MINISTRY OF TRANSPORT AND ROADS / THE GOVERNMENT OF SOUTHERN SUDAN (MOTR / GOSS)

MINISTRY OF PHYSICAL INFRASTRUCTURE / CENTRAL EQUATOEIA STATE (MOPI / CES)

FOLLOW-UP COOPERATION FOR EMERGENCY STUDY ON THE PLANNING AND SUPPORT FOR BASIC PHYSICAL AND SOCIAL INFRASTRUCTURE IN JUBA TOWN AND THE SURROUNDING AREAS IN THE SOUTHERN SUDAN

FINAL REPORT

NOVEMBER 2009

JAPAN INTERNATIONAL COOPERATION AGENCY

KATAHIRA & ENGINEERS INTERNATIONAL

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PREFACE

In response to a request from the Government of the Southern Sudan, the Government of Japan decided to conduct the "Follow-up Cooperation for Emergency Study on the Planning and Support for Basic Physical and Social Infrastructure in Juba Town and the Surrounding Areas in the Southern Sudan" and entrusted it to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a Follow-up Cooperation Team headed by Mr. Kenji ISOMOTO of Katahira & Engineers International between August 2008 and November 2009.

The Follow-up Cooperation Team held close discussions with officials concerned of the Follow-up Cooperation and conducted field surveys in the Follow-up Cooperation area. Upon returning to Japan, the Follow-up Cooperation Team conducted further studies and prepared this final report.

I sincerely hope that this report will contribute to the promotion of the development and enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the official concerned of the Government of the Southern Sudan for their close cooperation extended to the Follow-up Cooperation.

November 2009

Toshiyuki KUROYANAGI
Director General
Economic Infrastructure Department
Japan International Cooperation Agency

Toshiyuki KUROYANAGI
Director General
Economic Infrastructure Department
Japan International Cooperation agency

November 2009

Dear Sir,

Letter of Transmittal

We are pleased to submit herewith the Final Report of the "Follow-up Cooperation for Emergency Study on the Planning and Support for Basic Physical and Social Infrastructure in Juba Town and the Surrounding Areas in the Southern Sudan". The report compiles the results of the Follow-up Cooperation including the advices and suggestions of the authorities concerned of the Government of Japan and your agency as well as the comments made by the Government of the Southern Sudan and other authorities concerned.

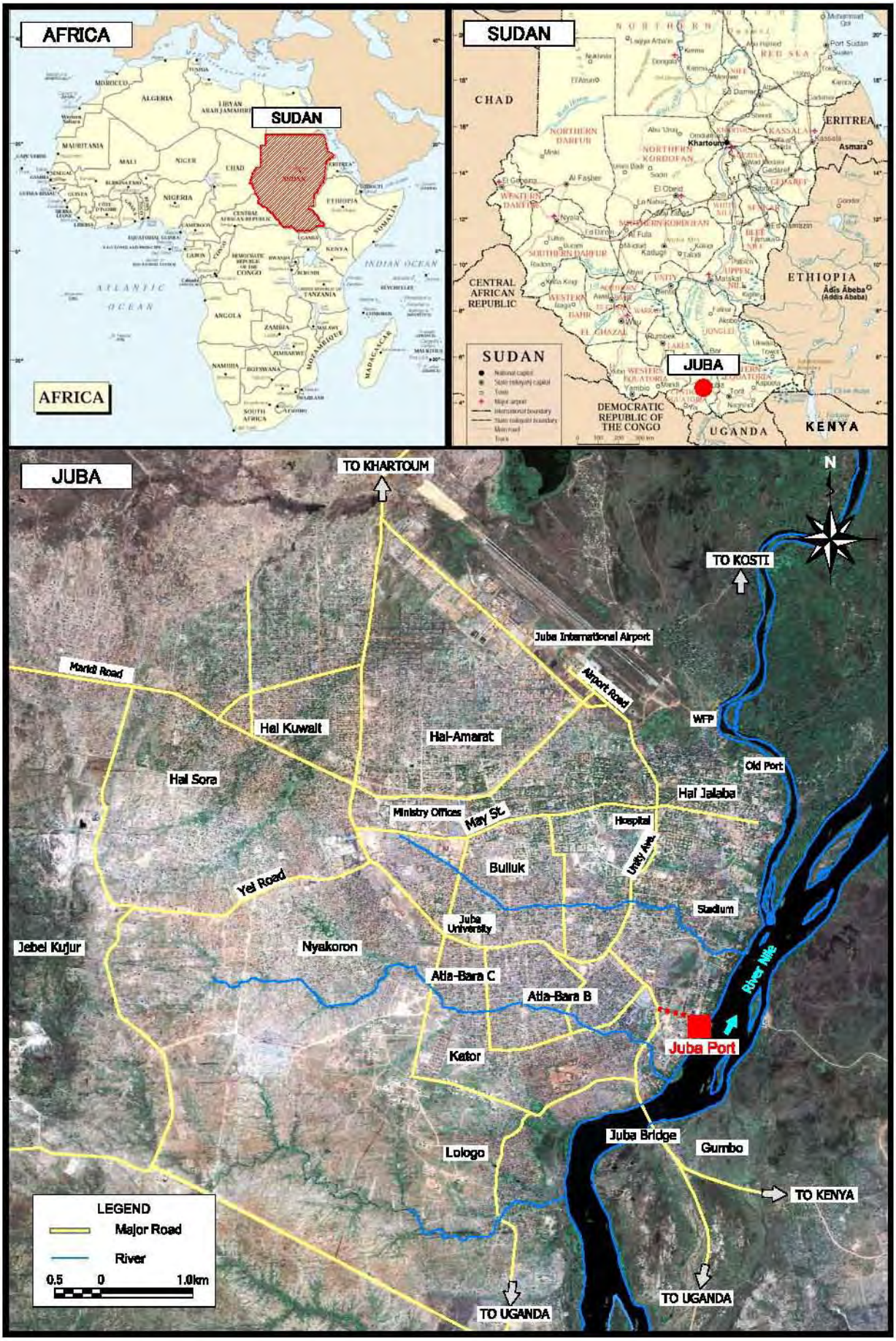
The report analyzes the countermeasures in order to improve the cargo handling activities in Juba Port. In addition, during the Follow-up Cooperation, the Jetty which damaged due to some barge collisions was repaired and strengthened.

We wish to take this opportunity to express our sincere gratitude to your agency and the Ministry of Foreign Affairs. We'd like also to express our deep gratitude to Government of the Southern Sudan as well as other Governmental Agencies concerned for the close cooperation and assistance extended to us during the Follow-up Cooperation.

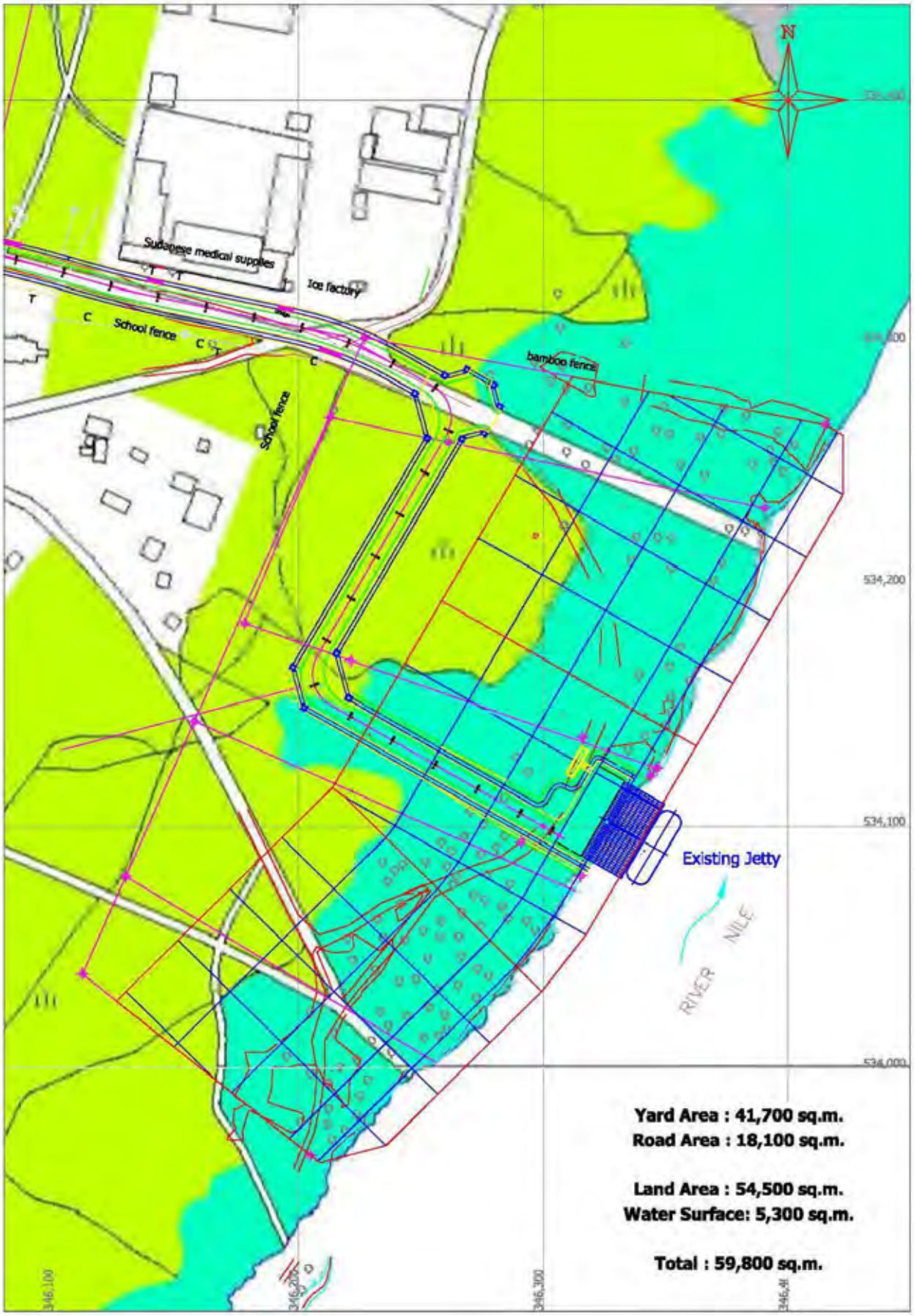
We hope this report will contribute to the reconstruction and development of the Southern Sudan.

November 2009

Kenji ISOMOTO
Team Leader,
Follow-up Cooperation for Emergency Study on the Planning and Support for Basic Physical and Social Infrastructure in Juba Town and the Surrounding Areas in the Southern Sudan
Katahira & Engineers International



LOCATION MAP



JUBA RIVER PORT MAP

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ABBREVIATIONS

CES	:	Central Equatoria State
CMT	:	Communication and Mechanical Transport
CPA	:	Comprehensive Peace Agreement
GoSS	:	Government of Southern Sudan
GPS	:	Global Positioning System
GoJ	:	Government of Japan
GoNU	:	Government of National Unity
IDP	:	Internally Displaced Person
JICA	:	Japan International Cooperation Agency
JICS	:	Japan International Cooperation System
MoPI	:	Ministry of Physical Infrastructure
MoTR	:	Ministry of Transport and Roads
NGO	:	Non-Governmental Organization
NRTC	:	Nile River Transport Company
RTC	:	River Transport Corporation
RTD	:	River Transport Department
SRTC	:	Sudan River Transport Company
STC	:	Sea Transport Corporation
UNICEF	:	United Nations International Children's Emergency Fund
UNJLC	:	United Nation Joint Logistics Centre
WFP	:	World Food Program

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Basic infrastructure has not been developed in Juba due to more than 20 years civil war. Under such condition, the Government of Japan (GoJ) implemented the "Emergency Study on the Planning and Support for Basic Physical and Social Infrastructure in Juba Town and the Surrounding Areas in the Southern Sudan" (the Emergency Study) from 2006 and carried out Juba port reconstruction as a part of pilot project through its implemented agency Japan International Cooperation Agency (JICA).

According to the Emergency Study, Cargo handling volume in Juba port which plays very important role of surface transport between North and South Sudan is predicted to 7,400 – 9,000t/month in 2015 from 5,000t/month in 2005. In the Emergency Study, in order to meet the cargo handling increase, JICA developed the port facilities as follows;

1. Berthing Jetty
   35 meters long and 16 meters wide
2. Cargo Handling Yard
   Flat area of 35 meters long 14 meters wide with lime & cement treated base (LCTB) and double bitumen surface treatment (DBST)
3. Pier Facility
   Gantry crane with lifting capacity of 1.5ton and 25 kVA Diesel Generator
4. Mooring Facility
   Four mooring posts
5. Storage Facility
   One fuel storehouse and one tools storehouse of 4 meters x 4 meters each
6. Access Road
   645 meters access road to the Jetty and the Cargo Handling Yard with 10 meters wide and paved with lime & cement treated base (LCTB) and double bitumen surface treatment (DBST)

However Juba port was not managed properly due to obscure role demarcation regarding management and maintenance, inadequate fee collecting system and a lack of experience of staffs in Directorate of River Transport (RTD)/Ministry of Transport and Roads (MoTR)/Government of Southern Sudan (GoSS) and Directorate of Communication and Transport (CMT)/Ministry of Physical Infrastructure (MoPI)/Central Equatoria State (CES). In addition, since there is not enough cargo handling equipments, the Juba River Port facilities

have not been utilized efficiently..

Under such condition, GoSS requested a technical cooperation from the GoJ for the conduct of the “Follow-up Cooperation for Emergency Study on the Planning and Support for Basic Physical and Social Infrastructure in Juba Town and the Surrounding Areas in the Southern Sudan” (the Follow-up Cooperation) In response to the request, the GoJ has decided to conduct the Follow-up Cooperation and JICA, has organized and dispatched a Follow-up Cooperation Team in accordance with the Scope of Work agreed between the preparation team for the Follow-up Cooperation Team dispatched by GoJ, GoSS and CES in August 2008.

1.2 OBJECTIVES OF THE FOLLOW-UP COOPERATION

The specific objectives of the Follow-up Cooperation are;

- To organize management and maintenance system of the port facilities developed in the Emergency Study.
- To improve cargo handling activities.

1.3 FOLLOW-UP COOPERATION AREA

The Follow-up Cooperation shall cover Juba city and surrounding area.

1.4 THE FOLLOW-UP COOPERATION FRAMEWORK

The Follow-up Cooperation is carried out in the flowing two phase;

Phase 1 : August 2008 to September 2008

Phase 2 : October 2008 to November 2009

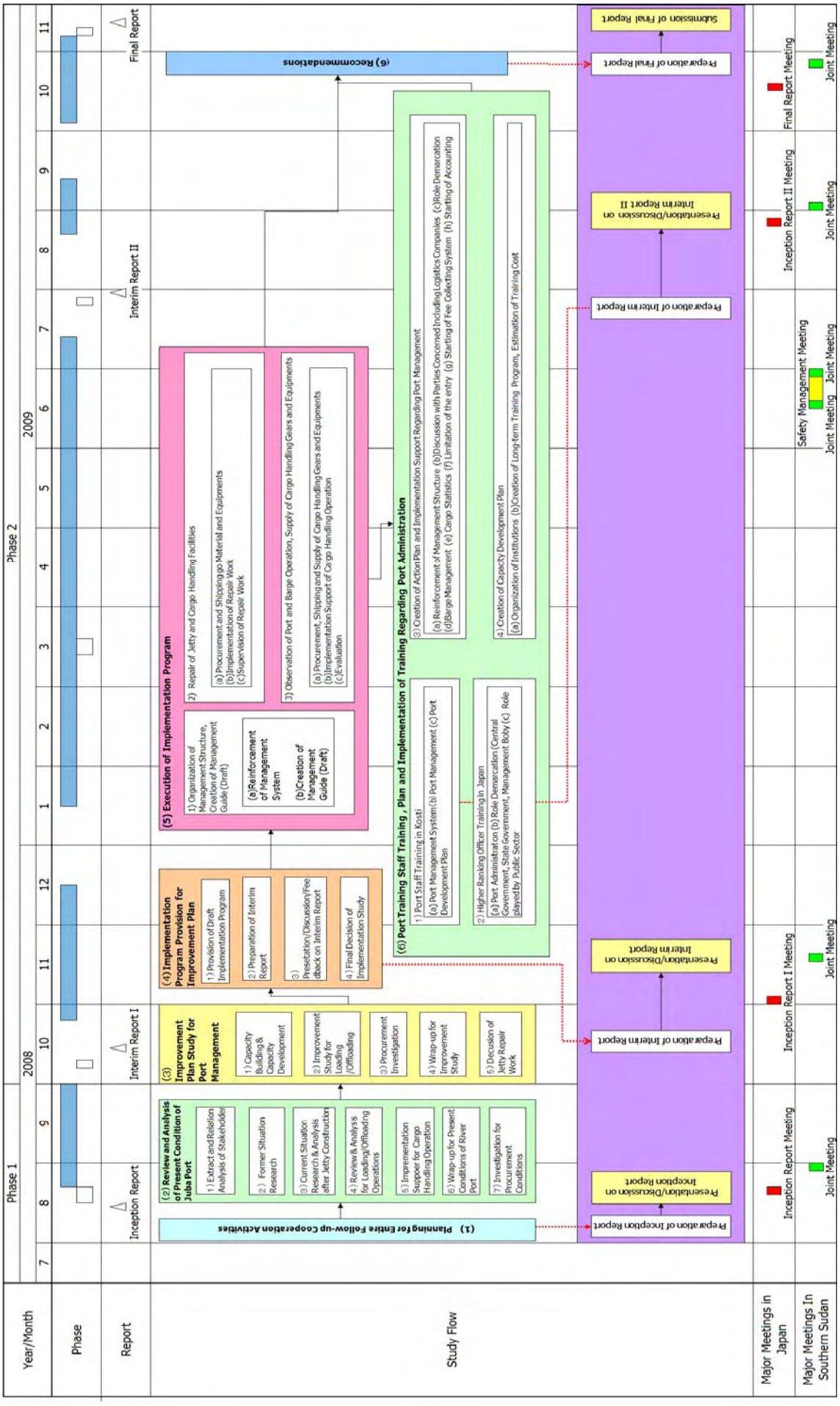

Figure 1.4-1 Follow-up Cooperation Flow Diagram

CHAPTER 2

CURRENT SITUATION OF BARGES & CARGO AT JUBA RIVER PORT

2.1 RIVER TRANSPORT OPERATION ALONG RIVER NILE IN SUDAN

River Transport Corporation (RTC) under jurisdiction of GoNU used to be the only one river transport company to operate between Kosti and Juba. However, after being privatized in 2007, there are some river transport companies operating along White Nile such as Nile River Transport Corporation (NRTC), Sudanese River Transport Corporation (SRTC) and KEER. It takes for barges 20 to 25 days to go to Juba from Kosti and 7 to 10 days from Juba to Kosti on average. Main ports along White Nile from Kosti to Juba are shown as follows;

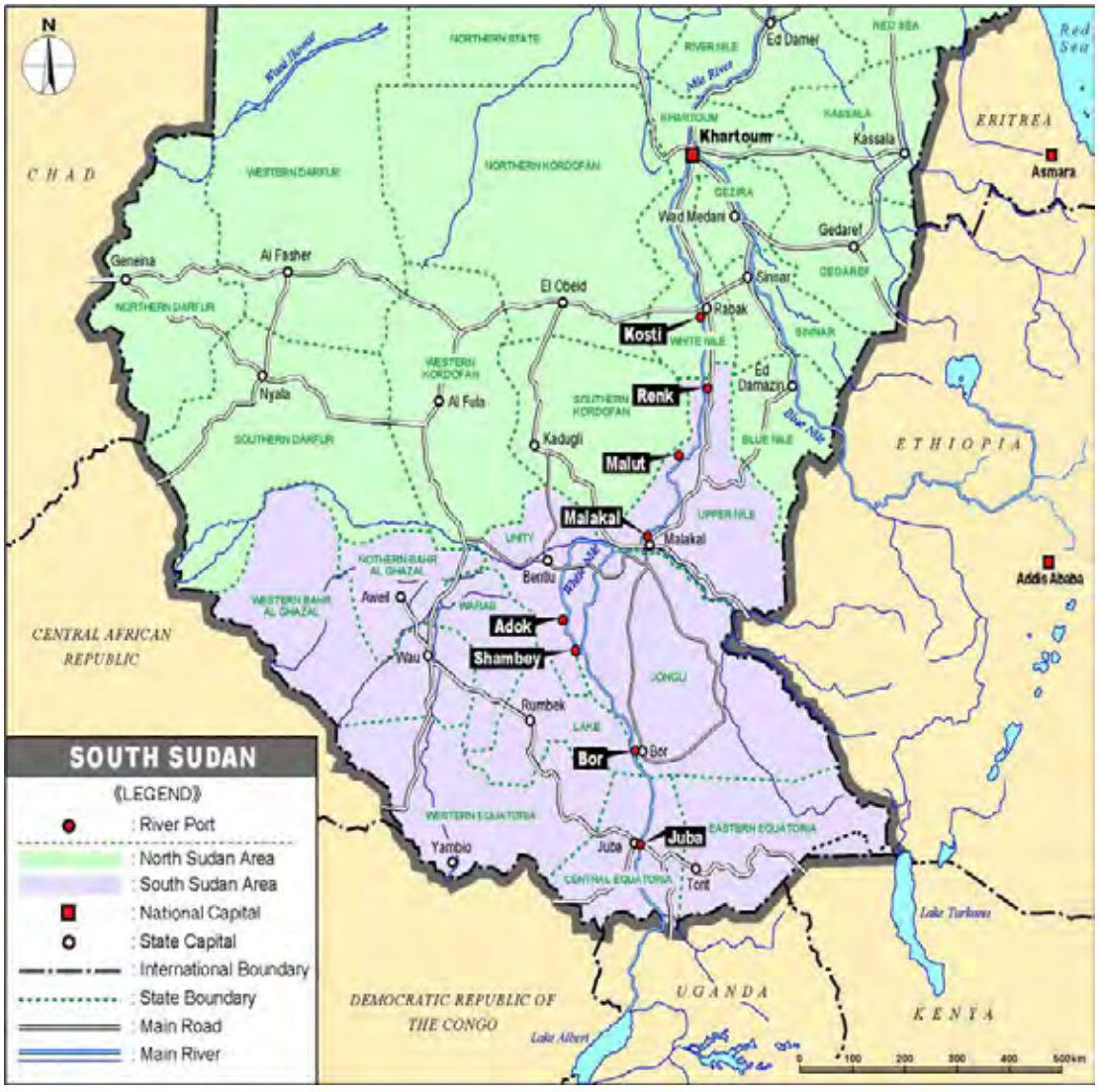

Figure 2.1-1 Main Ports along White Nile

2.2 NUMBER OF VESSELS & CARGO AT JUBA RIVER PORT

According to the latest information obtained from United Nation Joint Logistics Centre (UNJLC), Khartoum, Sudan, vessels operating on South Reach (between Kosti and Juba) along While Nile is summarized in the Table 2.2-1 as shown.

