

**THE PROJECT FOR CONSTRUCTION OF
NILE RIVER BRIDGE
IN THE REPUBLIC OF SOUTH SUDAN**

**ENVIRONMENTAL IMPACT
ASSESSMENT**

Final Report

October 2011

**Ministry of Roads and Bridges
Republic of South Sudan**

EXECUTIVE SUMMARY

This is a report of Environmental Impact Assessment performed for the project for construction of Nile Rover Bridge and accesses, which are located at south of Juba. The purpose of the report is to obtain the environmental permission from Ministry of Environment (MOE) for the implementation of the project by ensuring to mitigate environmental impacts predicted.

Study approaches consist of site reconnaissance, existing data collection, discussion with related persons, numerical analysis, sampling and laboratory testing.

The project is consisting of a bridge of 560m long over Nile River and accesses of 3,700m long as a part of future circumferential road for Juba, in addition acting as (1) network road connecting with other state capitals, (2) diversion road to mitigate the traffic congestion in Juba downtown and (3) to promote development and improve the southern area of Juba for the returning refugees and soldiers after cease fire/independence. Thus, the project is quite important for the development of Juba, Central Equatoria State and Republic of South Sudan.



Figure Location of the project

By the project, some negative impacts were predicted and, for that, mitigation measures are planed as:

- (1) Resettlement Action Plan (RAP) in separate volume,
- (2) Environmental Management Plan (EMP) and
- (3) Health Management Plan (HMP)

In these management plans, focuses are as follows:

1. On the west bank, access to the bridge passes through residential area owned by either private or

community, while on the east bank it passes through mostly open area belonging to community only. The residents are mixture of origin tribe people and other ethnic people.

2. By the land acquisition for the project, 80 households are to be displaced. They have to be properly compensated and assisted, regardless of conditions of land tiles, tribes etc, so that the life levels and livelihood will be better off compared to the project before. Vulnerable group shall be assisted as well. It should be ensured that other ethnic people than the origin tribe shall be treated fairly, openly and justifiably without prejudice or discrimination. Details are discussed in RAP, different volume.
3. Basically the local economy is promoted by the project. However the people, who may lose their jobs permanently/temporary by the land acquisition will be prioritized to be employed at the construction site, together with provision of vocational training so that everyone can enjoy the project benefit, in addition to replacement cost compensation.
4. None of social institution, infrastructure or service is affected except tented police station.
5. The natural resources had been already over exploited during civil war and forest has been lost then and there is no protected species of fauna and flora at the site.
6. Air pollutions (NO₂, SPM, CO and SO₂), noise and vibration caused by the traffic will be improved in Juba downtown due to the reduction of traffic volume the project while they are within the environmental limits both during construction and after operation at the project site except 2025. In 2025 the air pollutions will become very worse in spite of Nile Bridge construction due to over inflow of traffic in Juba downtown. Before this year, other circumferences roads shall be provided to reduce the traffic volume into Juba Down town.
7. An effort is taken to minimize the degree of air pollutions, noise and vibration by properly managing the construction work and equipments. Monitoring of them is implemented before, during and after construction to ensure that the emissions are endurable.
8. Impact to the hydraulic conditions or bank and riverbed erosion is environmentally tolerable during and after construction.
9. Water contamination caused by the construction of piers in the river is estimated and found to be negligible. No substances/waste shall be dumped into the river. Muddy water generated during earth filling work shall be properly treated pond before discharged into river. Water quality (Dissolved oxygen, pH, turbidity etc) shall be monitored in dry and wet seasons before and after construction respectively and every month during construction.
10. No residents care about the landscape of future bridge or embankment. However, side slopes of embankment are to be re-vegetated with grass to reproduce a natural landscape as much possible, together with slope protection.
11. The ratio of people living with HIV/AIDS at the site is considered to be high. By the in flow of many construction workers during construction and returning of refugees and soldiers to the site,

situation can be worsen. Campaign for prevention of STI /HIV/AID and provision of safety goods including workers and adjacent communities are implemented.

12. All the wastes from camp, kitchen, toilet and construction site are properly collected and dumped as per regulation.
13. During construction, it is monitored to ensure there is no child labor or salary discrimination by gender.

Abbreviation

AH	Affected Households
CPA	Comprehensive Peace Agreement
CBD	Central Business District
CES	Central Equatorial State
CO	Carbon Monoxide
DO	Dissolved Oxygen
Ec	Electric Conductivity
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FDI	Foreign Direct Investment
GOS	Government of Sudan
GRSS	Government of Republic of South Sudan
HH	Household
IDPs	Internally displaced Persons
ICS	Interim Constitution of Sudan
ICSS	Interim Constitution of Southern Sudan
LTPR	Land Tenure and Property Right Research
JICA	Japan International Cooperation Agency (JICA)
MOE	Ministry of Environment
MRB	Ministry of Transport and Roads
NGOs	Nongovernmental Organizations
NISPDS	Nile Institute of Strategic Policy and Development Studies
NO ₂	Nitrogen Dioxides
NPA	Norwegians People's Aid
NRC	Norwegian Refugees Council
NTU	Nephelometric Turbidity Unit
ODA	Official Development Assistant
OP	Operation Policy
PAPs	Project affected Persons
PPE	Personal Protective Equipment
RAP	Resettlement action Plan
ROW	Right of Way
SAAR	Secretariat for Agriculture and Animal Resources
SO ₂	Sulphur Dioxides
SPLA	Sudan Peoples' Liberation Army
SPLM	Sudan Peoples' Liberation Movement
SPLM/A	Sudan Peoples' Liberation Movement/Army
SPM	Suspended Particulate Matter
SPRP	Sudan Property Right Program
SS	South Sudan Land Commission
SSLC	Suspended Solid
SDG	Sudanese Pound
VAC	Value Assessment Committee
WB	World Bank
WHO	World Health Organization

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1. Introduction

This is an Environmental Impact Assessment (EIA) Report submitted by Ministry of Roads and Bridges (MRB) to obtain the environmental license for the Project for Construction of Nile River Bridge in Republic of South Sudan.

Study approaches are consisting of

1. Site reconnaissance by specialist
2. Interview to responsible agencies
3. Discussion with stakeholders at the meeting
4. Opinion collection from governmental officials/specialist, community, UN etc concerned
5. Existing documented data collection and study
6. Socioeconomic interview and census
7. Numerical analysis for air pollution, noise and vibration
8. Sampling and laboratory chemical analysis

Above activities were done from December 2010 to July 2011 by MRB, with a support by the JICA study team and Norken International Limited, Kenya.

In the report, following sections are provided:

- Section 2 describes the project outline expected benefits
- Section 3 outlines the results of alternative study performed
- Section 4 present about legal and institutional issues at the implementation of environmental activities
- Section 5 discusses the environmental baseline data especially around the site
- Section 6 predicts the environmental impacts caused by the project
- Section 7 proposes the environmental management plan to mitigate the environmental impacts predicted
- Section 8 shows the health and safety management plan
- Section 9 suggests traffic management plan
- Section 10 indicates public participation performed
- Section 11 provides conclusion and recommendation

2. Project Description and Benefit

(1) Project description

The proposed location of the new Nile river bridge is at the upstream of the existing Bailey bridge, forming a link for circumferential road C3 as shown in Figure 2-1.

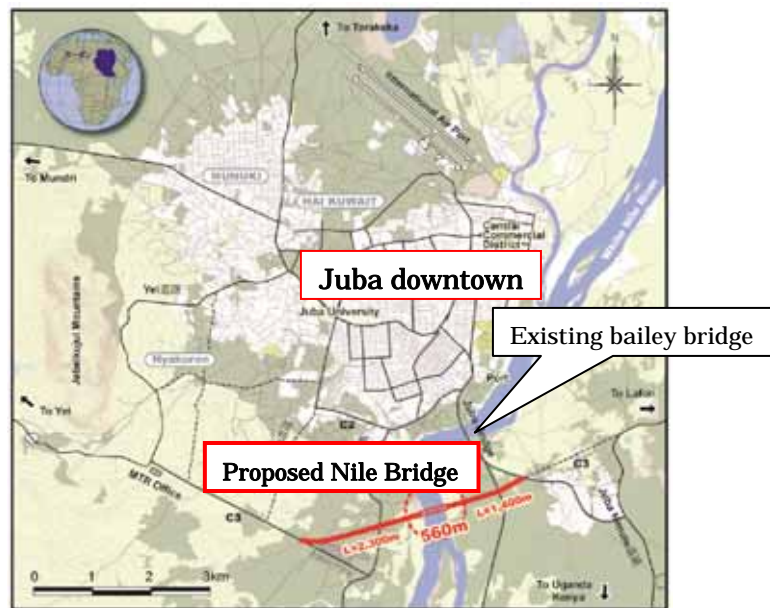


Figure 2-1 Location of proposed Nile Bridge

By the construction of this bridge and accesses, following merits can be expected:

- To improve the connection with other cities and countries
- To mitigate the traffic congestion in Juba downtown by diverting traffic
- To develop south of Juba area for refugees and soldiers who are returning to Juba
- To promote the employment and business chance for returned people and build up a stabilized, secured and healthy society as a result
- Preparation for the collapse of existing over capacity bridge any day

Figure 2-2 indicates the configurations of proposed bridge and accesses.



Figure 2-2 Location of the proposed bridge and accesses

The project components are:

- A bridge with total length of 560m over Nile River with a width of 12.9m consisting of:
 - 4 spanned steel tied arched main bridge (4@87.5m=350m) supported by steel piped piled foundation
 - (West side) 5 spanned steel I-beamed side bridge (5@30m=150m) supported by bored piles and direct foundation
 - (East side) 2 spanned steel I-beamed side bride (2@30m=60m) supported by bored pile and direct foundation
 - Slope protection work surrounding embankment for piers on the both banks
- Access of 2,300m on the west bank and 1,400m on the east bank with a maximum width of 30m consisting of:
 - Traffic lanes (2@3.6m=7.2m) paved with concrete for 50m lengths of approaches on both bank with grave for rest portion other than approaches
 - Shoulder/walkway (2@3m=6m)
 - Side drains
- Base camps, 200m x 200m on the west bank and 100m x 200m on the east bank consisting of
 - Workers camps with a clinic, drinking water weli(s), a kitchen and a canteen, bedroom, sanitary facilities such as toilet, drain and sewage storage pond/tank, solid waste stockpiles for garbage collection, guard house and fence
 - Construction yards
 - Stock pile yard
 - A concrete batching plant

Outlines of bridge and access are shown in Figures 2-3 and 2-4 respectively.

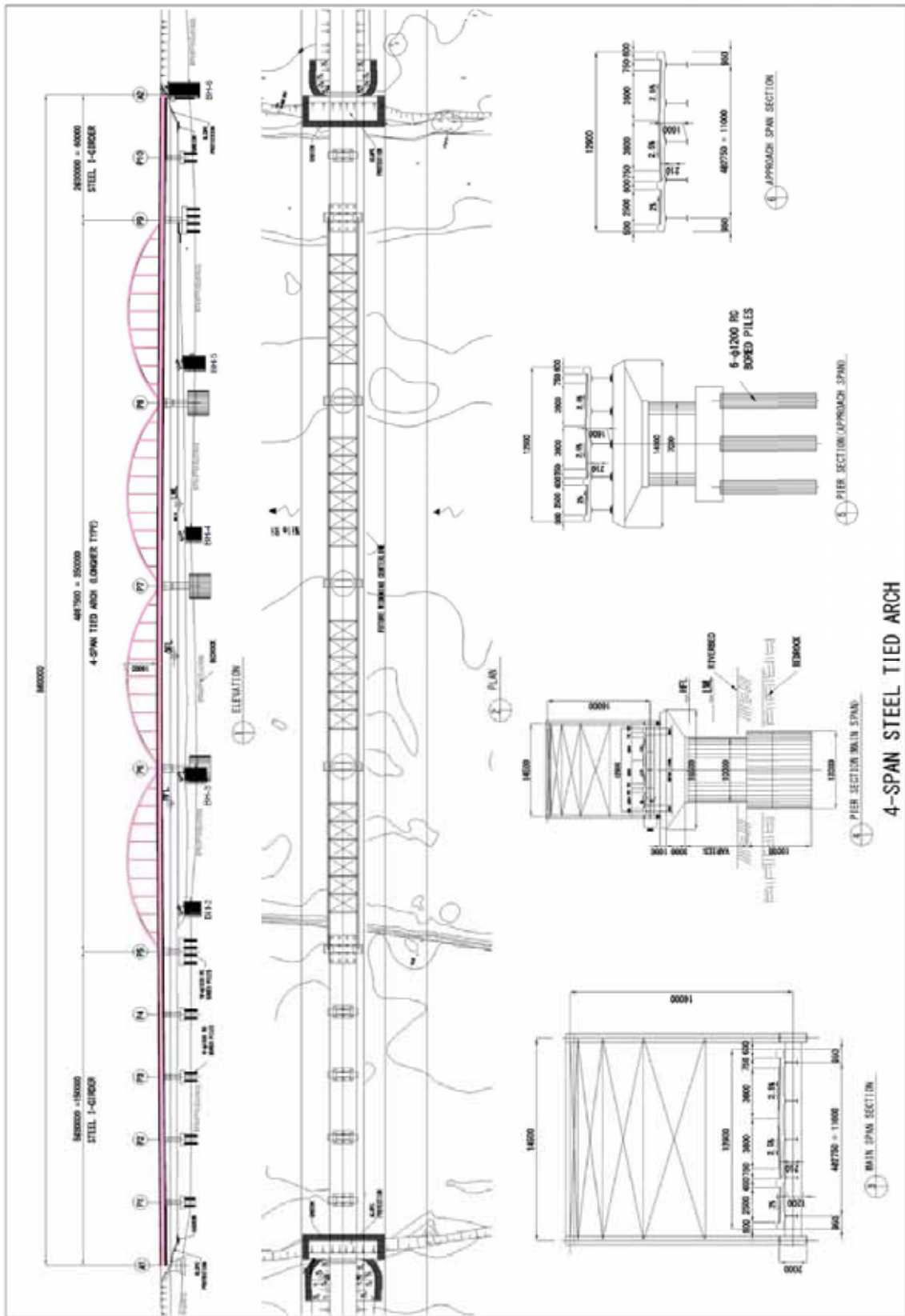


Figure 2-3 Outlines of Bridge

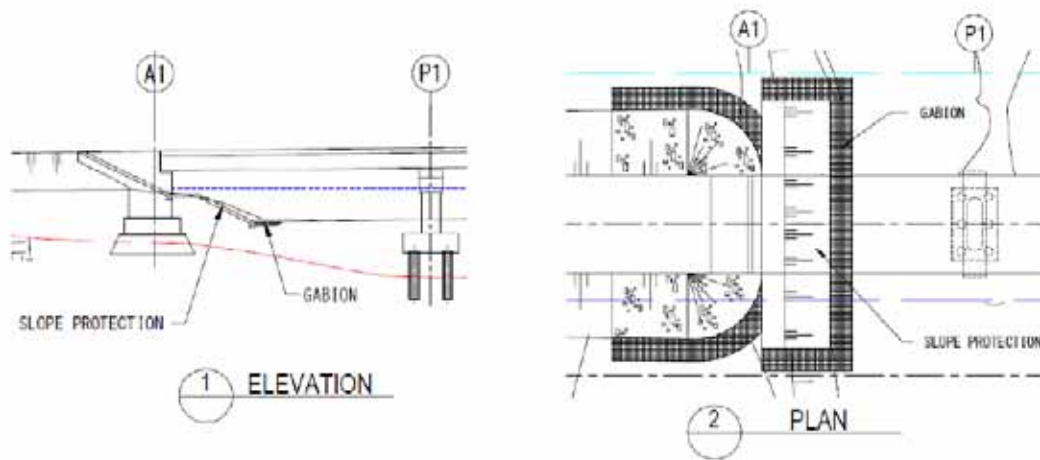


Figure 2-4 Slope Protection Work around Abutment

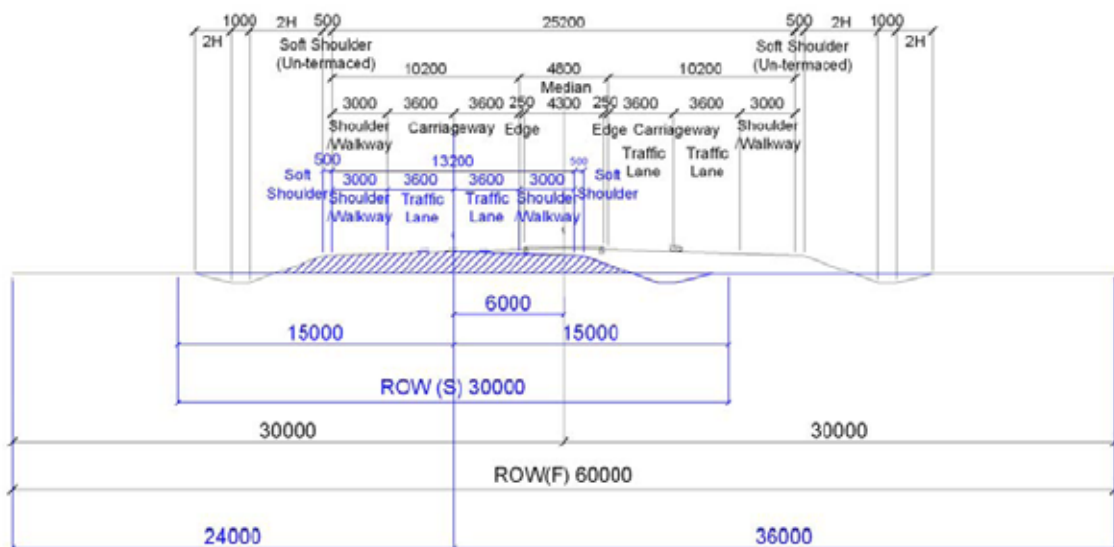


Figure 2-5 Outline of the proposed access

The bridge and access are designed based on technical, financial, environmental and social issues such as:

- Lineament required as one of C-3 road
- Minimum number of displaced households
- No school, church, clinic are affected
- Construction cost, duration, material availability, durability
- Hydrology
- Landscape

Table 2-1 indicates the material and equipment to be used.

