lower than that of other countries, and the quality of sesame from Gedaref State, which had a high international reputation in the past, has been consistently declining in recent years. As a result of an analysis based on the field survey, the bottleneck for Japan in importing Sudanese sesame is the lack of a traceability system and the resulting detection of harmful substances such as pesticide residues and aflatoxin.

**Table 4-2-20 Summarisation of Inspections for Pests and Pesticide Residues in Japan**

Type	Subject of inspection	Subject to regulation	Contents of inspection	Responsible organisation
Inspection based on the Plant Protection Law	Plant	Pests and diseases harmful to plants (fruit flies, tobacco mildew, etc.)	Check the plants for pests and diseases.	Ministry of Agriculture, Forestry and Fisheries Plant Quarantine Station
Inspection based on the Food Sanitation Law	Foods, etc.	Harmful to the human body (bacteria, heavy metals, pesticide residues, molds, etc.)	The survey team examines whether the product conforms to standards (pesticide residues, etc.) set forth in the Food Sanitation Law.	Ministry of Health, Labour and Welfare Quarantine Station

Source: Ministry of Agriculture, Forestry and Fisheries. "What is the import quarantine of plants conducted by the Ministry of Agriculture, Forestry and Fisheries?"  
[https://www.maff.go.jp/j/syouan/syokubo/keneki/k\\_buntan/index.html](https://www.maff.go.jp/j/syouan/syokubo/keneki/k_buntan/index.html)

**Table 4-2-21 Cases of Post-Quarantine Refusal for Sesame Exports (2007-2015)**

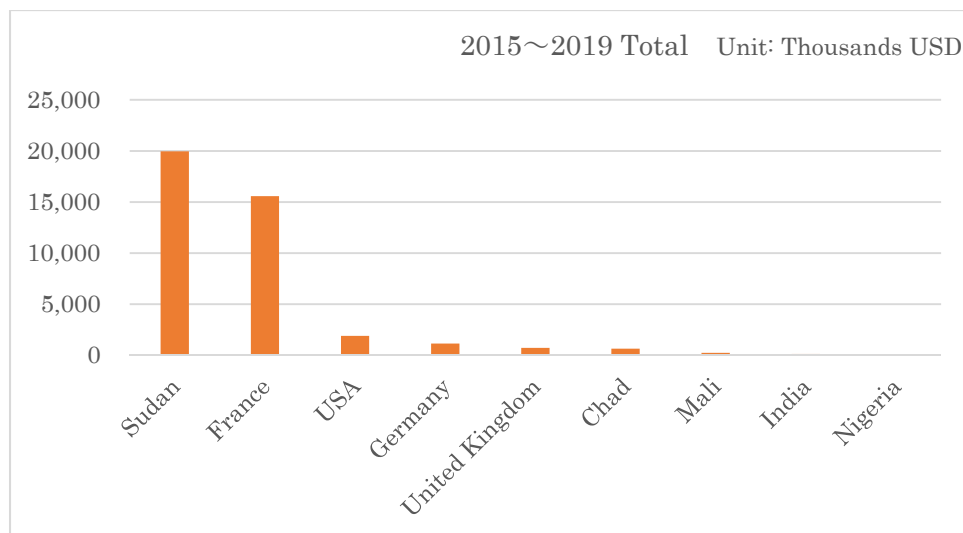
Year	Notifying Country	Reason for rejection	Total weight (tons)
2015	Poland	Rodent excrements (8, 20, 20, 20, 10 /kg)	n/a
2013	Cyprus	Salmonella (presence /25g)	38
2009	Japan	Carbaryl (0.09ppm detection)	n/a
2009	Japan	Carbaryl (0.02ppm detection)	n/a
2009	Germany	Aflatoxins (B1 = 11.3; Tot. = 11.3 µg/kg - ppb)	23
2007	Netherlands	Aflatoxins (B1 = 7.8; Tot. = 9.1 / B1 = 11.2; Tot. = 14.6 µg/kg - ppb)	36
2007	Netherlands	Aflatoxins (B1 = 20.6; Tot. = 23.6 µg/kg - ppb)	14

Source: Upgrading the Sudanese Sesame seeds value chain (UNIDO project, STDF Project Grant Application Form), July 2017.

## 2) Gum Arabic

As for gum arabic, Sudan is ranked first for exports to Japan. France, which is ranked second, imports about 50 million USD worth of said product from Sudan, which suggests that re-exports are taking place.

NIPPON FUNMATSU YAKUHIN Co., LTD., which has been using Sudanese gum arabic as a raw material for more than 40 years, said that the quality of Sudanese gum arabic is very high and that quality control such as grading is carried out at a high level.



Source: UN Comtrade Database (HS Code: 1301.20)

**Figure 4-2-30 Top Exporters of Gum Arabic to Japan**

#### 4-2-4 Agricultural and Livestock Sector Development Policies in Neighbouring Countries

##### (1) Kenya

With regard to agriculture, special emphasis is placed on improving agricultural productivity, increasing incomes, and the commercialization and intensification of agriculture, especially for small farmers. The development of irrigation facilities to achieve those goals is also being emphasized. In the case of horticultural crops, the government is promoting stakeholder organisation, investment opportunities, and export promotion, so that the income of value chain actors other than farmers can also be improved. Besides, separate legislation has been formulated for the development of tea, coffee and fibre crops.<sup>30,31</sup>

As for livestock farming, this accounts for about 42% of agricultural GDP and is highly valued as a means of securing employment for people and earning foreign currency. Kenya is developing a wide range of fields including livestock hygiene, livestock health, dairy, meat, leather, poultry farming and beekeeping.<sup>32</sup>

The export commodities that are considered to compete with Sudan are vegetables such as potatoes and tomatoes, fruits such as bananas and mangoes, goat meat, and leather. Particularly in the area of leather, Kenya is exporting leather, mainly tanned hides, and in terms of marketing, it has contracted with a foreign consultancy firm, so it is thought that Sudan has much to learn from Kenya's leading example.

##### (2) Tanzania

In agriculture, Tanzania aims to achieve food security and poverty reduction through the modernization and commercialization of agricultural production in highly competitive commodities. In particular, the government plans to invite investment from the private sector and focus on exports. In terms

<sup>30</sup> Government of Kenya, 2010: Agricultural Sector Development Strategy 2010-2020

<sup>31</sup> Government of Kenya, 2020: The Horticultural Crops Authority Bill

<sup>32</sup> Government of Kenya, 2019, Draft National Livestock Policy

of products, the government is promoting the expansion of exports of coffee, cashew nuts, cotton, corn, rice, and sugar. Tanzania also aims to maximize earnings by developing marketing systems that meet market needs.<sup>3334</sup>

With regard to livestock, Tanzania aims to promote exports of beef, poultry, dairy products and other products. In particular, Tanzania has been promoting the increased production of high quality beef that meets the standards of overseas markets. The aim is to make the industry more competitive and efficient to improve the income of livestock farmers while inviting private investment. As a foundation for this, the improvement of livestock sanitation by enhancing veterinary services is being promoted.<sup>3536</sup>

The export commodities of Tanzania which compete with Sudan are sesame, groundnuts, cotton, vegetables such as tomatoes and potatoes, and fruits such as bananas and mangoes. In particular, Tanzania is exporting sesame to Japan, and is one of the top five exporters to Japan, which indicates that exports are high quality.

### **(3) Djibouti**

Because Djibouti is an arid country, it is difficult to conduct agriculture, so agriculture accounts for only about 4% of GDP. However, Djibouti aims to set up an agricultural production unit to add value to its production with a view to exporting it to Gulf countries.

As for livestock, the volume of exports to Gulf countries is on the rise, albeit in small numbers. The strategy for livestock production is to increase the number of cattle by improving the rearing environment, strengthening livestock hygiene, and increasing the supply of feed.

Djibouti has also formulated a master plan to strengthen production in agriculture, livestock and fisheries, and plans to improve production technology, utilize water resources, and develop human resources in order to increase the share of GDP in those sectors. Incentives to support the private sector are already in place, including tax exemptions for fuel used in fishing and improved access to agricultural machinery and seeds through participation in agricultural cooperatives, among other success stories.<sup>37</sup>

At present, Djibouti has little spare capacity to export from its agricultural and livestock sectors, and is only an export hub for coffee, dried legumes and grains produced in neighboring countries, as well as livestock from Ethiopia and Somalia, and it is not considered to have any products that compete with Sudan.

### **(4) Ethiopia**

With regard to agriculture, Ethiopia aims to improve the productivity of food, cash crops, and livestock, and work to improve cultivation methods, such as reducing post-harvest losses and the use of agricultural inputs, in order to promote reduced dependence on imported food. Based on the

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<sup>33</sup> Government of Tanzania, 2013. National Agriculture Policy

<sup>34</sup> Government of Tanzania, 2008. Agricultural Marketing Policy

<sup>35</sup> Government of Tanzania, 2006. National Livestock Policy

<sup>36</sup> Government of Tanzania, 2015. United Republic Of Tanzania Ministry Of Livestock And Fisheries Development: Tanzania Livestock Modernization Initiative

<sup>37</sup> Government of Djibouti, 2020. Ministry of Agriculture, Livestock and Marine Affairs

Comprehensive Africa Agriculture Development Programme (CAADP) signed by the government and development partners, the program aims to attract private sector investment in agribusiness, increase added value through the processing of fruits and vegetables, and promote exports. On the export side, cash crops such as coffee, oil crops, pulses, fruit trees, vegetables, cut flowers, tea and spices are being promoted.<sup>3839</sup>

Ethiopia has a diverse environment suitable for livestock production and aims to improve the value chain and increase productivity of poultry, beef and dairy cattle, particularly through the use of quality breeds and expansion of feed and veterinary services. While exports of livestock products and meat are expanding in order to obtain foreign currency, Ethiopia is also aiming to increase the number of animals raised as domestic demand for beef is accelerating due to the increase in urban population and income in Ethiopia.<sup>4041</sup>

Export commodities that are likely to compete with Sudan are sesame, cotton, potatoes, goat meat and leather. In the case of meat in particular, Sudan is a major exporter of beef and sheep meat, while Ethiopia is a major exporter of goat meat, although Ethiopia is expanding its exports to the United Arab Emirates and Saudi Arabia, as well as to Vietnam and other Asian countries. Alitegahat Almtadedda co. Ltd, a member of the GIAD group, has set a goal of expanding meat exports not only to the Middle East but also to Asia, so Ethiopia's slaughterhouses for export and support measures for the private sector should be adopted as leading examples.

## **(5) South Sudan**

Most food and food product supplies in South Sudan are imported, and people who have insecure food access are receiving food aid from abroad. Therefore, the Comprehensive Master Plan for Agricultural Development formulated by the JICA project in 2015 also states that improving agricultural and livestock productivity for food security is a priority issue, except for forestry items such as gum arabic and logs.

## **(6) Chad**

80 percent of the population makes a living from agriculture, livestock and fisheries, and this is primarily for the domestic market. With regard to agriculture, the National Development Plan (2017~2021) clearly states that the country will industrialize agriculture to add value and promote exports. In addition to gum arabic, sesame, and cotton, groundnuts, hibiscus, cashew nuts, and dates have also been identified as potential export items. On the other hand, Chad is in a situation where it is dependent on food imports from Cameroon.

Livestock production is recognized as the most important sector in Chad, but the gradual loss of grazing land due to drought and urbanization has led to frequent conflicts between nomadic and sedentary

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<sup>38</sup> Government of Ethiopia, 2010. Ethiopia's Agricultural Sector Policy and Investment Framework (PIF) 2010-2020.

<sup>39</sup> International Trade Administration, 2020. Ethiopia-Country Commercial Guide

<sup>40</sup> Government of Ethiopia, 2015. Ethiopia Livestock Master Plan: Roadmaps for growth and transformation: A contribution to the Growth and Transformation Plan II (2015-2020).

<sup>41</sup> MoA (Ministry of Agriculture). Regulation to Control the Import, Export and Transit of Animals, and other Commodities

livestock farmers. The Government of Chad has positioned the provision of investment opportunities in livestock as an important measure, and will promote facilities that meet the standards of the OIE, such as feedlots and slaughterhouses for cattle, camels and goats, as well as research facilities and the development of vaccine production capacity. The number of livestock kept in Chad is the fourth largest in Africa, but due to the limited number of modern slaughterhouses, the country has not been able to produce value-added livestock products such as meat and leather.<sup>42</sup>

The commodities that are likely to compete with Sudan's exports are groundnuts, cotton, gum arabic and goat biologicals. In particular, the production of cotton and the number of live goat are higher than those of Sudan, but as Chad is a landlocked country, Sudan is currently considered to have a greater advantage in terms of logistics and transportation costs.

## **(7) Central African Republic**

In the Central African Republic, Subsistence agriculture and forest resources are the main industries, with agriculture, livestock and fisheries accounting for 80% of total employment. However, due to the impact of conflicts within the country, the food self-sufficiency rate, which had been 75%, has dropped significantly. Cotton, coffee, and tobacco are also grown for export, but the volume of exports itself is not large. Organisational capacity in the agricultural sector is fragmented and underfunded in all activities, including agricultural extension officers, agricultural cooperatives, agricultural inputs and marketing support for agricultural products.

As for livestock, cattle, sheep, goats, pigs and chickens are raised mainly for domestic consumption, and the number of animals is increasing due to nomadic herding from Chad and Sudan. At present, there is no surplus to export and the country is dependent on imports from Cameroon, Belgium, the Netherlands, Namibia and France. The organisational capacity of the livestock sector also needs to be reformed, including improvements in veterinary services and the strengthening of cooperatives.<sup>43</sup>

There are not considered to be any particular items that are considered to compete with Sudan's exports. Since the Central African Republic is experiencing a decline in food self-sufficiency, it is possible that Sudan can expand exports by improving customs and logistics infrastructure with the Central African Republic.