Table 2.2-1 Summary of River Transport Operators along White Nile

Operators	Fleet Size and Vessel Types	Pushing Capacity & Cargo Vessel Capacity (Metric Tons)	Estimated Total Cargo Carrying Capacity (Metric Tons)	Maximum Passenger Capacity (Number of Passengers)	Principle Ports of Call	Private Port Ownership
NRTC	**71 Vessels:** 13 Pushers 8 Passenger 50 Barges (Cargo, Flat Top, Fuel and Mixed)	***Pushers - 2,000*** General Cargo and Flat Top - 500 Fuel - 300	***26,000*** 15,000 ~ 25,000	1,600	Kosti, Renk, Malakal, Shambe, Bor	Kosti Additional New Facilities planned for South Sudan
SRTC	**28 Vessels:** 8 Pushers 18 Barges 2 Passenger	***Pushers - 1,200*** General Cargo and Flat Top - 600-900 Fuel - 300 Super Barge – 1000	***9,600*** 5,400 ~ 10,800	600	Kosti, Renk, Malakal, Shambe, Bor	
KEER-MISC / KEER Marine	**13 Vessels:** 2 Pushers 5 General 4 Flat Top 2 Fuel	***Pushers - 1,800*** General Cargo - 450 Flat Top - 400 Fuel - 300	***3,600*** 4,450	-	Kosti, Renk, Malakal, Shambe, Bor	Kosti New Port planned for Juba
Agility Logistics / Tri-Star	**2 Vessels:** 2 Fuel Barges	Each Fuel Barge - 500	1,000	-	Kosti, Malakal, Bor, Juba	Kosti, Bor and Juba Facilities Under Development
Sernum Fisheries Cooperative Society	**27 River Boats**	10 boats - 10 9 boats - 15 5 boats - 20 2 boats - 30	395	-	Malakal, Shambe, Bor, Juba	None
Mohamed Khamis	**10 River Boats**	4 boats - 11 3 boats – 15 2 boats - 20 1 boat - 25	154	-	Malakal, Shambe, Bor, Juba	None
Talha Elyas Babiker	**2 Vessels:** 1 Pusher 1 Barge	***Pusher - 600*** Barge - 500	***600*** 500	-	Kosti, Malakal	None
Shankin for Trading and Investment Ltd.	**8 Vessels:** 3 Pushers 5 Barges	***Pushers - 600*** Barge - 210	***1,800*** 1,050	-	Kosti, Malakal, Bor, Juba	None

Data Source; River Cargo Transportation Assessment, White Nile River, Sudan, United Nation Joint Logistics Centre (UNJLC), February 2009

From this table, we will be able to re-estimate possible total cargo carrying capacity along the South Reach by those operators. For example, first three major operators (i.e. NRTC, SRTC,

and KEER Company) recently introduced modern high horse-powered twin-engine pusher boats between 1,200 and 2,000 metric ton pushing capacity as show in the Table 2.2-1.

However, those pusher boats usually coming up from Kosti to Juba with 2 to 4 general barges or only 1 super barge, due to limitation of its own pushing capacity and obstacles like rock and/or wreck especially during the dry season, therefore, we should not count total volume of various barges (general, flat top, fuel, mixed, and super) as the total cargo carrying capacity of this South Reach, unless such external limitations would be cleared by dredging works and navigation aids.

In addition, except those 2 river boat operators and fuel oriented operator (Agility Logistics / Tri-Star) who does not posses pushers, total maximum pushing capacity is now 41,600 metric ton with 5 remaining operators, and usually those operators would not push barges with their maximum loads to avoid risks incurred by not only those obstacles mentioned above, but also their own engines as well as routine maintenance of those vessels, therefore we should handle this figure with care.

From our observations and hearings from the operators, these figures are estimated to be down to around 60% level (i.e. only 300 ton against standard 500 ton capacity barge) as 25,000 metric ton as a reasonable maximum cargo carrying capacity on the South Reach along White Nile with those fleets.

2.3 OBSERVED VOLUME OF CARGOS AT JUBA RIVER PORT

2.3.1 Estimation from Departure/Arrival Volume

(1) Number of Arrival and Departure of Barge

The arrival and departure of barges at Juba River Port for 24 days from 27th of August 2008 to 17th of September 2008 is shown below;

Table 2.3-1 Arrival & Departure of Barge

	P	C	F	FL	Total
Arrival Barge	1	13	9	3	26
Departure Barge	1	7	5	-	13
Total	1	20	14	3	39

Note: P: Passenger Barge C: Cargo Barge F: Flat Barge FL: Large Flat Barge

The number of Flat barge is close to that of cargo barge which implies that demand for oil has been increasing.

(2) Type of Cargo

All cargo barges enter Juba port with full of food and household goods such as rice, bean, flour, pasta, beer, soap, candle, dry battery and so on. Flat barges are also full of goods such as drum, car, container etc, on the deck and diesel oil in the tanks below deck. Large scale and heavy cargos including containers are unloaded by truck crane with capacity nearly 35 to 45 tons. The diesel oil is pumped up from the tanks and put into the tank-lorries directly.

(3) Cargo Volume (27Aug.-19Sep. 2008)

Based on visual estimation the assumption of cargo volume according to barge type on the outward and homeward journeys between Kosti and Juba is shown as follows;

Table 2.3-2 Assumption of Cargo Volume by Barge Type

Type of Barge	Kosti-Juba	Juba-Kosti	Remarks
Cargo Barge	425 tons	127 tons	Kosti-Juba 100% loaded
Flat Barge	400 tons	30 tons	Juba-Kosti 30% loaded
Large Flat Barge	-	60 tons	Juba-Kosti 30% loaded on the deck

The assumption of cargo volume incoming and outgoing Juba River Port during the observation is shown as follows;

Table 2.3-3 Assumption of Incoming and Outgoing Cargo Volume

	Cargo Barge	Flat Barge	L. Flat Barge	Total
Incoming	5,525 tons	3,600 tons	1,500 tons	10,625 tons
Outgoing	892 tons	150 tons	-	1,042 tons
Total	6,417 tons	3,750 tons	1,500 tons	11,667 tons

Note: L. Flat Barge with heavy machines on the deck is assumed at 500 tons.
Cargo Barge with full of goods is assumed at 425tons per barge.
Flat Barge is assumed at 300 tons diesel in the tank and 100 tons goods on the deck.

2.3.2 Estimation from Vessel Operation Schedule

Based on interviews to shipping companies, NRTC and SRTC, monthly and yearly cargo volume is assumed and the result is shown as follows;

NRTC	2-4trip per month（4 barges/group）	
	In case 3 journeys per month, 1,450 tons per trip	4,350 tons
SRTC	4 trip per month (2 barges/group)	
	In case 4 journeys per month, 300 tons per barge	2,400 tons
	Total / Month	6,750 tons

At the time of previous survey in 2006, monthly cargo volume was 4,800 tons and future demand of it in 2015 was predicted at 7,100 to 8,600 tons. But it seems that cargo volume has been increasing at much faster speed. It is evidenced from the fact that the number of loaders increased to 125 from 175 this year.

2.3.3 Cargo Handling Volume by NRTC

According to the cargo handling records obtained from NRTC between July and December 2008, total handling volume at Kosti varies from 7,500 ton to 9,000 ton per month except September when SRTC handled a lot of heavy duty equipment from Kosti to Juba.

Of which, cargo up to Malakal was once less than those for up to Juba, however such situation has been changed drastically toward the end of year, and cargo volume up to Juba has been gradually decreased from 4,500 ton per month level toward less than 3,000 ton per month level, and those for up to Kosti has been gradually increased from 3,000 ton per month level toward over 6,000 ton per month level.

Unfortunately, we have not been able to obtain records of SRTC and KEER for same period; therefore, we are not able to assess what has been occurred with Juba and Malakal exactly, whether it was occurred in only NRTC or general conditions. However, we have also observed irregular activities which never have been seen previous period was pre-deposition of relief stocks at Malakal from Juba during those periods by UNICEF and WFP as well as

water treatment chemical forwarding to Malakal via Juba by GoSS.

And other possible reason for cargo handling volume change would be seasonal factor during the End and New Year season and also dry season, when water level of White Nile is lower than the other rainy season. Therefore, navigational depth become shallower, and then carrying cargo volume has to be minimized, especially for Juba.

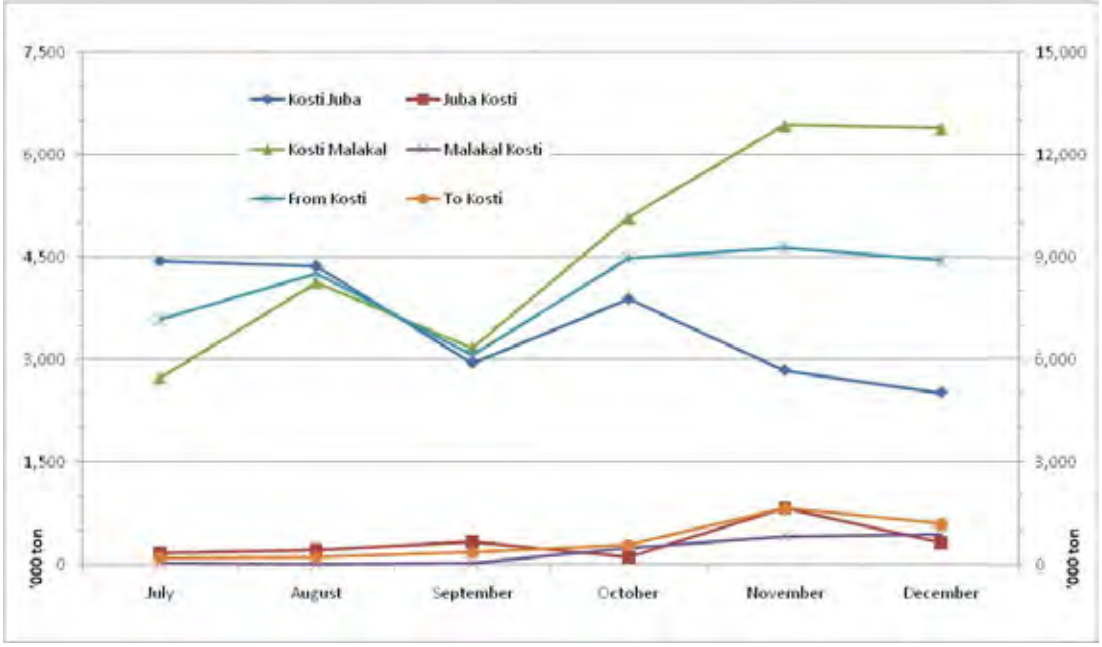

Figure 2.3-1 Monthly Cargo Handling Volume by NRTC

Table 2.3-4 Monthly Cargo Handling Volume by NRTC (tons)

From	To	July	August	September	October	November	December
Kosti	Juba	4,451	4,383	2,955	3,896	2,846	2,517
Juba	Kosti	173	216	332	112	828	319
Kosti	Malakal	2,739	4,137	3,179	5,083	6,435	6,391
Malakal	Kosti	24	-	32	467	819	870
From Kosti		7,190	8,520	6,134	8,979	9,281	8,907
To Kosti		197	216	364	579	1,647	1,188
Total		7,387	8,736	6,498	9,558	10,928	10,096
From Kosti		97.3%	97.5%	94.4%	93.9%	84.9%	88.2%
To Kosti		2.7%	2.5%	5.6%	6.1%	15.1%	11.8%

On the other hand, inland waterway traffic from Juba and Malakal to Kosti has been constantly increased little by little, although percentage of it against the total volume between Kosti and Juba is still small.

2.3.4 Number of Docking Vessels at Juba River Port

Based on the Follow-up Cooperation Team own on-site observation between 19 January and 30 June 2009, we have observed total number of 126 barges arrival and 127 barges departure during this 163 days.

Observed fleet movement arriving and departing was 72 and 82 times, therefore, we can confirm average number of barges per fleet was 1.75 and 1.55, and average interval of fleet was 2.7 and 2.0 days, respectively.

However, these figures are results of the limitation of navigational path just downstream of Juba River Port, where only two barges can pass through at once.

Therefore, actual number of fleet movement arriving and departing between Kosti and Juba was assumed to be 36 and 41 respectively, and average number of barges per fleet was 3.5 and 3.1, and average interval of fleet was 4.5 and 4.0 days, respectively.

From those figures, we can assume that about 7 to 8 fleet are arriving and departing every month and total number of barges will be around 23 to 24. Therefore, at Juba River Port, average volume of cargo arrived should be about 7,000 metric ton per month, if we could assume each barge carried 300 ton of cargo.

Table 2.3-5 Observed Number of Docking Vessels at Juba River Port

Contents		Unit	Arrival	Departure
Observation	Total Number of Barges	Ship	126	127
	Total Number of Fleet	Fleet	72	82
	Average Number of Barges per Fleet	Ship	1.75	1.55
	Average Interval of Fleet	Day	2.26	1.99
Actual	Total Number of Fleet	Fleet	36	41
	Average Number of Barges per Fleet	Fleet	3.5	3.1
	Average Interval of Fleet	Day	4.53	3.98
	Average Number of Fleet per Month	Fleet	6.63	7.55
	Average Number of Barges per Month	Ship	23.2	23.4

Currently, except pusher boats belonged to KEER, vessels do not have GPS navigational aids, therefore other most of fleet takes at least 3 weeks from Kosti to Juba, and a half of it from Juba to Kosti, since they are only navigable during the day time. On the other hand, KEER pusher can shorten this to about a half to one third with their GPS navigational aids with search lights as well as sounding devices on the control bridge.

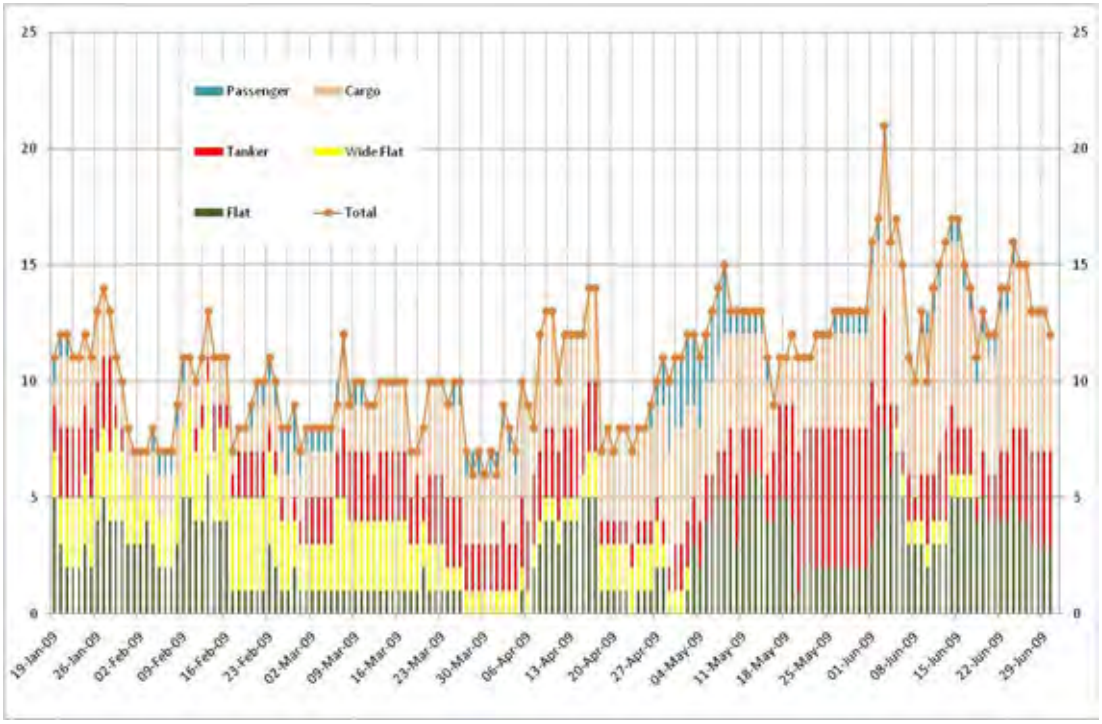

Figure 2.3-2 Observed Number of Docking Vessels at Juba River Port

Considering total number of pusher boats and travelling time as well as loading and off loading time, maximum capacity of handling cargo along South Reach would be reduced from the figure shown in previous section as follows;

Present Assumptions;

(Present)	Unit	Kosti-Juba	Kosti-Malakal
Loading Time in Origin	(Day per Barge) Days per Fleet	(1) 4	
Travelling Time (Up Stream)	Days	20	4
Off-Loading Time in Destination	(Days per Barge) Days per Fleet	(2) 8	
Travelling Time (Down Stream)	Days	10	2
Off Duty at Origin	Days	3	2
Total Duration for Completing 1 Voyage	Day (Week)	45 (6.4)	20 (2.9)

From this table, to handle demand in Juba, cargo fleet requires more than actual demand since it takes one and a half months to complete one round trip, on the other hand, to handle demand in Malakal, cargo fleet require less than actual demand since it takes about two thirds months to complete one round trip when it is best condition case.

Considering routine maintenance of pusher boat every after one round trip, voyage to Juba may need 2 months interval, and voyage to Malakal may need 1 month interval. Therefore,

25,000 metric ton capacity by those fleet will be reduced further more by about two thirds again with around 18,000 metric ton level per month, if demands on both Malakal and Juba are same level of around 9,000 metric ton per month.

If demand in Malakal would 9,600 ton per month, they needed 32 barges with 300 metric ton each, and 8 pushers in total, and automatically supply to Juba would be fixed with remaining number of pushers as the limitation.