Table 2-1 Materials and equipment to be used for the Project

Material/MM	Amount to be consumed/generated
Earth, m3	70,000-100,000
Aggregate, m3	8,000
Cement, ton	3,000
Re-bar, ton	2,000
Water(for concrete), ton	10,000
Manpower, M/M	500-600 for 39 months
Construction period, Month	39
Construction equipment to be used	Dump trucks x 8 nos for 8 months Bulldozer x 2 nos x 10 months Road roller x 1 no x 7 months Crane x 4 nos x 10 months Back hoe x 4 nos x 10 months Mobile concrete plant x 2 x 24 months Concrete pump car x 1 no x 12 months Pile driving machine x 1 no x 12 months
Diesel, m3	150-200 for 3 years
Construction waste to be generated, m3	15,000-20,000

(2) Project benefits

Following project benefits are predicted::

- Improvement of inter-cities communication
- Relief of traffic congestion in Juba downtown
- Promotion of development of south area of Juba County including:
 - Networks of tap water, sewer, electricity and regional roads
 - Housing/facilities for residence, education, medical services , religion
- Promotion of local economy by:
 - Increase of employment for the present construction work in short term and above development work in the long term
 - Increased business chance
- Upgrading of hygiene condition by provision of
 - Safe water
 - Sanitary toilet/liquid waste treatment and prevention of water borne transmittal disease
 - Solid garbage collection
- Integration of different communities
 - Reduction of dispute cases by providing enough sources such as drinking water, energy and other necessary social services so that people don't have to fight over. No necessity of land encroaching by provision of land.
 - Reasonable life level, livelihood and social status can be maintained able to respect each others

3. Policy, Legal, and Administrative Framework

This chapter discusses the policy, legal, and administrative framework within which the environmental activities are carried out. Also explains the environmental requirements of the donor (JICA) and international standardized safe guard policy.

3.1 Regulatory framework for environmental management

(1) The constitution of The Southern Sudan

The interim constitution of the Government of Southern Sudan (GoSS) spells out in Section 2 that every people shall have the right to have the environment protected for the benefit of present and future generations, through reasonable legislative action and other measures that prevent pollution and ecological degradation; (b) promote conservation; (c) secure ecologically sustainable development and use of natural resources while promoting national economic and social development so as to protect bio-diversity.

(2) Environmental Impact Assessment (EIA) Regulation

There are three draft regulations as:

- Environmental Protection Bill 2010

Specifies (a) the members of administrations in the levels of GoSS, states, county, payam and boma, (b) process of environmental impact assessment, (c) consideration of the statement, (d) obligation of the proponent, environmental audit, (e) establishment of environmental standards of air quality, water quality, discharge, odor, noise and vibration, soil quality etc, (f) management of environment for water courses, community, mountainous areas, waste management, control of pollution, environmental restoration order and so on. The problem is that this bill is not authorized. So there is no legal procedure is authorized for environmental activities this moment. After the approval, based on this bill, the administrative committee shall be set up and environmental standards shall be proposed immediately.

- Southern Sudan National Environmental Policy (Draft) 2010

This aims to properly protect and to sustainably use of natural environment and resources for present and future generations in Southern Sudan. The sectors of protection are: fisheries, forestry, wild life and tourism, agriculture, oil industry, trade, energy, mining, transport and road, housing, health, potable water, public hygiene etc. As common issues over these sectors, followings are

in concern and policies shall be established: natural hazard and desertification, dispute and environment, population gross and environment, genders and environment, wetland/river/lake. As a instrument to implement above mentioned issues, following environmental policies are proposed to be established: environmental registration, economic incentive, EIA, to cope as an organization, environmental education, environmental standards, regional/international cooperation, public investment and monitoring/evaluation. As an EIA process, following are proposed:

- Implementation of EIA for all the project as a law
- Capacity development through environmental monitoring activities
- Revision of environmental guidelines for all sectors
- Participation of all the stakeholder to the project from very initial stage of the project cycle.

- Environmental guidelines for the directorate of Roads and Bridges 2007

This is an environmental guideline for roads and bridge construction by MRT and is also yet not approved. This detail plainly what activities shall be done for protection of the environment in respective stages of tender, design, construction, operation and maintenance for construction of roads or bridges, sampling materials camp preparation etc. Also proposes checklists for detecting for environmental impacts. This is a convenient manual easy to understand even if for the beginner persons who are not familiar to environment to follow. This guideline shall be formally authorized as soon as possible.

- Environmental permissions to be obtained for construction work

- Soil/rock borrowing

Basically when you are going to borrow soil/rock from a certain location, an application form shall be fulfilled and submitted to the ministry of industry and mining under CES, which includes location of the pit, amount to be excavated etc. Approval takes about one week. In addition, consultation with owner community is also required. However in case you are going to purchase soil/rock from private enterprise/ communities, you don't have to obtain the permission of excavation since the enterprises themselves have already obtained. Locations of these borrow pits and dumping site are presented in Figure 3-1.

➤ Use of dumping site

Open dumping site for waste/soil is located along Yei Road which has been already authorized by MOE and anyone can use. The terrain is flat land and streams are not around as may be polluted. Surrounding area is very low densely populated wild grass area. Dumping location itself is 2-3 hundreds meters away from the road. Waste are downloaded from trucks at any place there. Open burning is being implmented to reduce the volume. and smoky.in that time.. Amount of waste deposited so far was very less and the capacity is enough for the project.

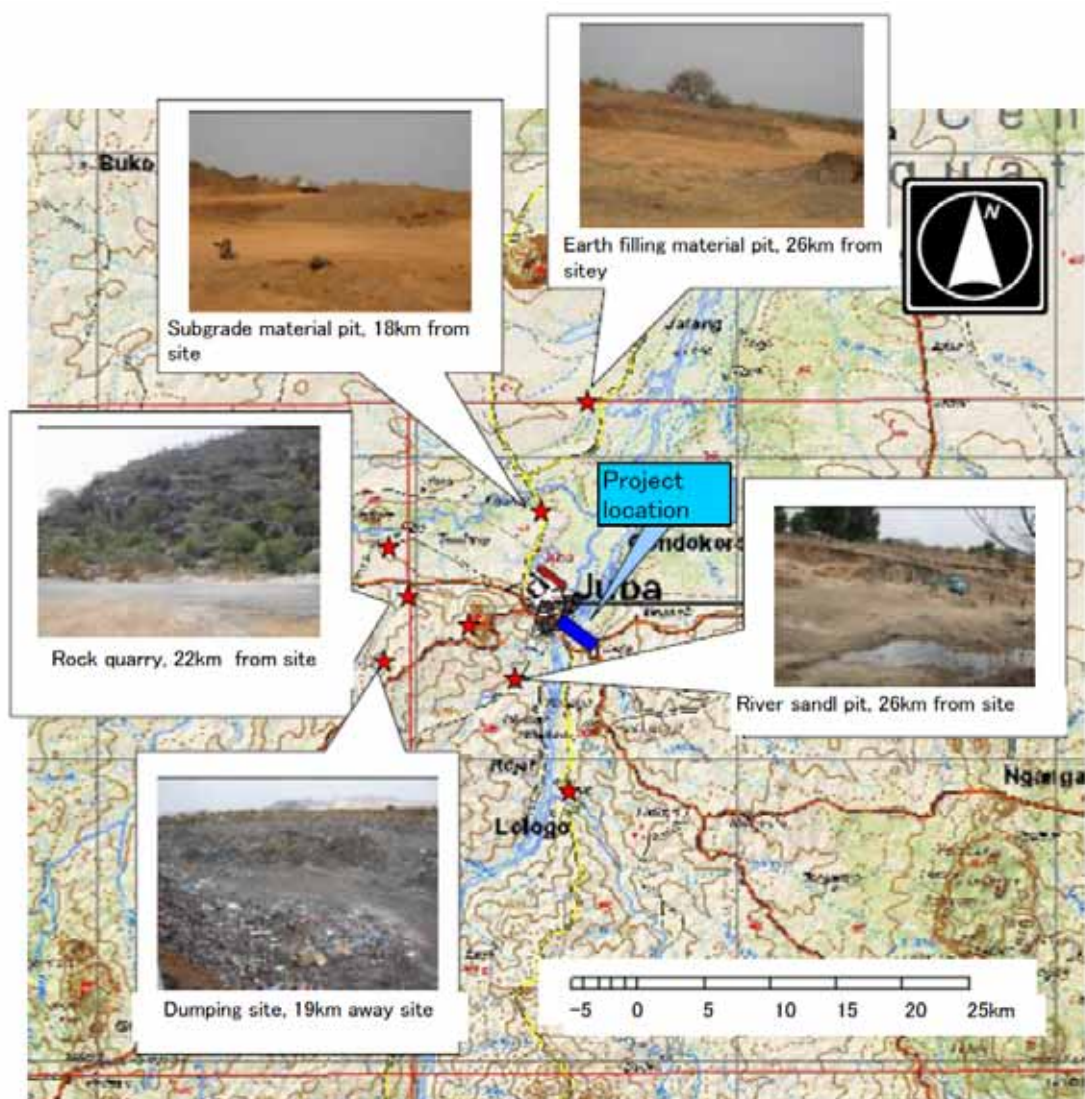


Figure 3-1 Locations of official borrow pits and dumping sites

➤ Use of river water

Basically, when you are going to exploit the river water of Nile, you have to fulfill the application form and submit to the ministry of water resource management and irrigation under CES, describing sampling location, amount and durations etc. It can take 2 weeks to be authorized. For the Project, MBR will submit the request of exemption of such application and the Nile River water can be exploited during construction.

(3) The forest act 1999 and forest policy framework 2007

These regulations are the bases of prevention of forest destruction and illegal logging. Also specified is the base how to estimate the compensation of trees, although the procedure is already outdated today.

(4) Land act 2009

This proposed followings:

- Returned refugees are properly protected by the Resettlement Action Plan
- By the eviction of illegal settlers, alternative land may be provided case by case
- Compensation to the lost assets by the land acquisition made by replacement cost
- Dispute about land is arbitrated through community grievance mechanism before court quickly, cheaply and with satisfactorily for both of disputers.
- Community land is respected and the occupant of community land is considered as formal land title holder so far the community authorizes

Thus, the land act established includes quite advanced policy. However the problem is the difficulty of commitment to follow this act due to the limitations of budget, shortage of manpower and, among all, some misunderstanding between tribes.

There are others law about environment, such as Wildlife conservation and national parks act 2003, Forest commission act 2003. However the site is not located in conservation area or forest, comments about them are omitted.

(5) World Bank guidelines OP.4.01 “Environmental Assessment”

Environmental Assessment requires following study:

- Policy , legal and administrative framework

- Project description
- Alternative study
- Baseline data
- Environmental impacts
- Environmental management plan
- Public consultation at least two times for TOR determination and draft final report approval
- Conclusion and recommendation

(6) JICA guidelines for environmental social considerations

Following is required for the recipient (of technical cooperation) government;

- 1) The recipient governments are required to incorporate the outcome of environmental and social considerations studies into their planning and decision making processes.
- 2) At the selection of proposed project or ensuring environmental and social considerations, JICA examines followings:
 - Evaluation of mitigation measures proposed
 - Study scopes (e.g. human resettlement, air pollution etc)
 - Compliance with laws and standards of recipient government
 - Acceptance of the project and mitigation measures by the society
 - Proper handling of involuntary resettlement and ethnic minority
 - Monitoring of implementation
- 3) EIA report shall be disclosed in the recipient country, able to read or take copy for local stakeholders any time.

(7) Policy gaps

There is not environmental laws finalized so far and MOE is ready to proceed in accordance with international good practice such as World Bank's safeguard policy or JICA guidelines for EIA.

3.2 Institutional arrangement

For fulfilling of requirement proposed, following Institutions are related:

- Ministry of Transport and Roads (MRB), Republic of South Sudan
- Ministry of Environment (MOE), Republic of South Sudan
- Ministry of Physical Infrastructure (MOPI), Central Equatoria State

- Value Assessment Committee
- Juba County Office
- Rajef Payam Office
- Lologo and Gumbo Communities
- UN Habitat

(1) Ministry of Transport and Roads (MRB)

MRB is the project proponent and supposed to:

- implement Environmental Impact Assessment (EIA), prepares EIA draft final report, organizes stakeholders meeting for draft final report, submits the final report to MOE for approval,
- supervise construction work,
- take mitigation measures and carry out monitoring as specified in EIA report,
- prepares the budget for mitigation measures and compensation
- provides affected households as proposed in Resettlement Action Plan (RAP)

The issue is that too small manpower allocated for the environmental matters so far. Increment of manpower plus mobility will be necessary. Also proposed is to be equipped at least with simple and low-priced hand-held typed monitoring tools for noise, water quality (Dissolved oxygen, pH, temperature, turbidity and conductivity), exhausted gas quality (NOX, VOC) detector.

(2) Ministry of Environment (MOE), Republic of South Sudan

MOE implements audit of EIA submitted from MRB, although the environmental regulation is not yet authorized. The number of staff related to monitoring is 3 inspectors for pollution control under the division of the environmental management. In addition, 9 inspectors for waste management, EIA and environmental audit are allocated. They are not well experienced and capacity building through actual monitoring is required

(3) Ministry of Physical Infrastructure (MOPI), Central Equatoria State

MOPI implements:

- Demarcation of lands owned by Lologo and Gumbo Communities for the purpose to secure the land access and bridge
- Census and asset survey and determine the compensation prices for affected households as a Value Assessment Committee (VAV)

- Provision of plot very cheaply to landless household in the governmental group relocation site in Durubi.

MOPI is a large organization consisting of directorates of 1) Land and town planning, 2) Housing and construction, 3) Road construction, 4) Local resources, 5) Survey and 6) Communication with a total employee of more than 700. The issue is that the ethnic color of this organization looks a little strong and fair and deliberated consideration of other ethnic is necessary. The issue of expropriation of land of illegal settlers is criticized by the paper. When handling title-less people, not only in accordance with the law, but also additional considerations incorporating with JICA guidelines are required.

(4) Inter Ministerial Committee

For resettlement activities, IMC will be established, under which Value Assessment, Compensation and Resettlement Committee (VARCRC), Grievance Committee (GC) and Internal Monitoring Committee (IMC) are to be established as subcommittees..

(5) Juba County Office

Coordinate MRB, communities including paramount chief to acquire the community land for households with formal land titles.

(6) Rajef Payam Office

Implement census and asset survey for affected households together with MRB, MOE, MOPI and communities. After relocation, their lands are registered here. Ethnic color is very strong as well.

(7) Lologo and Gumbo Communities

These communities act for the protection of their community member, providing alternative lands for residential or agricultural activity purposes at the open spaces. The problem is they would not allow other tribes member to occupy their land.

(8) UN Habitat

UN Habitat provides (1) technical training (2) materials (3) tools and equipment for building of house for non-titled people in our project. UN Habitat Juba office is located close to MOPI. Three permanent staffs are working. They are now

implementing “Slum Upgrading Project” in Juba downtown, moving 500 households of informal settlers to the governmental group relocation site of Durubi, 8km west of Juba for the improvement of their life quality, social status (as a formal land owner) and livelihood.

3.3 Capacity buildings

With assistances from the consultant, capacity buildings for MRB and MOE are implemented for planning and implementation of the Environmental, Health and Safety plan (EHS plan) through co-implementation/on-job-training and seminar.

- Seminars are held for monitoring technique, evaluation of the results and planning of necessary mitigation measures based on the evaluation.
- On-job-training includes co-evaluation of EHS submitted by the contractors and co-supervision of environmental management activities by them.

Contents of EHS are presented in Chapter 8. Details of implementation schedule for capacity buildings are discussed in the stage of detailed design in 2012.

4. Alternative Study

(1) Background of the proposal of Nile River Crossing Bridge Project and its concept

The project of Nile River crossing bridge has been initially proposed by JUBA URBAN TRANSPORT INFRASTRUCTURE AND CAPACITY DEVELOPMENT STUDY IN THE SOUTHERN SUDAN (JICA, July 2007). This study analyzed the present setting and future conditions and demand of urban transport infrastructure in Juba urban area. It comprehensively covered the issues of transport including road development and policy, urban street improvement, public transport, traffic management, urban street maintenance system, capacity development throughout the pilot project, road institution and urban environment. The report established a Road Network Master Plan for Juba and surrounding areas until the year 2025 and the Capacity Development Plan for the Ministry of Physical Infrastructure. The outcome of the Study concluded that the established plans are technically, economically, environmentally and socially feasible and will contribute to the development of Juba urban area. In view of urgency of the development of transport infrastructure in Juba urban area and the needs for socio-economic development of Southern Sudan, the study has proposed the Nile River Crossing Bridge.

(2) Assumption of Social and Economical Framework

Number of population in Juba County is considered as being sharply increased due to returning of refugees and soldiers after CPD (2005) and independence (2011) as Table 4-1.