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<sup>42</sup> The International Trade Administration, U.S. Department of Commerce, Chad - Country Commercial Guide

<sup>43</sup> The World Bank Group, 2019.CAR-Agriculture Recovery and Agribusiness Development Support Programme

**(8) Competitive export items with Sudan and Sudan's neighboring countries**

**Table 4-2-22 Arrangement of Export Competing Products with Sudan's Neighboring Countries**

	<b>Main export promotion items</b>	<b>Competing export products with Sudan</b>
Kenya	Agricultural sector: tea, cut flowers, coffee, horticultural crops Livestock sector: livestock organisms, meat, milk, leather	Vegetables such as potatoes and tomatoes, fruits such as bananas and mangoes Goat meat and leather
Tanzania	Agricultural sector: coffee, tobacco, cashew nuts, cotton, corn, rice Livestock sector: beef, mutton, goat meat, poultry, dairy products, leather	Sesame seeds, groundnuts, cotton, vegetables such as tomatoes and potatoes, and fruits such as bananas and mangoes
Djibouti	Livestock sector: Livestock organisms, meat	None in particular
Ethiopia	Agricultural sector: coffee, oil crops, pulses, fruits and vegetables, cut flowers, tea, cotton, sugar, spices Livestock sector: Leather products, hides, meat, live animals, camel's milk, beeswax and honey, processed meat products	Sesame, cotton, potato Goat meat, leather
South Sudan	Agricultural sector: feed crops Livestock sector: livestock organisms, meat, leather Forestry sector: gum arabic, Logs	None in particular
Chad	Agriculture: sesame, cotton, groundnuts, cashews, dates, shea butter, hibiscus, moringa, spirulina Livestock sector: livestock organisms, meat, leather Forestry sector: gum arabic	Groundnuts, cotton, gum arabic Goat body
The Central African Republic	Agricultural sector: flowers, coffee, tobacco, sisal, fresh vegetables, oil palm, oil crops, cereals Livestock sector: livestock organisms, beef, pork, chicken Forestry sector: Timber	None in particular

Source: JICA Survey Team

**4-2-5 Potential for New Entry and Expansion of Sales Channels for Sudanese Products in Overseas Markets**

**(1) Sesame**

Sudan is the world's number one producer of sesame (2019, FAOstat) and the number one exporter (2018, Comtrade). On the other hand, countries with low purchase prices, such as China and the Middle East, are the main sales channels, and sales channels have not been established in countries with high purchase prices, such as the EU, Japan, and South Korea. This is largely due to a lack of confidence in the quality of Sudanese products due to inadequate sanitary and phytosanitary measures. For example, in Japan, pesticide residues were detected in 2009, 2013, and 2018, and the export volume has been decreasing year by year. In addition, aflatoxin and salmonella have been detected in other countries, and the EU has designated Sudanese sesame as an enhanced quarantine item from 2019.

In the states of Sennar and Gedaref, where the field survey was conducted, the use of pesticides during cultivation is almost non-existent. The major issues are pesticide residues due to the use of pesticides after harvest for pests and the occurrence of aflatoxin and salmonella during transportation and



storage. According to interviews with Japanese importers, the oil content of Sudanese sesame is lower than that of other countries, and the quality of sesame from Gedaref State, which had a high international reputation in the past, has consistently declined in recent years.

Traders visually check sesame seeds when they buy them from farmers and determine the price by volume, while inspections for oil content, pesticide residues, etc., are conducted by traders afterwards. In addition, the purchased sesame seeds are stored together in one place which leaves them prone to contamination. In addition, it has been noted that transport trucks and market sacks are unsanitary.

These factors suggest that a bottleneck in expanding exports of Sudanese sesame is the lack of a traceability system and an appropriate purchase system, and the associated detection of pesticide residues, aflatoxin and other harmful substances. Therefore, it is necessary for farmers, traders, and markets to work together to implement appropriate post-harvest management, and to develop a traceability system and a purchase system.

## **(2) Groundnut**

Groundnut is Sudan's second major export oilseed crop after sesame. It faces a number of challenges in promoting exports, including the fact that it is often grown in rainfed areas and is therefore affected by rainfall, resulting in large fluctuations in production volume, and that aflatoxin (a highly toxic fungus) has been detected, resulting in a decrease in export volume.

However, in recent years it has expanded its cultivated area, dramatically increasing production from 1.04 million tonnes in 2015 to 2.83 million tonnes in 2019, and there is a strategy to increase exports to China, according to the Ministry of Agriculture and Natural Resources.

In the future, as with sesame, it will be necessary to develop hygiene management and traceability systems at the farm level. In addition, since groundnut is mostly grown in the rainfed areas of western Sudan, such as the states of West Kordofan and East Darfur, it is important to strategically expand its cultivation in the irrigated areas near Khartoum State (Gezira, Gedaref, Sennar, etc.) with international prices in mind.

## **(3) Cotton**

Cotton has long been cultivated as an important cash crop, and before the 1990s it accounted for 40% of the country's foreign currency earnings. However, both production and export volumes declined due to a slump in international prices caused by the spread of synthetic fibres and a shift to wheat.

However, in the 2000s, a presidential decree aimed to revive the textile industry, and the area under cultivation increased from 72,000 ha in 2013/14 to 239,000 ha in 2019/20. The introduction of genetically modified cotton, e.g. Roundup Ready (RR) varieties with herbicide tolerance, in 2012 has also improved monoculture yields, making it a major export commodity along with sesame and livestock organisms. At an interview with the Ministry of Agriculture and Natural Resources, the following issues and targets were raised: the current number of cotton mills is about 50, and the aim is to add value to exports by expanding capacity through renovation and construction; to accelerate the introduction of

improved varieties; and to increase the area under cultivation to about 400,000 ha in the near future.<sup>44</sup>

In addition, the spinning industry is receiving direct investment from foreign companies in China, Syria, Qatar, Turkey, and other countries, and many private companies are providing inputs and technical support, so it is expected to develop significantly in the future, but the Ministry of Agriculture and Natural Resources would like to prioritize cotton exports.

#### **(4) Vegetables and Fruits**

Vegetables and fruits can be produced in a variety of types due to geographical diversity. The top commodities are onions, bananas, tomatoes, mangoes, potatoes, dates, limes, okra, cucumbers and sweet potatoes. Regarding the export performance of vegetables, although the value of transactions increased 1.58 times between 2014 and 2018, from USD 35.32 million to USD 55.76 million, mainly due to increases in onion and chickpea exports, the situation is not stable for fruits, which fluctuated between USD 1.85 million to USD 11.22 million during the same period.

With regard to vegetables, the promotion of exports of tomatoes and potatoes, which are the second most productive vegetables after onions, could be considered, but because their added value is lower than that of fruits, and because the cold chain has not yet been developed, it is thought that development for fruit exports should be given priority.

With regard to fruits, although mangoes and dates are second only to bananas in terms of production, Sudan ranks only about 50th in the world in terms of export value. In addition, mangoes and dates have not been established as a stable source of income, as the excess of exports and imports switches from year to year. Interviews with the Sudanese Centre for the Sterilization of Horticultural Exports (SCS), a leading exporter of horticultural crops, revealed that the main marketing channel for dates is limited to Islamic countries, and the crop with the highest potential for export expansion is mangoes.

The results of the field survey in Sudan indicate that in order to expand mango exports, it is necessary to increase the cultivation of export-oriented varieties and to improve the cold chain. Also farmers harvest mangoes just by dropping them from tall trees in rural areas, so there needs to be the proper harvesting of mangoes. In addition, it is necessary to follow the example of Kenya, which is a leading example, to strengthen cooperation between ministries and related organisations, and to promote government support that provides incentives to producers and exporters. According to the Ministry of Agriculture and Natural Resources, no donor project for mango export has been implemented so far, so the impact of the support for export expansion will be very significant for mangoes.

#### **(5) Gum Arabic**

Sudan is the world's number one producer of gum arabic. The production of gum arabic had been 50,000 tons per year until the 1960s, but this declined to 25,000 tons by the 1980s. In recent years, however, production has remained between 60,000 and 90,000 tons, and export volumes have been on the rise.

Japan is also a major import partner, on the subject of which Japan Powdered Pharmaceutical Co. was interviewed. The quality of gum arabic in the country is very high, and quality control such as grading

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<sup>44</sup> FAO/GIEWS CROP AND FOOD SUPPLY ASSESSMENT MISSION TO THE REPUBLIC OF THE SUDAN

is carried out at a high level. Therefore, from a corporate perspective it is difficult to imagine importing from other countries. However, the current import volume of gum arabic itself will not expand as the population of Japan is decreasing, and demand from emerging countries such as China and Indonesia will grow.

On the other hand, it has been pointed out that small farmers are exploited by many middlemen and do not receive adequate compensation. It is also believed that there is a lot of smuggling to Chad, the Central African Republic, Ethiopia and Eritrea. Therefore, it is considered necessary to develop a trading system for gum arabic in order to achieve sustainable export growth.

## **(6) Livestock**

Livestock is a major export commodity in Sudan, and an export target amount had been set in the Five-Year Programme. The importance of this export growth can be seen in the fact that the country aimed to increase its exports by 1.5 times between 2015 and 2019. In 2018, it was the world's ninth largest exporter, with 63% of its exports going to Saudi Arabia, 34% to Egypt, 2% to Qatar, and the rest to Bahrain, Kuwait, and Lebanon.

In the United Arab Emirates, where Sudan has not been able to establish export sales channels for livestock products, sheep and goat products are imported from Australia, India and other countries. These countries are developing vessels for livestock, setting up promotional organisations in target areas, establishing traceability systems, and implementing livestock disease control programs.

As a predominantly grazing country, Sudan has earned the reputation of being an importing country in terms of animal welfare. On the other hand, livestock diseases have led to frequent suspensions of exports by export partner countries, and it is an urgent task to improve livestock health by expanding veterinary services and strengthening vaccine production capacity, and to meet the quarantine standards of export partner countries. In addition, it is important to supply livestock in accordance with international standards by establishing traceability systems and updating and improving livestock quarantine stations.

## **(7) Meat**

Meat is an important export commodity for Sudan, which has a large livestock population, and together with livestock, export targets were set in the Five-Year Economic Reform Plan (2015-2019). Within the African region, Sudan is by far the largest exporter of livestock and meat in terms of total value. However, contrary to this, in 2018, the export value of meat was only USD 6.7 billion compared to USD 76.6 billion for livestock, and within Africa, South Africa, Ethiopia, Botswana and Namibia exported more meat than Sudan.

Compared to livestock, meat can be transported in larger quantities at any one time, which lowers transportation costs and allows for value-added exports. In addition, since more than 90% of Sudanese livestock organisms are exported to Saudi Arabia and Egypt, it is assumed that there is a risk of sluggish export growth depending on the policies of each country and there are susceptibilities to price fluctuations. Therefore, development is required to increase exports of meat and to balance exports with livestock based on price trends.

The bottleneck in the expansion of meat exports is the lack of slaughterhouses for export that can obtain Halal certification, HACCP, ISO, etc. It is necessary to urgently promote measures to support capital investment in the private sector, as well as the provision of land and investment incentives for foreign capital. In addition, the development of the cold chain, including the renovation and expansion of freezer storage facilities at airports and the nationwide deployment of reefer trucks, is a priority issue, while the education and securing of inspectors to be deployed at slaughterhouses and quarantine stations for export must be promoted in parallel.

## **(8) Leather**

Leather is an industry with high potential in Sudan, where the livestock industry is flourishing. Since raw hide is produced as a by-product of slaughtering livestock, one would generally expect a correlation with the value of meat exports, but Nigeria, Kenya and Tunisia trade at several times the value of exports than Sudan, despite their low meat exports. In addition, Sudan exports raw cattle hides to Nigeria and wet blue sheep and goat leathers to Saudi Arabia, China, Ethiopia, Turkey, so it can be said that Sudanese hide and leather are of low quality and relatively low priced.

Ethiopia is a large exporter of leather, and because of the low cost of labor and the abundance of labor compared to other countries, foreign companies are increasingly interested in Ethiopia with over 75 domestic and foreign companies having invested in leather manufacturing plants. The country also abolished export taxes imposed on the intermediate leather products of cattle, sheep and goats in January 2020.

In addition, Kenya, which exports hides to Italy, has developed a leather development plan and is actively providing technical and marketing support.

A lot of support is needed to improve the quality of Sudanese hides, including management during rearing, e.g. deworming, injury prevention, and improvements in slaughtering operations, e.g. skinning, storage, and renovation of tanneries. Since the leather sector is based on the development of the livestock and meat sectors, it is necessary to develop these sectors, as well as to promote support measures and attract investment in the leather sector, following the advanced practices of neighboring countries such as Ethiopia and Kenya.

**4-3 Information on major local companies**

There are major company groups in Sudan, such as DAL and GIAD. Cooperation with these company groups is expected to be important for Japanese companies to expand their businesses in Sudan.

**4-3-1 DAL Group**

DAL Group is a private Sudanese conglomerate and the largest private company in the country. The company operates in multiple business sectors, including engineering, agriculture, food, automotive, medical and mining.


DAL Group has its origins in Sayer & Colley, an engineering firm founded by two British partners in 1951, when Sudan was under British and Egyptian rule. The DAL Group was born in 1984 with the establishment of DAL Agriculture. Since then, the company has expanded to DAL Food, DAL Motors, DAL Engineering Company, DAL Medical and DAL Mining, and currently has over 8,000 employees.

In 2018, it established DIAC (DAL Innovative Agriculture Co.), which is engaged in the business of agricultural inputs, agricultural contractors, agricultural equipment rental, pivot irrigation, distribution, etc., and is now involved in businesses that cover the entire value chain. The company is also engaged in the R&D business of input materials and agricultural machinery.

Company name	DAL Group Company Ltd
Year of establishment	1951
Location	No. 1/15 Block 4F, Industrial Area, Khartoum North, PO Box 807, Khartoum, Sudan
Contact number / address	HQ reception number: +249185444130 Email: info@dalgroup.com



DAL Group Companies



Examples of DIAC Partner Companies

Source: JICA Survey Team

**Figure 4-3-1 DAL Group Related Information**

### 4-3-2 CTC Group

CTC Group, established in 1956, is a group of private Sudanese companies involved in a wide range of businesses, mainly in the agricultural sector, including agricultural machinery, agricultural materials, and agricultural commodity exports, and also in mining, ICT, water resources, and automobiles.

The group has been building partnerships around the world for more than 60 years. Trading brands include New Holland (agricultural machinery), Syngenta (agrochemicals and seeds), Fujitsu (ICT) and Tata Motors (automobiles). The company also exports gum arabic, sesame, melon seeds and hibiscus.

Company name	CTC Group
Year of establishment	1956.
Location	Head Office, Zubeir Pasha St, PO Box 980, Khartoum, Sudan
Contact number / address	Head office: +249 187 14 4000 Email: info@ctcgrouppltd.com



CTC Group Companies



Partner Company Example 1



Partner Company Example 2

Source: JICA Survey Team

Figure 4-3-2 CTC Group Related Information

**4-3-3 GIAD Industrial Group**

The GIAD Industrial Group was established by the Sudanese government in 1993 with the vision of becoming the largest industrial group in Africa. The company is involved in a very wide range of sectors including automotive, metals, electronics, aviation, marine, mining, agriculture, transport, renewable energy, construction and infrastructure, space technology, medical devices, textiles and leather, as well as consulting services.

GIAD Group established the GAID Automotive Industry Company in 2005 and is now fully engaged in the production of passenger cars, buses, trucks, tractors, pickup trucks and other vehicles. In the agriculture and food sector, the Sudanese Centre for the Sterilisation of Horticultural Exports was established in 2013 to export agricultural and processed products based on GAP.