In this case, 19 pushers (total 27 minus 8) are still available, however considering overhaul maintenance every after particular hours of use, all pushers are not always available, and if overhauling number is 3 all the time, available pusher would be 16 as maximum, and by splitting these pushers to 2 because a half of fleet has to standby for next month demand, therefore, only 8 pushers and 32 barges are available to supply goods to Juba at once. As a result, 9,600 metric ton per month would be a maximum supply to Juba under current situations.

Future Assumptions;

(Future)	**Unit**	**Kosti-Juba**	**Kosti-Malakal**
Loading Time in Origin	(Day per Barge) Days per Fleet	(1) 4	
Travelling Time (Up Stream)	Days	10	2
Off-Loading Time in Destination	(Day per Barge) Days per Fleet	(1) 4	
Travelling Time (Down Stream)	Days	5	1
Off Duty at Origin	Days	3	2
Total Duration for completing 1 Voyage	Day (Week)	26 (3.7)	13 (1.9)

In the near future, all pushers could be replaced and/or converted with modern equipments like KEER's fleet, with same number of pushers, one complete round trip would be reduced less than one month for trip to/from Juba, and less than a half month for trip to/from Malakal.

In such case, maximum supply capacity to Malakal and Juba would be at least 150% of current situation; therefore, cargo handling capacity target in short to medium term for each port should be 15,000 metric ton per month at least, and this figures should be increased in medium to long term basis with at least 20,000 metric ton per month, and desirable level with 30,000 metric ton per month, considering introduction of additional fleet of vessels and container cargos.

2.4 REVISION OF CARGO DEMAND FORECAST

In the previous Emergency Study report, future cargo handling demands were prepared based on the data obtained relatively short period since CPA. And its annual growth rate was set as around 4% to 6% with almost negligible out-going cargo demand at that time. Therefore, based on the average cargo demand in Year 2004 as about 4,800 ton per month, future cargo demands in Year 2008, 2012, and 2016 were estimated as shown in the Table 2.4-1

Table 2.4-1 Original Future Cargo Demand Forecast in Previous Study

(unit: ton per month)

Growth Rate	2004	2008	2012	2016
4%	4,800	5,600	6,600	7,700
6%		6,000	7,500	9,500

However, based on the average records in Year 2006 and Year 2007 together with extract record showing above, and recently observed fact that out-going cargo presence as about 30% of in-coming cargo, annual growth rates of cargo handling volume at Juba port are expected to be double of previous study's figure as shown in the Table 2.4-1.

Which indicates that former forecasted volume of Year 2016 as between 7,700 and 9,500 ton per month, will be achieved within this Year 2008 with much more possible demands in Year 2012 and Year 2016, respectively, if limitation of cargo handling volume due to lack of adequate facilities and/or yard space are ignored.

Table 2.4-2 Revised Future Cargo Demand Forecast based on the Latest Data

(unit: ton per month)

Growth Rate	2004	2008	2012	2016
8%	4,800	7,900	10,700	14,500
12%		8,800	13,800	21,700

2.5 REQUIRED CARGO HANDLING FACILITY & YARD SPACES

As shown in the Table 2.5-1 which was indicated in the previous Interim Report as well, based on the Harbor Design Manual provided by Japan Harbor Engineering Association under supervision of Ministry of Land, Infrastructure, and Transportation of Japan, required port area shall be expanded according to its demands.

Table 2.5-1 Required Cargo Handling Facility & Yard Spaces and Its Saturated Year

Cargo Volume (ton per month)	Required Port Area (sq. m)					Saturated Year	
	Ware-house	Cargo Handling Yard	Storage Space (Inside)	Storage Space (Outside)	Total	Previous Forecast	Revised Forecast
3,600	4,000	2,400	4,000	2,400	12,800	2004	2004
7,200	8,000	4,800	8,000	4,800	25,600	2012	2008
10,800	12,000	7,200	12,000	7,200	38,400	2020	2012

Note; Based on the assumption that each cargo remains in the port area for 30 days

However, considering limitations bonded by supply sides in terms of available fleet for South Reach and port area in Juba, short term (up to 2015) target cargo handling volume should be around between 7,000 and 10,000 metric ton per month.

And with such range of cargo volume, existing port area would be quite sufficient in terms of required port area, unless each cargo remained in the port more than 30 days. And if cargo volume increased in near future, the possible option which the Port Management Authority could tackle would be increasing the cargo handling volume from the proposed level of 10,000 metric ton per month to much higher level by speeding up its cargo handling interval from 30 days to 20 days or much shorter since available port area is only 36,000 square meters in total.

From such point of view, capacity building and development of all related personnel as well as provision of modern facilities and equipment would be very much essential.

CHAPTER 3

CURRENT CONDITIONS & ISSUES OF THE JUBA RIVER PORT AREA

3.1 SECURITY & SAFETY ISSUES

(1) Safety of Vessels

At Juba River Port, all vessels except those docked at the Jetty, are presently moored to mango trees naturally grown on the riverbank with a single wire rope. There is no facility or equipment to protect the safety of vessels.

The basic purpose of river transportation by ship is to deliver cargos to their intended destinations in secure manners. Therefore, a port must be a place where ships can be moored securely for safe loading/unloading.

Safety measures that should be incorporated in upgrading the mooring facilities are:

- Encouraging the use of the safe Jetty
- Installation of safe mooring piles
- Construction of berths for vehicles
- Protection from flotage objects

(2) Safety of Loading Operation

At present, there is only one small flat space where heavy equipment can be used to load/unload heavy cargos.

Operation of heavy equipment has the following requirements (challenges):

- Securing of a flat space that can withstand a sufficient pressure against the ground for installation of heavy equipment
- Procurement of lifting slings and other hoisting tools
- Work area has to be off limits to people other than the loaders

(3) Safety of Workers

Safety awareness among loaders, shipping companies, consignors, consignees, port managers, labor unions, and other stakeholders are extremely low. The workers are not given an opportunity to improve their slinging and other techniques to ensure safety, and instead are doing their jobs simply by own habits. Safety education and use of safety gears, including safety hats and boots, are needed.

(4) Safety of Cargos

Currently, storing cargos inside the barge is the only measure taken for the safety of cargos. No fire-extinguishing equipment is in place. Measures such as setting up a safe storage space, attaching noticeable labels on hazardous cargos, designating mooring sites (for loading fuel oil cargos, etc.) and installing fire-extinguishing equipment near mooring sites, need to be taken.

(5) Safety of Vehicles

Promotion of safe driving, enforcing speed/weight limits, and restriction on entry by unregistered car inside the port area will be needed in future after restricting the free entry and exit of people to/from the port area, which is presently allowed to do so.

(6) Other

Since the volume of fuel handling has been increasing at Juba River Port, the counter measures to control flammable cargos should be taken. The counter measures to prevent the spread of fire are as follows:

- Establishment of a fire-extinguishing system, installation of fire-extinguishing equipment
- Prevention of oil spill: oil fence, sawdust, oil absorbent mat

In addition to the counter measures above, ensuring human safety against accidental de-mooring of ships and oil spill should be discussed and implemented as soon as possible to reinforce the safety regulations.

3.2 PORT FACILITY ISSUES

(1) Current Condition

On September 9, 2008, we surveyed the present conditions of facilities and tenants within Juba River Port area. Outlined below are facilities in each area of the port.

A: North-West

Loader's Union Office	(1) masonry structure
Cafe and Sleeping Place	(2) temporally bamboo and tent

B: North

Driver's Union Office	(1) masonry structure,
Cafe and Sleeping Place	(14) temporally bamboo and tent
Open Air Salon	(200) plastic chairs
(operated by cafe and union)	
Grocery	(1) temporally bamboo
Telephone Charge Shop	(2) movable desk
Bar	(1) temporally bamboo and steel sheet
Hair Salon	(1) temporally bamboo and tent
Shop under construction	(1) temporally bamboo

C: Center

State police office	(1) container
	(1) temporally wood frame and steal sheet roof
Military Police	(1) big tent (10 persons)
CES Tax Office Store	(1) temporally wood frame and steal sheet roof
	(1) wood frame with tent
NRTC Office	(1) open air desk and chairs
Tent for Passengers (IDP)	(7) small size tent (3-4 persons)
Broken Truck	(8) 4 ton, 5trucks are not sure broken
	(-) parts of track are many
Remained Cargo	(530) Asphalt drams

D: Back of the Jetty

Toilet for CES	(1) temporally wood frame and steal sheet roof
Tent for Passengers (IDP)	(12) small size tent (3-4 persons)
	(1) big size tent (10-12 persons)

E: South

Shipping Group Office	(1) temporally bamboo and steel sheet
Oil Whole Seller	(6) open air depot on land*

4 group stock 10 drums
1 group stock 40 drums
1 group stock 60 drums

* ( ) : number

The map below shows the layout of existing facilities and the mooring of barges, pusher tugs, and other types of vessels.

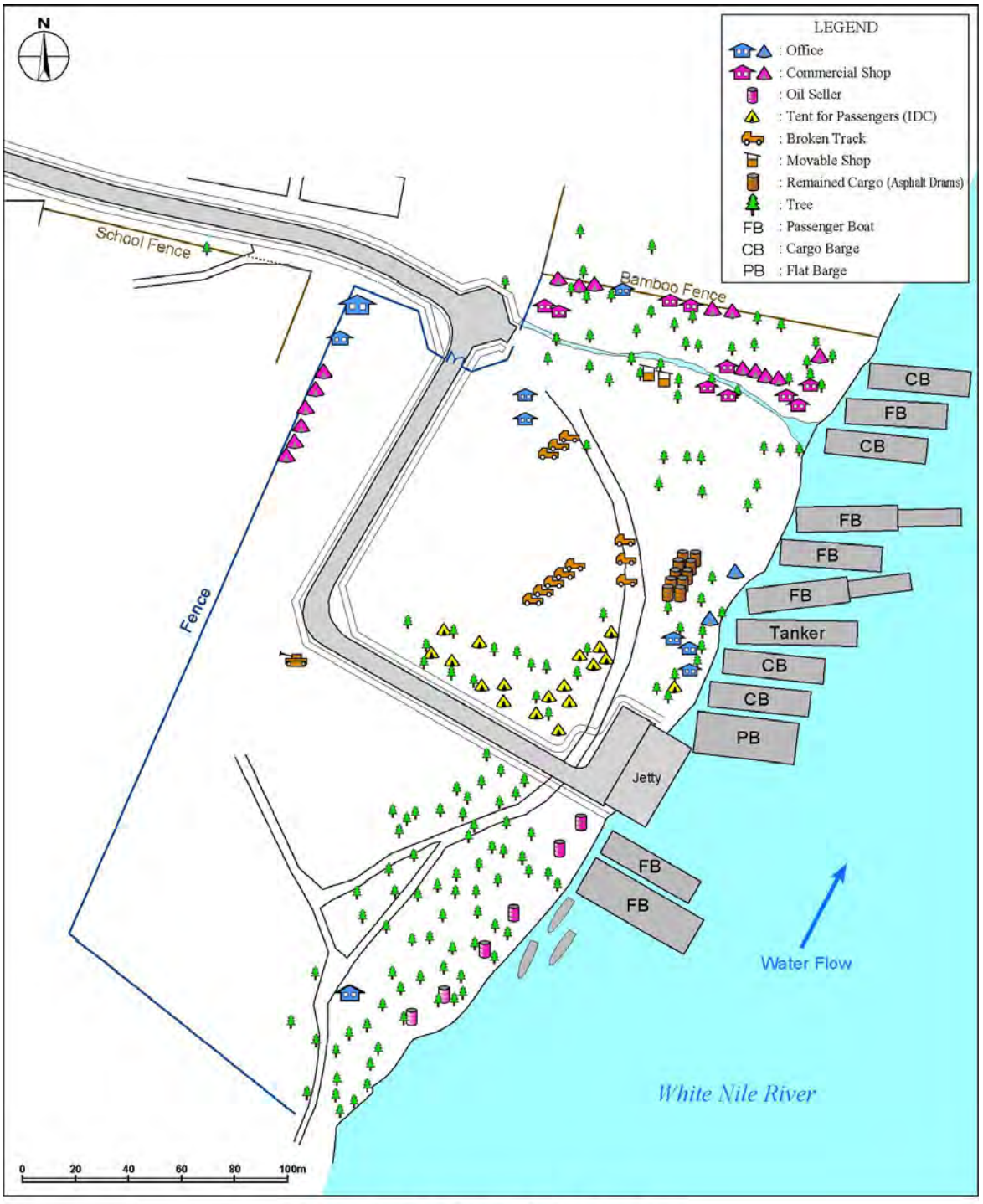

Figure 3.2-1 Existing Port Facilities of Juba River Port

3.3 OTHER ISSUES

3.3.1 Technical Capability of Port Activities

There are two problems as for technical capability of port activities.

1. Undeveloped facility in the port area
   - Lack of port and logistical facilities to make cargo flow efficient
   - High cargo handling cost due to lack of handling equipments
   - Congestion due to low port labour management and security

2. Lack of understanding for port management and how to use the port facilities. Port management and safety management including maintenance are not acquired under no port controller. Especially safety technology for vessels is not mastered. Problems regarding safety management are as follows;
   - Lack of understanding for the Jetty use
   - No safety management for docking vessels
   - Lack of attention to hazardous cargo such as chemicals and oil
   - Unclear responsibility system of management due to no port management rule
   - Lack of disaster prevention conscious and safety first of user and labour
   - Lack of knowledge regarding cargo handling facility and equipment (hooking/unhooking, rope work etc)

3.3.2 Vessel & Port Security

(1) Outline of Vessel Services

On the Kosti-Juba route, NRTC and SRTC operate two to four fleets a month with each fleet consisting of one pusher tug and four barges (or one pusher tug and two barges in case of SRTC fleet).

- Crew members:
  Total of 16 personnel (or 15 for SRTC) comprised of 1 captain, 2 sub-captains (1 sub-captain for SRTC), 3 deckhands, 1 chief engineer, 3 engineers, 1 purser, 1 cook, 1 security guard, and 3 barge staffs

- Vessel services
  Travelling ships communicate with their shipping companies via USB radio three times a day at specific times (7:30, 12:00 and 14:00).

They receive instructions from the shipping company regarding outbound cargos before entering the port, based on which they make a loading plan. Instructions about unloading are given either before or after port entry. They depart the port according to an order issued by

their shipping company 24 hours prior to the departure time.

We observed 3 pusher tugs belonging to NRTC and SRTC and found that their engines were maintained well.

(2) Safety of Vessels (based on hearing survey)

1) Navigation Safety

1. 1 security guard is on board for unlikely event such as pirates.
2. Water depth changes and becomes dangerously shallow in some spots along the route, which is identified by observing the water surface above those spot, as well as changes in the current. Ships travel dangerous areas during the day or wait by mooring to a tree on the riverbank during the night or until the water level raises sufficiently.
3. Navigation aids are needed in dangerous areas. (crew's request)
4. There is a great risk of collision with other vessels, especially fishing boats and small ships.
5. The ships were not equipped with compass or other navigation tools. According to captains, they navigate by relying solely on visual landmarks and, where necessary, use a searchlight during night travel. They requested GPS and radars.
6. Issues addressed concerning safety
   - Transport ship GISSAN currently moored at Juba River Port collided with and made a small vessel sink 8 months ago, which resulted in 15 deaths. The captain of the ship has been arrested by the authorities.
   - GPS, depth finder, and radar, as well as training on the operation of such instruments are essential for preventing collisions and grounding among increasing number of ships transporting fuel in the tanks of flat barges.
   - There are several spots between Kosti and Juba where giant rocks are situated within water way, which makes it difficult to travel by ship. Once an oil tank barge hits on a rock and causes oil spill, it could seriously damage White Nile basin, which could possibly lead to an international conflict. However, the port-related personnel have very little awareness of this potential danger and no counter measures are taken at present to prevent oil spill.
   - Transport of chemicals has begun some time ago. It needs to be recognized that certain chemicals require special handing and could cause serious environmental pollution in case of spillage.

- Neither pusher tugs nor barges are installed with emergency rescue equipments. Pusher tugs and passenger barges should at least be equipped with life vests in order to save human's life.

- Setting up navigation aids in dangerous areas needs to be considered.

2) Safety During Mooring & Demooring Work

1. At present, barges have to be anchored perpendicular to the riverbank and need to be moored and demoored across the river flow. They have to be pressed against other barges to avoid swinging and drifting downstream.

2. Barges and pusher tugs are not installed with fenders and thus get damaged each time when they make contact with other vessels or objects.

3. Both ends of wire ropes for connecting barges to pusher tugs, as well as mooring wire ropes, are not treated properly and some ropes have broken strands and not tied securely.

4. Issues addressed regarding safety
   - Mooring rope is important and the only tool for keeping vessels mooring safely. Since broken wire could cause accidental demooring and other serious accidents, instructions and trainings of proper wire rope use are urgently needed.

   - Tires or other fender materials need to be attached to barges and pusher tugs to prevent leakage, damages to cargos, and/or oil spill.

3) Safety Related to Anchorage

1. Currently 20, 22, 24-mm mooring wire ropes are mostly used along with some 32-mm ropes. Most barges are moored directly to an upstream mango tree with a single wire rope extending from vessel bows. When another ship is to be anchored downstream, it will be moored to the upstream ship, which creates extra load to the mooring rope (tied to a mango tree) and could cause accidental demooring and other serious accidents.

2. Issues addressed regarding safety
   - Oil spill could lead to river water pollution and other environmental destruction. In addition, if a vessel is stranded in narrow waterway near Juba port, the entire port could be disabled.

   - Construction of mooring posts along the riverbank is required.

   - Nighttime lighting is necessary, even when no ships are coming into the port during

the night in order to prevent oil spill from barges and other accidents due to broken mooring ropes caused by natural disasters or human errors.

- Regular patrolling or other measures are needed to adjust mooring ropes that get loosened or tightened as the water level rises or lowers due to rainfall, etc, and to quickly respond to unexpected incidents.

- Occasional adjustment of mooring ropes especially at the Jetty is necessary to protect barges and the Jetty from damage. Use of hawsers along with wire ropes may be necessary. Mooring lines at the front and back ends of the barges should combine a breast line (going at right angles to the center of a dock) and a spring line (going parallel to the dock).

CHAPTER 4

TRIAL OPERATION

4.1 RESULT OF TRIAL OPERATION

In the Follow-up Cooperation, we in combination with staffs related to Juba River Port ran a trial operation of unloading/loading of cargos to verify whether cargo handling activities by utilizing the existing gantry crane and the Jetty are efficient or not..

Date : 11 -14 September 2008
Place : Jetty with gantry crane at Juba River Port

Results of the trial operation are described below.

(1) Unloading of Diesel Oil by Pump

Consignee : BROSS PETRLEUM (Fuel retailer)
Worker : 6 Persons Pump Operator (1), Assistant (4), Supervisor (1)
Tank lorry : 2 Lorries 28kl+32kl＝60kl(1), 60kl(1)

Result of observation is shown in Table 4.1-1.

Table 4.1-1 Unloading Diesel Oil

Unloaded by	Date	Start Time	Finish Time	Time (min)	Unloaded Cargo (kl)	Unloaded Cargo/min (kl/min)	Unloaded Weight (ton)
Pump	11/Sep.	9:15	11:40	145	60	0.41	48.0
		11:50	13:00	70	20	0.29	16.0
Total				215	80	0.37	64.0

Note: Diesel Oil 1 kl= 0.8 ton

(2) Unloading of Asphalt Drums by Crane

Consignee : AYUB (Commercial trader)
Worker : 13 Persons Crane Operation (4), Loader (9)
Lorry : 7 Lorries 25 ton Capacity

Result of observation is shown in Table 4.1-2.

Table 4.1-2 Unloading Asphalt Drums

Unloaded by	Date	Start Time	Finish Time	Time (min)	Unloaded Cargo (drum)	Unloaded Cargo/min (drum/min)	Unloaded Weight (ton)
Crane	11/Sep.	10:20	17:12	412	231	0.56	57.8
	12/Sep.	9:00	10:50	110	69	0.63	17.3
Total				512	300	0.57	75.0
Manual	(Estimated Capacity)			4	1	0.25	0.3

Note: Asphalt Drum 1 can= 0.25 ton

(3) Loading of Sulfate Bags by Crane and Manual

Shipper : Department. of water works, CES
Worker : 21 Persons Crane Operation (4), Loader (17)
Lorry : 2 Lorries 25 ton Lorry wit 25ton Cart

Result of observation is shown in Table 4.1-33.