Table 4-1 Increment of population*

		2008	2015	2025
GRDP per Capita (US\$)		530	1,030	2,670
Population		260,000	520,000	950,000
GRDP (US\$ million)		140	540	2,540
Annual Growth Rate	GRDP per Capita	-	10 %	10 %
	GRDP	-	21 %	17 %

*After Juba urban Transport Infrastructure and capacity development study in The Southern Sudan, Final report, Executive summary 2010

(3) Policy and Strategy of South Sudan Development

In term of the policy and strategy for new development of South Sudan, "SOUTH SUDAN

DDEVELOPMENT PLAN 2011 – 2013 (hereafter SSDP)” has been established and approved officially. The SSDP decelerates 4 pillars derived from 10 sectors, GOVERNANCE, ECONOMIC DEVELOPMENT, SOCIAL and HUMAN DEVELOPMENT, CONFLICT PREVENTION and SECURITY. The relationship between pillars and sectors is shown in the Table 4-2.

Table 4-2 SSDP Sector Approach

Pillars	Sector Working Group
Governance	Accountability, Public Administration
Economic Development	Infrastructure, Economic Functions, Natural Resources
Social and Human Development	Education, Health, Social Protection
Conflict Prevention and Security	Rule of Law, Security

In articulation its interrelation with entire Economic Development Pillar, the infrastructure sector has come up with the following objective which stipulates its contribution to economic growth and sustainable development.

To maintain, rehabilitate, provide and operate infrastructure to enhance poverty reduction, economic growth, and service delivery in a sustainable manner.

This objective embraces the key priorities for the Roads and Road Transport Sector and is entirely consistent with the achievement of the overall objectives and its associated targets. The target of Road and Road Transport Sectors is as follows.

Table 4-3 Targets of Road and Road Transport Sector by SSDP

Program Area	Road Infrastructure and Road Transport Service
Outcomes or Objective	Improved interstate, trunk and feeder roads, routinely maintained on sustainable basis and roads safety to enhance economic growth
Indicator and Base Line	Length of asphalted trunk road network, interstate and feeder roads under construction baseline: 363 km
Targets	1000 km
Responsible Agency	Ministry of Transport and Road, States

(4) Future Road Network Improvement Plan in Juba Metropolitan Area

The future road network Improvement plan was formulated by the JUBA URBAN TRANSPORT INFRASTRUCTURE AND CAPACITY DEVELOPMENT STUDY IN THE

SOUTHERN SUDAN (JICA, July 2007). The principals for Road Network Improvement Plan are set up as follows.

- To establish a hierarchical and functional road network
- To form a radial and circumferential road system
- To guide and coordinate the future land use plan to avoid sprawling suburban development
- To utilize existing roads as much as possible

The proposed road network in Juba urban area is shown in Figure 4-1, the road network is composed of arterial streets, collector streets, and local streets. It is proposed to form an arterial road network of radial and circumferential type. Radial Roads are major arterials from the center of Juba urban area to outer areas in radial direction connecting to major interstate/international roads, while Circumferential Roads are major distributors connecting Radial Roads. Radial Roads consist of six roads: R-1 to R-6, and Circumferential Roads consist of 4 roads: C-1 to C-4. Proposed Nile River Bridge is a part of C3 Section, crossing Nile River and connecting to the southern cities from Juba city, and connecting Nimule Road.



Figure 4-1 Metropolitan network plan

In the view of necessity of development of either Juba south or Juba east for returnees, feasibilities of alternatives for construction of trunk lines C2, C3 (Proposed Nile River Bridge) and R5, and reinforcement of existing bridge were compared and C3 (Proposed

Nile River Bridge) was concluded as most feasible as Table 4-4.

Table 4-4 Results of Feasibility Study¹

Alternatives	C2	C3*	R5	Existing bridge
Activity	New road construction			Reinforcement
Connection with other capitals	Applicable	Applicable	Applicable	Applicable
Development of south or east of Juba	Applicable	Applicable	Applicable	Not applicable
Reduce the traffic jam in Juba	Applicable	Applicable	Not applicable	Not applicable
Proposed road length km	8.0	12.6	-	-
Project cost unit: million US\$	73	199	-	-
Benefit cost ratio	1.3	1.4	-	-
Economic Internal Ratio of Return (EIRR) %	11.3	11.4	-	-
Conclusion	Second feasible	Most feasible	Less feasible	Less feasible

*C3: Proposed Nile River Bridge

After Alternative C3 is selected as the high priority project, detailed locations were studied for most suitable river crossing location as shown in Table 4-5.

Table 4-5 Selection of River Crossing Location

Option	Plan		
	Option C3-B1	Option C3-B2	Option C3-B3
Road Alignment/ Geometry	<ul style="list-style-type: none"> - road alignment crosses only one channel of the Nile River - alignment pass thru the community boundary on the eastern side - partially utilize the existing new earth road on the west bank 	<ul style="list-style-type: none"> - road alignment crosses the Nile River at two converging channels - alignment cuts through the community on the eastern side - partially utilize the existing new earth road on the west bank 	<ul style="list-style-type: none"> - road alignment crosses the Nile River at two converging channels - alignment cuts through the community on the eastern side - alignment follows the existing new earth road on the west bank
Road Length/ Cost	Road = 5.85 km Nile Bridge = 560m	Road = 6.48 km Nile Bridge = 770 m	Road = 7.02 km Nile Bridge = 910 m
Affected Structures	<ul style="list-style-type: none"> - affects most number of structures on the western side of Nile River - no structure affected on the eastern side of Nile River 	<ul style="list-style-type: none"> - affects fewer number of structures on the western side of Nile River - most number of structures affected on the eastern side of Nile River 	<ul style="list-style-type: none"> - affects the least number of structures on the western side of Nile River - more structures affected on the eastern side of Nile River
ROW	- shortest length, least additional ROW take	- 10% more ROW take than C3-B1	- longest alignment, greatest ROW take (20% more than C3-B1)
Evaluation	Recommended (better alignment, shorter road and bridge and cheaper to construct)	X	X

¹ JICA, Juba Urban Transport Infrastructure and Capacity Development Study Executive Summary 2010

As shown, the most northern location is selected.

In case the project is not implemented, following negative effects are predicted:

- Difficulty remains as same as today about connection/communication of Juba, a capital of the Republic of South Sudan, with other states/countries
- Juba south is kept undeveloped and slum areas will be formed else where by returned people, in which security, hygiene, safe water etc may not be ensured
- Traffic congestion in Juba downtown will be intensified, as may be avoided by the proposed C3 road, which would have diverted the major traffic flowing into Juba downtown, and the traffic air pollution and noise will be worsened as a result.
- In case present Bailey bridge has collapsed as would happen any day, the communication between Juba and southern cities become difficult.

(5) Future Traffic Volume

Future Traffic Volume on the project site (Nile River Crossing Bridge Point) are estimated as the Table 4-6.

Table 4-6 Future Traffic Volume on the Nile River Crossing Bridge Point

			Car	Pickup	Minibus	Bus	Light Truck	Medium Truck	Heavy Truck	Motercycle	Total
Y2011	Without Project	Juba Bridge	2,182	782	2,289	2	1,443	879	558	1,928	10,062
		Nile Bridge	-	-	-	-	-	-	-	-	0
	With Project	Juba Bridge	-	-	-	-	-	-	-	-	0
		Nile Bridge	-	-	-	-	-	-	-	-	0
Y2015	Without Project	Juba Bridge	3,963	1,420	4,157	3	2,621	1,597	1,014	3,503	18,278
		Nile Bridge	-	-	-	-	-	-	-	-	0
	With Project	Juba Bridge	4,362	1,564	0	0	0	0	0	5,103	11,029
		Nile Bridge	1,665	592	4,158	2	2,598	1,608	1,025	2,824	14,472
Y2025	Without Project	Juba Bridge	8,311	2,979	8,720	7	5,497	3,349	2,126	7,347	38,336
		Nile Bridge	-	-	-	-	-	-	-	-	0
	With Project	Juba Bridge	9,150	3,280	0	0	0	0	0	10,703	23,133
		Nile Bridge	3,492	1,241	8,721	5	5,450	3,372	2,150	5,923	30,355

4. Initial Environmental Examination

The environmental screening of proposed project was implemented to determine the appropriate extent and type of EIA study.

Based on the activity for the project, we implemented scoping and concluded as Table 5-1. As an overall rating, the project is classified as A, “Seriously negative impacted” if the worst rating is adapted.

Table 5-1 Results of scoping

Item	Legend: -A: Serious negative impact -B: More less negative impact +A: Large positive impact +B: Moderate positive impact D: Almost no impact	Rating				
		Overall	Site clearance	Construction	Operation	
Social environment	1	Involuntary resettlement	-A	-A*	D	D
	2	Local economies, such as employment, livelihood, etc.	-B	-B	+B	+B
	3	Land use and utilization of local resources	-B	-B	-B	+A
	4	Social institutions such as social infrastructure and local decision-making institutions	-B	-B	-B	+B
	5	Existing social infrastructures and services	-B	-B	-B	+B
	6	Poor, indigenous, or ethnic people	-A to -B	-B	-B	+B
	7	Misdistribution of benefits and damages	-B	-B	-B	+B
	8	Cultural Heritage	-B	-B	-B	D
	9	Local conflicts of interest	-B	-B	D	+B
	10	Usage of Water and Water Right	-B	-B	-B	+B
	11	Accident	-B	D	-B	-B
	12	Sanitation	-B	-B	-B	D
	13	Infectious diseases such as HIV/AIDS	-B	D	-B	-B
	14	Gender	-B	-B	-B	-B
	15	Children’s Right	-B	-B	-B	-B
Natural environment	16	Topography and Geology	-B	D	-B	D
	17	Soil Erosion	-B	D	-B	-B
	18	Groundwater	-B	-B	-B	-B
	19	Hydraulic Situation	-B	D	-B	-B
	20	Costal Zone	D	D	D	D
	21	Fauna, Flora and Biodiversity	-B	-B	-B	-B
	22	Meteorology	-B	D	D	-B
	23	Landscape	-B	D	-B	-B
	24	Global Warming	-B	-B	-B	-B
Pollution	25	Air Pollution	-A to -B	D	-B	+B
	26	Water Contamination	-B	D	-B	D
	27	Soil pollution	-B	D	-B	D
	28	Waste	-B	D	-B	D
	29	Noise and vibration	-B	D	-B	+B
	30	Ground Subsidence	-B	D	-B	-B
	31	Oder	-B	D	-B	-B
	32	Bottom Sediment	-B	D	-B	D

*80 families (80 x 4 members =320 persons) or more are to be displaced by the project, which exceeds the 200 persons as per para. 17(a), OP4.12 Involuntary resettlement, World Bank.

5. Baseline Data

This chapter assesses the dimensions of the study area and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences.

6.1 Present condition of the site.

The access passes Lologo community on the wet bank and Gumbo Community on the east bank as Figure 6-1. Land can be classified, based on ownership, as shown in Figure 6-1.

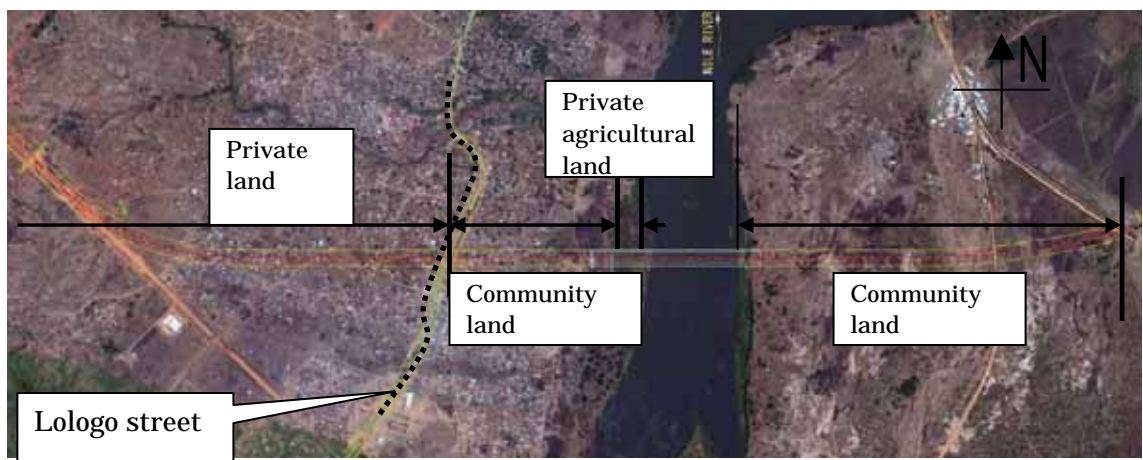


Figure 6-1 Land title

On the east bank, all the land belongs to Gumbo Community and several houses are located on the river side and near Nimle road. On the west bank, western portion to Lologo street is private land while eastern portion is land of Lologo Community. We asked a favour to show us the land title certificate. Out of 80 interviewees, only 16 showed us the certificate. The ratio is less than 20%. Thus, more than 80% of the households at the site may not have formal land title. Average family members are 9 persons, ranging to 36 in the maximum. This big figure is due to the polygamous system. In the average, 4 members go to school while less than 2 are working in average.

Administrative boundaries are shown in Figure 6-2.

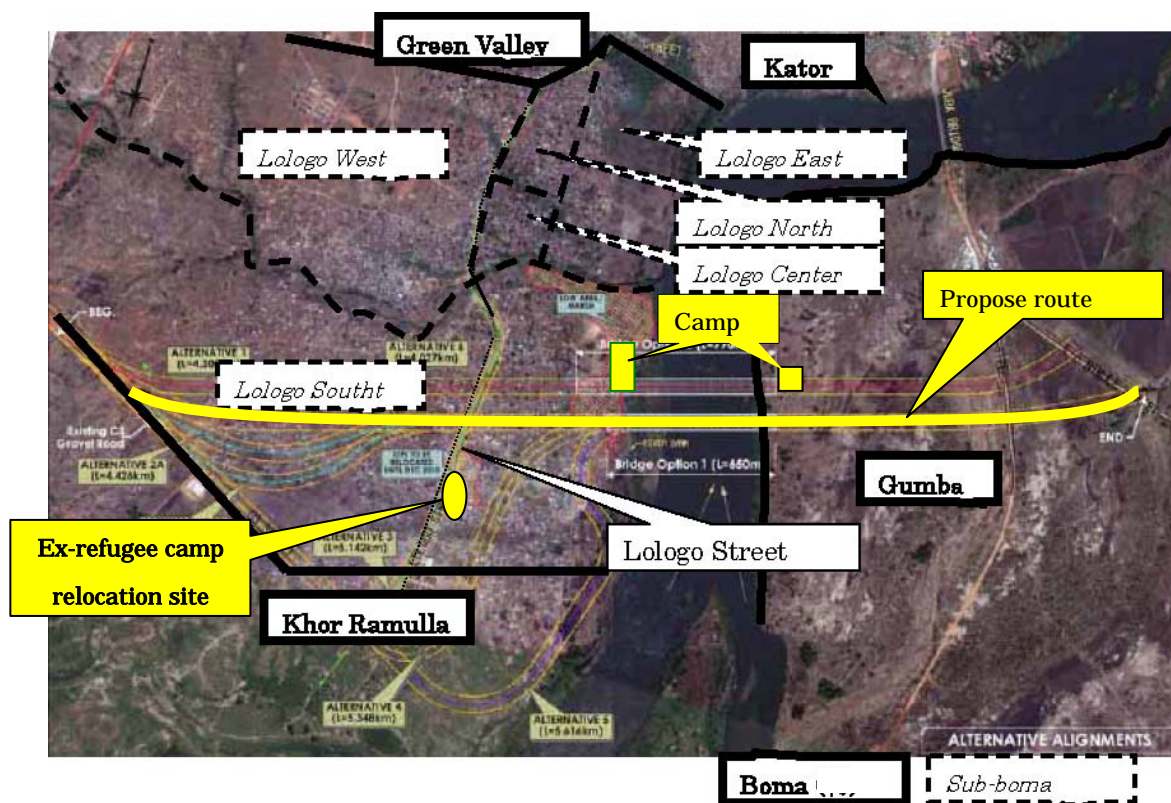


Figure 6-2 Administrative Boundaries at the site and affected areas

Impact zone can be classified as directly impacted and indirectly zones. Directly impacted zone are areas where structures, construction yards and relocation site are located while in directly impacted zone is its surrounding area. Outline of directly impacted zone is summarized in Table 6-1.

Table 6-1 Outline of directly impacted zone

Component		Width m	Length m	Present land use
Bridge		15	560	Agricultural field
Access to bridge	West bank(Lologo community)	30	2,300	Residential houses/land
	East bank (Gumbo community)	30	1,400	Agricultural field
Temporary construction yard	West bank(Lologo community)	100	150	Agricultural field
	East bank (Gumbo community)	100	200	Agricultural field
Alternatives of relocation sites	Lologo (formal title holder)	50	100	Refugee camp
	Tokiman west	1,000	2,500	Relocation site
	Jandoro	1,000	1,000	Relocation site
	Durupi (for informal residents) 8km west of Juba downtown	2,000	2,000	Payam relocation site

Locations of alternatives are shown in Figure 6-3.