Company name	GIAD Industrial Group
Year of establishment	1993.
Location	Headquarters, Sixtieth Street intersection with Madani Street, Khartoum, Sudan
Contact number / address	Tel 1: 00249123464404 Tel 2: 00249123112579 Email: info@giadmotor.com

Source: JICA Survey Team

**Figure 4-3-3 GIAD Industrial Group Related Information**

**4-3-4 Golden Arrow Group**

Founded in 1948 as a small transport business in Khartoum, Golden Arrow became one of the oldest Toyota dealers on the African continent and established itself in the industry by acquiring the exclusive rights to sell Toyota in Sudan 15 years later. Twenty years later, in 1984, Golden Arrow signed a similar contract with YAMAHA Motor and also began to handle HINO Motors products (Toyota, Yamaha Motor and Hino Motors are exclusive distributors). The company has more than 1,000 staff deployed throughout Sudan to provide services.

The company is also a member of the Al-Mamoun Group, a family-owned group with multiple operations throughout Sudan. The Al-Mamoun Group includes 1) Tara International which handles UD

Trucks, Hitachi Construction Machinery, etc., 2) Premier Food Products Company which handles milk and dairy products, etc., and 3) JAC Chinese Motors.

**Table 4-3-1 Golden Arrow Group Related Information**

<b>Company name</b>	Golden Arrow Co., Ltd
<b>Year of establishment</b>	1948.
<b>Location</b>	Golden Arrow Al-Ghaba Ave, Khartoum, Sudan
<b>Contact address</b>	Phone Number: +249 18 357 3321 Sales & Info (Inquiries) Email: info@goldenarrowsudan.com

Source: JICA Survey Team

**4-4 Market Opportunities for Japanese Companies**

Based on the first and second round of field surveys, the market opportunities for Japanese companies are summarized as follows. A common comment from Sudanese companies was that they wanted opportunities to know more about Japanese companies. It is necessary to provide opportunities to match the technologies that Japanese companies can provide with Sudanese companies and markets.

Although there seems to be a strong image that Japanese products are of high quality but expensive, while Chinese products are inexpensive but break down quickly, many respondents said that they would buy good products even if they are expensive (e.g., agricultural machinery). On the other hand, some said they were concerned about electric power consumption because Sudan has a poor electric supplies. Therefore, it is considered necessary to adjust product performance and basic specifications for the Sudanese market to avoid over-specification.

**4-4-1 Fertilisers and agricultural chemicals**

The use of chemical fertilizers and agriculture chemicals is not a common situation in all areas of Sudan. The mango farmers surveyed in the field, who have 4 ha to 105 ha of plantation areas, have not been using chemical fertilizers, although they differ in the use of organic fertilisers: some apply no fertilisers, others apply purchased organic fertilisers, and some are producing and applying compost (raw materials purchased in the market). In addition, although they use pheromone traps to control fruit flies, they do not use pesticides (when there was a large outbreak of fruit flies in River Nile State in 2015, the Ministry of Agriculture and Natural Resources distributed pesticides on an emergency basis, but they have not used fertiliser since then). Furthermore, according to the provincial Ministry of Agriculture and Natural Resources, sesame farmers in Sennar and Gedaref states do not use fertilizers and agriculture chemicals during cultivation, but use pesticides to control pests around sesame when it is drying in the sun after harvest.

In view of this situation and with regard to food safety and the SDGs, it can be said that Sudan should promote environmental conservation agriculture. As an example of this growing demand, two organic fertiliser plants have been established in the past few years in the Omdurman area of Khartoum State, bringing the total number of organic fertilizer plants in Khartoum State to five. In addition, the use of fertilisers is not widespread in commercially grown sesame. But in recent years, the increase in yield through fertilisation has been attracting attention. Therefore, as part of the promotion of exports to developed countries, organic



fertilisers, rather than chemical fertilisers, may be used to increase production and promote high value addition.

In Sudan, which has the largest livestock industry in Africa, raw materials for compost production can be secured in abundance, and the spread of organic fertilisers is expected to increase through the construction of an efficient collection system for livestock manure and compost production facilities.

#### **4-4-2 Soil conditioners and green manure crops**

Since the majority of Sudan is hyper arid or arid land, conservation of agricultural land and improvement of its soil fertility is an important issue. As a measure against drought, the introduction of soil improvement material (Porous Alpha) from Tottori Resource Recycling, Inc. may be considered. The company has developed a soil conditioner in collaboration with Tottori University, one of the world's leading institutions for arid land research, that improves soil water retention and enables normal cultivation with just half the normal water content. The company has already offered its products in Morocco, Peru and other countries through the JICA Small and Medium Enterprises (SME) and SDGs Business Support Project, and it is possible to offer its products in Sudan in collaboration with overseas bases.

In addition, alkaline soils are often found in arid areas, and pH 7~8 is also common in Sudanese soils. As desertification (expansion of arid lands) caused by global warming will have a greater impact on agriculture, the need for soil conditioners that can adjust soil pH is expected to increase. Fujimin, a soil conditioner and plant-activating agent developed by Japan Conservation Engineers & Co., Ltd. is effective in buffering soil pH, promoting soil aggregation, and improving fertilizer absorption efficiency, and the company is conducting projects and research in Paraguay and Uzbekistan under the JICA SME and SDGs Business Support Project. In addition, the company is highly regarded both domestically and internationally, having been registered as a supplier of JAS organic materials and as a member of the United Nations Industrial Development Organization (UNIDO)'s Sustainable Technology Promotion Platform (STePP), and has received the 2020 Minister of the Environment Award for Climate Change Action.

Furthermore, the spread of green manure crops not only contributes to improving soil fertility and water retention and preventing wind erosion, but it is also very effective in terms of pasture availability.

Soil conditioners are considered to be more difficult to disseminate to farmers than fertilisers and agricultural chemicals because of the slow onset of their effects. As a first step, it is necessary to introduce them to large-scale farmers and farmers with contracts with large companies to verify its cost-effectiveness and to raise awareness of the soil conditioners and green manure crops at the level of extension officers.

#### **4-4-3 Seeds and seedlings**

With less use of agricultural inputs and less precipitation than other countries, agriculture in Sudan is more vulnerable to the effects of global warming. Therefore, it is necessary to promote seeds with excellent drought resistance and disease resistance. Japan has four distinct seasons and small farming land, making it a strong player in the vegetable seed sector, accounting for 17% of the global vegetable seed market. However, since Japan has a lot of acidic soil due to high precipitation, and Sudan has a lot of alkaline soil due to aridity, it would be effective to develop seeds that meet the needs of the Sudan using Japanese technology, rather than

offering Japanese seeds. For example, a Japanese seed company could work with a major Sudanese company that has an R&D department to develop seeds that are resistant to specific diseases, and collect the seeds at a consignment seed farm in a climate similar to that of Sudan, so that the Japanese seed company can promote its seeds.

In addition, for items such as sesame that can be exported to Japan, a strategy to promote exports in both directions can be considered by introducing seeds that meet Japanese tastes, e.g. exporting sesame seeds from Japan to Sudan and exporting sesame from Sudan to Japan. The US company Sesaco, which became a Mitsubishi subsidiary in 2011, has developed a new type of sesame that can be harvested with large machinery, and it has succeeded in both improving productivity and ensuring traceability. DIAC, a subsidiary of the DAL Group, has a great interest in this seed, and the Ministry of Agriculture and Natural Resources also wants to promote research and development of "non-cleavable" sesame seeds. The introduction of such varieties will improve the efficiency of harvesting and help prevent the outbreak of aflatoxin and salmonella, which are barriers to export promotion.

#### **4-4-4 Irrigation equipment and agricultural machinery**

Creating an environment for efficient irrigation is important for Sudan, where rainfall is low. As an example, in Sudan centre pivot irrigation is used for large-scale crops such as sesame. On the other hand, a mango farmer in Khartoum State (management area: 105 ha), who was visited during the field survey, was observed to be using water-saving irrigation by installing thin irrigation hoses under their fruit trees. The cost of installation is about USD2,100/ha, and it can be said that large-scale farmers understand the importance of improving agricultural productivity through capital investment. Mango farmers in River Nile State have a management size of 1~4 ha and soil canals are maintained in their farmlands. Japanese technology includes automatic irrigation systems that are proportional to solar radiation or on a timer, but in Sudan, where there are concerns about electricity, it is more practical to use battery-powered systems or to combine them with solar panels.

With regard to solar panels as an ancillary facility for irrigation, it has been confirmed that farmers in River Nile State have been able to save on fuel costs for operating pumps by installing solar panels, indicating that there is potential for their widespread use at the farm level. In addition, two solar panels have been installed in the state as a pilot project under JICA's "Project for Strengthening Irrigation Scheme Management Capacity in River Nile State, Sudan (November 2015 to November 2019)", and those concerned and farmers who know about the project expressed their desire for further installations.<sup>45</sup>

Agricultural machinery is an important factor in increasing agricultural productivity, improving quality and reducing costs. The challenge is to popularise tractors among ordinary farmers, but major manufacturers such as John Deere (US), New Holland (US), and TAFE (India) have already entered the Sudanese market. For Sudan, where the area under cultivation per farm unit is large, a business plan based on in-depth research is considered necessary, including appropriately sized agricultural machinery and the formulation of maintenance networks.

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<sup>45</sup> <https://www.reuters.com/world/africa/sudanese-turn-solar-energy-amid-electricity-shortages-2021-05-19/>

#### 4-4-5 Cold chain related concerns

Maintaining the freshness of perishable foods is an important issue in Sudan, where average temperatures are high. As a result of the field survey, it was found that the meat quarantine station at the airport was not equipped with refrigerated storage facilities, and those at the plant quarantine station were also in need of updating. It can be said that the development of such logistics bases is an urgent issue for export promotion. Three private companies manage and operate the cold storage facilities at the plant quarantine station, but no specific company operates facilities at the meat quarantine station.

As for the entire cold chain, the transportation business is being developed mainly by large companies such as DAL Group and GIAD Industrial Group. However, many of the interviewees, including MoANR and MoAR, pointed out that the cold chain is not well developed and this is a key challenge for export promotion. In the slaughterhouses for export under GIAD, the Egyptian reefer trucks collect and export to Egypt. The Japanese company DENBA has a patented technology called DENBA+, which keeps products fresh by keeping them non-frozen in a minus temperature range. The company has conducted a demonstration project in Kenya for meat distribution and it is expected to do the same in Sudan.

In Sudan, where frequent power outages occur due to electricity shortages, the installation of solar power generation systems in parallel with the development of the cold chain could be considered. MoAR and the veterinary vaccine storage facility in White Nile State commented that the installation of a solar power system and the constant operation of the refrigeration facility will enable the proper storage of vaccines.

Furthermore, the introduction of Modified Atmosphere (MA) packaging is considered to be effective as a countermeasure against the high temperatures specific to Sudan. MA packaging extends the freshness retention period, making ship transport possible, and also enabling mass transportation and cost reductions. Nissan Steel Industry Co., Ltd. has started manufacturing and selling Fresh Mama in India after conducting demonstration tests and PR activities under the J-Method Farming Project of the Ministry of Agriculture, Forestry and Fisheries of Japan, and it is considered to be a reference case for business development in Sudan.

#### 4-4-6 Results of Interviews with Sudanese Companies and Market Opportunities for Japanese Companies

**Table 4-4-1 Results of Interviews with Sudanese Companies and Market Opportunities for Japanese Companies**

Sudanese companies (Main respondents)	Results of interviews on needs, market opportunities, etc.	Market opportunities for Japanese companies
CTC	<p>There are business opportunities for agricultural machinery (building a maintenance function is important)</p> <p>There is still a lot of available farmland in Sudan, and there are huge market opportunities for fertilizers, agricultural chemicals, seeds, etc.</p> <p>In the sesame export business, the company purchases almost all of its products from contract farmers, and CTC manages 100% of the cultivation, harvesting, sorting, and storage (it is also exported to the EU).</p>	<p>Among the companies interviewed in this survey, Mitsubishi Corporation's non-dehiscent sesame seeds and the Tottori Resource Recycling, Inc.'s Porous Alpha (soil conditioner for arid lands) may have potential for advancement.</p> <p>In the case of companies that have participated in JICA's small and medium-sized enterprise support program, Fujimin (plant-activating agent) from Japan Conservation Engineers &amp; Co., Ltd., has the potential to enter the market.</p> <p>In the case of agricultural machinery, it is necessary to establish a maintenance network and to consider standards suitable for cultivated areas in Sudan.</p>
DIAC (DAL Group)	<p>There is a great deal of interest in non-dehiscent sesame seeds developed by Mitsubishi Corporation (in collaboration with the American company Sesaco).</p> <p>We are in contact with the Tottori Resource Recycling, Inc., and plan to proceed with a Porous <math>\alpha</math> test (delayed due to the impact of soaring sea shipping costs after COVID-19).</p> <p>We expect Japanese companies to provide agricultural chemicals, fertilizers, and new technologies (drones, satellite technology, etc.).</p> <p>It also covers the field of livestock hygiene and breeding.</p> <p>Agricultural machinery is not keeping pace with demand</p>	<p>Among the companies interviewed in this survey, Mitsubishi Corporation's non-dehiscent sesame seeds and the Tottori Resource Recycling, Inc.'s Porous <math>\alpha</math> (soil conditioner for arid lands) may have potential for advancement.</p> <p>In the case of companies that have participated in JICA's small and medium-sized enterprise support program, Fujimin (plant-activating agent) from Japan Conservation Engineers &amp; Co., Ltd., has the potential to enter the market.</p> <p>In the case of agricultural machinery, it is necessary to establish a maintenance network and to consider standards suitable for cultivated areas in Sudan.</p>
DAL Food (DAL Group)	<p>We handle a wide variety of food products, and the cold chain will enable us to collect and ship them more efficiently.</p> <p>We have interest in food-related processing machinery (fish processing, fishing machinery, slaughtering-related, pasta, etc.)</p>	<p>Amongst the companies interviewed in this study, DENBA's refrigerator (patented technology) is considered to have the potential to enter the Sudanese market.</p> <p>Nissan Steel Industry's Fresh Mama (freshness-preserving film) may fit the needs of the Sudanese market. The company has participated in the overseas business expansion program supported by the Ministry of Agriculture, Forestry and Fisheries of Japan, and already launched a business in India.</p>

Sudanese companies (Main respondents)	Results of interviews on needs, market opportunities, etc.	Market opportunities for Japanese companies
1) Alitegahat Almtadeda Co.Ltd, 2) Green Zone for Trading & Investment (GIAD group)	<p>The capacity of reefer trucks for meat is insufficient, so we are renting trucks from other countries (e.g. we export to Egypt with an importer's truck).</p> <p>Export refrigerators at airports are inadequate, resulting in lower quality.</p> <p>In the agricultural sector, we are interested in Japanese agricultural machinery (e.g. potato harvesters), seeds and fertilizers.</p>	<p>Amongst the companies interviewed in this study, DENBA's refrigerator (patented technology) is considered to have the potential to enter the Sudanese market.</p> <p>Among the companies that have participated in JICA's Small and Medium Enterprise Support Program, TOYO AGRICULTURAL MACHINERY M.F.G Co., LTD.'s potato harvester is considered to have potential for advancement (it has been introduced in Hokkaido and is considered to be applicable in Sudan, where the area under cultivation is large).</p>
Sudanese Center for Sterilization Horticultural Exports (SCS) (A fruit and vegetable exporter under GIAD)	<p>The establishment of cold storage in rural areas is necessary to expand mango exports.</p>	<p>Amongst the companies interviewed in this study, DENBA's refrigerator (patented technology) is considered to have the potential to enter the Sudanese market.</p>
Agripack (Wholesaler of high quality fruit and vegetable products)	<p>In terms of products from Japanese companies, we are interested in all fruit and vegetable shipping machinery, including packing, washing and cold storage (more factories like Agripack will reduce the issue of Egypt and other countries re-exporting Sudanese production).</p> <p>If Sudan can introduce a Small Mobile Facility, Sudan can export high quality fruit and vegetables from rural areas.</p>	<p>Amongst the companies interviewed in this study, DENBA's refrigerator (patented technology) is considered to have the potential to enter the Sudanese market.</p>

Source: JICA Survey Team

# Chapter 5 Future Direction of Cooperation

This survey analysed priority issues to be tackled in the short, medium and long term and proposes measures based on the results of the survey.