Table 4.1-3 Loading Sulfate Bags

Loading by	Date	Start Time	Finish Time	Time (min)	Unloaded Cargo (bag)	Unloaded Cargo/min (bag/min)	Unloaded Weight (ton)
Crane	13/Sep.	10:50	14:35	225	1000	4.44	50.0
Manual	13/Sep.	15:40	16:48	68	500	7.35	25.0
	14/Sep.	9:16	10:16	60	500	8.33	25.0
Total				128	1000	7.81	50.0

Note: Sulfate Bag 1 bag= 0.05 ton

(4) Unloading of Flour Bags by Manual at Existing River Bank (for reference)

Consignee : Unknown
Worker : 20 Persons Loader (20)
Lorry : 1 Lorry 25 ton Lorry

Result of observation is shown in Table 4.1-4.

Table 4.1-4 Unloading Flour Bags

Loaded by	Date	Start Time	Finish Time	Time (min)	Loaded Cargo (bag)	Loaded Cargo/min (bag/min)	Unloaded Weight (ton)
Manual	12/Sep.	14:30	16:10	100	360	3.60	18.0

Note: Flour Bag 1 bag= 0.05 ton, Loaded at Natural River Bank

4.2 ANALYSIS OF TRIAL OPERATION

(1) Result of Trial Operation

- The way of using the Jetty and the gantry crane is safe and convenient for unloading of diesel oil and heavy drums.
- It is easy for loaders to unload goods from side docking barges to the Jetty.
- Usage of the gantry crane is effective for unloading oil drums.

(2) Conclusion

- The Jetty is useful and efficient for loading/unloading for all cargos except vehicles.
- The gantry crane is useful for loading/unloading of heavy cargos such as drum, machinery equipment and others.
- Manual loading/unloading at the Jetty is more efficient than that at natural river bank.
- Safety counter measures of cargo handling should be introduced.

CHAPTER 5

PORT IMPROVEMENT PLAN

5.1 STAKEHOLDER MEETING

(1) Purpose

To collect information from stakeholders in order to improve the Juba River Port operation and management.

(2) Attendance

Day : 12 Sep. 2008 Fri. 10:00-11:30

Place : Open-air under trees at Juba river port

Attendants（30 persons）

1) Drivers Union
2) Loaders Union
3) NRTC
4) Consignee
5) Taxation Authority, Revenue Authority, Goods Checking Authority/CES
6) Chamber of Commerce
7) RTD/MoTR/GoSS
8) CMT/MoPI/CES
9) Military Police
10) Public Security
11) Criminal Investigation Department/GOSS
12) Others

(3) Agenda of Meeting

Main agenda of meeting is as follows;

1) Present situation of Juba River Port and river transport
2) Result of trial operation

(4) Opinion of Attendants

(Drivers Union)

- Loading and unloading at the Jetty is better. The Jetty was strong enough to accommodate 25t trucks.
- There is a risk for truck to be stuck into mud in rainy season due to unpaved roads.
- Due to an inclination, a tank lorry cannot be loaded with oils up to its capacity.

- When heavy cargos such as containers are unloaded from barges, moving cranes are utilized. But the area where the cranes are utilized is limited because of little flat ground.
- Technical and Safety trainings are necessary.

(Loaders Union)

- Usage of the gantry crane is appreciated since it eases loaders from a possible heavy duty.
- There might be a possibility to reduce part of loader's work.
- We prefer to use the Jetty to the natural bank for loading and unloading.
- Toilets and showers are necessary.

(Consignee)

- Only one ship can be moored since there is only one Jetty. The crane capacity is also too small.
- There is a necessity to level the land within the port compound.
- Storages, offices and waiting rooms for drivers are necessary.
- ID cards should be issued for related persons who enter the Juba River Port in order to enhance security.
- An organization which controls the Juba River Port is necessary.
- Measures to keep the Juba River Port clean are necessary.
- The effort to reduce the cost of river transportation should be done by related organizations.

(Shipping Company: NRTC)

- We are willing to pay for charges for better Juba River Port operation and management.
- Currently, we are operating office works under trees. Therefore appropriate offices, storages, showers, toilets and waiting rooms are necessary.
- For security purpose, police stations, fences, generators (150 KVA), streetlights, and ID system are necessary.
- An access road (or a slope) which connects Jetty and natural bank is necessary.
- Warehouse and Passenger Shed are necessary.

(Others)

- There is a regulation to regulate any building to be constructed within 30m from the river in order to prevent pollution.
- Training for managing ports is necessary. Technical training for workers is also necessary.
- Fences, storages and offices need to be established. A small boat is also needed for patrolling and removal of garbage.

5.2 JOINT COORDINATION MEETING

(1) Purpose

To understand the current situation of the Juba River Port and river transport.

(2) General Information

Day : 17 Sep. 2008 Wed. 14:00－15:30

Place : Meeting Room, MPI, CES

Attendants (9 persons)

1) RTD/MoTR/GoSS
2) CMT/MoPI/CES
3) NRTC
4) JICA
5) Consultant

(3) Contents of Meeting

The meeting began with a presentation by the Follow-up Cooperation Team, based on handouts. The results of the Follow-up Cooperation so far and problems identified were explained. Furthermore it was confirmed by the attendances that the cost reduction efforts including further streamlining of loading/unloading operations were needed to maintain the competitiveness of the river transport because the river transportation in general incurs more contingent expenses than land transportation. However it is reported by the Follow-up Cooperation Team that the cost of river transport had risen to 80% of that of land transportation.

(4) Opinion of Attenance

(RTD/MoTR/GoSS, CMT/MoPI/CES)

- This kind of joint meeting is useful and another meeting is desired.
- Waterway bus or other more easily assessable means of river transport is needed.

5.3 PORT IMPROVEMENT PLAN

Based on the Stakeholder Meeting, Joint Coordination Meeting, and results of Interview Surveys in Appendix 3 to various organization officials as well as ordinary peoples in the port area, Follow-Up Cooperation Team has analysed the issues related to the port management, operation, and maintenance in line with the Project Cycle Method (PCM) as follows;

5.3.1 Stakeholder Analysis

According to the interviews to various sector stakeholders, we have found there are three types of stakeholders as follows;

Type-A

Who are involved in the activities related to the inland waterway transport currently such as;

- GoSS River Transport Department / Ministry of Transport and Roads, Ministry of Regional Cooperation, Criminal Investigation Department / Ministry of Interior, Military Police / Sudan Peoples Liberty Army, etc
- CES Mechanical Transport Department / Ministry of Physical Infrastructure, Revenue Authority, Standard Authority, Police, etc
- Operators Nile River Transportation Company, Sudan River Transportation Company, etc
- UN Agencies UNICEF, WFP, UNJLC, etc
- Donors JICA, etc
- NGO's SFM, etc
- Companies Transport Agents, Contractor (CEC), Logistics (SDV Transami), etc
- Unions Loaders Union, Truck Drivers Union, etc

Type-B

Who are not involved in the activities related to the inland waterway (river) transport currently, and who may have less possibility to be involved in it in the near future, such as;

- UN Agencies UNOCHA, UNMIS, UNDP, UNHCR, UNOPS, etc
- Donors USAID, GTZ, World Bank, etc
- NGO's ADRA, Carter Centre, AMREF, Red Cross, etc
- Companies Contractors (Civicon, ROCO, etc), Camp Operators (AFEX, Unity Group, etc), Logistics (Inter Freight), etc

Type-C

Who are not involved in the activities related to the inland waterway (river) transport currently, but who may have high possibility to be involved in it in the near future such as;

- Companies Factories (South Sudan Breweries, Mineral Water Companies, etc)

Note that some of stakeholders categorized as Type-B used to be the users of inland waterway

(river) transport during the very initial stages after CPA or before it, due to there were no other way to be reached to the other states especially along White Nile, due to very bad road conditions in those area especially during the rainy seasons, and/or too risky to use land transport at that time.

And then these companies have been shifting their transportation modes to either land or air after recent improvement of road conditions and/or frequent schedule of air transport services nowadays.

And rest of them are not relying on surface transportations at all from the beginning, and these companies are basically frequent users of air transport or operating their own air transport for carrying particular type of persons and/or goods which does not allow any delays, such as Emergency Medical Evacuation, Vaccinations, etc.

Based on major reasons why these companies have discontinued the uses of inland waterway (river) transport nowadays as particularly that it is too expensive to spend comparing the duration which takes or unpredictable operation schedule especially for those who does not have their liaison office or agent in Kosti and/or Khartoum, unrevealed that there is some kind of hypothesis as follows;

"Willingness to Pay" x "Duration Required" = "Almost Constant"

Above hypothesis is partially verified by the actual evidences of duration and payment required for air and land transport modes between Juba and either Kosti or Nairobi which almost equidistance from Juba as about 500 km as shown in the Table 5.3-1 and Figure 5.3-1.

Although actual air transport cost is still higher than theoretical reasonable cost, it has very big advantage that users do not need to worry about unpredictable delay which land transport some times faced. That is main reason for who takes air lift option and most of those users are able to afford such relatively high cost when they wish to avoid such possible problem which land transport still have.

Table 5.3-1 Hypothetical Demarcation among Different Transport Modes

Mode	Air	Land (Road)	River (Inland Waterway)
Duration Required after Shipping	2~3 days (average 2.5 days)	1~2 weeks (average 10 days)	2~4 weeks (average 20 days)
Willingness to Pay[*1](per ton)	SDG 4,000 (USD 2,000)	SDG 1,000 (USD 500)	SDG 500 (USD 250)
Reasonable Rate	4.0	1.0	0.5 or less
Actual Fee (per ton)	USD 2,500[*2] (Nairobi-Juba)	SDG 950 (Kosti-Juba)	SDG 800 (Kosti-Juba)
Current Rate	5.0	1.0	0.8
Typical Shipping Items	Instruments, Vaccines, Other Valuable Goods, etc.	Vehicles, Plants, Machineries, Furniture, Cabins, Generators, etc.	Foods & Beverages, Fuel, Construction Materials, etc.
Typical Consignees	UN Agencies, Donors, INGO's, etc.	Contractors, Camp Operators, LNGO's, etc.	Oil Companies, Local Whole Sellers, etc.

Note; *1 assumption
*2 exclude documentation, clearance fees

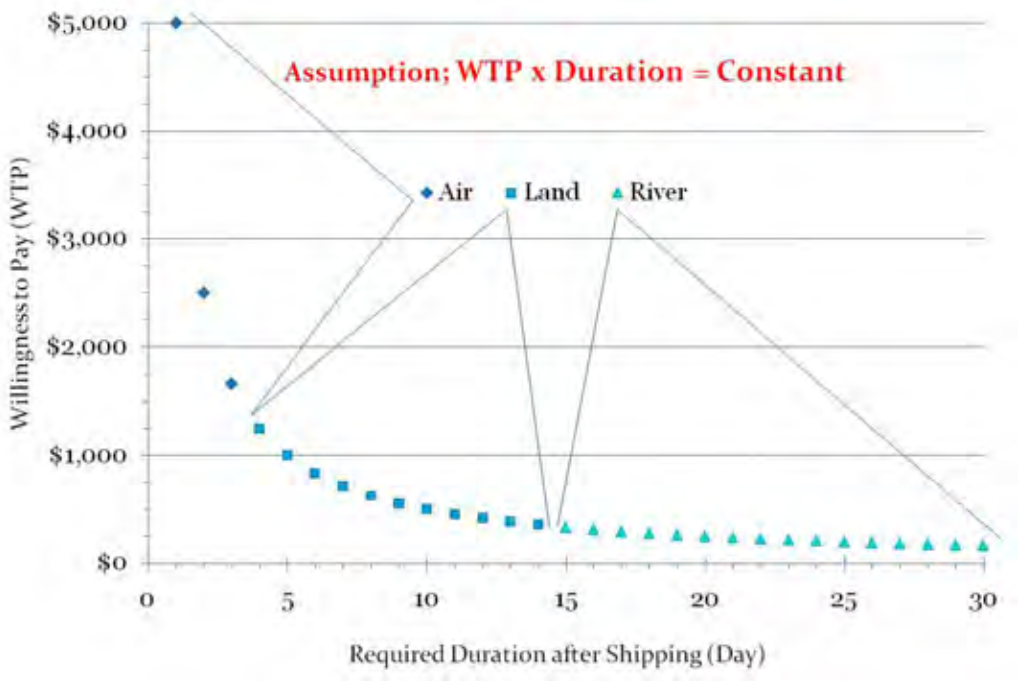

Figure 5.3-1 Hypothetical Demarcation among Different Transport Modes

However, there is still some gaps between actual fee and hypothetical willingness to pay for river transport users due to extra cost of mode changes in Kosti and Juba for loading and unloading works, since land transport items can be delivered from door to door basically, on the other hand river transport items requires change of modes at the both ports.

Actual cost of river transport itself is still much cheaper than the rate shown in the Table5.3-1 according to the river transport operators.

Based on this hypothesis, recapture of those possible river transport users in the near future will be still possible, especially for those bulky and heavy or fragile items, if inland waterway transport related stakeholders tag the team and try to improve current non-organized conditions in terms of particularly schedule and tariff controls for operation and loading and unloading works then reduce the cost imposed drastically.

5.3.2 Problem Analysis

Many problems are raised from not only public sector officials but also private sector participants as shown in the previous chapters and sections. To analyse all those problems systematically, and find out the way to solve those issues one by one, Problem Analysis is introduced, and categorized those problems (which are not properly provided based on those stakeholder's opinions) by group as follows;

1. Port Managements
   - Demarcation between GoSS and CES
   - Assignment of Port Management Staff
   - Coordination between Public and Private Sectors
   - Systems for Port Managements

2. Port Finances
   - Collection of Port Entry Fee
   - Collection of Facility Usage Fee
   - Distribution, Saving, and Utilization of Collected Revenue

3. Port Operations
   - Safety of Crane Operation Works
   - Safety of Vessel Operation Works
   - Safety of Cargo Handling Works
   - Gears for Port Operation Works

4. Port Facilities
   - Facilities for Port Management
   - Facilities for Bank Protection and Mooring
   - Facilities for Cargo Handling

5. Port Securities
   - Demarcation among Law Enforcement Bureaus
   - Port Security Plan
   - Vessel Security Plan

- Facilities for Security & Guard

6. Other Conditions
   - Public Health
   - Environment
   - Society & Religion
   - Human Rights
   - Education & Vocational Training

Above descried problems might be the cause of the less utilization of Jetty and gantry crane provided under the previous Emergency Study, and hence development of South Sudan as a whole might be hampered.

Such hierarchical relations between the poor causes and negative effects, except other conditions which beyond the control of this Follow-up Cooperation Programme, are schematically described in the Figure 5.3-2 on the next page.

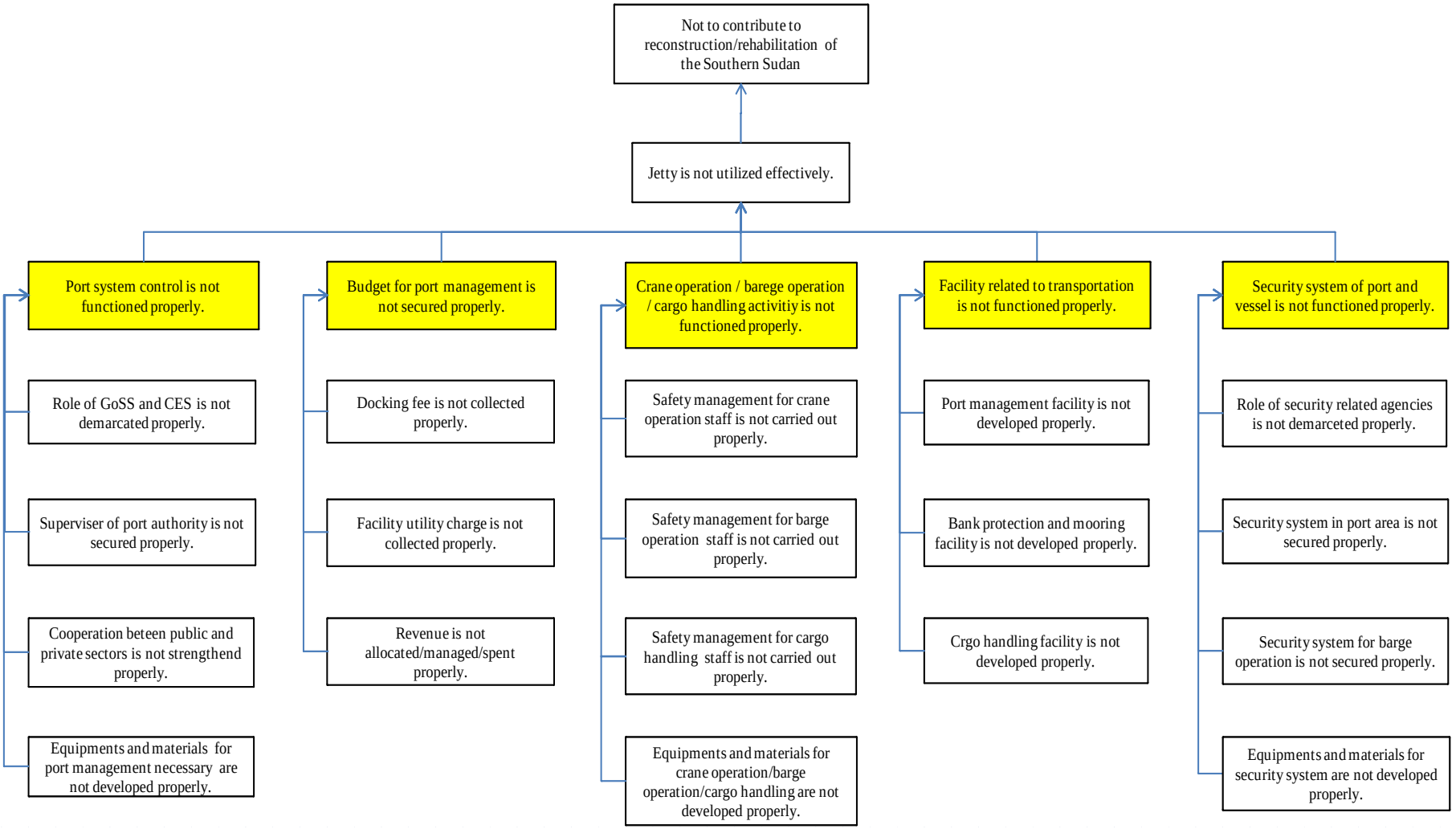

Figure 5.3-2 Problem Analysis Tree

5.3.3 Objective Analysis

Based on the Problem Analysis described in the previous section, Objective Analysis is introduced by simply changing the way of descriptions from “which are not properly provided” to “which are properly provided” as same manner as Problem Analysis by illustrating hierarchical relations between good causes and positive effect as shown in the Figure 5.3-3 on the next page.