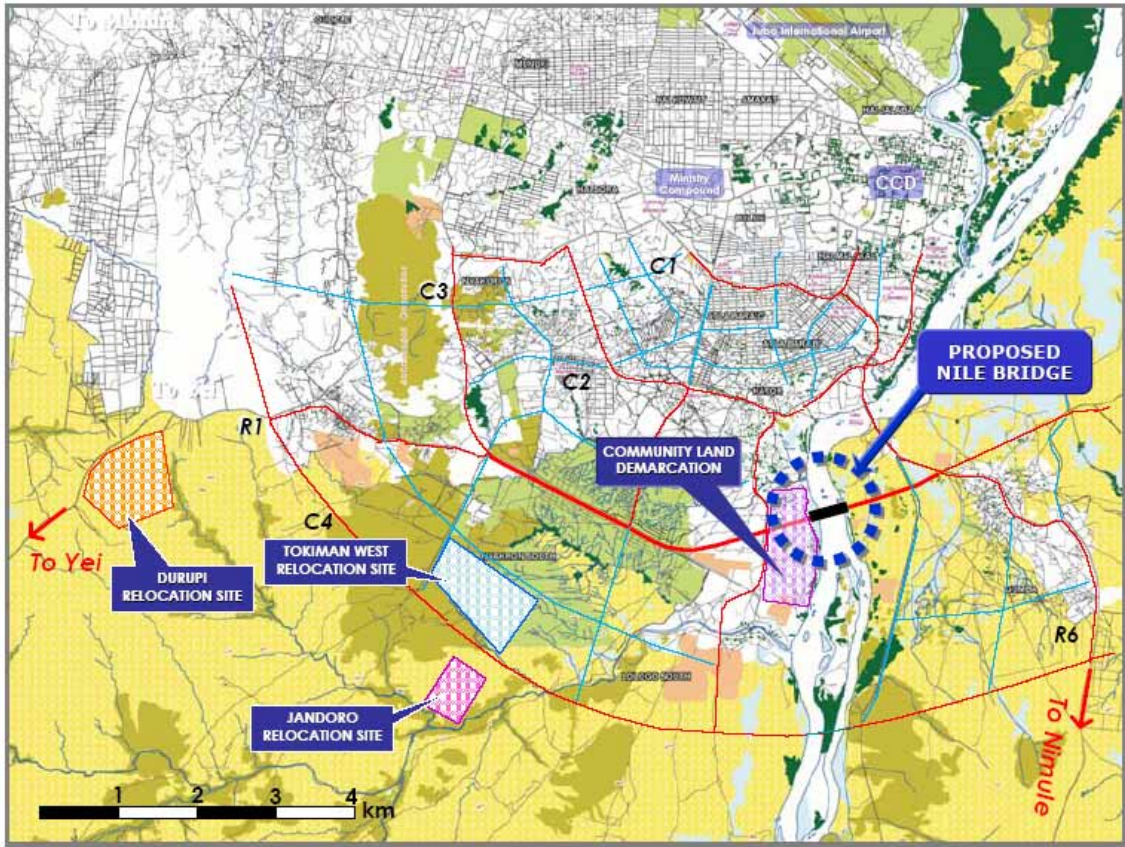


Figure 6-3 Location of alternative relocation sites

6.2 Present environmental conditions

- (1) Involuntary resettlement (Baseline)

This issue is detailed in RAP (Resettlement Action Plan) in different volume.

- (2) Local economies, such as employment, livelihood, etc. (Baseline)

Occupations and their incomes are shown in Figure 6-4.

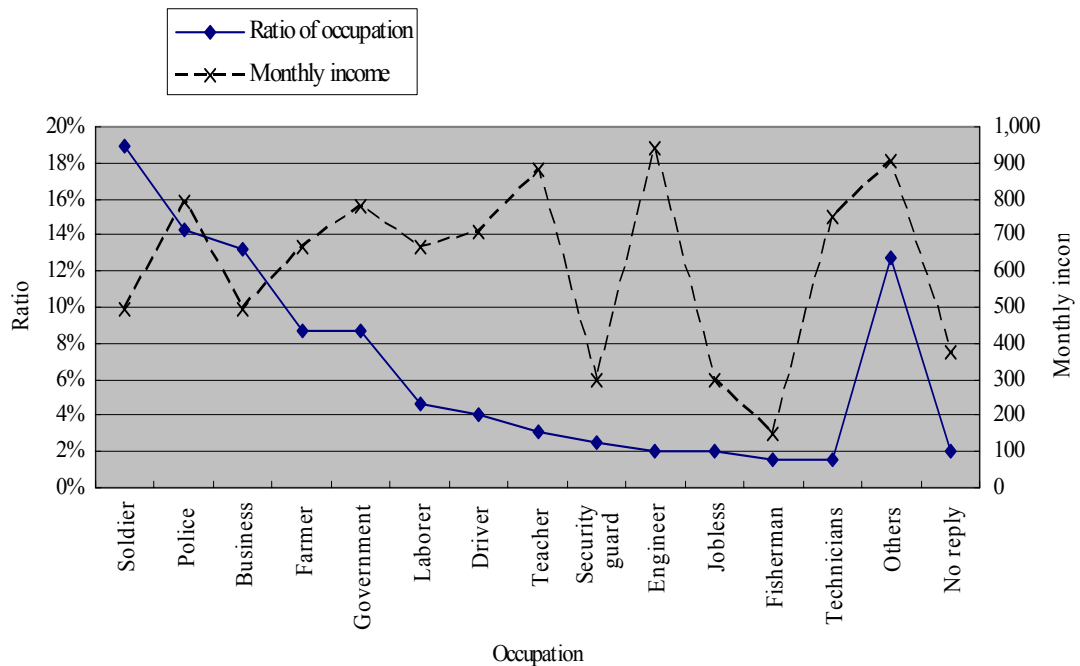


Figure 6-4 Occupation and income

Most popular occupations are soldier (19%) and policeman (14%). Average income is SDG750 (= \$300) only per month. Therefore, the income per one family member nearly drops on the line of \$1 per day which is the absolutely poverty line.

Four households replied as fishermen. They catch catfish, carp and Nile perch etc at up and down streams of Nile River since there is no fishery right set. Apparently, they are not full time fishermen and have labor work depending on the season.

Although not interviewed in this survey, there are several brick manufacturers at the shoreline of the river, excavating black soil, moulding and drying –up into bricks. Their work pattern is irregular as well, based on the weather and necessity of other works.

More than 10 farmers were interviewed who are mainly cultivating the flood plain along the shore. Due to the flood of the plain, the duration able to cultivate is 3 months only per year.

(3) Land use and utilization of local resources (Baseline)

Land uses and local resources are classified as:

- Residential area for the most portion of west bank and along river of east bank
- Agricultural land in the flooded swamp (activity is limited to February to April only)) on the west bank and in non-flooded area on the east bank

- Brick manufacturing along the river side of both banks
- Mango plantation along the riverside
- Group cemetery for unidentified war-dead on the west bank

It is noted that most area of east bank is not utilised. Figure 6-5 outlines the land use and local resources at the site.

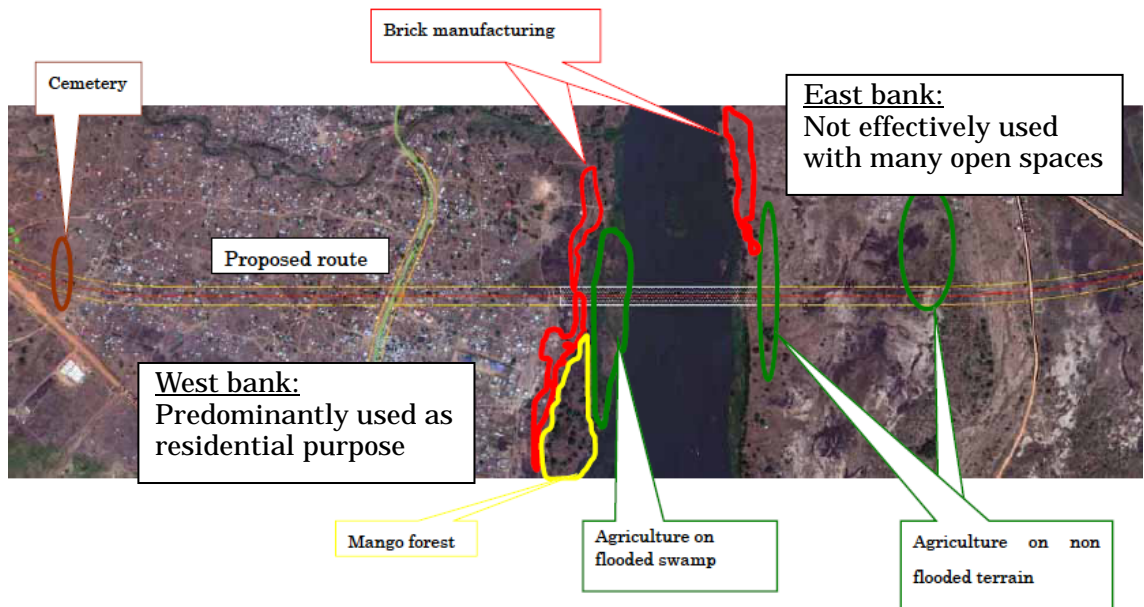


Figure 6-5 Land use and local resources utilization

(4) Social institutions such as social infrastructure and local decision-making institutions (Baseline)

There are several institutions on the west bank but there no institution at all on the east bank. Social institutions on the west bank include:

- Community office
- Churches
- Nursery/primary schools
- Vocational training school
- Clinic
- Refugee camp
- Police

In addition some portion of river side is used as

- Landry
- Bathing
- Water taking

Figure 6-5 shows distribution of social services and location of life activities.

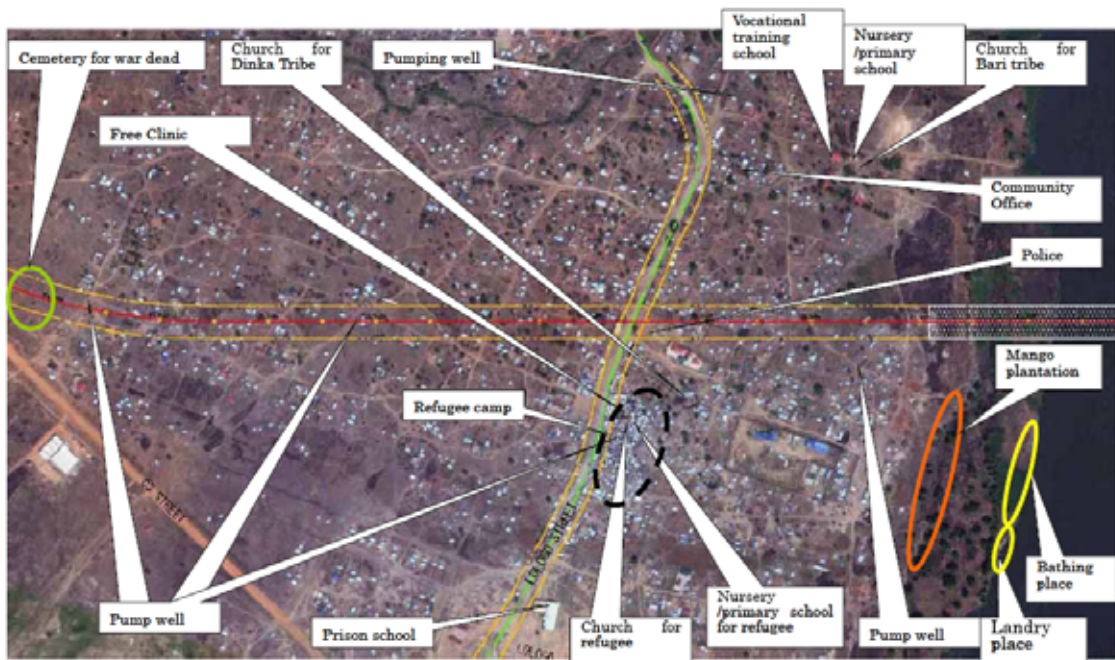


Figure 6-6 Locations of social /public services and daily activities

The youth in the community voluntarily teaches the children under 8 years old, who are unable to commute to far away school as Photo 6-1.



Photo 6-1 Children taught under trees

(5) Existing social infrastructures and services (Baseline)

Social infrastructure available is pumping well on the west bank and there is no

infrastructure at all on the east bank.

The East of Lologo Street and the eastern bank (Gumbo) had no apparent planned streets and all lacked proper roads and drainage. In all the areas, the lack of proper roads is linked by improper accessibility to the areas.

Housing is not arranged in orderly. Traditional compounds and housing (tukuls: thatch roof and mud wall) is the dominant feature in most areas. The number of tukuls on a family plot varies depending on the number of people in the household, what the family can afford, and tukuls is rented out. Main problems with living in a tukul were stated as being inadequate protection against damp/rain and the risk of theft. The cost of building a tukul is estimated at around SDG 800 (about US\$ 300). Poorer households or households under the fear eviction tend to live in shacks. Other households had well-built mud/brick houses with iron sheeting roofs on foundations which are reported to cost around US\$1,000 or more. This was particularly the case in Lologo.

Most households west of Lologo Street have clearly defined plots with boundaries either marked by fences, poles, or plants, depending on what the household could afford.

Access to basic services in all the areas is minimal. In particular, communities complained of inadequate water supplies. There are few boreholes or communal standpipes and most households obtain water from water carriers who pump up untreated water from the Nile. Where boreholes are present, they are often broken. In Lologo, community leaders and several women complained that the boreholes brought about fighting between women; on a number of occasions, this has escalated into fighting along tribal lines. Although some residents were noted to have generators, most people rely on energy sources such as charcoal, kerosene, and candles. Residents on the edge of Juba complained of the travel costs to the main market, schools, and other amenities in Juba town as too expensive. From Lologo and Gumba communities SSP 2 per trip is quite expensive for the poor people within these areas. The lack of cheap pharmacies in these areas was commonly raised as a concern.

(6) Poor, indigenous, or ethnic people (Baseline)

The indigenous people of the area are the Bari people. Settlers within Lologo and Gumbo area include soldiers and their families of other tribes. In addition there is an

area which is predominantly Lopit people who came to Juba from Eastern Equatoria in the 1960s as a result of famine and subsequently moved to Lologo. There is also an area predominantly of Dinka who have lived in Juba since the 1960s and who had cattle camps nearby. A large number of Equatorian tribes have settled over the years for a variety of reasons, including for employment and availability of land relatively close to Juba. In 1992, many people left the area due to the heavy fighting around Juba. Some returned soon after hostilities ended, whilst others remained in the town until the signing of the CPA. Community leaders and members have stated the population has increased dramatically since the signing of the CPA. The ration of tribes in the site is indicated in Figure 6-7.

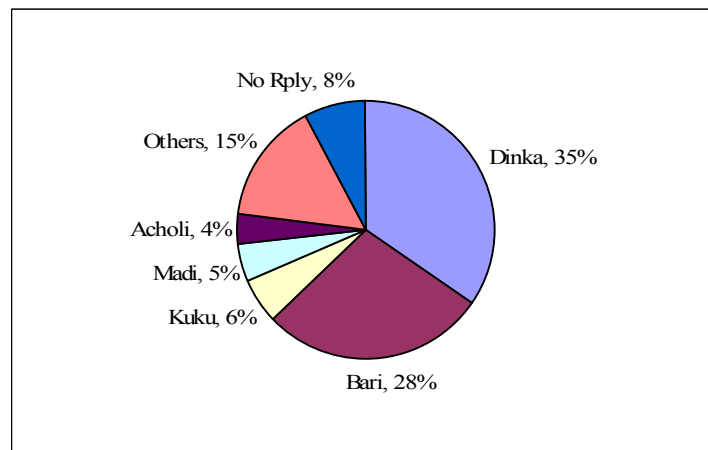


Figure 6-7 Ratio of tribes in the site

Figure 6-8 indicates ratios of tribes of returned soldiers. As shown, nearly 80% of returned soldiers are of Dinka Tribe.

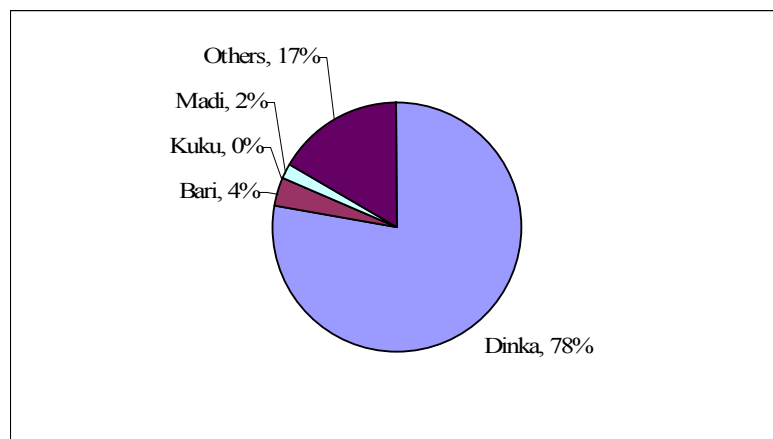


Figure 6-8 Ratio of tribes in returned soldier

(7) Misdistribution of benefits and damages (Baseline)

Other ethnic tribe than indigenous tribe who, occupy community land, are not provided with land titles, are thus suffering for unstable condition, afraid to be kicked out any day.

(8) Cultural Heritage (Baseline)

There is no cultural heritage at the site.

(9) Local conflicts of interest (Baseline)

Based on the results of interviews to the 80 number of affected households during census, only 16% replied there is no conflict in the site. Others would not want to reply about a topic of conflict purposely. The reason can be as follows. Land title was confirmed only 17%. As elders in the communities said, according to their perception, there are land dispute of unauthorized occupation of community land by different tribe people. So, no replied people are under pressure from indigenous tribe people to go out.