Since the issues identified in this survey cover wide range of areas, the projects proposed in the Final Report are divided into two categories: (1) initiatives that the Government of Sudan should implement on its own or with the support of other organisations, and (2) projects that can be implemented through JICA's technical cooperation or Grant Aid.

According to an analysis of JICA's cooperation with Sudan to date, JICA has been implementing technical cooperation projects in various areas such as agriculture, water resources, health, and environment/solid waste management, but there is no technical cooperation project in customs<sup>46</sup> (JICA website and Official Development Assistance (ODA) portal website). When requesting a new cooperation project, it is essential for C/P agencies to have a basic understanding of project management (including an understanding of PDM) in order to properly formulate and implement a project. Therefore, the PCM workshop for Sudanese officials (C/P candidate organisations etc.) was conducted at the time of the first field survey, led by Mr. Mitsunori Numaguchi, the Chief Consultant who had similar experience on such initiatives as shown in Figure 5-1-1. In the same PCM workshop, a PDM preparation exercise was conducted, and through this exercise, potential cooperation projects were narrowed down. This effort increased the ownership of the C/P and some proposals were submitted by the due date of 2021 needs survey.

The respective directions of cooperation in trade, logistics infrastructure, and agriculture and livestock sectors are described below.



Source: JICA Survey Team

**Figure 5-1-1 PCM workshop facilitated by the Chief Consultant**

<sup>46</sup> Human resource development through Knowledge Co-operation Program (training program) is being carried out.

## **5-1 Recommendations for measures to stimulate trade in Sudan**

### **5-1-1 Summary of Current Status and Issues in Trade Promotion (WTO Accession)**

Sudan is currently in the process of applying for WTO membership. The obligations on trade facilitation to be implemented by members after accession to the WTO are set forth in Articles 1 to 13 of the Trade Facilitation Agreement. Measures that should be specifically addressed with the aim of facilitating trade are listed below. Since there are significant time and budget constraints to address all of the following measures in a single project, they need to be prioritised in consideration of the current situation.

- Article 3: Prior instruction
- Article 5: Other measures to improve fairness, non-discriminatory treatment and transparency (measures relating to animal and plant quarantine and food hygiene)
- Article 7.4: Control methods according to the degree of danger (risk management)
- Article 7.5: Post-clearance audit (post-clearance investigation system)
- Article 7.6: Determination and publication of the average time required for pick-up
- Article 7.7: Measures for trade facilitation for authorised business operators
- Article 7.9: Perishable goods
- Article 8: Cooperation of border agencies
- Article 9: Movement of goods intended to be imported under customs control
- Article 10.3: Use of international standards
- Section 10.4: Single window
- Article 11: Freedom of currency (transit)

The survey team believes that programme support is necessary as a higher level of support. It is imperative for Sudan to hasten its accession to the WTO in order to promote and facilitate trade. The benefits of WTO accession (e.g., easier access to aid from international organisations and other donors, greater transparency in trade, lower time and cost of trade, etc.) are significant, and the survey team believes that a WTO accession support programme that integrates several projects is necessary.

Sudan applied to join the WTO in October 1994, and a working group on accession to the WTO was established shortly thereafter. Although most of the required documentation has been submitted, Sudan remains, to this day, an observer in the WTO.

UNCTAD has also worked closely with Sudan Customs and other trade-related agencies in establishing baselines for trade facilitation, in line with the provisions of the WTO TFA. The Sudanese field consultant prepared an initial assessment in 2012 and 2013 through a desk survey, credible reference sources, and interviews with key public and private sector institutions. The resulting Trade Facilitation Implementation Plan was validated at a stakeholders' meeting in March 2013. The plan was thoroughly reviewed and updated in December 2015.

An assessment mission was undertaken in December 2015 to establish a baseline for assessing Sudan's readiness to implement the TFA. This contributed to updating the 2013 UNCTAD TFA needs assessment to reflect current realities and to develop recommendations on the sorting of measures. The recommendations were provided to Sudan's established NWGTF, which was instrumental in updating the

2013 needs assessment and identifying measures requiring additional time and/or capacity building support (categories "B" and "C"). The updated needs assessment identified the following key areas:

- Expanding the scope of risk management to other border posts;
- Continued work in measuring and publishing average goods release times;
- Rationalization of Customs laboratories to support future improvements in test procedures and advance rulings;
- Establishing the foundations for Single Window;
- Improving and rationalizing training and professional development, including the application of e-learning tools

The objective of the WTO Accession Support Program is to facilitate Sudan's WTO accession work by introducing the following WTO TFA compliance items: advance ruling system, risk management, post clearance audit, TRS, AEO, bonded system, SW, and transit system to promote trade.

### **5-1-2 Challenges to trade promotion in the customs field**

In terms of challenges to trade facilitation in the customs field, a study report published in 2016 by the WCO, in addition to the UNCTAD study mentioned above, points to relatively high transaction costs, mainly related to communication challenges, lack of infrastructure, procedural delays at borders, and inefficient payment systems. While these challenges exist, Sudan has shown a commitment to modernizing and reforming its customs system, and these efforts are expected to bring tangible benefits to both the government and trade stakeholders.

Sudan Customs Authority, following the recommendations of the WCO, acceded to the Revised Kyoto Convention (RKC) in 2009 and has incorporated the given modernization measures to meet its RKC obligations. The newly amended Customs Act of 2010, which strengthened the legal alignment with the RKC, and the nationwide implementation of ASCYUDA World are examples of modernization.

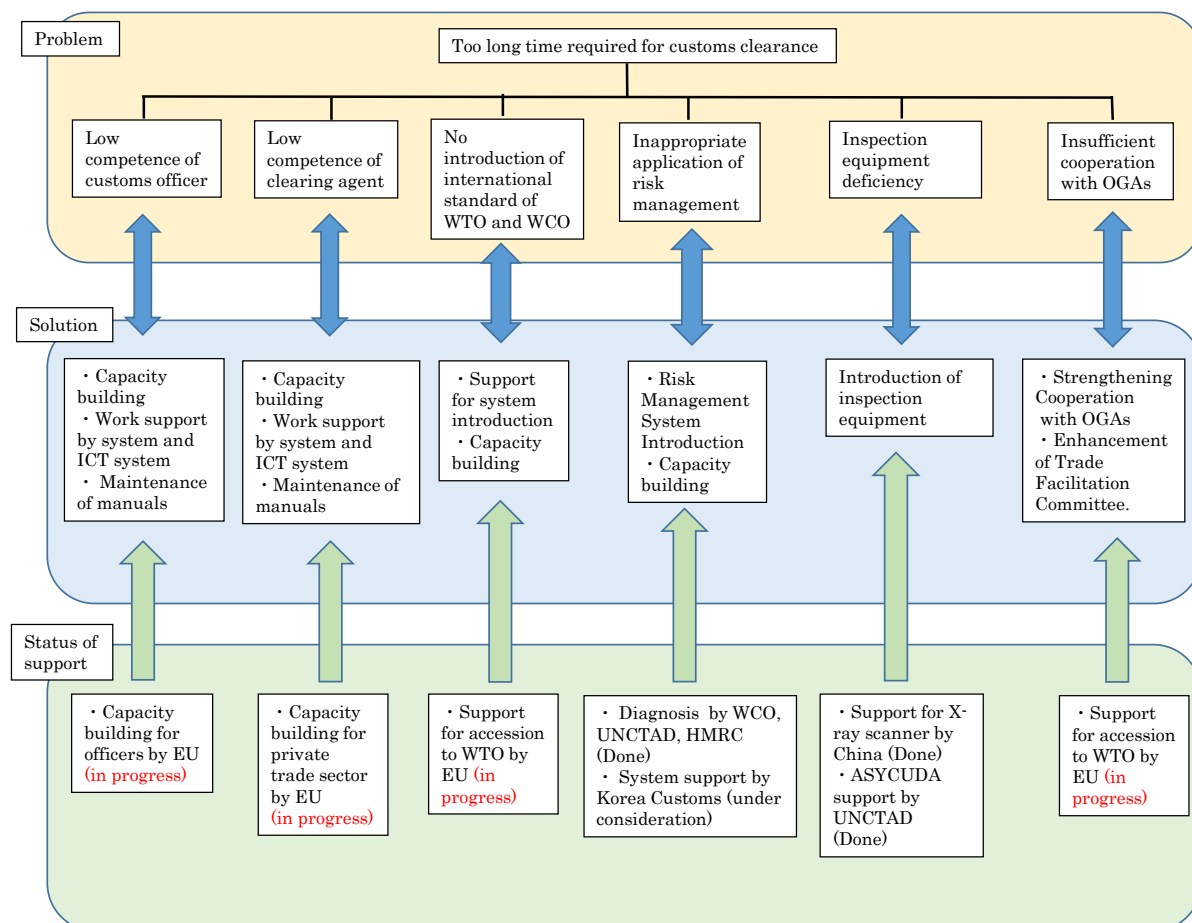
Sudan has benefited from continued support from the WCO, along with other technical cooperation in risk management, classification, and human resource management/training. As a manifestation of this, the Sudan Customs Strategic Plan for 2012-2016 has been developed. The plan highlights the following customs reform and modernization priorities

- Shorten customs clearance time and increase the level of spontaneous compliance of traders
- Effective use of the latest technology
- Application of risk management systems and methods
- Strengthen cooperation and coordination with other ministries and private institutions

A WCO assessment mission was sent in December 2015 to identify a baseline for assessing Sudan's readiness to implement the TFA. This contributed to updating the 2013 UNCTAD TFA needs assessment to reflect current realities and to develop recommendations on the sorting of measures. The recommendations were provided to Sudan NWGTF, which was instrumental in updating the 2013 needs assessment and identifying measures (categories "B" and "C") that require additional capacity building support, etc. The updated needs assessment identified the following key areas of support



- Expanding the scope of risk management to other border posts;
- Continued work in measuring and publishing average goods release times;
- Rationalization of Customs laboratories to support future improvements in test procedures and advance rulings;
- Establishing the foundations for Single Window;
- Improving and rationalizing training and professional development, including the application of e-learning tools



Source: JICA Survey Team

**Figure 5-1-2 Status of support for issues in the customs sector**

### 5-1-3 Support measures

Based on the trade promotion and customs issues identified in this study, Table 5-1-1 shows the support measures.

**Table 5-1-1 Trade promotion-related support measures**

Sector	No.	Proposal Support Measures	Related institutions	Proposed Timing and period of cooperation	Proposed Cooperating organisations
Customs	1	Support for strengthening customs risk management capacity	Sudan Customs Authority (SCA)	Short term 3 years	JICA
	2	Support for the introduction of advanced ruling systems (goods classification, rules of origin, customs valuation)		Mid to long term 3 years	Donor
	3	Support for bonded transport system and transit trade facilitation		Mid to long term 2 years	Donor
	4	Support for improvement of Authorised Economic Operator System		Mid to long term 2 years	Donor
	5	Improvement of time release study implementation capacity		Mid to long term 2 years	Donor
Trade + Infrastructure	6	One Stop Border post implementation support	SCA, SSMO, Ministry of Trade, Ministry of Agriculture and Natural Resources, Ministry of Health, Ministry of Transport	Long term 5 years	Government of Sudan

Source: JICA Survey Team

**(1) Project Title: Support for Strengthening Customs Risk Management Capacity**

**1) Background**

With regard to Sudan Customs, UNCTAD's study in 2013 and the WCO's study in 2016 pointed out the need to strengthen the risk management capacity of Sudan Customs in order to contribute to trade facilitation. Both studies pointed out that trade facilitation is hampered by the fact that Sudan Customs' risk management capacity is inadequate and the introduction of risk management methods is limited to Khartoum and other areas, resulting in overall customs clearance taking longer than necessary and incurring extra costs.

A 2015 time release study conducted by Sudan Customs Authority under the auspices of the WCO noted unusually long clearance times. It took 21 days to clear customs at Port Sudan, a typical seaport, 14 days, 16 hours and eight minutes at Soba ICD, a land clearance point, and six days, 15 hours and 35 minutes at Khartoum Airport, the capital. In Japan, the average time required for customs clearance is 61.9 hours for sea cargo and 12.3 hours for air cargo.

In terms of trade costs, according to the 2016 World Bank Doing Business Report, Sudan's cost to import (border compliance) was USD1,128, nearly double the sub-Saharan average of USD643. In

terms of exports, Sudan's cost to export (border compliance) was USD1,060 nearly double the USD542 in the sub-Saharan region.

The Sudan National Trade Facilitation Roadmap 2017-2021, compiled by the Government of Sudan, states that the government's mission is to reduce import and export time by 40%, eliminate unnecessary costs incurred by traders, and increase export volume by at least 25% by 2021 by implementing various activities included in the Trade Facilitation Roadmap.

Among the six goals for the realization of the mission, Goal 2 is a 40% reduction in customs clearance time and Goal 5 is implementation of at least 70% of the trade facilitation measures stipulated in the WTO Trade Facilitation Agreement. And deploying automated customs risk management at all border posts is defined as an activity (Activity 25) to achieve Goal 5.