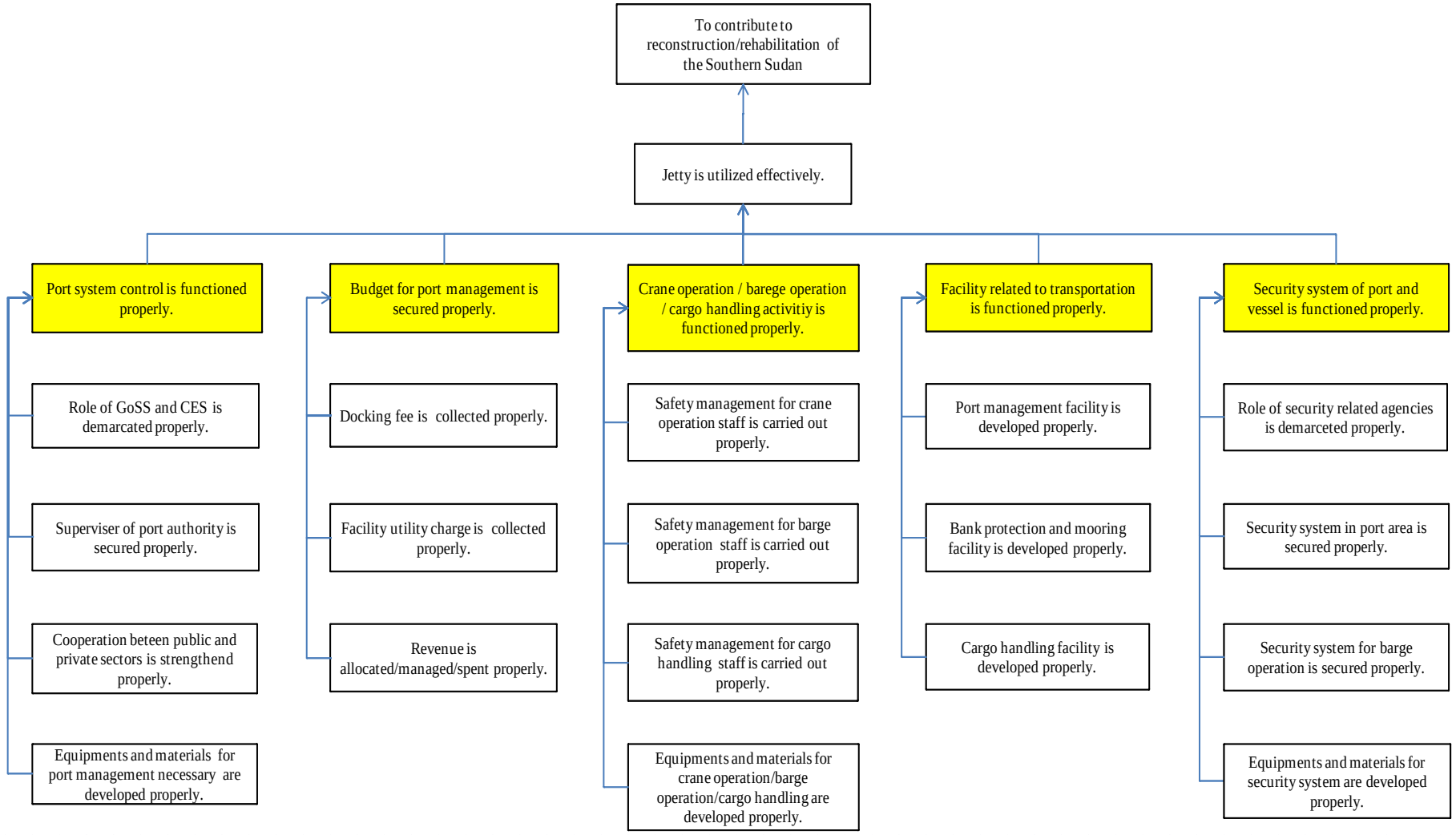

Figure 5.3-3 Objective Analysis Tree

5.3.4 Projects Selection

Based on the Objective Analysis, all line-ups should be handled as one package of series of activities. However, some line-ups are beyond the capacity of the Follow-Up Cooperation Programme in terms of budget ceiling.

Therefore, in this section, we, JICA Follow-Up Cooperation Team, tentatively suggests that first three line-ups shall be categorized to be handled under this Follow-Up Cooperation Programme, and remaining two line-ups shall be categorized to be handled under further cooperation programme, such as Grant Aid and Technical Cooperation Project schemes under JICA, or other bi-lateral or multi-lateral cooperation programmes or own financed programme by Government of South Sudan or even other scheme such as Public Private Partnership as shown in the Figure 5.3-4 on the next page.

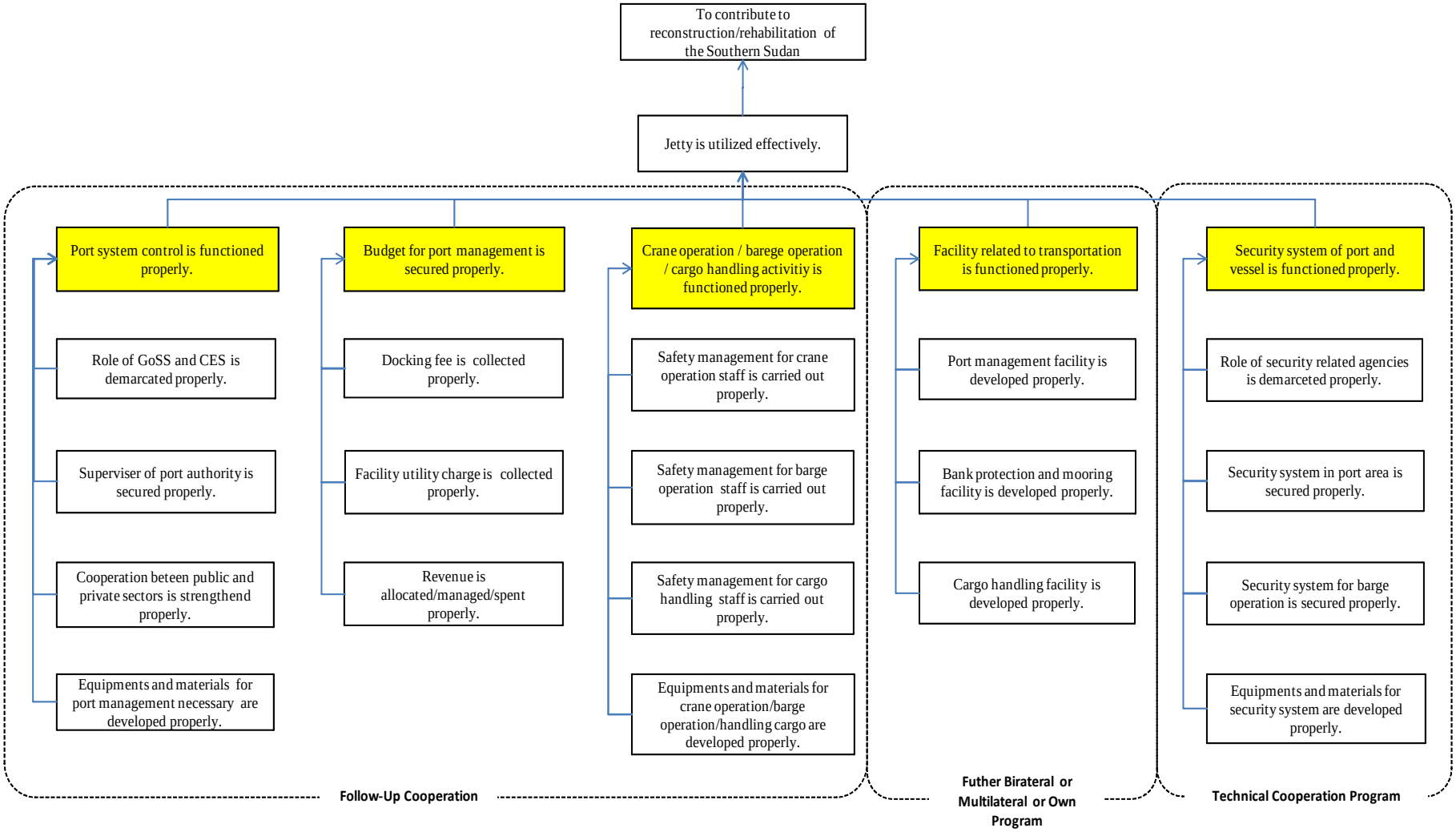

Figure 5.3-4 Project Selection Tree

5.3.5 Projects Design Matrix (PDM)

Although some line-ups of activities may be categorized to be handled with the other schemes, objective and overall goal is still same one. Therefore, all those activities, and outputs together with objective and overall goal are summarized in the one template called Project Design Matrix (PDM) as shown in the Figure 5.3-5 on the following pages.

In this PDM, other important descriptions are “Evaluation Indicators”, and “Way of Collecting those Indicators” as well as “External Conditions” and “Pre-Conditions”.

This PDM is still tentative and contents shall be evaluated by Joint Coordination Committee Members after and/or during the course of discussions with all concerned stakeholders.

Project Summary	Indicator	Means of Verification	Important Assumption
Overall Goal To contribute to reconstruction/ rehabilitation of the southern Sudan	Gross Region Product	Census	- Peace of both the north and south Sudan is kept.
Project Goal Juba River Port Jetty is utilized effectively.	- Handling Cargo volume - Number of Incoming/Outgoing vessel to the port, Barge docking days, Number of incoming/outgoing vehicle and people	Port Management Registry	- Cost of river transport goes down to less than half of that of land transport.
Outputs 1. Port system control is functioned properly. 2. Budget for port management is secured properly. 3. Crane operation / barge operation / cargo handling is functioned properly. 4. Facility related to transportation is functioned properly. 5. Security system of port and vessel is functioned properly.	- Number of Port Management Staff: VV people - Revenue: SDG XXX - Expenditure: SDG YYY - Number of staff finished training course: ZZ people - Number of Accident: under AA per month - Development Rate of Port Facility: 50% (2012), 100% (2016) - Port/Vessel Security System: Establishment of Port Police or Coast Guard	- Organization Control Chart - Manpower List - Revenue/Expenditure Registry - List of Staff Finished Training Course - Accident Registry (land/water/theft) - Transportation Facility Development Record - Port & Vessel Security Plan	- Facility and equipment in Kosti & Rabak is developed as well as that in Juba and maintained continuously. - Sailing course is well-maintained. - Sail aid equipment is developed.
Activities 1.1 Role of GoSS and CES is demarcated properly. 1.2 Port management staff is secured properly. 1.3 Cooperation between public and private sectors is strengthened properly.	**Input** 1. Specialist: (Consultant) - Transport Facility Improvement Planner - Capacity Building & Development Specialist - Vessel & Port Security Planner - Assistant Supervisor for Construction & Procurement (Short-Term Experts) - Cargo Handling Instructor - *(Port Management Adviser)*		- Security in port area is secured. - Overland route from Kenya & Uganda is secured.

Figure 5.3-5a Project Design Matrix (1/2)

Project Summary	Indicator	Means of Verification	Important Assumption
1.4 Necessary equipments and materials for port management are developed properly. 2.1 Docking fee is collected properly. 2.2 Facility utility charge is collected properly. 2.3 Revenue is allocated / managed / spent properly. 3.1 Safety management for crane operation staff is carried out properly. 3.2 Safety management for barge operation staff is carried out properly. 3.3 Safety management for cargo handling staff is carried out properly. 3.4 Equipments and materials for crane operation/barge operation/cargo handling are developed properly. 4.1 Port management facility is developed properly. 4.2 Bank protection and mooring facility is developed properly. 4.3 Cargo handling facility is developed properly. 5.1 Role of security related agencies is demarcated properly. 5.2 Security system in port areas is secured properly. 5.3 Security system for barge operation is secured properly. 5.4 Equipments and materials for security system are developed properly.	2. Equipments & Materials for Cargo Handling /Vessel: - For Cargo Handling (Pallet, Wire Mock, Drum Hook, Pallet Sling, Heavy Duty Sheet) - For Vessel (Shackle, Wire Clip, Wire Rope, Mooring Rope) - For Maintenance (Fender, Debris Barrier, Oil Barrier) 3. Small-size Equipments for Port Management: - Oil Pump, Chemical Fire Extinguisher, Hand Pallet Truck, Loading Ramp 4. Middle-size Equipments for Port Management: - Fork Lift Truck, Generator, Landing Craft, 4WD Vehicle 5. Large-size Equipments for Port Management : - Rough Terrain Crane or Rotary / Jib Crane 6. Utilities for port management : - Warehouse, Shed, Office, Security Post, Fence, Gate for Vehicle & Staff, Water Supply Unit, Sanitation Facility, Toilet & Shower, ID Issuing Machine 7. Facilities for Port Management : - Bank Protection, Mooring Post, Paved Cargo Handling Yard, Paved Open-Air Yard, Concrete Slab for Warehouse, Drainage Facility, Lighting Facility, Docking & Roll-On / Roll-Off Facility *8. Materials for Repair & Reinforcement Works* - *For Repair (Fender, Mooring Post, Realignment of Crane Rails)* - *For Reinforcement (Braces, Embedment & Extension of Crane Rails)*		**Prerequisite** - River transport companies continue to exist - Both Northern and Southern Sudan and neighbouring countries like Kenya & Uganda are stable - Price of crude oil is stable

Figure 5.3-5b Project Design Matrix (2/2)

5.3.6 Port Improvement Plan

Followings are long list of gears, equipments, facilities, and systems to be procured under the Follow-Up Cooperation Programme and/or further cooperation programmes.

And General Layout Plan of Juba River Port Improvement Programme is attached hereinafter for internal reference purpose only.

Table 5.3-2 Procurement Item List

Items		Description	Unit	Quantity
G	Woodern Pallet	1,200mm×800mm×140mm	pcs	900
	Plastic Pallet	1,200mm×1,000mm×140mm	pcs	100
	Wire Net	1.8m×1.8m(w/ Cambers sheet)	set	6
		2.0m×2.0m (w/ Cambers sheet)	set	6
	Pallet Sling	1.5 ton Standard Set	set	6
	Drum Hook	4-in-one Type (Vertical)	set	6
	Shackle	φ19mm (for Mooring Wire)	pcs	24
		φ22mm (for Mooring Wire)	pcs	24
		φ25mm (for Mooring Wire)	pcs	24
		φ28mm (for Mooring Wire)	pcs	24
		φ32mm (for Mooring Wire)	pcs	24
	Wire Cripps	φ18mm (for Mooring Wire)	pcs	48
		φ20-22mm (for Mooring Wire)	pcs	48
		φ24-25mm (for Mooring Wire)	pcs	48
		φ26-28mm (for Mooring Wire)	pcs	48
		φ30-32mm (for Mooring Wire)	pcs	48
	Mooring Rope	φ50mm (200m Roll)	set	1
	Fiber Rope	φ14mm (200m Roll)	set	1
		φ20mm (200m Roll)	set	1
		φ26mm (200m Roll)	set	1
		φ30mm (200m Roll)	set	1
	Tractor Tire	φ955mm×300mm (for Fender)	set	3
	Fender	275×275×1500 Type D	set	14
	Oil Barrier	EP-200S	m	100
	Debris barrier	16 inch diameter by 10 foot long	set	3
	Plastic Sheet	25m×25m	set	12
S	Hand Pallet Truck	1.0 ton Manual Type	set	3
	Landing Radder	Aluminium Ladder Type	set	3
	Oil Pump	Heavy Duty Type (30kilo litter per hour or higher)	set	3
	Fire Extinguisher	Mobile Form Building Type (for oil & chemical)	set	3
S & M	Warehouse	Tent Type (10m×30m×4.9m)	set	6
	Office	Containar Type 20ft	set	4
	Security Post	Cabin Container Type (8ft×12ft)	set	2
	Shed	Tent Type (4.5m×7.2m×3.35m)	set	2
	Fence	Heavy Duty Chain Link w/ Barbed or Laser Wire(H=3.0m)	m	360
	Vehicle Gate	Heavy Duty Steel Flamed Sliding Type(1.8m×12.0m)	set	2
	Personal Gate	Heavy Duty Chain Link w/ Pipe Flames(2.0m×1.8m)	set	2
	Water Supply	Deep Well(30m) w/ Pump & Elevated Tank(3qu.m)	set	2
	Sanitation	Toilet(3+3) w/ Septic Tank(6qu.m) & Soak Pit	set	2
	Tap & Shower	Public Tap w/ Sink(×4) & Shawer (2+1)	set	2
M	Fork Lift Truck	3.5 ton Engine Type	set	2
	Generator	45-kVA w/Canopy	set	1
	Landing Craft	18-ft w/ 40hp Outboard Engine	set	2
	4WD Vehicle	6-Seated w/ Extra 4-jump Seat	set	2
L	Truck Crane	50 ton & 41.5m-long arm	set	1

Note G : Gear S : Small Size Equipment S & M : Security and Maintenance Equipment
M : Middle Size Equipment L : Large Size Equipment

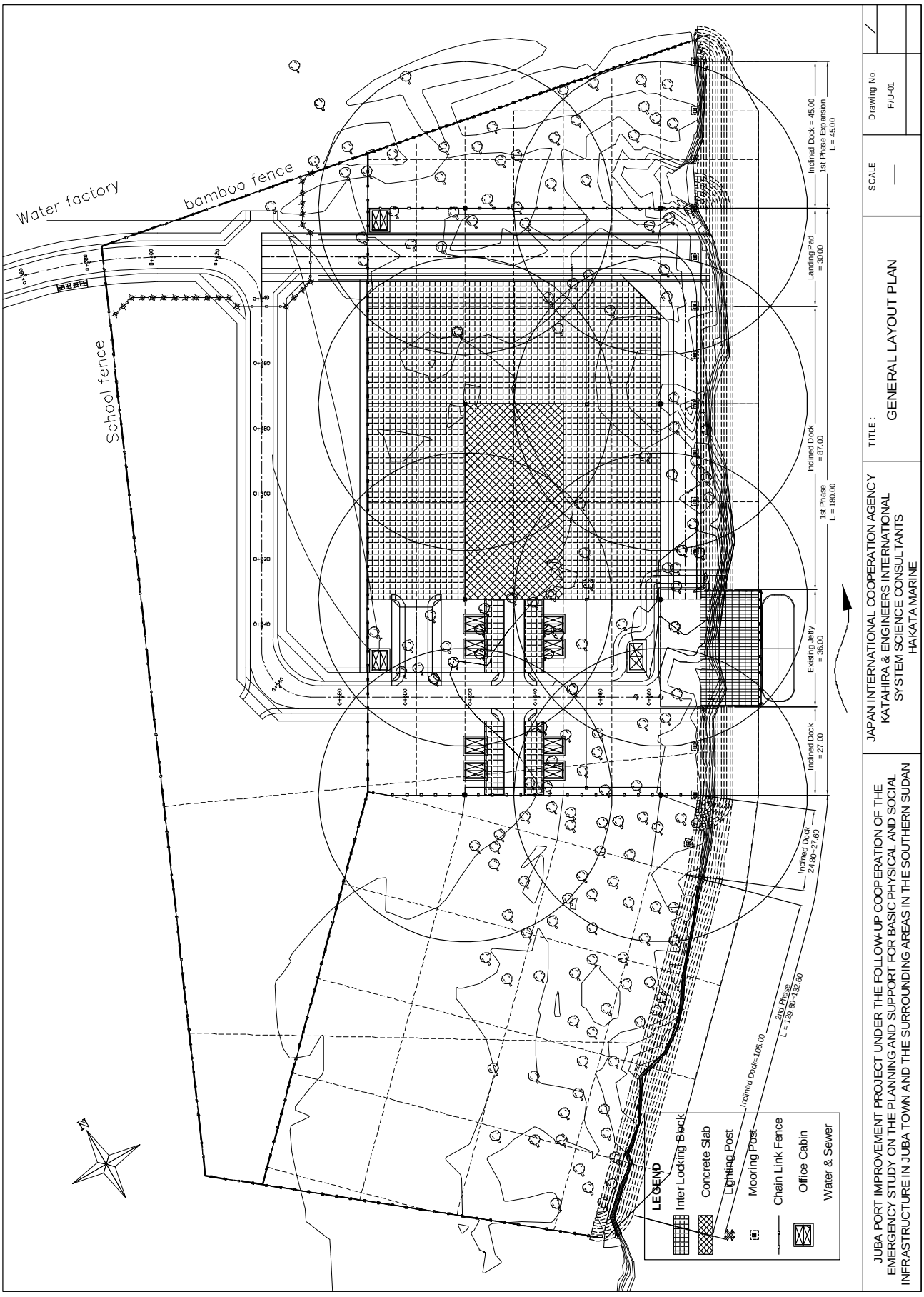

Figure 5.3-6 General Layout

CHAPTER 6

PORT ADMINISTRATION COMPOUND PROVISION WORKS

6.1 PROPOSED CONTENTS OF THE WORKS

6.1.1 Development of Necessary Facilities

Before Follow-up Cooperation programme started, our counterparts, RTD/MoTR/GoSS and CMT/MoPI/CES, were working under mango trees or in tents and/or temporary sheds constructed by the authorities and/or shipping companies. Furthermore, there was no toilet except for an old one which is scarcely working now constructed under the project of "Emergency Study on the Planning and Support for Basic Physical and Social Infrastructure in Juba Town and the Surrounding Areas in the Southern Sudan" between 2006 and 2007.

As a result of the first field survey and a series of discussions with the related authorities, above described things turned out to be part of reasons that hindered them from working in the port area. In order to improve their working condition and environment, facilities as shown in Table 6.1-1 will be developed under the Follow-up Cooperation programme however direct contract by JICA Juba Field Office through JICS.