(10) Usage of Water and Water Right (Baseline)

Water is obtained from:

- River (free)
- Water lorry (5SDG/200 litre)
- Pumping well (1SDG/4 litre)
- Pet bottle (0.5SDG/1 litre)

Quality of river water is very low and has to be chlorinated before use.

(11) Accident (Baseline)

As shown in Figure 6-9, there are 4 roads related to the project at the site as:

- Lologo street
- C-3 Road
- Nimle Road
- Rajecf Road

None of them is paved.

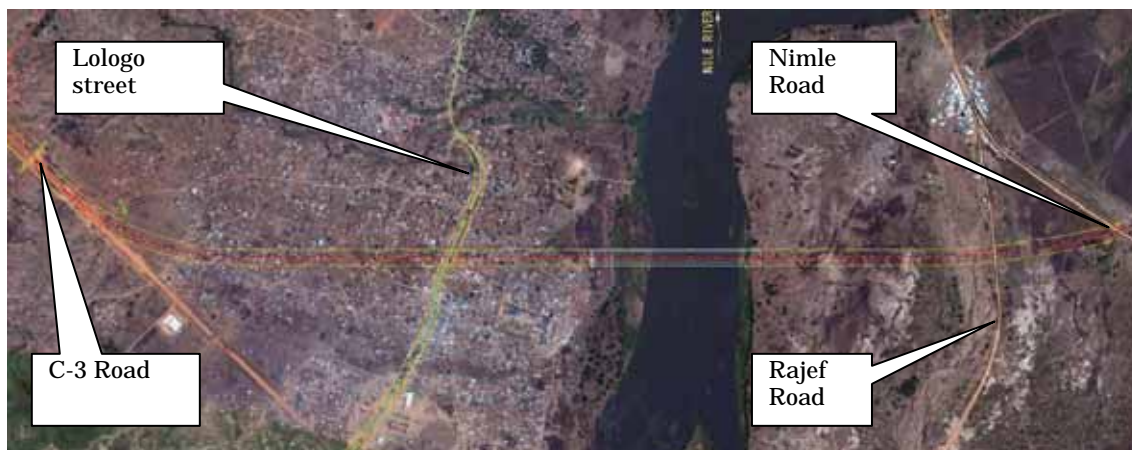


Figure 6-9 Location of existing roads

Lologo Street is a very narrow unpaved road, crossing the center of Lologo Community north to south. Traffic volume monitored in 2011 is less than 2,000 per day, half of which is motor-bikes and the rests are mostly mini-buses. It is a pure community road, so much up and down and winding with 4m width. C-3 Road is practically with almost no vehicle observed all day in the portion at the site since it is disconnected.

Nimle Road is an international trunk road connecting with Uganda. Rajef Road also is an international trunk road with a traffic volume of 5,000 per day, half of which is motor bike as well. Number of truck reaches about 1,000 per day. There is no street lighting along these roads.

(12) Sanitation (Baseline)

Sanitation levels in all the areas are quite poor and a significant portion of households indicated that they did not have a basic pit latrine. Many households have constructed shallow pit latrines on plot perimeters that tend to overflow during heavy rain onto public pathways, a clear public health hazard.

(13) Infectious diseases such as HIV/AIDS (Baseline)

According to the existing study² following can be conclude:

- Baseline research in Southern Sudan (2001) showed HIV prevalence rates among youth ages 15-24 to be 2.6% overall, 1.1% in male and 3.1 % in female.

² Sarah Krosh, Rapid Assessment of Gender and HIV/AIDS: Juba County and Yei County October 2006(Revised)

- A 2002 “Save the Children US KAP” Survey found 68.2% are aware of HIV/AIDS, while condom is rarely used, only less than 1% .
- Juba County had an overall HIV/AIDS prevalence rate of 20.6% among VCT (Voluntary Counseling and Testing in Juba) clients as shown in Figure 6-10.

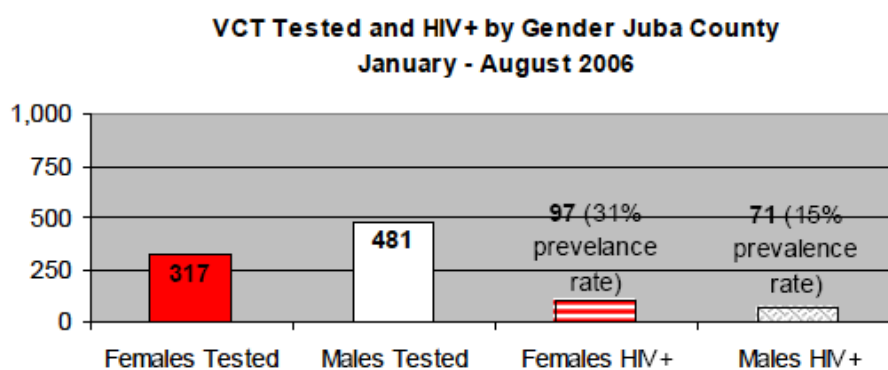


Figure 6-10 Prevalent rates of HIV positive

- The prevalent rate in the site is unknown, however due to the inflow of returned soldier the rate can be higher, since the soldiers after CPA 2005 came out of the jungle and were paid much to spend on alcohol and sex with prostitutes, exposed to with high risks to be transmitted of HIV.

(14) Gender (Baseline)

Female in South Sudan faces issues of:

- Patrilineal society with limited roles and rights
- Early marriage due to poverty (dowry) and conflict (fear of death)
- Polygamy (based on economic conditions)

Table 6-2 indicates the relation between socioeconomic status and polygamy.

Table 6-2 Socioeconomic status and polygamy

Socio-Economic Status: Juba County (1999)

Socio-economic Group	"very poor"	"poor"	"middle"	"better off"
% of population	42	40	11	9
Number of wives per man	0-1	2	2-3	3-4
number of children per man	0-3	8	9-20	>20
number of shoats* per household	2	5	10	20
feddan** cassava cultivated in normal year	1/8	1/4	1/2	1

Source: WFP Monitoring and Assessment 1999/2000 *shoat: a weaned animal **feddan=4,200square meters or 1.04 acres

- Low education
- Female genital mutilation (2% of female population)
- HIV/AIDS

(15) Children’s right (Baseline)

There are two issues about children such as child labor and child soldier.

Child labor

Child labor is one of the major problems facing for young children in their quest for an education in South Sudan. UNICEF found that 58.3% of boys and 79.6% of girls ages 5-17 help with household chores in stead of having education. And, youth often work outside the home to supplement the family’s income, 52.6% of boys and 42.8% of girls (UNICEF MICS). High levels of underdevelopment, poverty and population growth force children and youth to work to help provide for basic needs. After decades of conflict, the population in South Sudan has not seen education as a means to a better standard of living. Girls of school going age spend most of their time at home undertaking household chores: washing, cooking, cleaning and caring for younger siblings. Boys, as well, spend much of their time looking after livestock or assisting in workshops. It is also much less likely they will receive HIV/AIDS education. Figure 6-10 indicates the types of works children are engaged in Juba.

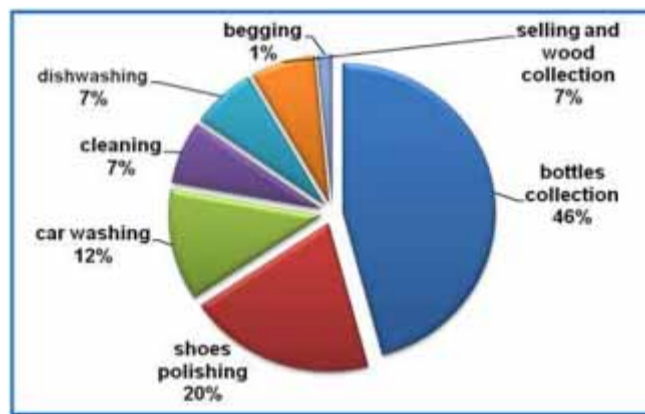


Figure 6-11 Economic Activities of Children working in Juba

The children at the site are as follows:

- Young school going boys were involved in money creating activities such as shoe shine business where they walk around with brushes and shoe polish looking for any ready customer.
- Others are involved in daily family chores such as looking for younger siblings within the family and drawing water from the borehole.

- The Black Market for foreign currency exchange has several young boys who deal in money exchange.

Children soldier

Although the recruitment or use of children under the age of 18 in armed conflict is contrary to international law and contrary to Sudan’s CPA 2005, many children were conscripted or some times abducted by fighting forces. Since 2001, an estimated 20,000 children from the SPLA have been disarmed, demobilized and returned to their families with UNICEF supports. However it is still estimated that more than 2,000 children are in SPLA presently.

(16) Topography and Geology (Baseline)

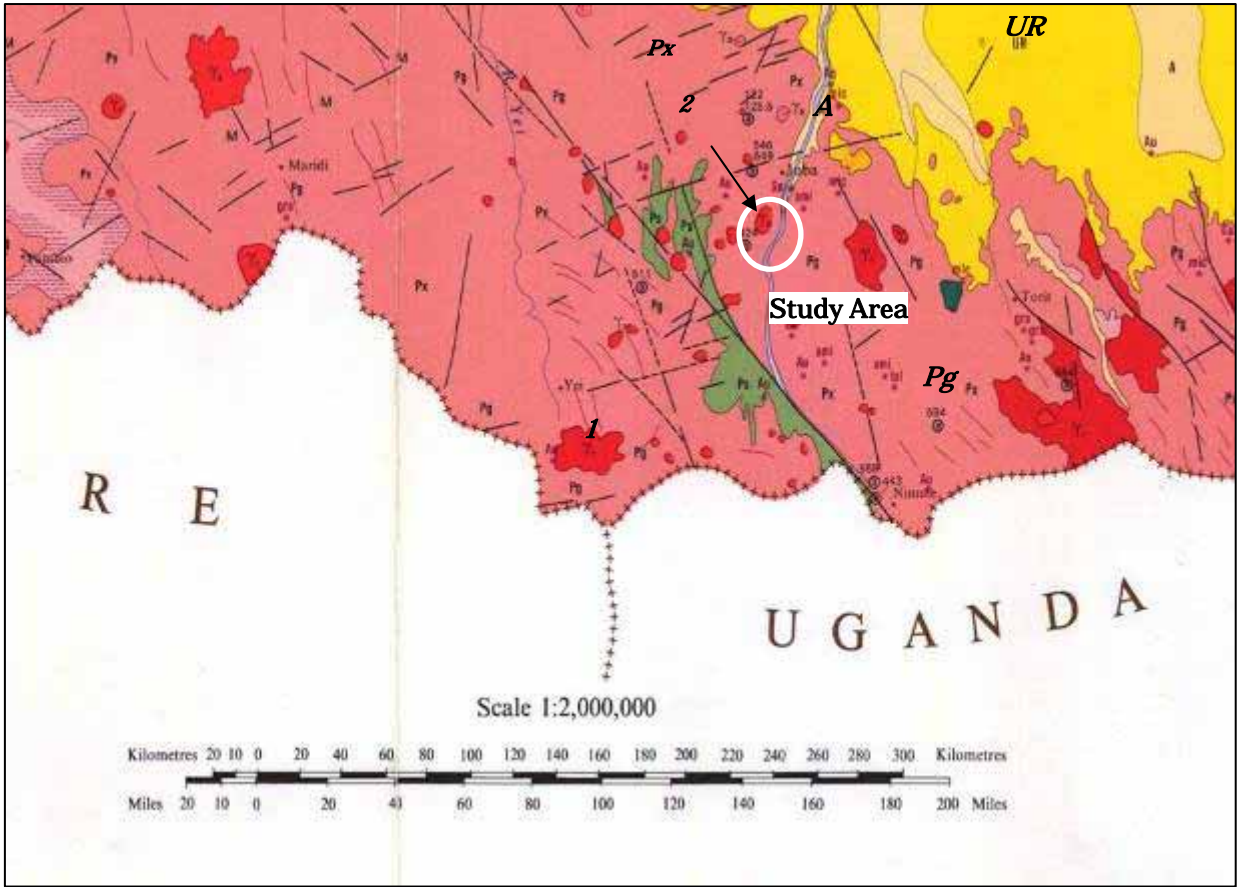
The terrain within Lologo area (west bank of the River Nile), is relatively flat but gradually becoming sloppy towards the river. The elevation ranges 460 to 480 above sea level approximately. Elevation of river bottom is EL+450m. The terrain within Gumbo area has the same characteristics but there are a few rock outcrops near the Juba-Numele road junction, where the project road will commence.

Project area and its surrounding area can be tectonically and geologically divided into two zones that consist of the alluvial deposits and the Undifferentiated Basement Complex. The alluvial deposit, un-conformably overlying the Undifferentiated Basement Complex, is extensively distributed in the area. The undifferentiated basement complex consists of metamorphic and intrusive rocks of various grades of metamorphism. Table 6-3 summarises ages classes and formations of geology at the site while Figure 6-11 indicate geological map.

Table 6-3 Stratigraphic classification of the study area

Geological age	Geological class	Geological formations
Quaternary (Recent)	A) Alluviums, wadi fills, terraces, delta and swamp deposits	Boulder, Gravel, sand and Silt-Clay
Upper - Lower Middle Proterozoic	Px) Undifferentiated Basement Complex Ps) Undifferentiated Schist Group Pg) Undifferentiated Gneiss Group	Ps) Meta-sediments, marble, quartzites, graphite and mica schists. Pg) Granitic gneisses, migmatites, charrockitic granites, amphibolites and pyroxene granulites.

Source; Geol Map of the Sudan (1981) Geological & Mineral Resources Development of Sudan



Source; Geol Map of the Sudan (1981) Geological & Mineral Resources Development of Sudan

Figure 6-12 Geology surrounding the study area

Boring was made along the proposed bridge at the locations shown in Figure 6-12. Soil profile along the proposed bridge is presented in Figure 6-13.

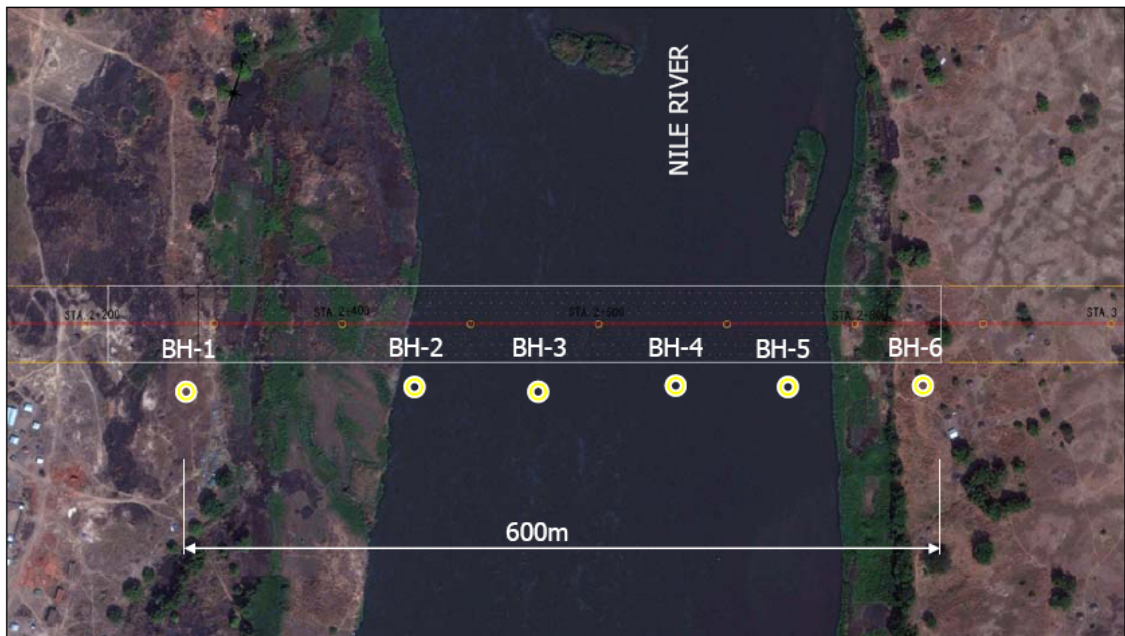


Figure 6-13 Locations of boreholes

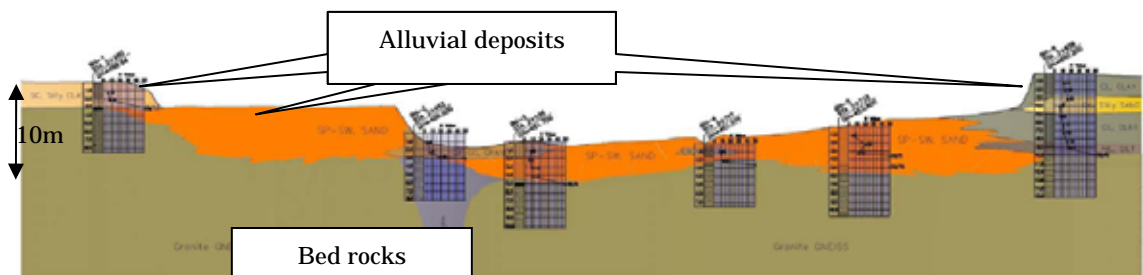


Figure 6-14 Soil profile at the proposed bridge

As shown in the figure, base rocks are encountered a few meters below the river bed, while they are 10m below ground surface on the bank in the maximum.

(17) Soil Erosion (Baseline)

Erosion on the ground surface by rain water, due to absence of proper drainage system, is never significant. The erosion by the river is being progress on the west bank while sedimentation is occurring on the east bank based on the discussion with site observation and discussion with authorities..

(18) Groundwater (Baseline)

Existing well data were collected from Rural Water and Sanitation Department, MWRI. According to these data, a total of 439 wells are listed consisting of 417 wells in Juba

Payam and 22 wells in Rejaf Payam as shown in Table 6-4.