At Sudan Customs, the customs clearance system, ASYCUDA World, was introduced in 2016 with the support of UNCTAD. In addition, in accordance with the recommendations of the WCO and other authorities, Sudan Customs established a risk management office in Khartoum Airport Customs Sub-Branch in 2016, and as of the end of August 2021, risk management departments have been established in five areas (seven branches) across the country. On the other hand, due to the lack of competence (insufficient training) of the staff in charge of risk management and the poor selectivity criteria set in ASYCUDA, the benefits of computerization are not being enjoyed, and the inspection rate (Red Channel) is about 70%, while the system permission (Green Channel) is only 8%. In addition, Korea Customs Service is currently considering supporting the introduction of a national single window and risk management system in Sudan, and support for the introduction of the system and support for human resource development related to international standards are expected to have synergistic effects in addition to being compatible.

With regard to the management of importers and exporters, which is a key element of customs risk management and the basis of the selectivity criteria, Sudan Customs Authority has not been able to manage all importers and exporters, and has just introduced a golden list (good importers and exporters) system of so-called AEO, while no other management of importers and exporters has been implemented. Starting with the management of importers and exporters, Sudan Customs needs to analyse information and set selectivity criteria focusing on other risk management elements, such as cargo and destination. By doing so, Sudan Customs will finally be able to achieve the customs clearance time it needs.

International standards exist for customs risk management, and the General Annex 6 of the RKC specifies the concept and specific methods of customs risk management. Sudan has ratified the RKC, and supporting the development of human resources to implement the RKC's customs risk management is a meaningful way to improve Sudan's investment climate and promote trade. General Annex 6 Customs Control (Risk Management) of the WCO's RKC and its commentary, the Risk Management Compendium<sup>47</sup> are available. The Compendium contains indicators, and also makes the criteria available to ratifying countries in detail. Based on the Compendium, it is necessary to build from scratch an information analysis approach that is tailored to the actual situation in Sudan.<sup>48</sup>

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<sup>47</sup> <http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/enforcement-and-compliance/activities-and-programmes/risk-management-and-intelligence/risk-management-compedium-common-part.pdf?la=en>

<sup>48</sup> <http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/enforcement-and-compliance/activities-and-programmes/risk-management-and-intelligence/risk-management-compedium-common-part.pdf?la=en>

RKC's risk management approach is effective under weak governance in post-conflict countries. In general, a post-conflict country, the government is not trusted and the people are not very law-abiding, so it is necessary to develop a risk management approach based on an assumption that human nature is fundamentally flawed.

As a concrete approach to risk management for Sudan Customs, it is considered that the following steps should be taken in close cooperation with counterparts: Appropriate understanding of the WCO RKC Risk Management Compendium ⇒ Examination of Indicators for Sudan based on the Compendium Consistency between the WCO RKC Risk Management Compendium and the ASYCUDA system ⇒ Information collection based on the past studies ⇒ Information analysis ⇒ Setting of specific indicators (Selectivity Criteria) ⇒ Monitoring. In other words, the introduction of a "one shot at declaration in Sudan" risk management approach is required, given the low level of development in the public and private sectors.

## **2) Objective**

The customs risk management capacity of Sudan Customs will be strengthened in key customs offices such as Khartoum and Port Sudan.

## **3) Contents**

- Strengthen risk management capabilities of risk management branches
- Strengthen Sudan Customs' capacity to exchange and collect information
- Strengthen the information analysis capabilities of risk management branches
- Enhance the ability of ASYCUDA World, the customs clearance system, to set selectivity criteria.

## **4) Implementing Organisation and Related Organisations**

Sudan Customs Authority (Risk Management Office and its branches)

## **5) Schedule**

The goal is to implement support as quickly as possible. Three years.

## **6) Feasibility and Points to Note**

- The scope needs to be reviewed depending on the IT literacy of counterpart staff.

## **(2) Project Title: Support for Introduction of Advance Ruling System (Classification, Rules of Origin, and Customs Valuation)**

### **1) Background**

Same as (1) above.

In addition, as part of the trade promotion efforts, an advance ruling system (classification, rules of origin, and customs valuation) was introduced. However, as a result of the interview with the clearing agent, it was determined that the advance ruling system was not in operation at the customs clearance site.

## **2) Objective**

To improve the operation of the advance ruling (classification, rules of origin, and customs valuation) system, which contributes to trade promotion, among other WTO TFA compliance issues, in order to facilitate Sudan's accession to the WTO.

## **3) Contents**

- Classification
- Rules of origin
- Customs valuation

## **4) Implementing Organisation and Related Organisations**

Sudan Customs Authority (International Directorate)

## **5) Schedule**

The goal is to implement support in the medium term. The implementation period is three years.

## **6) Feasibility and Points to Note**

- Care should be taken to ensure that it is consistent with the trade facilitation plan reviewed by NWGTF. It also needs to be reviewed as necessary.

# **(3) Project Title: Support for bonded transport system and cross-border trade facilitation**

## **1) Background**

Sudan has borders with seven countries, including South Sudan, and proper operation of the system of cross-border transportation for logistics to the hinterland and bonded transportation within Sudan are essential. The WTO also considers the transit system to be an important system for landlocked country trade.

## **2) Objective**

To introduce a transit system (bonded transport system and cross-border trade facilitation measures) to facilitate Sudan's accession work to the WTO.

## **3) Contents**

- Improvement of bonded transport screening capacity

- Establishment of a collateral system
- In-transit monitoring system

#### **4) Implementing Organisation and Related Organisations**

Sudan Customs Authority, International Affairs Section

#### **5) Schedule**

Early cooperation is preferable. Five years.

#### **6) Feasibility and Points to Note**

- It is essential to cooperate with the Central Bank in building a network with the banks to which collateral is deposited and in collateral settlement procedures.
- Cooperation with the police and other authorities is necessary for measures to prevent unloading during transportation.

### **(4) Project Title: Support for improvement of Authorised Economic Operator system**

#### **1) Background**

Same as above (1).

#### **2) Objective**

Implementation and strengthening of the AEO system, which contributes to the promotion of trade, among the compliance issues of the WTO TFA, in order to facilitate Sudan's accession to the WTO.

#### **3) Contents**

- Review of certification standards for AEOs
- Dissemination of information and capacity building for potential AEOs
- Improvement of capacity for monitoring of AEOs

#### **4) Implementing Organisation and Related Organisations**

Sudan Customs Authority (International Directorate)

#### **5) Schedule**

Early cooperation is preferable. Two years.

#### **6) Feasibility and Points to Note**

- A baseline survey of the existing system needs to be conducted as soon as possible to work out the details of the project.

**(5) Project Title: Improvement of time release study implementation capacity**

**1) Background**

Same as above (1).

**2) Objective**

To improve the capacity of Sudan Customs to conduct time release study and to strengthen the system and capacity to conduct time release study on a continuous basis. Time release studies are essential to measure the progress of Sudan's WTO accession work.

**3) Contents**

- Training of experts in time release study
- Development of Time Release Study Manual
- Establishment of a system for surveying the time required for customs clearance

**4) Implementing Organisation and Related Organisations**

Sudan Customs Authority (International Directorate)

**5) Schedule**

Early cooperation is preferable. Two years.

**6) Feasibility and Points to Note**

- Coordination and cooperation with customs brokers are essential.

**(6) Project Title: One Stop Border Post-implementation support**

**1) Background**

There are many public and private border procedures, and as many contact points as there are procedures. In order to consolidate these procedures and contact points, efforts to build and introduce a single window on the software side are made. On the other hand, efforts are also being made on the hardware side to consolidate facilities and centralise contact points, and this has been introduced at many land borders in Africa as the OSBP. Sudan also shares borders with seven other countries, so the potential for OSBP implementation is high.

**2) Objective**

To introduce the OSBP as a hardware aspect to facilitate trade in Sudan.

### **3) Contents**

- Adjustment of the OSBP system
- Guidance on implementing the OSBP system
- Operational support for OSBP

### **4) Implementing Organisation and Related Organisations**

Sudan Customs Authority (International Affairs Directorate), SSMO, Ministry of Trade and Supply, Ministry of Agriculture and Natural Resources, and Ministry of Health

### **5) Schedule**

Five years

### **6) Feasibility and Points to Note**

- Establishing a border-related committee and coordinating with the border-related committees of neighbouring countries that share a border with Sudan are essential, and requires time and effort to coordinate.

## **5-2 Priority issues for improving logistics infrastructure and recommendations on the support measures**

### **5-2-1 Logistics Infrastructure Strategy**

Table 5-2-1 shows the current situation in the field of logistics infrastructure, as well as the intentions and aspirations of the Sudan. Port Sudan does not have any core shipping routes and is functioning as a feeder port for Saudi Arabia. Sudan's intention is to attract large ships to call at Osman Digna Port (Suakin Port) by improving the port, but first of all, it is necessary to focus on shortening the berthing time at Port Sudan, which currently takes about 14 days, and exploring the possibility of increasing the water depth in the medium and long term. In addition to stimulating demand by promoting industry in Sudan, it is believed that the border facilities in the hinterland of Chad and northern Ethiopia should be improved with promotion of OSBP. Location of dry ports and free zones should be reorganized and made more convenient in order to capture transit demand.



**Table 5-2-1 Sudan's Aspirations in the Logistics Infrastructure Sector**

Mode	Status	Description
Port	Present	The time required to wait for berthing is long and unpredictable. Because of the shallow water depth, it is not competitive with surrounding ports.
	Expectation of Sudan	If the Suakin Port (PPP project) is accomplished, the Government of Sudan expects large vessels to call at the port because it is a feeder port with Jeddah and is mainly used for small ships at present.
	Goal	Focusing on improving the convenience of existing container berths of Port Sudan. Improving the depth of berths will be explored in the medium to long term.
Land transport	Present	In adjacent neighboring countries, trade volume with Egypt is high, and other borders are closed for security reasons.
	Expectation of Sudan	There is a lot of smuggling and future growth is expected. The Government of Sudan expects increases in trade through the southern border (northern Ethiopia, Galabat, Chad and Adri).
	Goal	Egypt, Ethiopia, Chad border facility improvements and OSBP promotion. In addition, the development of the National Transport Master Plan will solve challenges for land transport by reorganizing the location and improving convenience of dry ports and free zones.

Source: JICA Survey Team

### 5-2-2 Challenges to the logistics infrastructure sectors

In the general transport sector, NTMP has not been approved by the Government of Sudan after its development in 2010 due to the country's unstable condition. Since the last WB study to develop a master plan was conducted more than 10 years ago, the social conditions and the state of development of transport infrastructure in Sudan have changed significantly. Given that the existing NTMP is based on the situation before the independence of South Sudan, it is necessary to develop a new national transport master plan that is more in line with the current situation of the Sudanese state, and to make a priority list of infrastructure investment projects.

In the road sector, poor road surface conditions are the main cause of high transport costs and transport time. In particular, the cost of transporting goods to neighbouring countries is even higher than that of transporting goods to major cities in Sudan, because cross-border time is added to the transport time, and the competitiveness of road transport is lower than that of neighbouring countries. Therefore, the challenge is to improve cross-border facilities in order to reduce crossing times.

Slope collapses, landslides, rockfalls and river flooding on the Port Sudan-Khartoum Road, the main logistics artery, have caused damage to the road and every year the main logistics artery of Sudan gets temporarily cut off. Sudan's national road network is weak and there are no options for diversionary roads to avoid bottlenecks. Disaster prevention and mitigation measures for this section are urgent issues to ensure sustainable logistics functions.

NHA had introduced PMMS and VLMS to improve the efficiency of road maintenance work, but it is necessary to improve the road maintenance capacity of NHA engineers in order to promote the PMMS and VLMS.

At present, with the exception of the two Egyptian border crossings, the operation of border facilities is limited due to security issue. While, there are some routes such as Port Sudan - Chad where transportation

demand can be expected. Therefore, a strategic corridor plan that includes neighbouring countries is needed to establish a smooth logistics route when security improves in the future.

In the railway sector, the availability rate of locomotives owned by SRC is approximately 20%, and sufficient locomotives have not been secured to maintain regular train services. Repairs for locomotives cannot be done due to lack of spare parts, and for this reason the procurement of spare parts necessary for these repairs and general maintenance is a problem.

Major track rehabilitation works were carried out between 2010 and 2019, but the track from Madani to Babanusa was not included. Connectivity of the rail network from Port Sudan to Western Sudan needs to be ensured.

In the port sector, the gantry cranes and other cargo-handling equipment at the old container berth at South Quays in Port Sudan are severe ageing, and the availability rate is remarkably low. So, the renovation or replacement of gantry cranes and other cargo-handling equipment is an issue for improving the efficiency of cargo-handling operations.

A lot of port-related infrastructure is under planning to be developed, specifically for Port Sudan, Suakin Port, and Salloum Dry Port, but it is necessary to make a comprehensive coordination of the division of functions and priorities of each port infrastructure, and to consider a rational budget allocation and financing plan.

There are well-located ports and dry ports from a logistics perspective, but their strengths are not fully exploited due to insufficient connectivity with other transportation infrastructure. There is a need for a comprehensive plan to promote the development of logistics hubs that are linked to other modes of transportation, including railway and road.

### **5-2-3 Support measures**

Table 5-2-2 shows the support measures based on the issues of logistics infrastructure that are currently identified.

**Table 5-2-2 Support Measures Related to Logistics Infrastructure**

Sector	No.	Proposed support measures	Related institutions	Proposed Timing and period of cooperation	Proposed Cooperating organisations
General	1	The Project for Formulation of National Transport Master Plan	Ministry of Transport (Sudan Railways Corporation, Sea Ports Corporation), Ministry of Urban Development, Roads and Bridges (National Highway Authority)	Short term 2 years	JICA
	2	Data Collection Survey on Development of Logistics Network in the Port Sudan International Corridor		Mid to long term 3 years	Donor
Road	3	Khartoum - Port Sudan Road Disaster Prevention Plan	Ministry of Urban Development, Roads and Bridges (National Highway Authority)	Short to mid term 3 years	Donor
	4	The Project for Capacity Enhancement in Road Maintenance and Management		Short term 2 years	JICA
	5	The Project for Construction of Border Post Facilities	Ministry of Transport	Short to mid term 2 years	Government of Sudan
Railway	6	The Project for Track Improvement on Existing Railway Lines	Ministry of Transport (Sudan Railways Corporation)	Long term 4 years	Donor
Port	7	Provision of Container Handling Equipment and Capacity Building for Improving Cargo Handling Operations in Port Sudan	Ministry of Transport (Sea Ports Corporation)	Short term 3 years	Donor

Source: JICA Survey Team

### **(1) Project Title: The Project for Formulation of National Transport Master Plan**

#### **1) Background**

Sudan has long been suffering from a lack of investment in transport infrastructure due to economic sanctions and political instability. However, with the recent lifting of the SSDL, investment demand for new construction, renovation, and maintenance of transportation infrastructure, including road networks, railways, and ports, is expected to increase.