Table 6.1-1 Proposed Items of Necessary Facilities

Category	Type of Work	Description	Unit	Qty
I	Container Office	Double 20ft Containers including A/C	set	4.0
	Stairs & Deck	Steel framed Stirs & Deck	set	1.0
II	Deep Well	30m with a Submerged Pump & 5kVA Generator	set	1.0
	Elevation Tank	Capacity: 2000L , H=5.5m	set	1.0
	Fuel Storage	Size: 2.4m x 2.4m , Height: 3.0m	set	1.0
	Toilet	Size: 4.8m x 2.4m , Height: 2.5m Male: 1 toilet, 2 urinal, 1 Hand-wash Female: 1 toilet, 1 Hand-wash	set	1.0
	Septic Tank	Capacity: 1500L	set	1.0
	Soak Pit	Capacity: 2500L	set	1.0
	Water Pipe	PVC Φ30mm	m	117.0
III	Generator Shed	Size: 4.8m x 4.8m , Height: 3.0m	set	1.0
IV	Generator	45kvA	set	1.0
V	Passage way	t=10cm with 15cm thick wall	m2	15.0
	Portal Culvert	W:11.5m , L: 2.5m	set	1.0
	Temporary Driveway	W: 6.0m , Murram t=15cm	m	22.5
	Temporary Parking	Murram t=15cm	m2	75.6

The Work was divided into five categories as shown in the Table 6.1-1 and implemented by some local construction companies through JICA Juba Field Office and JICS and Follow-up Cooperation Team provided technical assistance to both JICA Juba Field Office and JICS and supervised local contractors works at the site.

Category I	:	Each container office user is RTD/MoTR/GoSS, CMT/MoPI/CES, Follow-up Cooperation Team and one of office user is undecided.
Category II	:	Toilet for the counterparts and its affiliate facilities.
Category III	:	Shed for the 40kVA generator.
Category IV	:	40kVA generator was procured by JICA Juba Office.
Category V	:	In order to make access to the offices easy, passage way was constructed. Furthermore temporary driveway and parking as well as portal culvert were developed to access to the offices by car. In future plan, the temporary driveway and parking which were constructed by just 15 cm thick of murram are supposed to be paved.

Figure 6.1-1 Office, Stairs & Deck

Figure 6.1-2 Toilet

Figure 6.1-3 Fuel Storage (Left) & Generator Shed (Right)

Figure 6.1-4 Portal Culvert

6.1.2 General Layout

Due to limited budget and time, Follow-up Cooperation Team drew focus on the bare essentials of facilities as mentioned above Table6.1-1 to facilitate counterparts' work activities. However as the amount of cargo handling increases, it is expected easily that more facilities such as additional office and generator will be required to be enlarged and redeveloped as needed. Consequently, space for such facilities should be obtained for future expansion plan. When the layout plan was created, a series of discussions with the related authorities as well as field surveys were carried out. Basic concepts of the plan are;

- to minimize earth works
- not to cut down mango trees in the port compound
- to observe vessel operations and cargo handling activities easily from the offices
- to access to the Jetty and the existing river bank easily

Layout plan is shown in Figure 6.1-5 on the next page.

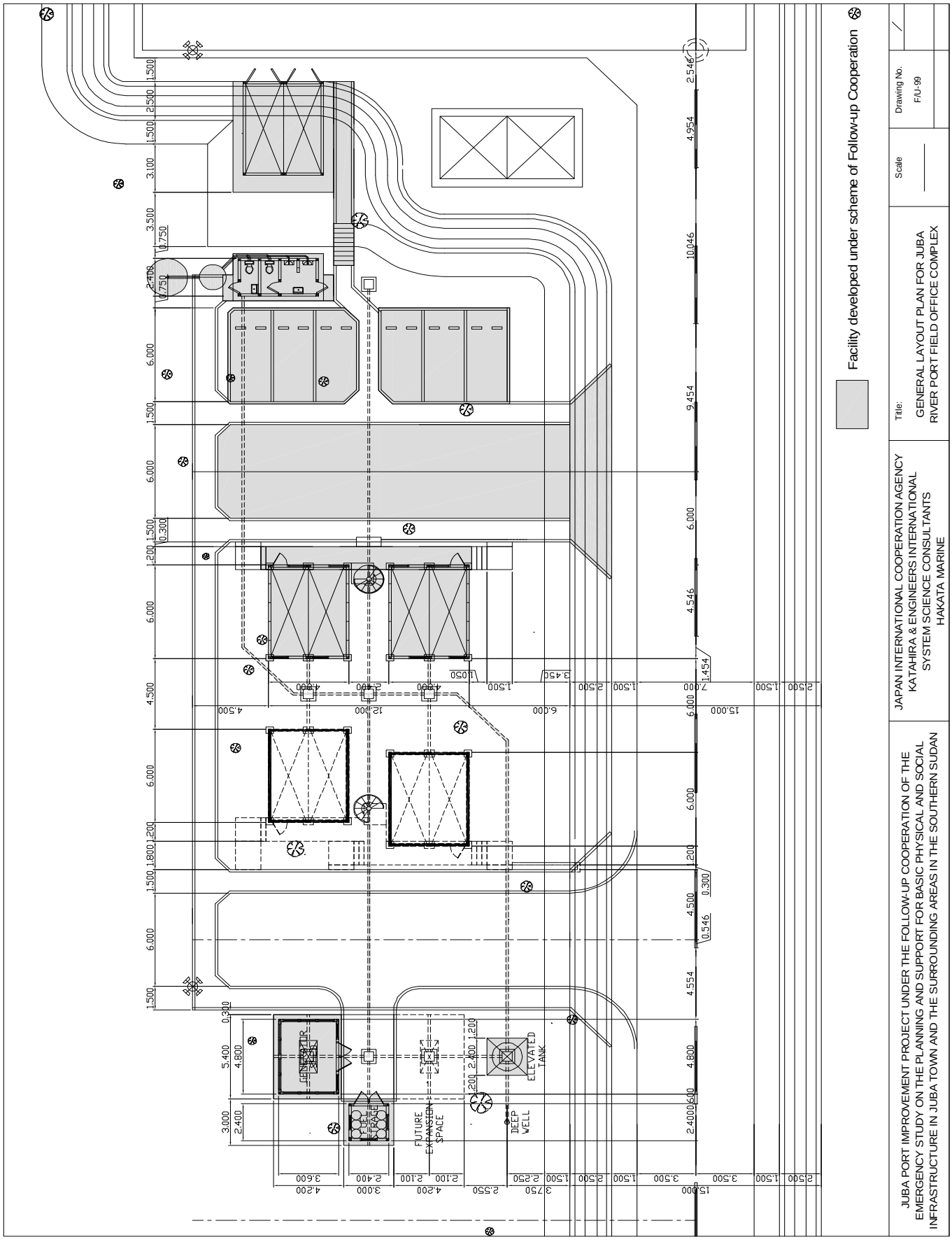

Figure 6.1-5 Layout Plan

6.2 PROGRESS OF THE WORKS

6.2.1 Procurement of Materials and Equipments

Since all materials and equipments were able to be procured in Juba, it didn't take time to prepare and transport them to the site. Furthermore, fabrication parts such as the Stairs, Deck and frame of Elevated Tank were assembled and welded in workshops in order to minimize time-consuming works in the site.

6.2.2 Implementation Schedule

Implementation schedule of the Work is shown in Figure 6.2-1.

Figure 6.2-1 Implementation Schedule

- Category I was constructed in advance of other works and finished during the year of 2008. However the final inspection was not carried out until the Generator for the lights and A/Cs was procured and connected to the offices.

- Since Category II and III were done by different companies, they were implemented at the same time.

- In Generator Shed in Category III, the Generator had to be installed after completion of floor slab. However the construction of other parts was postponed for about two weeks because an initially installed generator was defective product and it took time to reinstall a new one.

- In Category V, as the structural calculation and construction of culvert were required

much time, it took longer than we expected. That is because the prevention work against rainwater from upstream of ditch by piling sandbags up was implemented, since the construction time was the beginning of short rainy season. And as the culvert was designed to be strong enough for traffic load equivalent to middle-sized car, bar arrangement and concrete works needed paying close attention.

- Inspections were carried out according to the completion of each category.

CHAPTER 7

JETTY REPAIR WORKS

7.1 DAMAGED CONDITION & PROPOSED CONTENTS OF THE WORKS

7.1.1 Damage Condition

In the first field survey of Follow-up Cooperation, some trial operation activities using cargo handling equipments were conducted. As a result, the Jetty started to be used gradually. However in the middle of October 2008, it was reported that the crane couldn't operate, the fender support had been dent, one mooring post had leaned toward the river etc, from JICA Juba Field Office. According to interviews to related authorities and persons related to port activities, it seemed that barges collided with the Jetty once or twice. However particular damage condition was unknown. Therefore in order to investigate the damage condition in detail, one member of this Follow-up Cooperation Team was mobilised ahead of schedule. As a result of detailed investigations, the damage condition and its cause turned out as shown in Table 7.1-1.

Table 7.1-1 Damage Condition and its Cause

Damage Condition	Cause
1. Damage of Fender & its Support	• Barge Collision
2. Distortion of Crane Rail	• Barge Collision
3. Damage of Mooring Post	• Swift Fall of Water Level • Lack of Mooring Skill and Knowledge

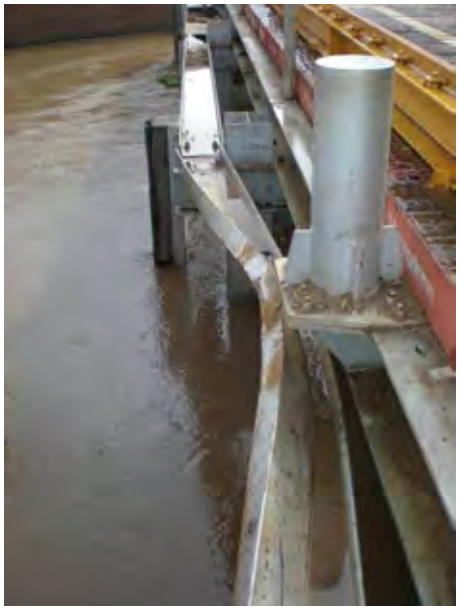

Figure 7.1-1 Damage Condition I (Fender Support)

Figure 7.1-2 Damage Condition II (Mooring Post)

7.1.2 Proposed Contents of the Works

After detailed field investigations and discussions with JICA Juba Field Office, its head quarter and related authorities, repair works of the Jetty were proposed. In addition, in consideration of barge collision again, reinforcement works of the Jetty were proposed as well as shown in Table 7.1-2.

Table 7.1-2 Jetty Repair & Reinforcement Work

Item	Description	Unit	Q'ty
1. Preparation Work	Procurement, Fabrication, Transport of Materials	LS	1.0
2. Container Warehouse Setting Work	20ft Container	set	2.0
3. Damaged Parts Removal Work		LS	1.0
4. Fender Support Setting Work	H-350	m	70.0
5. Fender Setting Work	1800- Hard Rubber D-Type	set	19.0
6. Mooring Post Setting Work	ϕ 265 x 450	set	4.0
7. Anchor Setting Work	M50 x 700	set	4.0
8. Deck Plate Fixing Work	Four Corners Bolt Tightening	set	144.0
9. Crane Rail Adjustment Work	Gantry Crane with Capacity 1.5 ton	LS	1.0
10. Brace Setting Work	C-300	set	20.0
11. Ramp Setting Work		set	1.0
12. Side Ditch Protection Work	Gabion & Geotextil	set	2.0

In Item 5, Fender Setting Work, the number of fender increased from 8 to 19 and interval of it shortened from 5.0m to 2.5m. In addition, in order to protect the corner of the Jetty against barge collisions, each corner was protected and strengthened by using 3 fenders and curve-fabricated fender support.

Figure 7.1-3 Fenders at the Corner

In Item 6, Mooring Post Setting Work, Mooring Posts themselves were reinforced as well as

attaching parts.

In Item 7, Anchor Setting Work, 4 Anchors were installed into the base rock under the riverbed. Three is possibility that extra-design force is acted by barge collisions by touching down in a longitudinal direction to the Jetty. These 4 Anchors stand against the force and avoid the Jetty from lifting up.

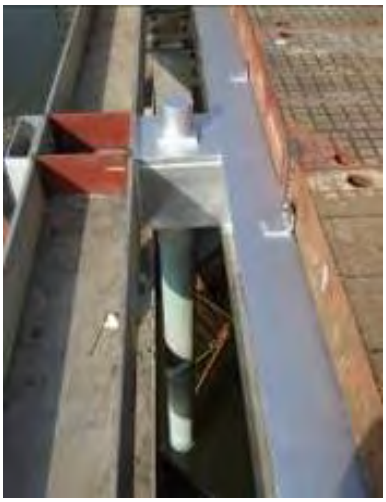

Figure 7.1-4 Anchor Setting Work

In Item 8, Deck Plate Fixing Work, the first line of deck plate in parallel with river flow and column at intervals of one were fixed with bolts to the upper lateral channels.

In Item 10, Brace Setting Work, in order to resist horizontal force from barge touch-down to the Jetty, 20 Braces, C-300 were installed.

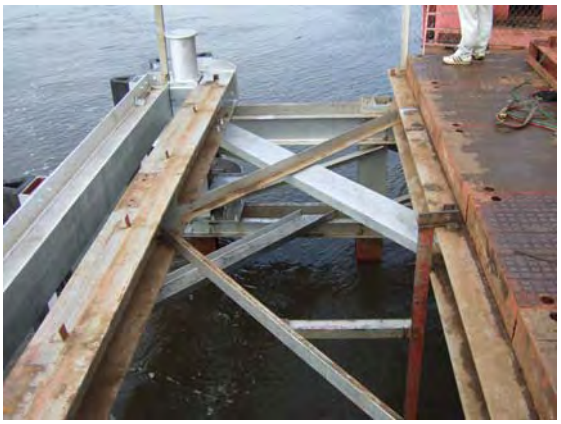

Figure 7.1-5 Brace Setting Work

7.2 PROGRESS OF THE WORK

7.2.1 Transportation

Ocean and Inland transport duration is shown in Table 7.2-1.

Table 7.2-1 Ocean and Inland Transportation Duration

Container Description		Origin	Via Point No.1		Via Point No.2		Via Point No.3		Via Point No.4		Via Point No.5		JUBA
		Departure Date	In	Out	In	Out	In	Out	In	Out	In	Out	Arrival Date
			Length of Staying		Length of Staying		Length of Staying		Length of Staying		Length of Staying		
40ft	Repair Parts	BANGKOK	SALALA		MONBASA		MALABA		KAYA		JEBEL KOJUR		JUBA PORT
		1-Feb	18-Mar	28-Mar	10-Apr	27-Apr	29-Apr	30-Apr	3-May	6-May	8-May	9-May	9-May
			10		17		1		3		1		
			46	13	2	3	2	0					
			Ocean Transport : 69		Inland Transport : 12								

The materials of the Jetty repair and reinforcement works were procured and fabricated in Bangkok, Thailand and shipped toward Juba on 1st of February. Although ocean transport takes about 30 to 35 days normally, it took as many as 69 days on this occasion. Main reasons are as follows;

- The ship stopped at unscheduled transit ports.
- A mishandling when transhipping the container occurred at Salala Port.
- Because of recession worldwide, the ship was forced to wait until containers accumulate enough to set sail.

After arriving at Mombasa Port, due to clearance at customs it took 17 days as expected. In inland transport, the container arrived at Juba port for 12 days without problem.

7.2.2 Implementation Schedule

Plan and implementation schedule are shown in Figure 7.2-1 on the next page.

- Prior to the arrival of repair parts on 9th of May, excavation work for container warehouse and damaged parts removal work started.

- Container Warehouse Setting Work, Fender Support Setting Work, Fender Setting Work and Mooring Post Setting Work finished as almost previously arranged without any major problems.

- In Anchor Setting Work, there was an obstruction at the edge of cutting edge plate and it was impossible to drill. The cause turned out to be a bolt which was abandoned at the

time of Jetty construction in 2007. Therefore a diver removed the bolt and clear obstructions before drilling.

- Although Deck Plate Fixing Work and Brace Setting Work have large number, the same works are repeated. These works speeded up and finished ahead of schedule as workers became accustomed to the works.

- The rail of Gantry Crane which was difficult to use because of barge collisions was readjusted and anchored on the fixed deck plates. Therefore the strength of the rail increased drastically compared to before one.

- Ramp and Landing Ladder were fixed to the south side of the Jetty where it doesn't obstruct the Crane activities.

- At last, Side Ditch Protection Work was conducted by using gabion mats and geotextile.

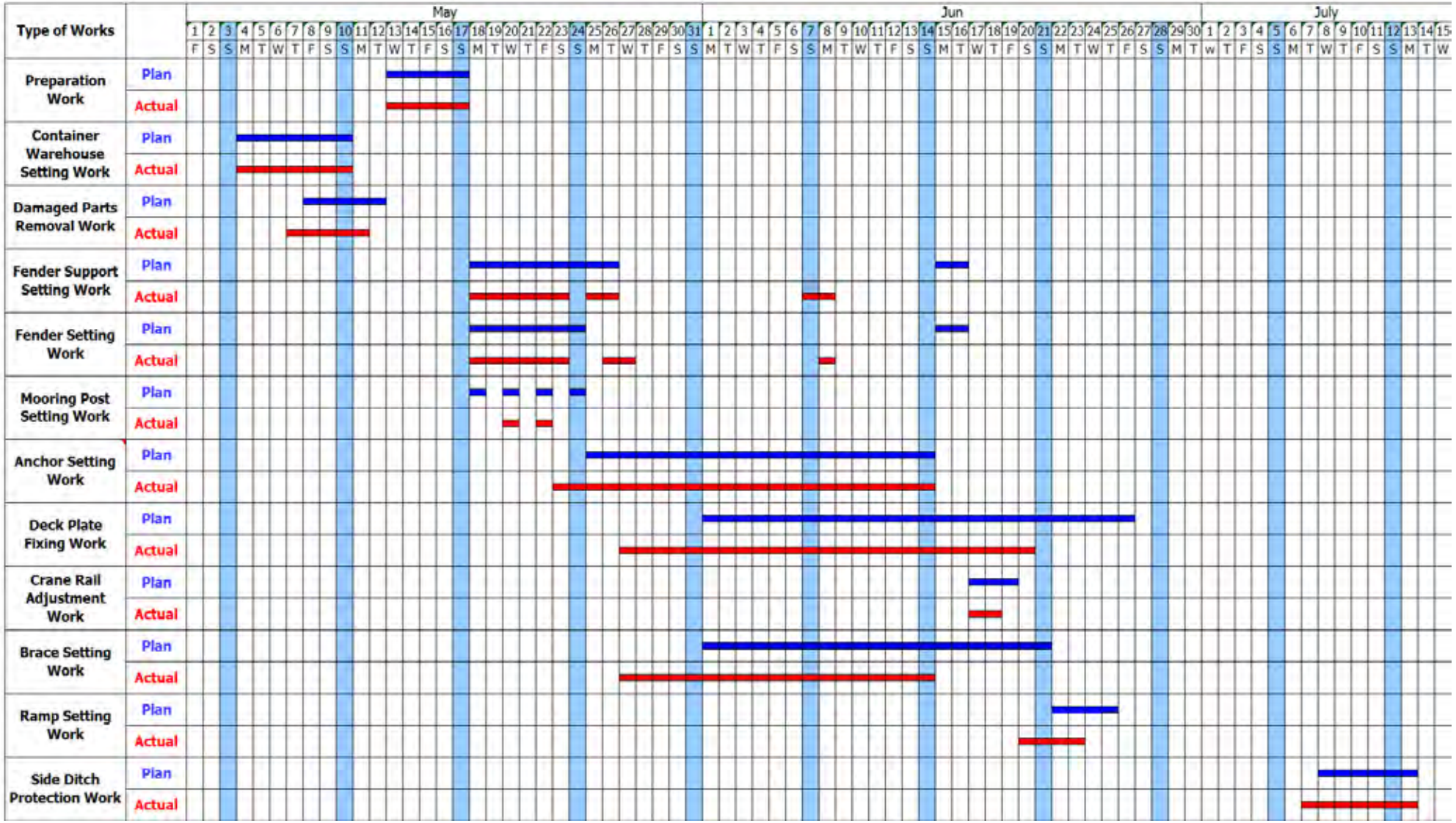

Figure 7.2-1 Implementation Schedule

CHAPTER 8

CARGO HANDLING GEARS AND EQUIPMENT PROCUREMENT WORKS

8.1 PROPOSED CONTENT OF THE WORKS

8.1.1 List of Cargo Handling Gears and Equipments

As a result of the first field survey and a series of discussions with related authorities, issues and problems regarding cargo handling activities and safety of vessel operations were clarified. In order to improve the issues and problems, necessary cargo handling gears and equipments were listed up as shown in Table 8.1-1.