Table 6-4 Well data in the Study Area

	Item	Juba Payam (1977-2008)	Rejaf Payam (1981-1986)	Total
1.	Completion of Well			
	Successful	292 (70 %)	14 (64 %)	306 (70 %)
	Dry	125 (30 %)	8 (36 %)	133 (30 %)
	Total	417 (100 %)	22 (100 %)	439 (100 %)
2.	Well Yield (m³/h)			
	Max.	7.20	2.10	7.20
	Min.	0.10	0.30	0.10
	Ave.	1.67	1.16	1.67
3.	Static Water Level (m bgl)			
	Max.	42.29	21.0	42.29
	Min.	1.20	5.80	1.20
	Ave.	12.21	12.42	12.21
4.	Depth (m bgl)			
	Max.	84	93	93
	Min.	15	27	15
	Ave.	49	55	49

Source: Rural Water and Sanitation Department, MWRI

(19) Hydraulic Situation (Baseline)

Hydraulic situation was studied and Table 6-5 indicates the summary of parameters of Nile River.

Table 6-5 Hydraulic parameters of Nile River

River bed	Material	Well-graded sand
	Elevation m	451.0
Flow in dry season	Water level m	455.65
	Volume m ³ /s	1,300
	Velocity m/s	1.2
Flow in rainy season	Water level m	456.65
	Volume m ³ /s	1,900
	Velocity m/s	1.2

During rainy season, water level rises 1m higher than dry season.

Figure 6-15 indicates the possible areas of flood in cases of 50 and 100 years' returns respectively. In the 100 years' return, the flooded water reaches to some residential area.

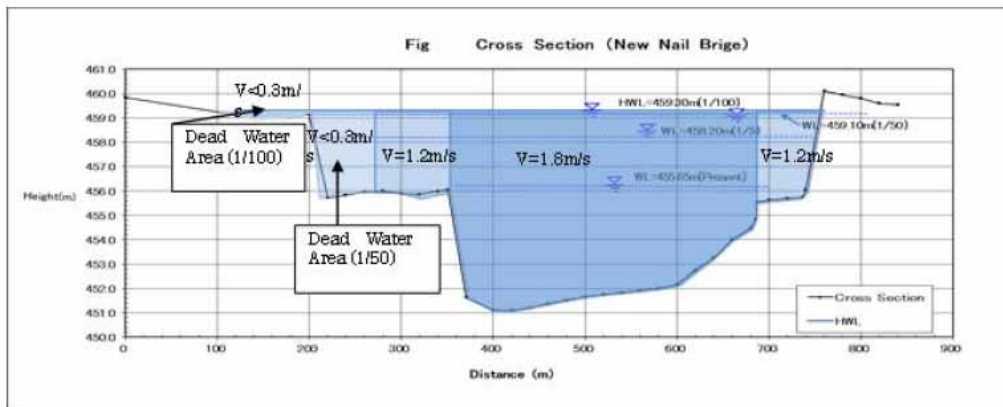
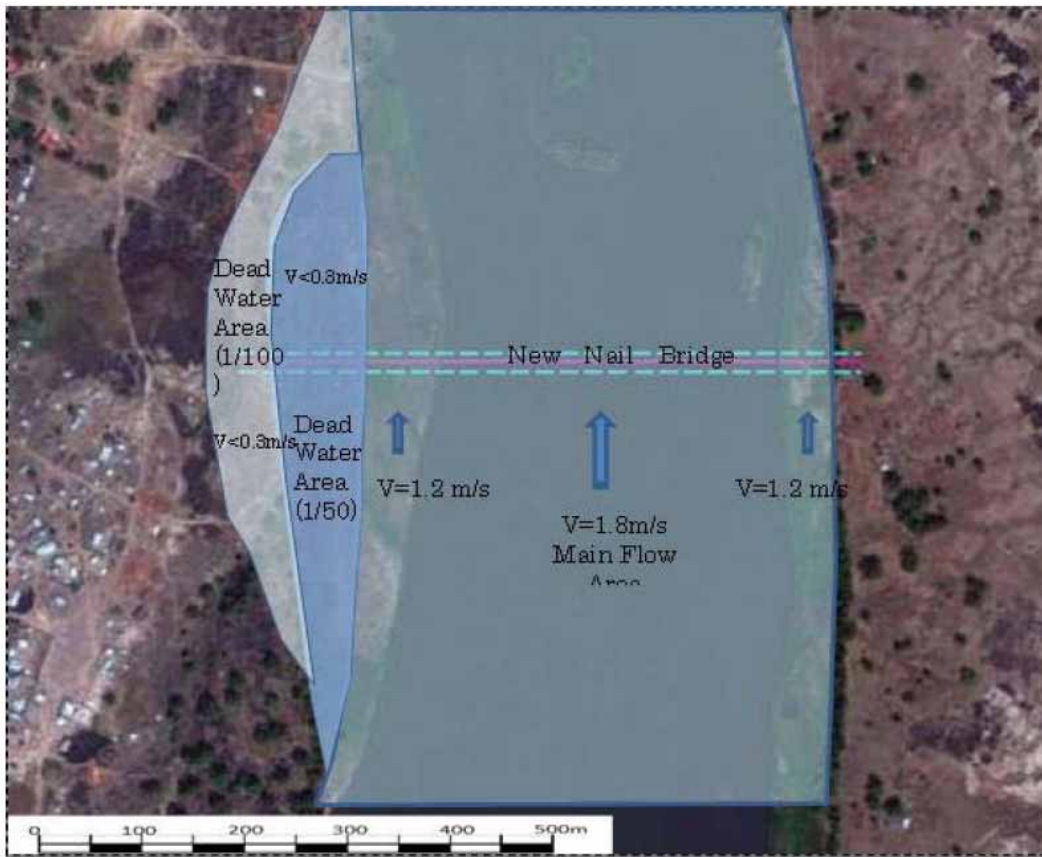


Figure 6-15 Possible area of flood in 50 and 100 years' returns respectively

(20) Coastal Zone (Baseline)

As shown in the Figure 6-16, the coastal area is about 5,000 km down stream of the project site..



Figure6-16 Project and the coastal area

(21) Fauna, Flora and Biodiversity (Baseline)

The aquatic environments along River Nile, - water and wetlands, - and which forms part of the project area, serve as habitat for interrelated and interacting populations of plants and just a few animals. However, at the proposed project area, Lologo and Gumbo do not support any wildlife due to the existing human settlements and lack of wildlife habitats.

Historically the study area used to be covered by mixed vegetation of savannas and forests. However, the vegetation was over exploited because of the civil war, and many big trees were cut to be used for military use and as fuel wood. It is said that all of the forests have been destroyed. Therefore, lots of birds and other small wildlife that used to have lived in forests were affected and the great majority of them has disappeared. A trace of the forestry vegetation remains along the Nile River and its branch rivers. In these areas, there are mango trees, papaya trees, and other fruit trees, in addition to Neem and other useful tree. Table 6-6 summarise major trees distributed at the site and their characteristics.

Table 6-6 Common Trees and Shrubs within the project area

Plants (Trees and shrubs)			
	Name	Environmental Significance	Availability within the Project Areas
1	Mango trees (<i>Mangifera indica</i>)	Nutritionally rich fruit plant, consumed locally and sold at the local markets.	Dominant fruit plant along the project sites.
2	Variety of edible leafy vegetables	Food crop	Planted along the banks of River Nile within the project site for subsistence and commercial use, locally.
3	<i>Neem trees</i> (<i>Azadirachta indica</i>).	Natural pesticide and insects repellent, including mosquitoes ³ . Also it provides shade within homesteads.	Dominant plant along the project sites.
4	Avocado	The fruit trees are relished by humans and birds as well.	Few trees within Lologo and Gumbo area.
5	Guava		
6	Accasia		
7	Ficus	Old and big tree serves as meeting and relaxing area for community since it provides thick shade during sunny days.	Sparsely scattered within homesteads at the project sites.
8	Banana	Bananas are a staple starch food. Cooked raw or eaten when ripe.	A handful of plants near the river bank at Gumbo and Lologo.
9	Pawpaw	Mainly used as a food, eaten while ripe.	Few trees within the project areas.

Owners of these trees are the owner of the land on which trees are planted. Red listed fauna stay in the protected area about tens of kilometers upstream of the site around Ethiopian border. Residents saw crocodiles but they are common species Nile Crocodile. In the river, cat fish and other common mud fishes are available.

³ In 1959, a German Entomologist noticed that the only agricultural life left after a major storm of locusts in Sudan was the *neem trees*. Locusts had landed on the leaves but still did not feed on them, bringing the attention that the tree is a natural insect repellent, including mosquitoes.

(22) Meteorology (Baseline)

The climate of Juba area is mainly influenced by its low altitude location where absence of relief barriers mitigates against high rainfall. Figure 6-17 summarises the weather in Juba.

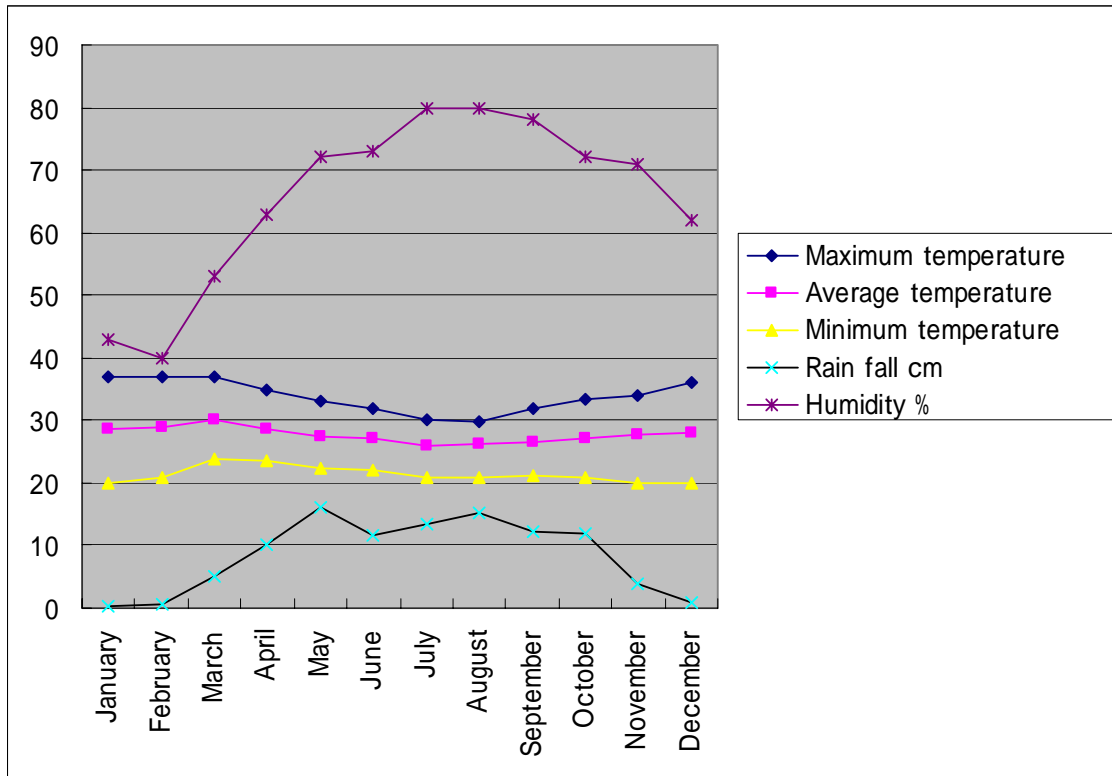


Figure 6-17 Climates in Juba

(i) Temperatures

Juba is basically a hot area where average minimum monthly temperatures (based on the 1998 to 2004 statistics) range from 20 to 24 whereas the average maximum monthly for the same period are in the range 30 to 38.

(ii) Rainfall

Rainfall data for Juba Town is available for the period 1996 to 2009 but excludes 2001. Features of rainfall are as follows:- Annual rainfall. Rainfall records for the last 10 years for Juba Town, mean annual rainfall averages 1096.1 mm. The wettest year 1996 with 1340mm while 2000 was the driest year when only 884mm was recorded.

Seasonal rainfall: Annual rainfall is delivered in one long wet season lasting 7 months from April to December. Each of the 7 months of the wet season receives on averages

above 100mm of rainfall. April and October are the wettest months receiving on average 154.2 and 145mm of rainfall respectively. November to March is the dry season when rainfall on average is below 50mm.

(iii) Relative humidity

Juba is relatively humid for most of the year with RH values averaging 65.6% but generally being above 60% for the months between April and December. Relative Humidity is highest in both July and August when it averages 80%.

(iv) Potential evaporation

Data on potential evapo-transpiration for the Juba area is not available. The analysis undertaken in this section is based on extrapolation of data accruing from climate modeling in the Sudd area (Y. A. Mohamed, H. H. G. Savenije, W. G. M. Bastiaanssen, and B. J. J. M. van den Hurk, 2005). On account of the low altitude location, Juba experiences high temperatures throughout the year which, together with prevalence of high relative humidity for most of the year would occasion only modest levels of potential evapo-transpiration demand. Studies undertaken to model the Sudd Hydrology based on remote sensing and climate estimated the evaporation flux for the Sudd wetland using thermal infrared remote sensing data and a parameterization of the surface energy balance concluded that the actual spatially averaged evaporation from the Sudd wetland over 3 years of different hydrometeorological characteristics varies between 1460 and 1935 mm/yr. This is substantially less than open water evaporation

(23) Landscape (Baseline)

The present landscape of the site on the west bank is sparse built-up residential area on the reddish soil (Laterite⁴) as shown in Photo 6-1. On the east bank, it is similar to west bank with some bushes and shrubs but almost without residential house

⁴ Laterites are typical soil types, rich in iron and aluminium, found in tropical region, rusty-red coloured due to oxidization. They developed by weathering of parent rock underneath.



Photo 6-1 Typical landscape of west bank (dusty and scattered with rubbish)

Interview was implemented about project impacts. Negative environmental impacts they imagine are water contamination, loss of fauna and flora, noise and vibration, and deterioration of traffic safety as shown below.

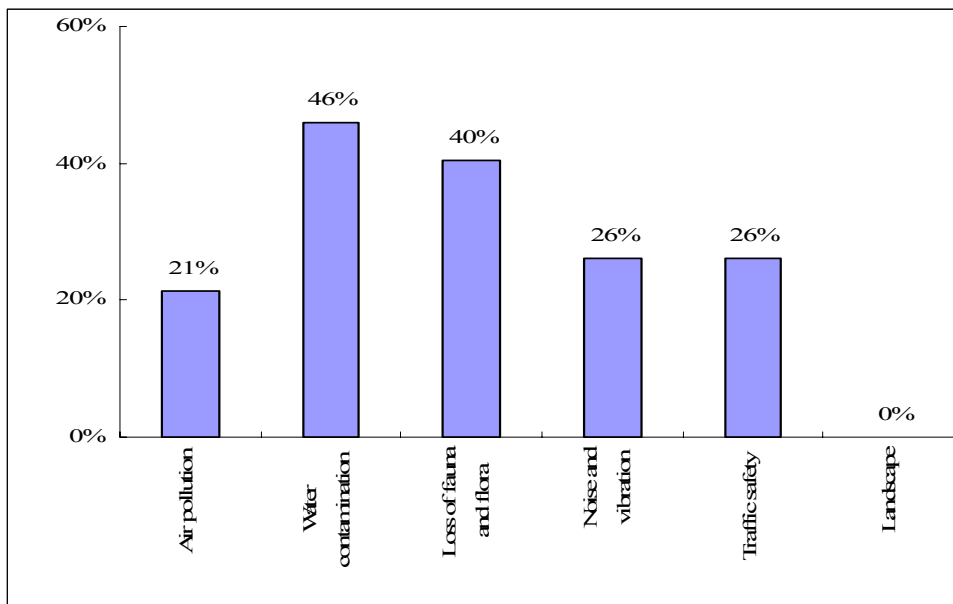


Figure 6-18 Possible environmental negative impacts, residents believe

As shown above, nobody raised the impact about landscape.

(24) Global Warming (Baseline)

Due to the traffic congestion by the increase of vehicle number and deterioration of traffic network, emitted amount of greenhouse gas is considered as increasing year by year.

(25) Air Pollution (Baseline)

Actual monitoring for air pollution was not implemented since the traffic at the site is almost zero and there can be no air pollution can be caused, in addition to the fact there is no factory which emit air pollutant. Instead, to estimate the baseline conditions for air pollution, we took the data⁵ obtained in Juba downtown near Juba Port, 4 km north to the project site since no data was available at the project site. The locations of air samplings are indicate in Figures 6-19 and 6-20 together with locations of water, noise/vibration and soil.