The NTMP, prepared by the Government of Sudan in 2010 with the support of the WB's Multi-Donor Trust Fund, outlines Sudan's transport policies and infrastructure priority investment strategies for the transport sector up to 2031. However, the NTMP is built on the premise of the situation before South Sudan became independent and it has not been approved by the Sudanese national government. Since then, due to continued political instability, the NTMP has not been updated, nor has a national transport and traffic master plan been developed to replace the NTMP. Although transport sub-sectors, mainly roads, railways, ports, airports, and river transport, have prepared their own investment plans, there is no national transport master plan for reference. Therefore, the investment plans of the sub-sectors are not well

coordinated. This has led to a lack of information on priority investment projects in the transport sector in Sudan, even for donors in various countries. Also, there is a need for a national transport master plan that adequately reflects the current situation in Sudan.

## **2) Objective**

By developing a National Transport Master Plan, Sudan government will identify priority projects to accelerate the development and maintenance of transport infrastructure.

## **3) Contents**

- Review of existing NTMP and identification and analysis of current status (transport network, implementation structure, annual plan, etc.)
- Passenger and logistics flow studies, transportation demand forecasts based on future development scenarios
- Development of a New National Transport Master Plan and support for the process of its approval by the Government of Sudan
- Recommendations for short-term priority investment projects
- Capacity building for an update of the National Transport Master Plan

## **4) Implementing Organisation and Related Organisations**

Ministry of Transport

Ministry of Urban Development, Roads and Bridges

## **5) Schedule**

This project will be a short-term support measure to develop a list of priority projects in the transport sector in Sudan. The period of cooperation shall be two years.

## **6) Feasibility and Points to Note**

It is important to strengthen the capacity of counterparts so that each related organisation (road, railway, port, aviation, and river transport) can formulate master plans with the new NTMP as an overarching plan after the new NTMP is formulated.

## **(2) Project Title: Data Collection Survey on Development of Logistics Network in the Port Sudan International Corridor**

### **1) Background**

In recent years, the development of transshipment ports as bases for international logistics functions has been attracting worldwide attention. In Eastern Africa, the Port of Mombasa in Kenya, the Port of Dar es Salaam in Tanzania, and the Port of Djibouti in Djibouti have come to play roles as gateways

to Eastern Africa. In order to fully demonstrate the function of a transshipment port, the development of a logistics hub that ensures connectivity with other traffic modes, such as roads and railways, is indispensable. In addition, corridors connecting landlocked countries and ports are being planned in many African countries. Hence, the development of logistics networks in cooperation with neighbouring countries is required. The Port Sudan Corridor, led by COMESA, is planned to function as an international logistics hub, as Sudan shares borders with seven other countries and has the geographical advantage of facing the Red Sea. The plan aims to develop Suakin Port as a transshipment port with international logistics functions for Sudan, however no detailed feasibility study has been carried out so far.

## **2) Objective**

Develop a roadmap for the Port Sudan International Corridor to enhance connectivity between Sudan and landlocked countries.

## **3) Contents**

- Gathering and analysis of information on comparative advantages, coordination, and functional sharing with other corridors
- Review, analysis, and evaluation of proposed corridor routes
- Planning of a logistics hub around the Suakin Port
- Strategic site optimisation and realignment plan for dry ports
- Consideration of priority projects

## **4) Implementing Organisation and Related Organisations**

Ministry of Transport

Ministry of Urban Development, Roads and Bridges

## **5) Schedule**

This project will be provided on a medium- to long-term basis to help realize the future development of the new terminal at Suakin Port and the logistics hub development project. The period of cooperation shall be three years.

## **6) Feasibility and Points to Note**

- Care will be taken to ensure consistency and coordination with the development of logistics networks in other corridors planned in neighbouring countries.
- It is essential that a comprehensive regional economic strategy be adopted that is consistent with export promotion products in national and regional plans

### **(3) Project Title: Khartoum - Port Sudan Road Disaster Prevention Plan**

#### **1) Background**

There are many wadis in Sudan. Heavy rains during the rainy season cause large amounts of water to flow, resulting in severe flooding and mudslides. This is why the Khartoum - Port Sudan Road is temporarily closed due to flood damage every year. This section of the road serves as an important logistics route connecting ports on the Red Sea to Khartoum. Temporary road closure due to flood damage is a major factor preventing stable logistics services. Flooding occurs due to a lack of drainage facilities such as ditches and culverts at the site. Even where such drainage facilities have been partially constructed, these do not function well in terms of working to their maximum capacity due to the accumulation of sediment caused by insufficient maintenance. In particular, the mountain roads located in the hilly areas of the road section are subject to slope failures, landslides, and falling rocks during the rainy season due to the bare surface of the mountains, as well as extensive damage to the road pavement caused by river flooding. In 2018, a field survey was conducted by Japanese companies with the cooperation of NHA, but specific disaster prevention and mitigation measures have yet to be realized. Therefore, it is important to enhance disaster prevention and mitigation functions by improving drainage facilities, implementing road slope disaster countermeasures, and implementing monitoring systems. In addition, although this road section is currently severely damaged, it is assumed that similar damage is occurring in other sections as well. It can be expected that the horizontal deployment of technical support for road slope disaster countermeasures will be required.

#### **2) Objective**

To establish a sustainable road network by implementing disaster prevention and mitigation measures, and monitoring systems on the Khartoum-Port Sudan Road, the main logistics network in Sudan.

#### **3) Contents**

- A series of technology transfers from investigation and design to construction management and maintenance for the implementation of drainage facilities, rock slope countermeasures, and debris flow countermeasures to strengthen disaster prevention and mitigation functions
- Support for the introduction of monitoring systems using satellite imagery
- Support for the horizontal deployment of knowledge and technology to similarly affected areas in Sudan

#### **4) Implementing Organisation and Related Organisations**

Ministry of Urban Development, Roads and Bridges (National Highway Authority)

## **5) Schedule**

Consider addressing this issue in the short term, as damage to road pavements is seen each year during the rainy season. The cooperation period shall be three years.

## **6) Feasibility and Points to Note**

It has been confirmed from interviews that flooding also occurs during the rainy season on the 240 km road between Haya and Atbara, which is beyond the previously mentioned section, and it is desirable that flood control measures are implemented concurrently with this support measure. The financial resources for implementation are expected to come from the local government or the National Highway Authority, as well as from the WB and other donors who have provided support in the past.

## **(4) Project Title: The Project for Capacity Enhancement in Road Maintenance and Management**

### **1) Background**

There are approximately 31,000 km of roads in Sudan, but the length of paved roads is only about 12,000 km, or about 38% of the total, which is extremely limited. Damage such as cracks and potholes have been observed in many places on paved roads due to inappropriate construction methods and lack of subsequent maintenance. Under such circumstances, the National Highway Authority (NHA), which is the road administrator of the national highways, has formulated a maintenance and rehabilitation project plan. However, sufficient budget has not been secured. In addition, the retirement of many skilled engineers and the lack of a unified maintenance manual have prevented the transfer and accumulation of technology, resulting in a shortage of technology and human resources. In the field of road maintenance management, the Pavement Maintenance Management System (PMMS) has been introduced by the NHA in recent years. There is a big shift to establishing a more efficient maintenance management system within the limited budget and human resources. On the other hand, the PMMS has not been utilised concretely because it has only been introduced for a short period of time. In order to develop an effective road maintenance management plan, the PMMS must be utilised and an implementation system for road maintenance management must be established.

### **2) Objective**

The NHA's capability to maintain and manage roads on national highways will be strengthened.

### **3) Contents**

- Improvement and technology transfer of PMMS
- Development of road maintenance plans using PMMS
- Formulation of technical manual for road maintenance and management (implementation of road surface condition survey and road facility inspection)
- Strengthen road maintenance management capacity by clarifying the implementation system of road maintenance management and implementing training

#### **4) Implementing Organisation and Related Organisations**

Ministry of Urban Development, Roads and Bridges (National Highway Authority)

#### **5) Schedule**

As PMMS is already applied, this support measure will contribute to efficient road maintenance and management at a relatively early stage by promoting its use. Therefore, it will be implemented on a short-term basis, and the cooperation period will be two years.

#### **6) Feasibility and Points to Note**

- Care should be taken to ensure that a mechanism is established to make sure that engineers who have received training in Japan are continuously assigned after the project period.
- Care should be taken to ensure that the budget is allocated in accordance with the Road Maintenance Plan that has been developed.

### **(5) Project Title: The Project for Construction of Border Post Facilities**

#### **1) Background**

Sudan shares borders with seven countries, and border facilities play an important role in stimulating land trade with neighbouring countries. However, the current border facilities are not adequate except for two main border locations (Argen and Ashket) on the Egyptian border. The border facilities constructed in 2016 need to be repaired due to the poor quality of construction at the Argen border crossing. In addition, the border crossing time takes approximately 2-4 days, which is much longer than that of neighbouring countries. Since cross-border procedures account for a large part of the border crossing time, it is important to facilitate cross-border procedures by developing OSBP compliant facilities.

#### **2) Objective**

OSBP facilities will facilitate cross-border procedures and promote cross-border trade with neighbouring countries that share borders with Sudan.

#### **3) Contents**

- Construction of border facilities (general management offices, cargo inspection facilities, parking lots, bonded warehouses, etc.)
- Design and construction supervision
- Procurement of equipment and devices (X-ray scanners for cargo inspection)
- Monitoring of operation and maintenance after completion of facilities

#### **4) Implementing Organisation and Related Organisations**

Ministry of Transport



## **5) Schedule**

It shall be a short- to medium-term support measure to be implemented concurrently with or prior to the border connecting road/railway. The period of cooperation shall be two years per border. Following completion of these facilities, monitoring for operation and maintenance should also be conducted.

## **6) Feasibility and Points to Note**

- Where a framework for corridor support with neighbouring countries exists, coordinate with relevant agencies and harmonise plans.
- With regard to the soft component of OSBP at the Sudan-Ethiopia border, since feasibility study is being carried out at the initiative of IGAD, it should be noted that maintenance policies should be harmonised.
- Since the areas near the border can be unstable, the feasibility of targeting the development of facilities at the Sudan-Egypt border, where security is relatively stable, is desirable.

## **(6) Project Title: The Project for Truck Improvement on Existing Railway Lines**

### **1) Background**

Despite the fact that the Sudan has one of the longest railway networks in Africa, most of the lines are not in fully operation due to ageing locomotives and tracks, as well as inadequate maintenance. In particular, the shortage of locomotives has a significant impact on the number of trains in operation. There is an urgent need to get locomotives back into working order by procuring spare parts. On the other hand, with regard to the tracks, under the 2010-2019 renovation project, the lines connecting Port Sudan, Khartoum and Madani, as well as the lines connecting Babanusa and Nyala, are being repaired, and trains are operating relatively well on these sections. However, the 515 km stretch between Madani, Kosti and El Obeid has not been repaired and is not in a condition to safely operate trains. In order to facilitate rail transport, it is necessary to ensure the connectivity of the rail network from Port Sudan to western Sudan.

### **2) Objective**

Improving the rail share of land freight transport in Sudan

### **3) Contents**

- Repair of the 515 km track between Madani, Kosti and El Obeid
- Strengthen capacity for operation and maintenance of railway infrastructure

### **4) Implementing Organisation and Related Organisations**

Ministry of Transport (Sudan Railways Corporation)

## **5) Schedule**

For the railway sector, the procurement of locomotive spare parts is a priority that should be resolved in the short term, and repair work on the concerned section is a medium- to long-term support measure. Repair work will be carried out from Madani on a priority basis. The overall cooperation period will be four years.

## **6) Feasibility and Points to Note**

Since the target section is 515 km long, it is necessary from the viewpoint of feasibility to divide the package into small sections and proceed with the cooperation involving several donors.

## **(7) Project Title: Provision of Container Handling Equipment and Capacity Building for Improving Cargo Handling Operation in Port Sudan**

### **1) Background**

The new and old container berths at South Quays in Port Sudan are each equipped with four gantry cranes, but several gantry cranes are inactive due to breakdowns and other reasons. Therefore, the availability rate is extremely low. This circumstance has resulted in longer waiting times for container ships in Sudan than in neighbouring countries. The wide variation in waiting times makes it difficult to determine schedules, which makes the port less convenient for shippers.

The challenge is to replace ageing gantry cranes with new units to improve the efficiency of container cargo handling operations and enhance service levels. Cargo handling equipment in the container yard is also not operating at full capacity, so it is important as well to improve the availability rate of cargo handling equipment other than the gantry cranes. In addition, since it is difficult to achieve efficient and effective operations simply by installing cargo handling equipment, continuous support aimed at improving operational capabilities is necessary.

### **2) Objective**

To improve service levels by reducing container handling time at the port through the provision and capacity enhancement of ageing gantry cranes and other cargo handling equipment

### **3) Contents**

- Replacement of ageing gantry cranes at old container berths (provision of new gantry cranes)
- Provision of other container handling equipment
- Conducting training and workshops to improve capacity in port operations and management

### **4) Implementing Organisation and Related Organisations**

Ministry of Transport (Sea Ports Corporation)

## **5) Schedule**

The low availability of gantry cranes has become a bottleneck in the port's lead time and needs to be remedied urgently. Therefore, short-term support will be considered. The period of cooperation shall be three years.

## **6) Feasibility and Points to Note**

In light of the situation in other countries such as Germany and Egypt, which have already provided technical cooperation to the Sea Ports Corporation and the container terminal at Port Sudan, it is necessary to explore the direction of cooperation, such as harmonisation of equipment and training programmes.

### **5-3 Priority issues for export competitiveness of Sudanese products and recommendations on the support measures**

#### **5-3-1 Direction of enhancing the export competitiveness of Sudanese products (Agricultural and Livestock Products)**

The JICA survey team narrowed down the priority issues and measures to enhance export competitiveness in the Sudanese agricultural and livestock sectors based on "4.2 Potential for new entry and expansion of sales channels for Sudanese products in overseas markets" and other factors. In addition, the JICA survey team classified the challenges into two categories: 1) challenges that require immediate action (short-term issues), and 2) issues that require step-by-step support in terms of policies and hardware based on these measures (medium- to long-term issues). The JICA survey team also examined 1) support by the donor or government of Sudan and 2) support by the private sector, and summarized them in the table below.