Table 8.1-1 List of Cargo Handling Gears and Equipments

Category	Name of Gears	Description	Unit	Qty
I	Plastic Pallet	—	pcs	100
	Wire Net	180cm x 180cm	set	6
		200cm x 200cm	set	6
	Pallet Sling	—	set	6
	Drum Hook	—	set	6
	Landing Ladder	SXN300-40-100	set	2
		SXN300-40-100 Special	set	1
		Joint Support	set	1
II	Mooring Rope	φ50mm x 200m	set	1
	Fiber Rope	φ14mm x 200m	set	1
		φ20mm x 200m	set	1
		φ26mm x 200m	set	1
		φ30mm x 200m	set	1
	Shackle	SB-20	pcs	24
		SB-22	pcs	24
		SB-26	pcs	24
		SB-28	pcs	24
		SB-32	pcs	24
	Wire Clip	F-18	pcs	48
		F20-22	pcs	48
		F24-25	pcs	48
		F26-28	pcs	48
		F30-32	pcs	48
III	Oil Barrier	10m	set	10
	Debris Barrier	DF-400, 20m	set	3
	Fire Extinguisher	Form Building Chemical Type	set	4
		Powder Type	set	4
IV	Plastic Sheet	25m x 25m	set	12
	Storage Shelf	1200 x 571 x 1800, 4 Steps	set	12
		1200 x 471 x 2100, 5 Steps	set	8
	Container	20ft	set	2

The necessary cargo handling gears and equipments are classified with following four

categories;

- Category I : Gears to make cargo handling activities more efficient and smooth
- Category II : Gears to make mooring operation more efficient
- Category III : Equipments for safety activities against environmental destruction and fire incidents
- Category IV : Equipments to store procured gears and equipments and cargo

As the Follow-up Cooperation focuses on the efficiency of cargo handling activities and safety vessel operations, gears and equipments in relation to the works above were listed up and procured. In case of being confirmed that the efficiency of the works improve by using procured gears and equipments, additional gears and equipments which were mentioned in the Inception Report such as Fork Lift Truck, Landing Craft and so on and so forth in order to streamline the works more and more will be procured under further cooperation programmes.

8.1.2 Management of Cargo Handling Gears and Equipments

In order to manage the cargo handling gears and equipments and avoid loss to the upmost, all of them were numbered and gear management form in Annex 5 was created. All gears and equipments users are registered in the form in Appendix 5 when they bring out and return the gears and equipments.

Figure 8.1-1 Numbering of Gears and Equipments

8.1.3 Training

There are some gears and equipments that require careful handling. However related authorities do not have staffs who are familiar with how to use them. Therefore trainings to instruct staffs on usage are required so as to avoid accidents caused by carelessness and lack of knowledge. In addition, videos concerning safety activities and vessel operations which were made in Japan were played for staffs to promote awareness and notice a concept of

safety first.

Figure 8.1-2 Training of Using Gears and Equipments

Figure 8.1-3 Playing safety Video

8.2 PROGRESS OF THE WORKS

8.2.1 Procurement Schedule

In order to maintain high quality all gears and equipments were procured in Japan and shipped in 3 containers according to size and delivery day. Duration of ocean and inland transport and waiting days at transit ports of each container are shown in Table 8.2-1.

Container No.1 and No.2 were shipped from Yokohama Port in Japan on the day of 16th of March 2009 and arrived at Mombasa Port on the day of 23th of April 2009. Duration of ocean transport was for 38 days as almost expected. However they were transported by different trucks from Mombasa Port to Juba due to a mishandling of the inland transport company.

Therefore they arrived in Juba on different days, 8th of May and 27th of May 2009 respectively. Regarding occen transport of container No.3, it took as many as 66 days. That is because the ship called at one more unscheduled port and moored long period.

In inland transport, there wasn't any problem and containers arrived for approximately 10 days. It was estimated that duration of inland transport in rainy season might take longer than that in dry season, however there was few days differences between duration of two seasons. According to an inland transport company, there was 10 to 15 days gap before, however as environment of inland transport has been getting better, duration of inland transport has been apt to shorten gradually.

Container Description		Origin	Via Point No.1		Via Point No.2		Via Point No.3		Via Point No.4		Via Point No.5		Via Point No.6		Via Point No.7		JUBA
		Departure Date	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	Arrival Date
			Length of Staying		Length of Staying		Length of Staying		Length of Staying		Length of Staying		Length of Staying		Length of Staying		
20ft (No.1)	Handling Equipments	YOKOHAMA	CHIWAN				SALALA		MONBASA		MALABA		NIMULE		JUBA BRIDGE		JUBA PORT
		16-Mar	21-Mar	25-Mar			5-Apr	13-Apr	23-Apr	30-Apr	1-May	1-May	4-May	7-May	7-May	8-May	8-May
			4				8		7		0		3		1		
		5	11				10		1		3		0		0		
		Ocean Transport : 38							Inland Transport : 8								
20ft (No.2)	Handling Equipments	YOKOHAMA	CHIWAN				SALALA		MONBASA		MALABA		NIMULE		JUBA BRIDGE		JUBA PORT
		16-Mar	21-Mar	25-Mar			5-Apr	13-Apr	23-Apr	13-May	17-May	21-May	25-May	26-May	26-May	27-May	27-May
			4				8		20		4		1		1		
		5	11				10		4		4		0		0		
		Ocean Transport : 38							Inland Transport : 14								
20ft (No.3)	Handling Equipments	YOKOHAMA	NINGIBO		SINGAPORE		SALALA		MONBASA		MALABA		NIMULE		JUBA BRIDGE		JUBA PORT
		30-Mar	8-Apr	16-Apr	26-Apr	6-May	12-May	20-May	4-Jun	17-Jun	20-Jun	20-Jun	23-Jun	26-Jun	28-Jun	29-Jun	29-Jun
			8		10		8		13		0		3		1		
		9	10		6		15		3		3		2		0		
		Ocean Transport : 66							Inland Transport : 12								

Table 8.2-1 Duration of Transport and Waiting Days at Transit Ports

As just described, there is possibility that unexpected things happen as far as occean and inland teansport. Consequentlly, it is recommended that occean and inland tranport period should have a margin of time.

8.2.2 Tax Exemption Letter

Before arrival of gears and equipments from Japan, their tax exemption letters should be issued from Ministry of Finance and approved from Department of Customs of GoSS and CES. In case of containers No.1 and No.2, any big problems didn't happen in order to obtain those tax exemption letters. However when tax exemption letter of container No.3 was under application, due to a sudden presidential decree, tax exemption procedure has changed and the change halted the issue of tax exemption letters without any advance notice. Under such conditions, most of donor organizations including JICA and UN agencies couldn't acquire their tax exemption letters except those for critical materials such as medicines. The impact of all imported materials halt was so big issue at the capital city, as a result, the procedure returned to the original condition on a temporary basis in June 2009. The issue of our last tax exemption letter had been suspended for about 50 days, however overall schedule of procurement and following training using procured gears and equipments were not so much affected because the tax exemption procedure was made in advance.

8.2.3 Inspection of Gears and Equipments

As soon as procured gears and equipments arrived at Juba River Port, member of JICA Follow-up Cooperation team implemented a series of inspections according to Inspection Sheets in Figuire 8.2-1 to confirm item's conditions and quantities one by one. After a series

of inspections, the all gears and equipments were stored in exsiting warehouses and procured 20ft containers and handed over to RTD/MoTR/GoSS and CMT/MoPI/CES.

Inspection Sheet

Equipment No.	6	Name of Equipment	Wire Clip		
Sub No.	6-5	Component	F30-32	Q'ty	48 pcs
Inspection Date	30th May 2009		Inspector	Eng. Kiyoshi MUKAI	

Main Use Intended:

handling wire ends properly

Specification

1. Weight 1.64kg
2. Screw Torque 1900kgf/cm
3. Dimension Refer to figure and chart below

(mm)

	Body							U-shaped Bolt Hexagpnal Nut				
	A	B	C	D	E	G1	r	d	G2	H	L	S
F30-32	42	15	98	25.5	79	58	17	22	58	18	130	75

Photograph

Other Information;	Manufacturer; UCHIDA TANKO Co. Ltd

Figure 8.2-1 Sample of Inspection Sheet

As for the details of training using procured gears and equipments is described in 9.2.2, Technical and Safety Operation Training in Juba.

CHAPTER 9

CAPACITY BUILDING AND DEVELOPMENT

9.1 ORGANIZATION SET-UP

9.1.1 Organization Set-up

In February 2009, RTD/MoTR/GoSS started talks with CMT/MoPI/CES and the river port users for the purpose of setting up the Port Administration. The table below shows the activities held by MoTR/GoSS in 2009.

Table 9.1-1 Activities by MoTR/GoSS

Date	Meeting/ Letter	Subjects
17th February 2009	Talks with the shipping companies	• Inspections of ships • Entry procedures • Port fees
6th May 2009	Letters from Undersecretary of MoTR/GoSS to MoPI/CES	• Joint operation of the port • Fee collection
	Clarification of the roles	• Roles of the military police, the police and the port administrators
7th May 2009	Talks with the shipping companies	• Notification of entry or departure, cargo handling, and employees • Establishment of the safety committee
8th May 2009	Talks with Drivers Union and Loaders Union	• Entrance fees • Ground lease for the office • Notification of employees • Vehicle wash • Illegal parking

9.1.2 River Port Committee (Environment, Operation and Safety Committee)

On 26th of June 2009, River Port Committee, composed of the private port users, RTD/MoTR/GoSS and CMT/MoPI/CES, was established at the first meeting held with the assistance of the Follow-up Cooperation team, where also Chairman, Vice-chairman and Secretary were elected. In the second meeting on 6th of July 2009, it was noted that committee's proposed rules would be examined and enforced afterwards.

9.1.3 Talks between MoTR/GoSS and MoPI/CES

In June 2009, MoTR/GoSS and MoPI/CES had talks to decide on the following basic issues;

- Ownership of the river port : Land right and ownership of facilities belong to CES.
- Juba River Port Administration

- ✓ Assignment of Staff : 6 staffs from RTD/MoTR/GoSS and 6 staffs from CMT/MoPI/CES will be assigned.
- ✓ Port Revenue : Fee collection and distribution
- ✓ Target Transfer Schedule : Management transfer will be finalized after staff training.
- ✓ Legal status of Port : Legal registration of river port is under preparation.

➢ Organization Structure

The memorandum of this meeting is attached on Annex 6.

9.2 HUMAN RESOUCES

In the talks in June 2009 between RTD/MoTR/GoSS and CMT/MoPI/CES, it was decided that both governments provided 6 staff members each for the Port Administration to start their operations. RTD/MoTR/GoSS has already chosen the members, on the other hand that of CMT/MoPI/CES is still under examination.

As these 6 staff members and higher ranking officers who work for the Port Administration didn't have enough experience in the port operations, the following capacity building and trainings conducted by the Follow-up Cooperation Team succeeded in showing some early achievements.

9.2.1 Port Staff Training in Kosti Port

This training was implemented with the collaboration of NRTC which makes up the majority of cargo in Juba River Port.

(1) Training Period

28th November to 4th December 2008

(2) Training Place

- Kosti Port NRTC
- Rabak Port SRTC
- Kosti New Port NRTC
- Dry Port STC

(3) Attendance List

- Trainees

Name	Age	Work Experience	Academic Background
Directorate of River Transport, Ministry of Transport and Roads, GoSS			
Mr. James Hassen Malua	32	7	University
Mr. Manyok Simon Chol	26	3	Secondary School
Mr. Zubeir T. Zakayo	33	9	University
Mr. Emmanuel Eli Dangawi	36	12	University
Directorate of Communication Mechanical Transport, Ministry of Physical Infrastructure, CES			
Mr. Lowrence Wani Pakomio	48	29	Junior College
Mr. David Wani Sisto	47	11	Secondary School
Mr. Michael Mogga Wani	43	6	Secondary School

- Follow-up Cooperation Member

Name	Assigned Field
Mr. Yukitaka Date	Capacity Building & Development Specialist
Capt. Kensuke Tsujino	Vessel & Port Security Planner

(4) Training Purpose

Capacity building of RTD/MoTR/GoSS and CMT/MoPI/CES staffs who are in charge of management and maintenance of Juba River Port

- Main Issue of Training
  - Maintenance and management work of port
  - Site observation of port facility
  - Human resource management of port
  - Sustainable management focusing on revenue and expenditure

(5) Training Programme

Content of training programme and list of relevant person are shown as follows;

Table 9.2-1 Training Programme

Date	Content	Trainer
28th November	Juba – Khartoum	
29th November	Khartoum – Kosti	
30th November	• Orientation • Site Observation at Kosti Port, Dry Port, New Port and Rabak Port	NRTC Khartoum Office
1st December	• Organization of NRTC • Relationship between NRTC Headquarter and Liaison Office • Finance, Fare Structure, Accounting • Management of Incoming/outgoing Vessel • Traffic Control, Warehouse Management	Traffic Department, NRTC Traffic Department, NRTC Financial Department, NRTC NRTC Juba Office NRTC Juba Office
2nd December	• Port Management and Maintenance Management of Port Related Person • Discussion with Loader's Union • Safety Management, Safety countermeasure • Discussion with NRTC, Cooperation Structure with other Logistic Firms	Traffic Department, NRTC Union Safety Department, NRTC Safety Department, NRTC
3rd December	Kosti – Khartoum	
4th December	Kartoum - Juba	

Table 9.2-2 List of Relevant Personnel

	Name	Department/ Section	Organization
1	Salah Eldin Idris Ali	General Manager	NRTC, Khartoum
2	Mohamaed Elfatih Ahmed	Training Coordinator	NRTC, Khartoum
3	Adam Mohakar	Director of Traffic Department	NRTC, Kosti
4	A. Mageed Mubarak	Technical Department	NRTC, Kosti
5	Altayib Sidahmed	Financial Department	NRTC, Kosti
6	Ayaub Fedl Elmoula	Traffic Department	NRTC, Kosti
7	A.Gani Mohamed Hemmael	Traffic Department	NRTC, Kosti
8	Elfatin Tuy Eldain	Safety Department	NRTC, Kosti
9	Abd Alghnani	Traffic Department	NRTC, Kosti
10	Siliman Ali Abdalla	Traffic Department	NRTC, Kosti
11	Awad Boshava Amird	Human Resource Recruit Department	NRTC, Kosti
12	Farid Mahmoud	Director	Kosti New Port/NRTC
13	Jacob Daniel	Juba Port Manager	NRTC, Juba
14	DP Yousri H. Fudel	General Manager	SRTC
15	Omen Remet Alla Adam		SRTC
16	Add Elhay Eltom	General Manager	SPC
17	Alam Obid All Omer		SPC
18	Alli Mohamed	Director	Loader's Union

(6) Training Output

Lectures were carried out based on references prepared by NRTC. Most of the references were prepared in English, however, some of them were only Arabic. This training was organized in order to learn the outline of organization structure and work contents for short period. For the staffs with few work experience this training regarded as very useful because they could learn work contents of private companies.

In addition, this training was the first time for staffs of RTD/MoTR/GoSS and CMT/ MoPI/CES to work/learn together for 7days. And they could directly discuss shipping companies; NRTC and SRTC and exchange opinions about issues of river transport. Since this training was too short, they desire a longer training and an internship opportunity.

Figure 9.2-1 Site Observation

Figure 9.2-2 Observation Barge Repair Yard

Figure 9.2-3 Presentation of NRTC

Figure 9.2-4 Observation of NRTC Port

9.2.2 Technical and Safety Operation Training in Juba

(1) Training Period

26th June to 3rd July 2009

(2) Training Place

Juba River Port Administration Office

(3) Attendance List

- Trainees
  Member of RTD/MoTR/GoSS
  Member of CMT/MoPI/CES
  Member of Loadder's Union
  Member of Truck Union
  Member of NRTC
  Member of SRTC
  Member of KEER

- Follow-up Cooperation Member
  Mr. Yukitaka Date Capacity Building &Development Specialist
  Capt. Kensuke Tsujino Vessel & Port Security Planner

(4) Training Purpose

The training purpose is as follows;

- To prevent accidents and improve working conditions
- To understand how to use the cargo handling gears and equipments which were procured and provided under the Follow-up Cooperation

(5) Training Programme

Table 9.2-3 Training Programme

Date	Content	Trainer
26 June	Explanation of Technical and Safety Operation Training Training Video for Basic Safety Committee Meeting with Port User	Mr. Yukitaka Date Capt. Kensuke Tsujino
29 June	Demonstration of Dram Hook & Pallet Sling Demonstration of Oil Fence	Mr. Yukitaka Date Capt. Kensuke Tsujino
30 June	Demonstration of Ladder for Vehicle Demonstration of Fire Extinguisher Demonstration of Rope Work	Follow-Up Team
3 July	Evaluation of Training	Follow-Up Team

(6) Training Output

Members of Loader's Union and Truck Union had roots in safety working condition and longed for the extension of the training. Before the training, they worked under very serious conditions without protecting hands and feet. However they found the importance of safety first concept through the training.

Moreover members of RTD/MoTR/GoSS and CMT/MoPI/CES became aware of issues how to proceed the safety management duty.

Figure 9.2-5 Training of Crane Use

Figure 9.2-6 Training of Drum hook Use

Figure 9.2-7 Training of Pallet Use

Figure 9.2-8 Playing of Safety Video

9.2.3 Executive Officer Training in Japan

(1) Training Period

24th of July to 5th of August 2009

(2) Training Place

JICA Yokohama International Center	Kanagawa Prefecture
Port and Harbor Bureau, Yokohama City	Kanagawa Prefecture
Tagonoura Port Administration Office	Shizuoka Prefecture

Yokkaichi Port Authority	Mie Prefecture
Construction Division, Onomichi City	Hiroshima Prefecture
JICA Osaka International Center	Osaka Prefecture

(3) Attendance List

- Trainees

Name	Position
Dr. Daniel Wani	Under Secretary, Ministry of Transport and Roads, GoSS
Eng. Lewis Gore George	1st Director General, Ministry of Physical Infrastructure, CES
Eng. Abdu S.M. Loka	Director General, Directorate of River Transport, Ministry of Transport and Roads, GoSS
Eng. Lino Schebesta D. Kenyi	Director General, Directorate of Transport and Roads, Ministry of Physical Infrastructure, CES
Mr. Jacob Daniel D.	Chairman of Juba Port Safety Committee Port Manager, NRTC

- Accompanied Member

Name	Assigned Field
Mr. Yukitaka Date	Capacity Building & Development Specialist
Capt. Kensuke Tsujino	Vessel & Port Security Planner
Mr. Kiyoshi Mukai	Assistant Supervisor for Construction & Procurement
Ms. Kumiko Nakanishi	Training Coordinator

(4) Training Purpose

The main purpose of this training is

- To learn role demarcation of central and local government.
- To learn the way how to organize suitable port administrative structure by using examples in Japan.
- To enhance an insight of administrative staffs who are in charge of build the system and institution into the efficiency of cargo handling activities.