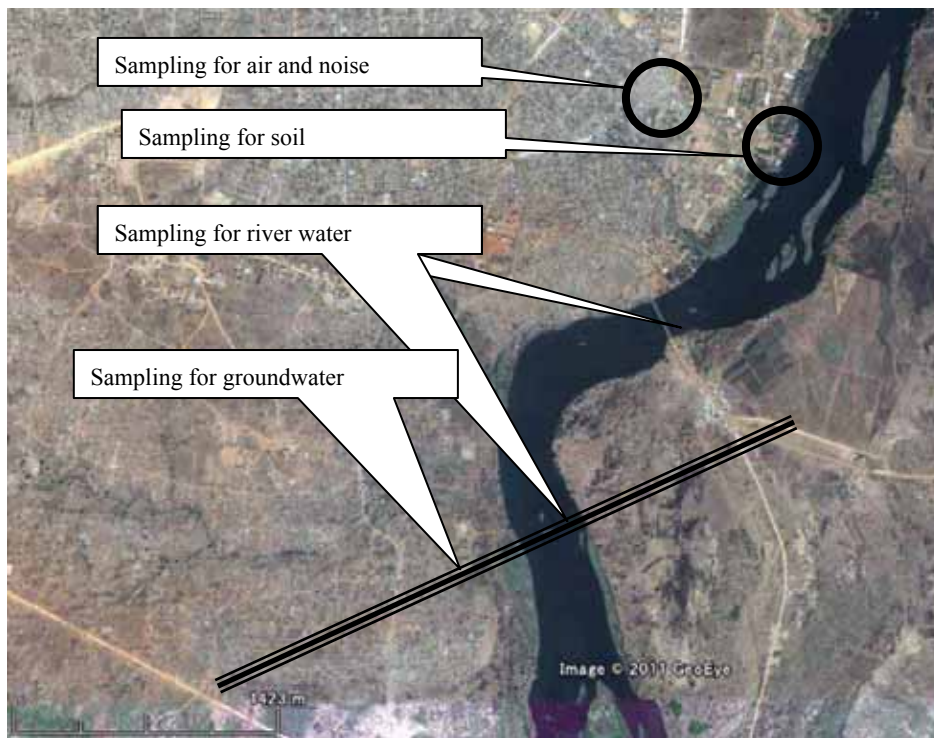


Figure 6-19 Locations of Monitoring

⁵ JICA, EIA Report for Juba River Port Expansion Project, 2010

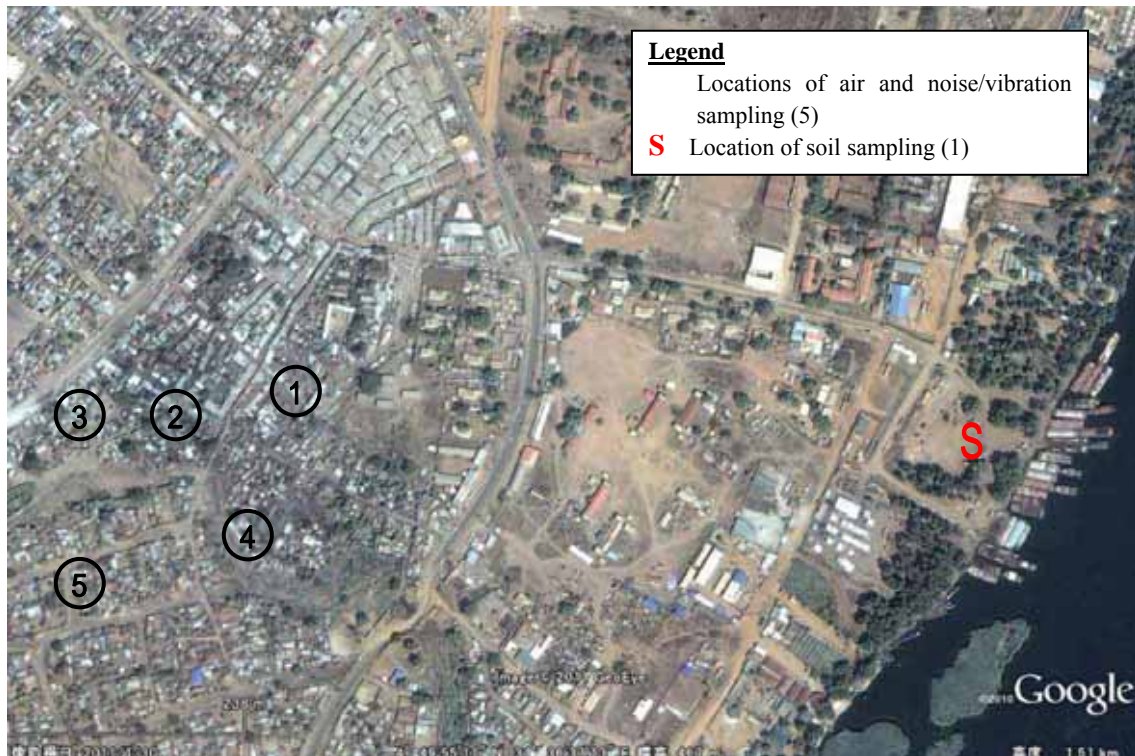


Figure 6-20 Detailed locations of sampling

Juba downtown is more congested with vehicles and the air pollution can be considered to be worse than the project site where almost no traffic is there. The results are shown in Table 6-7. As shown in the table, the average air pollution concentrations are less than the environmental standards set even in this traffic congested town. Therefore, the air pollution in the less congested project site can be estimated as not worse than in downtown.

Table 6-7 Results of ambient air pollution monitoring in Juba downtown

Sampled October 2010

			1 . Sunflower hotel	2 . Next to Keer Marine River Transport Company	3 . Next to Muslim School	4 . On the south side of the fence near the water pump	5 . Outside the JICA Office	Average of 5 locations	World Bank (WHO)	Kenyan Standard (other than controlled area)	Japanese Environmental Standards	
Air pollution	Dust	µg/m ³	81	12	17	70	15	39	-	-	600	
	Sulphur dioxide	µg/m ³	148 ⁶	76	Not detected	Not detected	37	52	20-125 daily (10 min.)	Yearly 80 (yearly 120 (daily))	114 (daily) 286 (hourly)	
	Nitrogen dioxide	µg/m ³	17	11	69	8	14	24	Yearly 40 (guideline) Hourly 200 (guideline)	82 (Daily) 204	82-123 (daily),	
	Carbon monoxide	µg/m ³	442	437	436	434	420	434	-	8 hours 2,000	12,500 (daily) 25,000 (8 hours)	
	Photochemical oxidants	µg/m ³	Not detected	Not detected	Not detected	Not detected	Not detected	0	-	Daily 129	129 (hourly)	
	VOC	Benzene	µg/m ³	84	23	Not detected	Not detected	Not detected	21	-	-	0.3
		Trichloro-ethylene	µg/m ³									200
Tetrachloro-ethylene		µg/m ³	200									
Dichloro-ethylene		µg/m ³	150									

(26) Water Contamination (Baseline)

Existing data about the qualities of Nile River water and groundwater were collected from same EIA Report for Juba Port Expansion and others references⁷, and studied while samples of river water at the location of proposed bridge and groundwater at Lologo Village were taken and tested. Tables 6-8 6-9 summarise these results.

⁶ According to the EIA, the detail of measurement is unknown. If the measurement was done for 1 day, this value 148 µg/m³ exceeds standard 114 µg/m³, but the done for 1 hour only it doesn't exceed that standard 286 µg. The reason of peculiar high value is not known since there is no source to emit SO₂. Anyway, the average is within the standard. Anyway, the average is within the standard. Anyway, SO₂ at No.1 location is far biggest than others, where no fuel/coal industries are there around Juba which emits a lot of Sulphate material.

⁷ Water analysis reports provided from JICA Technical Assistant Team

Table 6-8 Categorization of river water quality

Classification		AA	A	B	C	D	E
Natural environment conservation		Applicable	Not applicable				
Bathing		Applicable			Not applicable		
Agricultural use		Applicable				Not applicable	
Environmental conservation		Applicable					
Treatment required for drinking water supply		Simple treatment	Conventional treatment	Sophisticated treatment	Cannot use		
Fishery use		Pure water fishing		Slightly muddy water fishing	Muddy water fishing	No fishing	
Treatment required for industrial use		Conventional treatment			Sophisticated treatment	Special treatment	
Parameter and unit	Results (Location, month sampled)	Guideline values					
pH	- 7.5-7.7 (March 2011)	6.5-8.5 Irrigation water should be 6.5-7.5. Coagulation sedimentation method is affected if pH<6.5. Chlorination is affected if pH>8.5. Suitable for anticorrosion of water pipes and the river is productive if pH is 6.5-8.5. Nutrient is lost if pH is >8.5					
BOD	mg/L -	1 or less: Suitable for simple water treatment	2 or less: Survival limit for mountain stream fish	3 or less: Limit for conventional treatment for drinking water	5 or less: Survival limit for muddy water fish	8 or less	10
SS*	mg/L About 80 (estimated based on NTU monitored for water sample at the river, March 2011)	25 or less: Limit for aquatic lives for growth in general			50 or less: Limit for survival for fishes	100 or less: Limit for agricultural use	No uncomfortable odors, without floating garbage
DO	mg/L -	7.5 or higher Relatively favorable condition		5.0 or higher Applicable for agricultural use		2.0 Anaerobic fermentation can be prevented	
Total Coliform	MNP /100mL 1,100 (Juba bridge, November 2008 and >18 June 2009)	50 or less: Limit for chlorination method	1,000 or less Limit for bathing and conventional treatment method	5,000 or less Sophisticated treatment is required	-	-	-

Table 6-9 Results of chemical analysis for surface water and groundwater

Category	Parameter	Unit	River water				Ground water	Japanese standard for drinking water
			October-November 2008, Juba Bridge	July 2009, Juba Bridge	October 2010, Juba port	March 2011, Lologo	March 2011, Lologo	
Human health	Coliform	MNP /100mL	1,100	>18 February 2009	210 (E-Coli)	-	-	Not detected
	Cyanide	mg/L	Not detected	Not detected	-	-	-	0.01
	Mercury	mg/L	Not detected	Not detected	-	-	-	0.0005
	Lead	mg/L	Not detected	Not detected	-	-	-	0.05
	Cadmium	mg/L	Not detected	Not detected	Not detected	-	-	0.01
	Selenium	mg/L	Not detected	Not detected	-	-	-	0.01
Monitoring required	Arsenic	mg/L	Not detected	Not detected	Not detected	-	-	0.01
	Nitrates	mg/L	2.5	0.32	2.5	-	-	10
	Nitrites	mg/L	0.03	0.01	-	-	-	10
	Nickel	mg/L	0.02	Not detected	-	-	-	0.01
	Boron	mg/L	Not detected	Not detected	-	-	-	0.2
Acceptable drinking water quality	Nitrites	mg/L	0.03	0.01	-	-	-	0.05
	Copper	mg/L	Not detected	Not detected	2.0	-	-	1.0
	Iron	mg/L	0.48	0.42	387	-	-	0.3
	Manganese	mg/L	0.01	0.01	5	-	-	0.05
	Zinc	mg/L	Not detected	0.03	Not detected	-	-	1.0
	Sodium	mg/L	-	23.2	-	-	-	200
	Calcium	mg/L	Not detected	Not detected	-	-	-	300
	Phenols	mg/L	-	-	17.8 (TPH)	-	-	0.005
	pH	mg/L	7.6	7.6	6.5	7.6	6.6	8.6 ~ 5.8
n k i n g	Turbidity	NTU	16-20	20	24	19.5	2-7	2
	Manganese	mg/L	0.01	0.01	-	-	-	0.01

Category	Parameter	Unit	River water				Ground water	Japanese standard for drinking water
			October-November 2008, Juba Bridge	July 2009, Juba Bridge	October 2010, Juba port	March 2011, Lologo	March 2011, Lologo	
	Aluminum	mg/L	0.62	0.02	-	-	-	0.2
Not included in the standard	Conductivity	μS/cm	120-300	300-400	-	-	-	-
	Salt estimated from conductivity	mg/L	60-150	160-200	-	-	-	-

As shown in the above table, followings are noted:

- The quality of river water can be classified B-D, based on the concentrations of SS and Coliform which specifies
 - Bathing is no applicable
 - Sophisticated treatment is required as drinking water
 - Muddy water fishing may be only applicable
- As a direct drinking water for river water,
 - In the view of *human health*, coliform and E-coliform as were 1,100 and 210 MNP/100mL respectively, shouldn't be detected. Concentrations of Cyanide, Mercury, Lead, Cadmium, Arsenic, Nitrate and Nitrite were within the standards.
 - In the view of *monitoring requirement*, concentration of Nickel was beyond the standard.
 - In the view of *acceptable water quality*, concentrations of Copper, Iron, Magnesium and Phenol exceeded the standards. Colour and Turbidity also were not accepted.
 - In the view of *comfortable drinking water standard*, concentration of Aluminium exceeded the standard. Turbidity was not accepted as well
- As a direct drinking water of ground water,
 - In the view of accepted water quality, turbidity sometimes is beyond the standard..

(27) Soil pollution (Baseline)

According to the hearing from village head, there was no soil contaminating activities such as fuel storage or dumping of harmful material at the project site was done so far, we presumed no monitoring is necessary. Soil contamination monitoring will be implemented before construction to confirm if any soil be polluted.

Just as referential information, Table 6-10 summarizes the results of compositions of elements and soil pollution at Juba Port. As the typical case of lateritic soil in south regions, the iron content is high.

**Table 6-10 Results of chemical analysis for soil pollution
(Juba Port, 4km north of the site: just reference only)**

Sampled October 2010

Substance	Unit	Juba Port	Japanese Environmental Standards
Cadmium	mg/L	Not detected	0.01
Total cyanide	mg/L	-	Not detected
Organic phosphorus	mg/L	-	Not detected
Lead	mg/L	11.0	0.01
Chromium□	mg/L	-	0.05
Arsenic	mg/L	Not detected	0.01
Total mercury	mg/L	-	0.0005
Alkyl mercury	mg/L	-	Not detected
PCBs	mg/L	-	Not detected
Copper	mg/kg	-	125 for agricultural soil only
Dichlormethane	mg/L	-	0.02
Carbon tetrachloride	mg/L	-	0.002
1,2-dichloroethane	mg/L	-	0.004
1,1-dichloroethylene	mg/L	-	0.02
Cis-1,2 dichloroethylene	mg/L	-	0.04
1,1,1-trichloroethane	mg/L	-	1
1,1,2-trichloroethane	mg/L	-	0.0006
Trichloroethylene	mg/L	-	0.03
Tetrachloroethylene	mg/L	-	0.01
1,3-dichlororopen	mg/L	-	0.002
Thiuram	mg/L	-	0.006
Simazine	mg/L	-	0.003
Benzene	mg/L	-	0.02
Selenium	mg/L	-	0.01
Iron	mg/L	8,777	No standard
Manganese	mg/L	280	Ditto
Zinc	mg/L	Not detected	Ditto
Sulphate	mg/L	230	Ditto
Nitrates	mg/L	5	Ditto
Total petroleum hydrocarbon	mg/L	251	Ditto
BTEX	mg/L	42	Ditto

It is noted that the Lead is much beyond the standard. Because of this much high concentration, the pollutant source is considered as liquid but not solid source. In case of solid source such as bullets for guns, concentration usually dose not becomes this much high since the soluble amount of solid lead into water is quite limited. However in case of liquid source such as car battery liquid, a large amount of lead ions are already solved into the liquid and, thus, the concentration of reached soil sample⁸ has become very high. The sampling location is inside storage yard of Juba Port and leaked car battery liquid from decayed containers can be the reason of high contamination by lead.

The soil pollution baseline survey is not recommended due to cost ineffectiveness and difficulties to detect soil pollutions. The soil pollutions are classified into two types: one is pollution by evaporating substances such as gasoline and other type is pollution by

⁸ Concentration of substance in reached water is tested for soil pollution analysis.

heavy metals. In both cases it is very costly to find out, since commonly at all of 10 to 20m grids corner over the site, soil has to be sampled and tested for the case of gasoline pollution to hit the polluted portion. For the case of heavy metal pollution, the chance to hit the polluted soil becomes far less since the heavy metal doesn't expand like evaporated gasoline in the soil, other wise all portion of the site is not fully contaminated like at an ex-chemical product factory site. According to the information, the chance of total soil pollution is none and even if the soil sampling is implemented at several locations randomly, it is hard to detect soil pollution.

(28) Waste (Baseline)

There are many domestic waste including pet bottles were scattered all over the site. They are some times collected in the open holes any where and incinerated.

(29) Noise and vibration (Baseline)

Similarly as the case of air pollution, no noise pollution was considered as no serious, since no traffic or factory is there at the site. The existing data in downtown is taken as baseline data.

Table 6-11 indicates the back ground of noise and vibration. Vibration data is just estimated as representative values from experience.

**Table 6-11 Results of noise and vibration monitoring
(Sample at Juba Port, 4km north of the project site)**

Sampled October 2010

			1.Sunflower hotel	2. Next to Keer Marine River Transport Company	3. Next to Muslim School	4. On the south side of the fence near the water pump	5. Outside the JICA Office	Japanese Environmental Standards as for reference
Noise and vibration	Noise	dB	57-64	50-56	53-56	57-63	52-60	At road boundary; - 70 (day time) - 65 (night time)
	Vibration	dB	30-50					At the area mixed of residence and business activities - 70 (day time) - 65 (night time)

As shown, no serious noise or vibration is suffered in general as would beyond allowable limits compared in the case with Japanese standards. For time being there

data are to be utilised as baseline data for future prediction of noise and vibration caused by the project in the safety side estimation. Finally based on the monitoring before construction, noise and vibration are estimated at right location and the mitigation measures, if necessary, shall be planned.

(30) Ground Subsidence (Baseline)

The ground at the site is covered with well compacted sand or stiff clays, immediately underlain by rock within several meters below ground surface and no long term consolidation settlement can be caused

(31) Oder (Baseline)

Stinging smell can be expected while they incinerate kitchen waste near the house.

(32) Bottom Sediment (Baseline)

Bottom sediments are well-graded sand or gravels without very muddy material which may contain organic residue or heavy metal elements easy to adhere to very small soil particles.