**Table 5-3-1 Analysis of Current Status of Each Commodity and Priority Issues for Enhancing Export Competitiveness**

Items	Priority	Donor / Government of Sudan	Private sector	Current Status and Analysis
<i>Sesame</i>	Short term	✓		Agricultural chemicals residues, aflatoxin, salmonella, etc. are barriers to export expansion, and small-scale farmers need immediate support from donors.
	Mid and long-term	✓	✓	The donor/Sudanese government is required to expand sesame production in irrigated areas (implementation of irrigation schemes), and the private sector is required to take approaches to develop new export destinations (acquisition of GAP and organic certification).
Groundnut	Short term			After sesame, groundnuts are one of Sudan's leading export products, but the main production areas are located in Darfur and Kordofan, which are far from the capital, so it is desirable to prioritize measures to deal with pesticide residues and hygiene in relation to sesame, and to utilize these measures to promote groundnut exports.
	Mid and long-term	✓	✓	Aflatoxin control measures by the donor/Sudanese government, expansion of groundnut production in irrigated areas, and approaches by the private sector to develop new export markets (acquisition of GAP certification and organic certification) are required.
Cotton	Short term			The production and export volume has been growing remarkably due to the expansion of cultivated areas and the introduction of improved varieties.
	Mid and long-term	✓	✓	Further expansion of exports is expected through the development of cotton mills and contract cultivation with private companies. In addition, for the time being, Sudanese policy is to prioritize the export of cotton after it has been milled rather than supplying it to the domestic spinning industry.
<i>Vegetables and fruits</i>	Short term	✓	✓	The diverse climates of Sudan make it possible to produce a variety of crops, but there are challenges at each stage of cultivation, harvesting, storage, and distribution. As for mangoes, it is necessary for the donor/ Sudanese government to expand the cultivation of varieties for export, provide guidance on appropriate harvesting techniques, and establish an efficient collection and shipping system by the private sector.
	Mid and long-term	✓	✓	The Sudanese government and private sector are required to support the improvement of steaming heat processing capacity, and the private sector is required to develop new export destinations and improve the cold chain.
Gum Arabic	Short term			It is the world's number one producer and exporter, and is able to export high-quality products to Japan.
	Mid and long-term	✓	✓	The donor / Sudanese government is required to develop a trading system for gum arabic, and the private sector is required to establish sales channels for newly emerging countries.

Items	Priority	Donor / Government of Sudan	Private sector	Current Status and Analysis
<i>Livestock</i>	Short term	✓		As export restrictions are often imposed due to major livestock diseases, the donor/ Sudanese government needs to improve capacity to produce and supply vaccines and to inspect and diagnose livestock diseases as soon as possible.
	Mid and long-term	✓	✓	It is required to improve the quality and supply system by upgrading quarantine station facilities and equipment and establishing a livestock market trading system.
<i>Meat</i>	Short term		✓	The shortage of slaughterhouses for export is the biggest bottleneck for export expansion, and the Sudanese government should promote the development of these facilities as soon as possible by promoting private investment.
	Mid and long-term	✓	✓	There is a need to strengthen the value chain by improving the meat inspection system by the donor/Sudanese government and developing the cold chain by the private sector.
Leather	Short term			The export volume is small in relation to the number of livestock kept, so this sector has high development potential. Improvements in animal husbandry methods at the farm level (livestock sector) and improvements in the sophistication of raw hide processing methods at the slaughterhouse level (meat sector) need to be achieved first.
	Mid and long-term	✓	✓	The preparation of a leather export master plan by the Sudanese government and incentives for the leather sector should result in active investment by the private sector.

Source: JICA Survey Team

More detailed information on sesame, vegetables and fruits, livestock organisms, and meat, which are considered to have short-term challenges, was collected and analyzed in the first and second field surveys. As for fruits and vegetables, mangoes were selected as a target product based on the following considerations: 1) high production volume and low export volume, 2) high demand in neighboring countries and on a global scale, and as a result of confirming our intentions with the Ministry of Agriculture and Natural Resources.

Based on the challenges related to enhancing the export competitiveness of Sudanese products (agricultural and livestock products) identified in the survey, Table 5-3-2 to Table 5-3-5 show the measures to be taken. The support and response measures for sesame, mango, livestock and meat are summarized below. The implementing agencies for technical cooperation projects and grant aid programs include donors other than JICA and the Sudanese government.

**Table 5-3-2 Support and Response Measures to Enhance the Export Competitiveness of Sesame**

Stage	Scheme (Priority)	Subproject name	Contents
Central level	Technical Cooperation Projects (being implemented with the support of other donors)	Upgrading the Sudanese Sesame Seeds Value Chain	The UNIDO is providing support to the Ministry of Agriculture and Natural Resources, SSMO and MoI to improve their inspection capacity. (Training for 200 farmers and 30 extension workers in Gedaref and North Kordofan has also been conducted.

Stage	Scheme (Priority)	Subproject name	Contents
Distribution level	Technical Cooperation Projects (Medium- to long-term issues)	Market trading system improvement	Introduce a price evaluation system based on quality (provide incentives to farmers) Improvement of inspection capacity of local SSMOs Provision of simple equipment
	<b><u>Technical Cooperation Projects (Short-term issues)</u></b>	<b><u>Strengthening hygiene control for exporters and markets</u></b>	<b><u>Reinforcement of hygiene management at the distribution level (measures against aflatoxin and salmonella outbreaks)</u></b>
	Initiatives by the Private Sector (Medium- to long-term issues)	Expansion of sesame exports to high-end customers	Establish sales channels to countries that purchase sesame seeds at high prices, such as the EU, Japan and South Korea.
Producer level	Gratuitous financial cooperation (Medium- to long-term issues)	Expansion of irrigated sesame production	Implementation of irrigation projects Implementation of sesame production in irrigated areas
	<b><u>Technical Cooperation Projects (Short-term issue)</u></b>	<b><u>Improvement of capacity for appropriate use of agricultural chemicals and post-harvest management for sesame</u></b>	<b><u>Improve the practical ability of extension officers regarding GAP and traceability</u></b> <b><u>Improvement of farmers' ability to use agriculture chemicals properly and post-harvest management</u></b>

Source: JICA Survey Team

**Table 5-3-3 Support and Response Measures for Enhancing the Export Competitiveness of Mangoes**

Stage	Scheme (Priority)	Subproject name	Contents
Central level	Technical Cooperation Projects (Medium- to long-term issues)	Development of a master plan for fruit exports	Formulate a master plan to expand exports of major fruits Implementation of pilot projects
Distribution level	Investment and technical cooperation projects by private companies (Medium- to long-term issues)	Improvement of heat treatment capacity for fruit fly evaporation	The spread of Vapor Heat Treatment machines Improvement of quarantine capacity Construction of a data system for test data and analysis results
	Investment by Private Sector / JICA SME and SDGs Business Support Project (Medium- to long-term issues)	Fruit cold chain construction	Development of a fruit cold chain from production areas to airports and harbors (distribution centres, and reefer trucks)
	Initiatives by the private sector (Medium- to long-term issues)	Developing export markets for Sudanese mangoes	Promotion of Sudanese mangoes mainly in the Gulf countries and the EU
Producer level	<b><u>Technical Cooperation Projects (Short-term issues)</u></b>	<b><u>Improving the supply capacity of mangoes for export</u></b>	<b><u>Improvement of extension capacity for mango production for export</u></b> <b><u>Acquisition of production, harvesting, and storage technologies to expand exports</u></b> <b><u>Improvement of mango seedling supply capacity</u></b>

Source: JICA Survey Team

**Table 5-3-4 Support and Response Measures to Enhance the Export Competitiveness of Livestock Products**

Stage	Scheme (Priority)	Subproject name	Contents
Central level (Ministry of Livestock, Animal Resources Research Corporation (ARRC))	Grant Aid (Medium- to long-term issues)	Renovation of the Central Veterinary Research Laboratory	Expansion of vaccine manufacturing facilities Renewal of vaccine production equipment
	<b><u>Technical Cooperation Projects</u></b> <b><u>(Short-term issues)</u></b>	<b><u>Strengthen capacity for vaccine production and livestock disease testing and diagnosis</u></b>	<b><u>Capacity building of veterinary human resources (new vaccine production technology, animal disease testing and diagnosis capacity, etc.)</u></b> <b><u>Provision of equipment for testing and diagnosis</u></b>
	<b><u>Technical Cooperation Projects</u></b> <b><u>(Short-term issues)</u></b>	<b><u>Improvement of livestock export promotion system and structure</u></b>	<b><u>Review of laws and regulations related to livestock breeding (system development in accordance with OIE regulations, policies to promote the introduction of HACCP)</u></b> <b><u>Improve the training and development system for veterinarians and para-veterinarians</u></b>
Local level (quarantine station, state livestock department)	Grant Aid (Medium- to long-term issues)	Quarantine Station Renovation (quarantine, post-quarantine)*.	Updating of quarantine station facilities (fence, water source, roof, etc.) Renewal of equipment at quarantine stations
	<b><u>Technical Cooperation Projects</u></b> <b><u>(Short-term issues)</u></b>	<b><u>Enhanced Veterinary Services (pre-quarantine)</u></b>	<b><u>Training of veterinarians and para-veterinarians in quarantine and medical treatment techniques</u></b> <b><u>Improvement of quarantine system for livestock</u></b> <b><u>Provision of vehicles and equipment for mobile clinics</u></b> <b><u>Provision of refrigerators and solar panel equipment for vaccine storage</u></b>
	Subject-specific training (Medium- to long-term issues)	Strengthening the quarantine system for exports (Post-Quarantine)	Training on quarantine systems for exports to Japan (developed country), India (competitor country), etc.
Producer and distributor level	Gratuitous financial cooperation (Medium- to long-term issues)	Livestock market renovation	Livestock market facility upgrades (fencing, water source, roof, etc.) Construction of a market trading system
	Technical Cooperation Projects (being implemented with the support of other donors)	Livestock Epidemic-Surveillance Project to Support the Livelihoods of Pastoralists and Smallholders	IFAD is targeting White Nile, Blue Nile, Sennar, Northern, West Kordofan, South Kordofan, Gadaref and Kassala.

Note: \* Quarantine goes through the stages of Pre-Quarantine (Vaccination Centre, vaccination), Quarantine and Post-Quarantine (International Certificate is issued prior to export.)

Source: JICA Survey Team

**Table 5-3-5 Support and Response Measures to Enhance the Export Competitiveness of Meat**

Stage	Scheme (Priority)	Subproject name	Content
Slaughterhouse level	Grant Aid (Medium- to long-term issues)	Inspection Laboratory Renovation*	Improvement of testing laboratory facilities and equipment
	<b><u>Technical Cooperation Projects</u></b> (Short-term issues)	<b><u>Strengthening the capacity of meat inspectors</u></b>	<b><u>Implementation of training programmes for meat inspectors</u></b> <b><u>Development of training manuals for meat inspectors</u></b> <b><u>Provision of simple equipment</u></b>
	<b><u>Technical Cooperation Projects</u></b> (Short-term issues)	<b><u>Strengthen meat classification agency staff capacity**</u></b>	<b><u>Development of training programmes</u></b> <b><u>Updating the teaching curriculum</u></b> <b><u>Provision of simple equipment</u></b>
	Investment by the private sector (Short-term issues)*	Development of slaughterhouses for export	Development of slaughterhouses capable of acquiring Halal, HACCP, and ISO certifications
Transportation and export level	Investment by the private sector (Medium- to long-term issues)	Construction of a meat cold chain	Development of a meat cold chain from slaughterhouses to airports (distribution centres, and reefer trucks)
	<b><u>Investment by Private Sector / JICA SME and SDGs Business Support Project</u></b> (Short-term Issues)	<b><u>Khartoum Airport Cold Storage Facility Development</u></b>	<b><u>Maintenance of freezer storage in the airport</u></b> <b><u>Establishment of a facility management and operation system</u></b> <b><u>Improvement of product management skills of staff</u></b>
	Subject-specific training (Medium- to long-term issues)	Strengthening the quarantine system for exports (post-quarantine)	Training on quarantine systems for exports to Japan (developed country), Ethiopia (competitor country), etc.

Notes: \* Export slaughterhouses are operated by private companies and the attached testing laboratories are under the jurisdiction of the MoAR

\*\* The Meat Classification Institute is the only educational institution on meat quality control in Sudan operating under the jurisdiction of the MoAR.

Source: JICA Survey Team

### 5-3-2 Challenges to the agriculture and livestock sectors

For sesame, mango, livestock, and meat, which were determined to have short-term issues for export promotion, the current challenges are summarised as follows:

- Sesame: The UNIDO is currently providing comprehensive support, including farmer training and the development of sales channels, with a focus on strengthening the inspection system. However, the issue of detecting agriculture chemicals residues, aflatoxin and salmonella is still a major barrier to export expansion, and urgent measures are needed. In the medium to long term, approaches from the private sector to develop new export destinations, e.g. acquisition of GAP certification and organic certification, and expansion of sesame production in irrigated areas, e.g. implementation of irrigation schemes, are required.



- Mango: Other than beans, onions, and bananas, the export volume of fruits and vegetables is very limited, and there are challenges at every stage of cultivation, harvesting, storage, and distribution. With regard to mangoes, which are produced in large quantities and for which the government is planning to promote exports, although certain exporters are increasing their export volumes, in order to further expand, it is necessary to expand the production of varieties for export and to improve the quality of mangoes by improving the processing during and after harvest. In addition, no donor project for mango export has been implemented so far.
- Livestock: Export restrictions due to major livestock diseases are frequently imposed, and urgent measures are needed. Most of the vaccines for foot-and-mouth disease and Rift Valley fever are imported, and the government has a plan to upgrade its vaccine manufacturing facilities in response to calls for the country to achieve its own production. In the medium to long term, it is necessary to upgrade quarantine station facilities and equipment, and establish a livestock market trading system to improve quality and supply systems.
- Meat: The development of modern slaughterhouses is the biggest bottleneck for export growth (private investment). In addition, there was no frozen storage facility for meat at Khartoum Airport as of September 2021, and as the volume of exports increases in the future, there are concerns about this and the negative impact on quality during meat inspections. In the medium to long term, it is necessary to strengthen the value chain by improving the meat inspection system and developing the cold chain.

### 5-3-3 Support measures

Based on the issues of Agriculture and Livestock sector identified in the survey, Table 5-3-6 shows the relevant support measures. For the short term issues (underlined in bold), the details such as activities and schedules are organised in (1) to (4).