(5) Training Program

Content of training program and list of relevant personnel are shown as follows;

Table 9.2-4 Training Programme

Date	Content	Trainer
24th July	Juba – Khartoum	
25th July	Khartoum –	
26th July	Dubai – Osaka- Tokyo - Yokohama	
27th July	• Orientation, Explanation of Training Course • Briefing on Port Management and Operation in Japan	Follow-up Cooperation Team JICA
28th July	Site Observation at Tagonoura Port and Explanation of Tagonoura Administration System	Tagonoura Port Administration Office
29th July	Site Observation at Yokkaichi Port and Explanation of Yokkaichi Administration System	Yokkaichi Port Authority
30th July	• Site Observation at Onomichi Port and Explanation of Yokkaichi Administration System • Site Observation at Ship Yard	Construction Division, Onomichi City KANBARA SHIPYARD CO., LTD.
31st July	Site Observation at Yodogawa River Port	River Improvement Division, Osaka Prefectural Government
1st August	Day Off	
2nd August	Travel to Yokohama	
3rd August	• Site Observation at Yokohama Port • Tokyo – Osaka －	Port and Harbor Bureau, Yokohama City
4th August	Dubai – Khartoum	
5th August	Khartoum - Juba	

Table 9.2-5 List of Relevant Person

	Name	Department/ Section	Organization
1	Mr. Hiroyuki Ashikawa	Director	Tagonoura Port Administartion Office
2	Mr. Syusuke Tanabe	Chief manager	Ditto
3	Mr. Hisashi Takagi	Manager	Ditto
4	Mr. Takao Terasaka	Manager	Ditto
5	Mr. Kazuwaka Shimizu	Deputy Manager, Management Planning Divion	Yokkaichi Port Administration Union
6	Mr. Hirao Muro	Chief Manager, Management Planning Division	Ditto
7	Mr. Minoru Hatayama	Manager, Management Planning Division	Ditto
8	Mr. Kazutaka Inukai	Engineer, Management Planning Division	Ditto
9	Mr. Masaki Makimura	Manager, Construction Division	Onomichi City
10	Mr. Takuya Kanbara	President	KANBARA SHIPYARD CO., LTD.
11	Mr. Toshihisa Shibaike	Director, River Improvement Division	Osaka Prefectural Government

(6) Training Output

Understanding of Management System and Organization of Port

- ✓ Structure of executing organization and role of each sector
- ✓ Demarcation between central and local government
- ✓ Improvement mythology for cargo handling activities and transportation system

Understanding of Issues of Management System for Juba Port

- ✓ Enhancement of operation system
- ✓ Consultation and consensus communication and consultation system
- ✓ Fee collecting system and accounting system

Figure 9.2-9 Site Observation by Boat

Figure 9.2-10 Observation at Ship Yard

Figure 9.2-11 Discussion with Tagonoura Port Staff

Figure 9.2-12 Presentation of Yodogawa River Port Structure

9.2.4 Planning of Human Resource Development Programme

Although this programme was carried out during the Follow-up Cooperation, it is necessary to continue the programme in order to enhance human resource development for port management. For this reason, Action Program, which should be implemented urgently, and Medium Term Training Programme were prepared Follow-up CooperationTteam as follows;

(1) Short Term Action Programme

- Organization building of the port administration and enhancement of programmes for staffs in Juba
- On-the-job training (1-2 month) in Kosti port for the port administration staffs

(2) Medium-Term Training Programme

- Human resource development of RTD/MoTR/GoSS and CMT/MoPI/CES
- Safety management training for private port users
- Cost calculation and budget preparation for Medium-term training
- Port administration structure

These programmes should be used for capacity building for related authorities during and after the Follow-up Cooperation for better port management and maintenance.

9.3 ADMINISTRATION STRUCTURE

9.3.1 Port Administration Structure

Draft of the Port Administration structure is shown below;

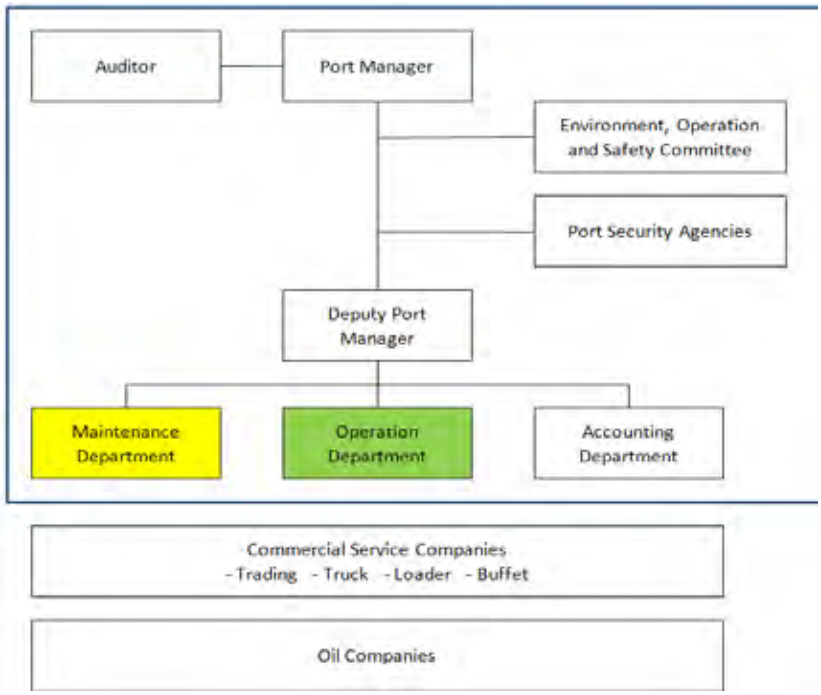

Figure 9.3-1 Port Administration Structure (Draft)

This Port Administration is composed of 12 staff members from RTD/MoTR/GoSS and CMT/MoPI/CES. However, the personnel of RTD/MoTR/GoSS will be mainly in charge of

port management until CMT/MoPI/CES staff members achieve enough knowledge and improve their management capacities through trainings. As most of the CMT/MoPI/CES members are mechanic, they are expected to work for Maintenance Department.

9.3.2 Demarcation of Work

Duties of each department in the Port Administration are defined as follows:

(1) Maintenance Department

- Security provision within the port compound
- Prevention of disaster
- Maintenance and management of port facilities and equipment

(2) Operation Department

- Receipt of port entry and departure reports
- Specify mooring location
- Utilization of goods handling point (and warehouses)
- Utilization of cargo handling gears and equipments
- Issue and control of ID card for people entering the port compound

(3) Accounting Department

- Collection of port facilities utilization fee
- Finance and accounting works
- Exchange of contract with external parties
- Facility maintenance
- Public relations

9.4 OPERATION AND MAINTENANCE

9.4.1 Basic Conditions for Operation and Maintenance Plan

(1) Budget for the River Port Operations

- Planning of revenue and expenditure on the basis of the joint management between GoSS and CES
- Port facility utilization fees as the main sources of revenue
- Although the port facility maintenance has been done irregularly and unsteadily, necessary expenditure for the river port maintenance should be included in the operation plan.

(2) Revenue

- Facility utilization fees and entrance fees as sources of revenue are tentatively set as shown in the Table 9.4-1.
- 60% of the revenue will be spent on the operations and management of the river port in conformity with the agreement with GoSS

Table 9.4-1 Tariff for Port Utilization

Item for Fee	Amount	Unit	Remarks
Registration Fee of Vessel, Tugboat	20,000	SDG/Vessel	41 vessels in 2009
Shipping License	10,000	SDG/Year	41 vessels in 2009
Entrance Fee of Lorry and Truck	10	SDG/ Vehicle	1500 trucks/year
Docking Fee for Tugboat and Vessel	200	SDG/Vessel	250 vessels in 2009
Docking Fee for Motor Boat	10	SDG/Boat	10 boats/ month
Demurrage Fee	50	SDG/ Night	0.5 day/ vessel
Land Lease (Union, Shipping Camp, Buffet)	5,000	SDG/Year	Not confirmed
ID Card (N.A)	-	-	Under consideration

(3) Expenditure

- Employment cost : Personnel cost for 12 staff members form GoSS and CES is shouldered by both governments. Only that of temporary cleaners and clerks will be budgeted
- Equipment purchases : Computers and copy machines
- Consumables : Photo coping, copy paper and toners
- Facility maintenance : Fuel for generator, Maintenance and repairing cost
- Communication cost : Phone calls and internet
- Training cost : Re-education of the personnel
- River port maintenance : Replacement and repair of facilities in the river port

9.4.2 Operation and Maintenance Cost

Table 9.4-2 shows the estimation of operation and maintenance cost in the next five years.

Table 9.4-2 Estimation of Operation and Maintenance Cost (Unit: SDG)

Revenue						
Item \ Year		1st year	2nd year	3rd year	4th year	5th year
		2009	2010	2011	2012	2013
1	Registration Fee of Vessel and Tug Boat	492,000	12,000	12,000	12,000	12,000
2	Shipping License	246,000	252,000	258,000	264,000	264,000
3	Entrance Fee of Lorry and Truck	90,000	90,000	90,000	90,000	90,000
4	Docking Fee of Tug boat and Vessel	3,000	3,150	3,300	3,450	3,600
5	Docking Fee of Motor Boat	1,200	1,200	1,200	1,200	1,200
6	Demurrage Fee	3,750	3,750	3,750	3,750	3,750
7	Land Lease (Union, Shipping Comp, Buffet)	5,000	5,000	5,000	5,000	5,000
8	ID card (N.A)					
Subtotal		840,950	367,100	373,250	379,400	379,550
Expenditure						
Item \ Year		1st year	2nd year	3rd year	4th year	5th year
		2009	2010	2011	2012	2013
1	Employment Cost	19,200	19,200	19,200	19,200	19,200
2	Equipment Purchases	40,000		20,000		20,000
3	Consumables	9,600	9,600	9,600	9,600	9,600
4	Facility Maintenance	26,860	32,860	32,860	32,860	32,860
	1) Fuel for Generator	18,100	24,100	24,100	24,100	24,100
	2) Repairing Cost and Equipment Maintenance	3,000	3,000	3,000	3,000	3,000
	3) Communication Cost	5,760	5,760	5,760	5,760	5,760
5	Training Cost	100,000	100,000	100,000	100,000	100,000
6	River Port Maintenance	200,000	200,000	200,000	200,000	200,000
Subtotal		422,520	394,520	414,520	384,520	414,520
Total		327,430	-27,420	-41,270	-15,120	34,970
Balance carried forward			327,430	300,010	258,740	243,620
Accumulated total			300,010	258,740	243,620	208,650

9.5 SAFETY CONTROL

Although related personnel and river port users have acquired safety knowledge through Technical and Safety Operation Training in Juba, other measures should be taken in order to diffuse the knowledge. Urgent counter measures necessary for the safety control are shown below;

- Safety Control System : Structure and the safety manager
- Safety Control Program : Patrol and training, Installation of Safety Notice Board

9.6 SECURITY CONTROL

The military police and police of GoSS and CES are in charge of monitoring port users as a security control. They are planning to introduce ID card system in order to limit the entries other than relevant personnel.

CHAPTER 10

JUBA PORT FACILITY & MANAGEMENT IMPROVEMENT PLAN

10.1 TECHNICAL COOPRATION SCHEME

By end of February 2009, an Application Form for Japan's Technical Cooperation namely "the Project for Improvement of Operation and Maintenance of Inland Waterway in Southern Sudan" was forwarded from Ministry of Transport & Roads through Ministry of Regional Cooperation, Government of Southern Sudan for pursuing further capacity building and capacity development of not only GoSS officials and CES officials but also other states officials as well as inland waterway related personnel from various sectors, including private entities.

Brief contents of the application form are as follows and details are in the Annex 7;

- Overall Goal;
  - ✓ To contribute to reconstruction/ rehabilitation of the Southern Sudan through improvement of inland waterway transport mode

- Project Purpose;
  - ✓ To improve port management system
  - ✓ To improve awareness and safeties for use of port facilities, equipments, and gears
  - ✓ To improve efficiency of loading and off loading activities
  - ✓ To improve safeties and efficiency of inland waterway along River Nile

- Outputs;
  - ✓ Port management system is functioned properly and independently.
  - ✓ Port safety management capability is improved sufficiently.
  - ✓ Inland waterway capacity is improved sufficiently.

- Project Activities;
  - ✓ Port management skills are improved
  - ✓ Revenues from port related activities are properly collected
  - ✓ Expenditures for port related activities and maintenance works are properly allocated
  - ✓ Port safety skills are improved
  - ✓ Port security measures are secured
  - ✓ Port facilities along River Nile are developed

- ✓ Inland waterway navigation aids are improved

- ➢
- ➢ Input from the Recipient Government;
  - ✓ Administration Staff of 5 from the GoSS
  - ✓ Technical Staff of 3 and Operation Staff of 5 from the State Government
  - ✓ Office Spaces in RTD Main Office and Port Field Office
  - ✓ Coordination with Related Public Sectors, such as Security, Revenue, Standards
  - ✓ Coordination with Related Private Sectors, such as Inland Waterway Operators, Loader's & Driver's Unions

- ➢ Input from the Japanese Government;
  - ✓ Long Term Experts
    - *a. Chief Advisor / Port Management Planner*
    - *b. Deputy Chief Advisor / Port Safety & Security Planner*
    - *c. Project Coordinator*
  - ✓ Short Term Experts
    - *d. Operation & Maintenance Specialist*
    - *e. Port Facility & Inland Waterway Navigation Specialist*
    - *f. Training & Evaluation Specialist*
  - ✓ Training in Japan / Seminar
    - ✧ *Port Administration & Facility Improvement Planning*
  - ✓ Training in-country / Workshop
    - ✧ *Port & Inland Waterway Operations & Maintenance Management*
  - ✓ Gears, Equipments, and Facilities
    - ✧ *Loading / Off Loading Gears, Safety Gears, etc.*

- ➢ Implementation Schedule;
  - ✓ 24 months from April 2010 to March 2012

- ➢ Implementing Agency;
  - ✓ The technical and management personnel at the River Transport Department, Ministry of Transport & Roads, Government of Southern Sudan and Mechanical Transport Department, Ministry of Physical Infrastructure, Government of Central Equatoria State will be available to support the implementation of the project.

10.2 GRANT AID SCHEME

At the same time of the request for technical cooperation scheme mentioned above, an Application Form for Japan's Grant Aid for General Project was also forwarded from Ministry

of Transport & Roads through Ministry of Regional Cooperation, Government of Southern Sudan for pursuing further expansion of Juba River Port as a first priority for not only Government of Southern Sudan but also Government of National Unity of the Republic of Sudan since inland waterway is very affordable to most local users, and is a vital link between the South and the North.

Furthermore, with its geographical, strategic and logistical point of views in the middle of northern sector of Sub-Sahara region, Juba River Port would have potential to be some kind of the "Cross-Border Transport Infrastructure (CBTI)", to supply goods and basic human needs for people in not only Southern Sudan and Central Equatorial State, but also surrounding areas, such as Ethiopia, Kenya, Uganda, Congo, Central Africa, Chad, and Sudan as a whole and it would be able to play a part of the role for the common objective of the international communities to develop a "Human Security" through economic development" of the Region.

Brief contents of the application form are as follows and details are in the Annex 8;

- Objectives / Purpose of the Project;
  - ✓ To rehabilitate and extend river port capacity
  - ✓ To facilitate movement of pushers in docking at the river port
  - ✓ To reduce local way of loading and unloading equipments through improvement of port and roads
  - ✓ To stimulate the local economy by means of better river transport network

- Overall Goal / Medium & Long-Term Objectives;
  - ✓ To stimulate economic growth in areas such as Juba Rumbek, Borl and Yei
  - ✓ To enhance investment and development activities through improved access to the area
  - ✓ To increase the opportunity for extending better social services; public administration and security
  - ✓ To increase the capacity of the Ministry of Transport & Roads, GoSS as well as Ministry of Physical Infrastructure, CES
  - ✓ Maintenance of Country's Ports and Roads Network
  - ✓ To provide means for transport for goods and passengers – Mangala, Bor, Malakal, and Renk ports.
  - ✓ To enhance trade, tourism and development activities with Northern Sudan.

- Outline of the Project and Request;
  - ✓ Concept

a. Provision of Docking Facilities (Extending Jetty with Landing Slope, Bank Protection, Mooring Post, etc.)
b. Provision of Cargo Handling Yard (Interlocking Block Pavement, and Drainage, etc.)
c. Provision of Storage Facilities (Warehouse, Storage Racks, etc.)
d. Provision of Administration Facilities & Equipment (Offices, Vehicles, Boats, Radios, etc.)
e. Provision of Security Facilities (Security Fence & Gate, Guard Post, ID System, etc.)
f. Provision of Life Lines (Generator, Deep Well, Water Tank & Hydrant, Toilet & Shower, Septic Tank, Soak Pit, etc.)
g. Provision of Cargo Handling Equipment & Gears (Folk Lift, Rough Terrain / Gibb Crane, Pallet, etc.)

- Component

('000 JPY)

Phase	Contents	Amount
Phase 1 (19,200 sq. m)	Civil Works	1,812,000
	Facilities	150,000
	Equipment	150,000
	Consultant Fee	259,000
	Total	2,371,000
Phase 2 (16,800 sq. m)	Civil Works	1,584,000
	Facilities	150,000
	Equipments	150,000
	Consultant Fee	240,000
	Total	2,124,000
Total (36,000 sq. m)	Civil Works	3,396,000
	Facilities	300,000
	Equipment	300,000
	Consultant Fee	499,000
	Total	4,495,000

10.3 INPUTS BY THE GOVERNMENT OF SOUTHERN SUDAN AND CENTRAL EQUAORIA STATE

In line with Jetty Repair Works, Cargo Handling Gear Procurement Works, and Capacity Building & Development activities, Government of Southern Sudan and Central Equatorial State had carried out following measures at Juba Port Area as shown below;

1. Leveling of Cargo Handling Yard (Northern Half of the Port Area)
2. Relocation of Vendors from Northern Part to Southern Part of the Port Area
3. Relocation of Related Authorities' Facilities (Tent and Shed) from the Bank to behind the Port Administration Office
4. Allocation of Office Yard to Inland Waterway Operators along Access Road (so far, only KEER installed their office cabins)

Figure 10.3-1 Leveling of Cargo Handling Yard

Figure 10.3-2 Relocation of Vendors

Figure 10.3-3 Relocation of Related Authorities' Facilities

Figure 10.3-4 Allocation of Office Yard to Inland Waterway Operators

CHAPTER 11

CONCLUSION AND RECOMMENDATIONS

11.1 CONCLUSION

After the discussion and exchange of Scope of Work in August 2008, within the relatively short period, the various not only problematical but also interesting facts are realized through the execution of the trial loading and off-loading works which involves the loaders union that was thought as the most obstacle of the utilization of the jetty & gantry crane and the opening of the stakeholder meeting which gathered all concerned parties.

Simultaneously, it does not mean that each concerned party prefers only respective standpoint, what proposes compromised plan and contribution plan vis-à-vis the other concerned party is worthy of to special mention.

After that, the incidents which are not expected occurred during next couple of months, such as repair & reinforcement works of the jetty & gantry crane became necessary due to the barge collision accident, and marine transportation of the equipment & material which is necessary for these repair & reinforcements works and the gears which contributes to the improvement of cargo handling efficiency delayed with the influence of worldwide economic stagnation.

However, sewing these intervals, following various inputs were done, such as the training for the management and maintenance at the Kosti Port with the cooperation of SRTC, provision of harbour office which becomes the base of the Follow-up Cooperation and management & maintenance administration via JICA/JICS support, the field training with the gears for the cargo handling, observation tour to various ports in Japan.

Through such activities, cooperative system among the concerned parties was brewed, and finally they have reached to input themselves by securing own budget and arranging various issues that previously mentioned as self-help manner inside the harbour area.

Although clear demarcation plan was agreed between both parties in regard to the role demarcation between Government of Southern Sudan and Government of Central Equatoria State, difference of ability on the site was carried over due to the positive inputs by GoSS side against the limited inputs by the CES side.

In general, initial purposes of this Follow-up Cooperation programme aiming the improvement of management, operation & maintenance system of the port facilities and the improvement of cargo handling efficiency provided under previous emergency development study, are almost achieved.

11.2 RECOMMENDATIONS

- ✓ While it is thought that humanitarian aids and early recovery aids continue in the other states in the Southern Sudan, quick transfer to and continuation of the reconstruction aids will be required based on the medium and long-term point of view at Juba City and Central Equatoria State which is Capital City and State of the Southern Sudan that received such humanitarian aids and early restoration aids during recent past years.

- ✓ A cross-border-point-like function of the Juba River Port which can be also the window to the Northern Sudan through the White Nile River as one of the terminal points of the Northern Corridor connecting between surrounding landlocked courtiers and Port of Mombasa in Kenya facing Indian Ocean shall be strengthened as focal point of sustainable and stable revival and development of the whole part of the Southern Sudan, in line with reinforcement measures of node and hub functions on the transport networks (including air, overland, and inland waterway) inside the Southern Sudan centering Capital City of Juba, and capacity building and development measures for human resources.

- ✓ Although both GoSS and CES appointed experienced staff to Juba River Port Administration, the assigned staff from DRT/MoTR/GoSS are either university or technical college graduate level, however, assigned staff from CMT/MoPI/CES has remained in secondary school graduate level. In order strengthening the Juba River Port Administration and promoting smooth transfer of power from GoSS to CES, positive inputs from state government side is recommended.