**Table 5-3-6 Support measures for the agriculture and livestock sector**

Sector	No.	Proposed Support Measures	Related Institutions	Proposed Timing and Period of Cooperation	Proposed Cooperating Organisations
Sesame	1	Market trading system improvement	Ministry of Agriculture and Natural Resources (MoANR), Agriculture Research Corporation (ARC), etc.	Mid-term 4 years	Government of Sudan / Private Sector
	2	<u>Strengthening hygiene control for exporters and markets</u>		Short term 3 years	Donor
	3	Expansion of sesame exports to high-end customers		Mid-term 3 years	Government of Sudan / Private Sector
	4	Expansion of irrigated sesame production		Long term 10 years	Donor
	5	<u>Improvement of capacity for appropriate use of agricultural chemicals and post-harvest management for sesame</u>		Short term 3 years	Donor

Sector	No.	Proposed Support Measures	Related Institutions	Proposed Timing and Period of Cooperation	Proposed Cooperating Organisations
Mango	6	Development of a master plan for fruit exports	Ministry of Agriculture and Natural Resources (MoANR), Agriculture Research Corporation (ARC), etc.	Mid-term 5 years	Donor
	7	Improvement of heat treatment capacity for fruit fly evaporation		Mid-term 3 years	Government of Sudan / Private Sector
	8	Fruit cold chain construction		Long term 5 years	Government of Sudan / Private Sector
	9	Developing export markets for Sudanese mangoes		Mid-term 3 years	Government of Sudan / Private Sector
	10	<b><u>Improving the supply capacity of mangoes for export</u></b>		Short term 5 years	Donor
Livestock	11	Renovation of the Central Veterinary Research Laboratory	Ministry of Animal Resources (MoAR), Animal Resources Research Corporation (ARRC), etc.	Mid-term 3 years	Government of Sudan / Donors
	12	<b><u>Strengthen capacity for vaccine production and livestock disease testing and diagnosis</u></b>		Short term 3 years	JICA
	13	<b><u>Improvement of livestock export promotion system and structure</u></b>		Short term 2 years	JICA
	14	Renovation of Quarantine Station (Quarantine, Post-Quarantine)		Mid-term 5 years	Donor
	15	<b><u>Enhanced Veterinary Services (Pre-Quarantine)</u></b>		Short term 3 years	JICA
	16	Strengthening the quarantine system for exports (Post-Quarantine)		Mid term 3 years	Donor
	17	Livestock Market Renovation		Long term 5 years	Donor
Meat	18	Inspection Lab Renovation	Ministry of Animal Resources (MoAR), Animal Resources Research Corporation (ARRC), etc.	Long term 4 years	Donor
	19	<b><u>Strengthening the capacity of meat inspectors</u></b>		Short term 3 years	Donor
	20	<b><u>Strengthen staff capacity of meat classification agencies</u></b>		Short term 3 years	Donor
	21	Development of slaughterhouses for export		Short term 5 years	Government of Sudan / Private Sector
	22	Construction of a meat cold chain		Mid-term 5 years	Government of Sudan / Private Sector
	23	<b><u>Khartoum Airport Cold Storage Facility Development</u></b>		Short term 3 years	Private Sector
	24	Strengthening the quarantine system for exports (Post-Quarantine)		Mid-term 3 years	Donor

Source: JICA Survey Team

## **(1) Project Title: Project on Improvement of Sesame Safety to Enhance Export Capability**

### **1) Background**

Sesame is Sudan's main agricultural product, it is produced mainly in North Kordofan, Sennar and Gadaref states, and Sudan was ranked first in the world in terms of production in 2019. Sudan was the world's largest sesame exporter in 2018, and 70% of the export value is accounted for by Egypt, China, India and Saudi Arabia.

On the other hand, the productivity of sesame in Sudan is very low, 259 kg/ha, compared to 1,200 kg/ha in China and 750 kg/ha in neighbouring Ethiopia. In addition, relatively high-quality sesame is being sold to markets with lax quality standards, such as China. Sesame sales channels have not been established to the EU, Japan, and South Korea, where purchase prices are high due to the lack of adequate sanitary and phytosanitary measures.

Pesticide residues are a particularly big problem, and according to the ARC in Sudan, five of the ten pesticides used on sesame are inappropriate for sesame cultivation. For example, in Japan, carbaryl (insecticide and plant growth regulator) was detected in 2009, and 2,4-D (herbicide) was detected in 2013 and 2018. Aflatoxin has also been detected in other countries. In the past, Sudan's sesame exports to Japan have been ranked at about the 10th in the world, but in recent years it has been at about 20th. Japan is the second largest importer of sesame after China, and a system for shipping sesame that meets Japanese import standards is extremely important for expanding sales channels in the future.

In this context, the UNIDO is implementing the "Upgrading the Sudanese Sesame Seeds Value Chain" project (Implementation period: October 2018 to March 2022). The project provides training to producers and GAP training to extension officers in the states of North Kordofan and Gadaref, and supports the whole value chain by reviewing Sanitary and Phytosanitary Measures (SPS) norms, building the capacity of inspection agencies, and promoting sales to potential export destinations such as EU, Japan and South Korea.

While the UNIDO project is expected to improve the capacity of SPS, this project will be a follow up on the dissemination and production system in the states of North Kordofan and Gedaref, and improving production technology in Sennar State, the main production area.

### **2) Objective**

Improve safety and health aspects of the sesame export value chain by smallholder farmers

### **3) Contents**

- A regional-level plan to enhance sesame export competitiveness will be developed
- Extension capacity for sesame production and supply for export will be strengthened
- Export of sesame seeds that meet safety and hygiene export requirements by small-scale farmers, distributors and exporters
- Marketing capacity of sesame stakeholders will be improved

#### **4) Implementing Organisations and Related Organisations**

Ministry of Agriculture and Natural Resources (MoANR, extension officer), SSMO, sesame farmers (North Kordofan and Gedaref states), sesame exporters and distributors traders

#### **5) Schedule**

The project should be implemented as soon as possible, as sesame stakeholders are highly interested in promoting trade in sesame because the UNIDO project is currently being implemented. Technical cooperation project for five years.

#### **6) Feasibility and Points to Note**

The UNIDO has been implementing the "Upgrading the Sudanese Sesame Seeds Value Chain" project. Therefore, when developing a detailed plan for this project, the activities and results of the UNIDO project should be carefully reviewed to avoid duplication and to reflect improvements.

### **(2) Project Title: Project for Enhancing the Competitiveness of Fruit Exports**

#### **1) Background**

Taking advantage of its geographical diversity, Sudan produces a variety of fruits, including bananas, mangoes, dates, and oranges. Annual production of bananas is at 900,000 tons; mangoes at 600,000 tons; and dates at around 400,000 tons. These crops are exported mainly to the Middle East, including Jordan, Egypt, and the United Arab Emirates.

However, post-harvest losses for horticultural crops are estimated to be 30-60%, and there are challenges at every stage of the value chain. For example, even in Gezira State, where horticultural crops are widely produced, the cold storage is only capable of handling 5% of the fruit and vegetable production. In addition, in transportation, bananas are piled up to the maximum load of 5~6 ton trucks, and bruising after ripening has become common.

As a result of this situation, with regard to the export performance of vegetables, although the value of transactions has increased 1.58 times between 2014 and 2018 (from USD 35.32 million to USD 55.76 million) mainly due to the expansion of onion and chickpea exports, the value of fruits has fluctuated between USD 1.85 million to USD 11.22 million during the same period, and the situation is not stable.

Sudan is taking measures to increase fruit exports, such as developing banana varieties that target export markets and importing mango varieties from South Africa that can also be processed. In addition, the Sudanese Centre for the Sterilization of Horticultural Exports has been established to carry out post-harvest handling, packing and exporting in accordance with GLOBALG.A.P. standards. Thus it can be said that Sudan's interest in horticultural crop exports is growing. In addition, the low use of pesticides has the potential to add even more value by obtaining organic certification.

Sudan is one of the top five mango-producing countries in Africa and one of the top 20 in the world, yet its exports rank only about 50th in the world. Bottlenecks to export expansion include a shortage of varieties for export, particularly South African varieties, and poor quality due to inappropriate treatment

during and after harvest. Therefore, the export competitiveness of mangoes will be enhanced by strengthening cooperation among producers, exporters, and government agencies, improving extension capacity, and improving the supply system of seedlings, with a focus on training for farmers to address these issues.

## **2) Objective**

Farmers involved or participating in the project will establish mango production and shipping groups to ship mangoes for export, which will improve their income.

## **3) Contents**

- A platform for the promotion of mango exports will be established.
- The extension sector's capacity to promote mango production for export will be enhanced.
- Mango production and shipping groups will acquire production, harvesting, and storage techniques for export expansion.
- The capacity of the provincial Ministry of Agriculture and Natural Resources to supply mango seedlings for export will be improved.

## **4) Implementing Organisation and Related Organisation**

Ministry of Agriculture and Natural Resources (MoANR), Agriculture Research Corporation (ARC), Agricultural Extension Department (Sennar, Northern and River Nile states)

## **5) Schedule**

The goal is to implement early support. Technical cooperation project for five years.

## **6) Feasibility and Points to Note**

- Although collaboration with private exporters is inevitable for export promotion, attention will be paid to the fair selection of mango growers for the project to ensure that the project does not lead to the profit of any one particular grower.
- In River Nile State, the "Project on Organisation of Market Oriented Agriculture and Irrigation Schemes and Strengthening of Their Operational Capacity in River Nile State, Sudan" is being implemented for a period of five years starting April 2021. Since export-oriented activities are also being considered in this project, inter-project collaboration will be noted.
- Similarly, in River Nile State, the "Dissemination and Demonstration Project for the Creation of Added Value of Onions through the Introduction of Agricultural Product Drying and Processing Technology (Daiki Sangyo Co., Ltd.)" is currently underway, and it is expected to have a synergistic effect on the production and export of dried fruits using the company's drying machines.

### **(3) Project Title: Project on Improving Veterinary Services to Promote the Export of Livestock Products**

#### **1) Background**

Sudan had 31.49 million cattle, 40.9 million sheep, 32.03 million goats, and 4.9 million camels in 2019, ranking first among African countries in sheep and camel rearing, and second for cattle and goats, behind Ethiopia. As a result, livestock exports play an important role in earning foreign currency in Sudan, and the country had set a goal of expanding livestock production and exports in “The Five-Year Programme for Economic Reform 2015- 2019”. Most of the major export destinations for livestock are Saudi Arabia and Egypt, and other Middle Eastern countries are also customers of Sudan.

One of the biggest obstacles to the export of livestock from Sudan is outbreaks of serious infectious diseases among livestock. In particular, there have been frequent outbreaks of Rift Valley Fever, a zoonotic disease that infects cattle, sheep, and goats; and in recent years, the 2019 outbreak has resulted in an embargo from export partners. In addition to Rift Valley fever, the country produces vaccines for several other major livestock diseases, but they are not produced in sufficient quantities and are not distributed or stored properly. Also, even when vaccines are distributed, many field-level livestock clinics and veterinary hospitals do not have refrigeration or freezing capabilities, and there is a marked shortage of veterinary medicines and equipment for use in medical treatment. With regard to quarantine stations, such as the Central Veterinary Research Laboratory, etc., many of the existing analytical equipment and instruments are outdated, and the veterinarians in charge of inspection and clinical practice are currently operating without adequate training and education.

In order to overcome these problems, the Government of Sudan is promoting the development of laws and regulations related to livestock production in line with international standards, strengthening vaccine production capacity, improving veterinary services, developing human resources in the livestock sector, and promoting investment in the livestock sector. Among these, support will be provided for the urgent issues of improving livestock-related legal systems and strengthening vaccine production capacity.

#### **2) Objective**

The export system of livestock products will be strengthened by improving the legal system for livestock health and producing vaccines for major livestock diseases.

#### **3) Contents**

- Improvement of livestock health-related policies and systems will be recommended to promote the export of livestock organisms.
- The Livestock Research Laboratory will be equipped with the necessary environment for the production of vaccines for major livestock diseases.
- Veterinary and para-veterinary personnel in the Livestock Research Lab will acquire skills in vaccine production for major livestock diseases.

- A vaccination system for major livestock diseases will be established at the pilot site, and a model for livestock bio-export is established.

#### **4) Implementing Organisation and Related Organisations**

Ministry of Animal Resources (MoAR), Animal Resources Research Corporation (ARRC), Central Veterinary Research Laboratory (CVRL)

#### **5) Schedule**

“Strengthen capacity for vaccine production and livestock disease testing and diagnosis” and “Improvement of livestock export promotion system and structure” are short-term priorities to be implemented as soon as possible. In addition, the project aims to establish a consistent livestock quarantine system by implementing the strengthening of veterinary services at a local level from the third year. The project will be implemented for five years as a technical cooperation project.

#### **6) Feasibility and Points to Note**

- A prerequisite for the commencement of this project is that the laboratory for the production of vaccines for major livestock diseases must have been upgraded to Biosafety Level 3 (It was at Level 2 as of September 2021).
- To promote meat exports, which is a medium-term priority, this project should collaborate with the Meat Export Promotion Project, described in the next page. After strengthening the livestock health sector in this project, the goal is to shift to an industrial structure focusing on meat export in the future.

### **(4) Project Title: Project on Improving Meat Processing and Distribution System for Meat Export Promotion**

#### **1) Background**

In 2019, the country ranked first among African countries in the rearing of sheep and camels, and second for cattle and goats, after Ethiopia. The government of Sudan set a goal of increasing meat exports by 1.2 times in “The Five-Year Programme for Economic Reform 2015- 2019”, although at present the main export of livestock products in Sudan is livestock. In addition, livestock is raised under natural conditions (as certified by the Farm Animal Welfare) and so have been highly evaluated by export partner countries.

Within Africa, although Sudan has the largest number of livestock, South Africa, Botswana and Namibia export more meat. In order to increase the competitiveness of meat exports, it is essential to develop slaughterhouses and meat processing plants that process livestock into meat. As of 2016, it was estimated that there were nine medium-sized slaughterhouses for export, but in practice they lacked adequate facilities such as proper waste disposal systems, cold rooms and incinerators. In addition, there were many traditional slaughterhouses, and a lack of personnel as well as insufficiencies in the skills of

meat inspectors, are some of the factors that hinder the supply of safe and hygienic meat. Another barrier to the expansion of meat exports was the inadequate functioning of the freezers at Khartoum Airport during the post-processing meat distribution stage.

In the future, it will be necessary to improve quality in terms of both hardware and software in order to meet global standards related to safety and quality, as well as production costs and feeding advantages. For this reason, the Sudanese government is in the process of developing modern slaughterhouses, establishing a meat cold chain, and complying with the international standards needed for exportation.

## **2) Objective**

Strengthen meat-related human resources and meat inspection systems in order to promote meat exports in Sudan.

## **3) Contents**

- The inspection capacity of meat inspectors will be strengthened.
- The educational capacity of meat classification agency staff will be strengthened.
- The meat storage capacity of airports will be improved.

## **4) Implementing Organisation and Related Organisations**

Ministry of Animal Resources (MoAR), Khartoum Airport Meat Quarantine, Meat Inspection Agency with Slaughterhouse, Meat Classification Institute

## **5) Schedule**

The development of freezer and storage facilities at Khartoum Airport, the strengthening of meat inspectors' capacity and the strengthening of the capacity of meat classification agency staff are short- and medium-term priorities and will be implemented as soon as possible. The implementation period will be three years.

## **6) Feasibility and Points to Note**

- Since the development of the Khartoum Airport Cold Storage Facility is a short-term priority issue, it should be considered for implementation (as the JICA SME/SDGs Business Support Project) in advance.
- In order to promote meat exports, which is a medium-term priority, the project will be linked to the Livestock Bio-Export Promotion Project mentioned in the previous page. After strengthening the livestock hygiene sector in the project, this technical cooperation project will be implemented with the goal of shifting the export structure from livestock to meat-based in the future.