7. Environmental Impacts

This chapter predicts and assesses the project's likely positive and negative impacts, in quantitative terms to the extent possible and specifies topics that do not require further attention.

(1) Involuntary resettlement (Project impact)

RAP in other volume details about resettlement activities.

(2) Local economies, such as employment, livelihood, etc (Project impact) .

By the project, most of local economy at the site is considered to be improved since,

- Employment is promoted at the construction site during construction
- Sales is increased for small business and farmer from passers-by of new route
- Increment of land price by new investors
- Increment of population resulting in activation of the economy

However some farmer, brick manufacturer or fisherman may suffer from more or less inconvenient during construction if no measures are taken although the area affected is width of 15-30m only for farm land and borrow area for brick manufacturing. Other than that, large area remains unattached by the project. As for fishermen, they are not much affected since the fishing points are abundant along the river other than the project site.

(3) Land use and utilization of local resources (Project impact)

Area of 15m x 150m in the flooded plain agricultural activities on the west bank become under the shadow of bridge deck. On the east bank agricultural area 30m x 200m is affected. Brick manufacturing activities is affected within ROW. Group cemetery for no-identified war dead on the west bank will be affected. Other than that, there is no impact to the land use and local resources

(4) Social institutions such as social infrastructure and local decision-making institutions (Project impact)

Most of these institutions are located sufficiently away from the proposed road. Police station, only social institution affected, is made up of temporary structure and easy to move.

(5) Existing social infrastructures and services (Project impact)

As for the existing pumping well inside ROW, road is designed to avoid them.

- (6) Poor, indigenous, or ethnic people (Project impact)
Among 80 households to be relocated, 66 have no land titles classified as informal residents. According to the regulation, they may be just kicked out of the site without any compensation and become poorer if no measures are taken.
- (7) Misdistribution of benefits and damages (Project impact)
While land title holders get enough compensation, non-titled may get nothing, but just kicked out of the site. Thus there can be misdistribution of project benefits and damages by the project can be caused if no measures are taken.
- (8) Cultural Heritage (Project impact)
There is no cultural heritage and no impact.
- (9) Local conflicts of interest (Project impact)
The displaced landless has no other place to go than encroaching the land not belonging to them. By this, land dispute arises if no measures are taken.
- (10) Usage of Water and Water Right (Project impact)
Existing pumping wells, water delivery service and taking water from river are not be affected by the project. Access to river side for water sampling is any where and no body is disturbed during construction or after operation. Contamination to river water during construction of pier on the river is in the range of negligible as discussed later.
- (11) Accident (Project impact)
After the access is connected to C3, Rajef Road and Nimule Road, the traffic volume 15,000 per day is expected, half of which is heavy vehicles. Heavy vehicles are some times seem to be overloading. Vehicles carrying excessive weight are less stable and take a longer time and distance to stop. The heavy load puts a massive strain on the tyres which are therefore more likely to fail under stress resulting in causing accidents. Overweight vehicles also cause excessive wear and tear to the road and bridge, as well as environmental damage in terms of increased fuel consumption, noise and vibration. Also at the intersection of access with Lologo Street, Nimle and Rajef Roads, the chance of traffic accidents also may be increased.

In addition to traffic accidents, accidents during construction, such as falling down from high place, can be caused.

If construction work is done or material is stored indiscriminately at any place where residents can freely approach without protection fence, injury/ accidents can be caused.

(12) Sanitation (Project impact)

By the Inflow of 500-600 outside construction workers, the present sanitary situation can be worsened by indiscriminating dumping of waste and toileting if no measures are taken.

(13) Infectious diseases such as HIV/AIDS (Project impact)

It is common understanding that by the inflow of outside workers, some of those may be living with HIV, in the construction site, the chance of infection may increase. Also noted is that reduced mobility and accessibility of populations in prolonged conflicts settings has been considered a protective factor against the spread of HIV, whereas increased mobility is considered a risk factor for the spread of HIV during peace time.

(14) Gender (Project impact)

Due to the increase of job opportunities, female workers also are able to find jobs with reasonable salary and the social position is raised. However for the families whose livelihood and life levels are worsen by the project, the gender gap can be widen. Mothers always too much overwork to feed their family if necessary, husbands, parents and, among all, children.

(15) Children's Right (Project impact)

Children's labor may be increase if no measures are taken.

(16) Topography and Geology (Project impact)

For filling material, Laterite, distributed at the ground surface only, is preferred due to its compactness and are stripped from ground surface at flat plain very thinly and shallowly so that not much change of topography or high risk of land slide are expected. As for concrete gravels, they are hacked from rock mountain and the topography can be changed more or less.

(17) Soil Erosion (Project impact)

Erosions on river bank and river bed were studied here.

Soil erosion of river bank is not considered to take place when piers are located 10m

away from the bank as per draft guideline for the planning of river crossing guideline⁹. In the project, locations of piers are situated much far away and, accordingly no bank erosion will be caused by the presence of piers.

As for river bed erosion or scouring, the maximum depth and area were estimated based on the guidelines for civil engineering institute in Japan and the results are as:

- scoring depth at downstream portion of the pier: 1m
- scoring area around pier: 2m

Base rock layer is encountered a few meters bellow river bed and not much scoring can be considered to be taken place

(18) Groundwater (Project impact)

Groundwater will not be affected since there is no work such as large scale pumping up, dewatering or grouting as can affect the groundwater table or quality.

(19) Hydraulic Situation (Project impact)

Impact by the installation of piers to hydraulic situation was studied as per the above guideline. Following is proposed as guidelines,

- Pier shall not be located at sensitive locations of the river such as
 - Bottle neck portion
 - Water hammering location
 - Confluence
 - Carved portion
 - Location where inclination of riverbed considerably changed
- Bridge shall be aligned as right angled to the flow direction during flooded
- There should be no existing river crossing structures, such as bridge, weir, underwater weir, etc at nearby location
- Increment of water level is below HWL (High Water Level) and within safety margin.
- Height of beam bottom shall be higher than HWL (Highest Water Level) + safety margin height predetermined by discharge

Figure 7-1 presents the relation of Nile River and proposed bridge configuration.

⁹ published by Japan Institute of Construction Engineering, 2009



Figure 7-1 Nile River and the proposed bridge

Locations of piers are indicated in Figure 2-3. As show in these figures, the bridge and piers are not located at sensitive location and is fulfilling above requirement, including increment of water table by pier as estimated in Table 7-1.

Table 7-1 Increment of water table by installation of piers

Q	Discharge, m ³ /s	1,700
C	Constant based on the shape of pier	0.9
b ₁	Width of river m (maximum depth line)	350
b ₂	Net width of river after deduction of total pier width $b_2 = b_1 - \sum t$	328.1
t	Pier width m	7.3
N	Number of pier	3
H ₁	Water depth at upstream portion of the pier m	7
□ h	Increment of water level m $\square h = \frac{Q^2}{2g} * \left(\frac{1}{C^2 b_2^2} (H_1 - \square h)^2 - \frac{1}{b_1^2} H_1^2 \right)$	0.01
	Bridge beam bottom m	461.726
	HWL m	459.3
	Water level at rainy season m	456.65
	Increased water level at rainy season m	456.66
	Safety margin m	1.5

*After D'Aubuisson Formula

Therefore, the impact to hydraulic situation is considered negligible.

(20) Costal Zone (Project impact)

Since the coastal zone is 5,000 km away, no impact is predicted.

(21) Fauna, Flora and Biodiversity (Project impact)

The impact of bridge to water environment is estimated and summarized as Table 7-2.

Table7-2 Impacts to fauna, flora and eco-system

Ecosystem	Possible impacts caused by			
	Clearance area	Scoring area around pier (No erosion on the river bank is estimated)	Water contamination during pier construction*	Change of hydraulic condition
Land eco-system	30m x 3,700m for accesses including some 110 Neem and Mango trees	-	-	-
Shoreline eco-system	20m x 10m x 2 pier without tree	-	0.1mg/L increment of SS	1cm increment of water table
Riverbed eco-system	8m x 19m x 4 piers	2m wide and 1m deep around pier	0.1mg/L increment of SS	-
Aquatic life	-	-	0.1mg/L increment of SS	-

* No dumping of waste into river is presumed

Basically, there is no protected species around the site. About the impact to the common species, followings are considered:

- For accesses, some 200 number of mostly Neem trees and few Mango trees are cleared. However they are able to be replanted. Abundant numbers of Neem trees and mango trees remain untouched by the project.
- The areas to be lost for shoreline and riverbed ecosystems are also negligible compared to the very large surrounding area with same environments and ecosystems.
- About scoring, this much scale is also no serious to hydraulic condition or water contamination and sometimes may give positive impacts to aquatic life, strengthening the variety of ecosystem due to cavity on the riverbed¹⁰.
- Impacts by water contamination and change of hydraulic condition are negligible respectively.

As a conclusion, impacts to fauna, flora and eco-system are considered as negligible.

(22) Meteorology (Project impact)

The project is not the project which can affect the climate.

(23) Landscape (Project impact)

The landscape will be changed by the appearance of a new Nile Bridge and embankment for accesses as show in Figure 7-2.

¹⁰ For example, Hyogo Prefecture in Japan, Manual for bio-diversity consideration (river), 2010



Figure 7-2 Landscape of a new bridge

However local residents are completely indifferent to the landscape of a bridge or access. For the governmental stakeholders, they prefer the type “tied arched bridge” as a beautiful shape.

(24) Global Warming (Project impact)

Emitted amount of global warming gas, CO₂, in cases with project and without project in 2015 were roughly estimated respectively for the area as shown in Figure 7-3.



Figure 7-3 Area of estimation for global warming gas

The results are presented in Table 7-3

Table 7-3 Comparison of emission of global warming gas (CO₂)

		2008	2011	2015	2025
Without project	Passage Car Unit (PCU) km	454,440	719,312	1,326,900	3,313,184
	Average velocity V, km/h	19.2	14.3	9.6	5.2
	CO ₂ , t/day	228	441	986	2,929

With project	PCU km	-	-	1,296,723	3,430,968
	Average velocity V, km/h	-	-	31	30
	CO2, t/day			427	1,149

$CO_2 = PCU \times 1.970 \times (546 - 20 \times V + 0.25V^2)$;
After Center for environmental information science, Japan 1999

As shown in the above, the emission amount is estimated as roughly halved by the implementation in 2015 and 2025 respectively.

(25) Air Pollution (Project impact)

Prediction of air pollutions were implemented based on the traffic volumes, velocity and baseline data obtained for the cases when the Project is implemented and not. For the evaluation of the predicted figures, the environmental target for air pollution were tentatively chosen as medium values from the comparison of WHO, Kenyan and Japanese standards as shown in Table 7-4. This target value shall be revised in the due course of the construction based on the practical results monitored.

Table 7-4 Tentative environmental target set the project

Unit: $\mu g/m^3$

	World Bank (WHO)	Kenyan Standard (other than controlled area)	Japan Road Environment	Environmental target proposed in the Project
Nitrogen dioxide NO2	Yearly 40 (guideline) Hourly 200 (guideline)	Yearly 82 Daily 204	Daily 82-123	Daily 123
Dust			600	600
Particulate matter PM	PM10 Yearly 20-70 PM10 Daily 50-150	SPM Yearly 140 SPM Daily 200	SPM Daily 100 SPM hourly 200	SPM Daily 100
Carbon monoxide CO	-	8 hours 2,000	Daily 12,500 8 hours 25,000	Daily 12,500
Sulfur dioxide SO2	Daily 20-125 10 minutes 500(guideline)	Yearly 80 Daily 120	Daily 114 Hourly 286	Daily 125
Ozone O3	8 hours daily maximum 100-160	-	Daily 129	-

Remark: "Guideline" means just a reference only

Locations of predictions are at the existing Juba Bridge and proposed new Nile Bridges in 2011, 2015 and 2025 respectively as shown in Figure 7-4.

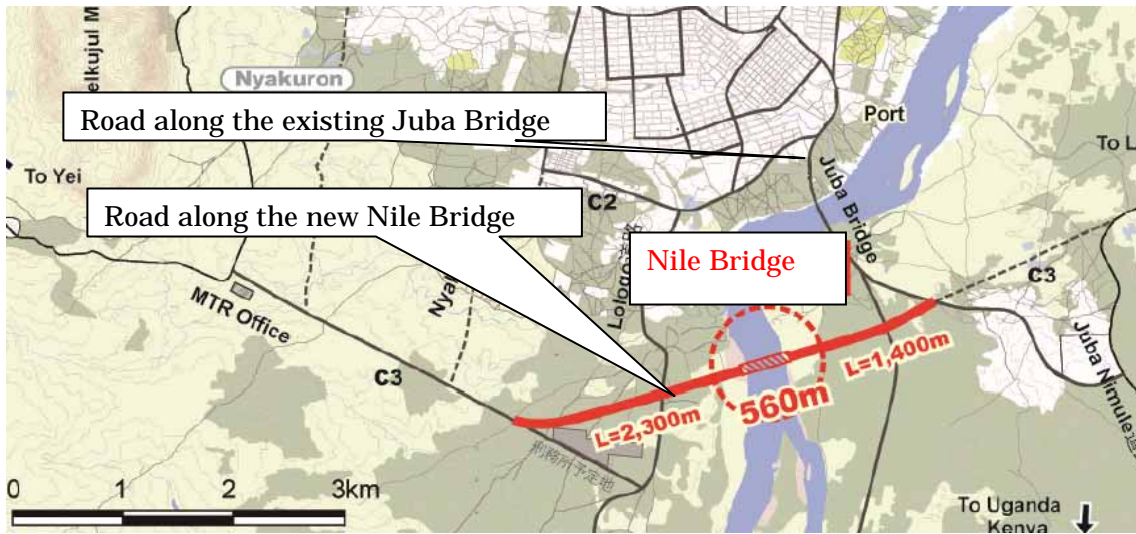


Figure 7-4 Location of predictions for air pollution, noise and vibration

Estimation method is presented in the appendix. The results of NO₂ prediction are presented in Figure 7-5.

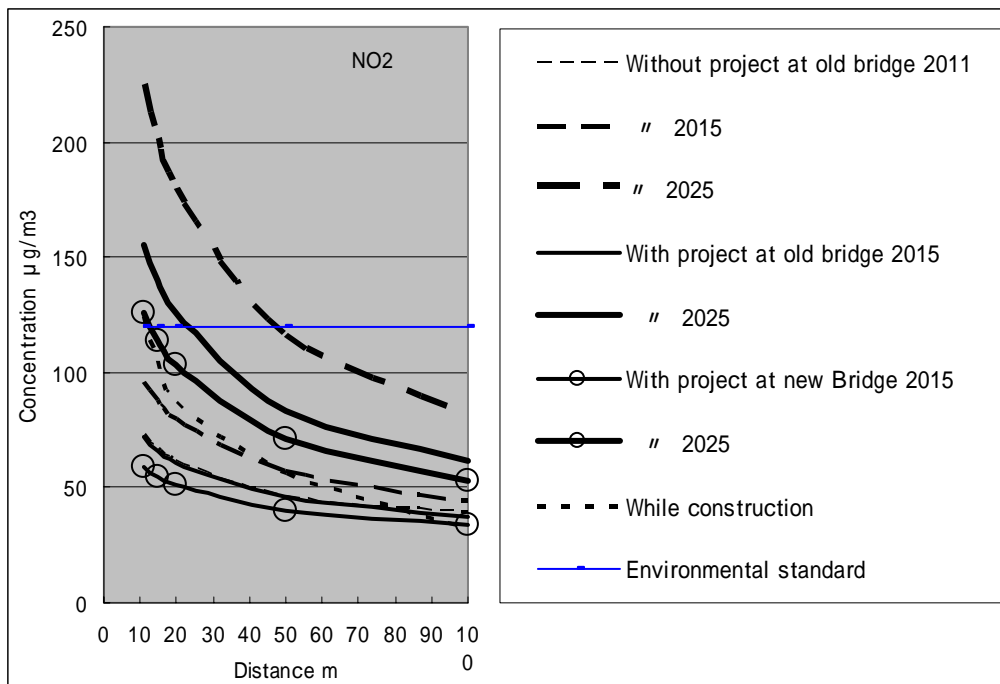


Figure 7-5 Prediction of air pollution, NO₂

In the figure, environmental standards on Japan are taken into consideration since they are not available here. Table 7-5 summarizes the concentrations of pollutions in cases

with and without project respectively.

Table 7-5 Prediction of air pollutions in cases of with and without projects

Location: 15m away from center line of the road

Unit: $\mu\text{g}/\text{m}^3$

			2011		2015		2025		2012	Environmental target
			Juba Bridge	Nile Bridge	Juba Bridge	Nile Bridge	Juba Bridge	Nile Bridge	Nile Bridge	
	Without project	Traffic volume per day	10100	-	18300	-	38300	-	During construction	
		Velocity km/h	15	-	10	-	5	-		
	With project	Traffic volume per day	-	-	11000	14500	23100	30400		
		Velocity km/h	-	-	10	50	5	40		
NO ₂	Without project	Daily	79	-	104	-	215	-	-	123
	With project	Daily	-	-	72	59	155	126	124	
SPM	Without project	Daily	42	-	43	-	49	-	-	80
	With project	Daily	-	-	42	41	46	44	43	
CO	Without project	Daily	485	-	510	-	625	-	-	12,500
	With project	Daily	-	-	480	466	559	530	434	
SO ₂	Without project	Daily	53	-	54	-	56	-	-	125
	With project	Daily	-	-	53	53	55	55	52	

As shown in the table, following are noted:

- Concentrations of NO₂ for both cases when project is implemented and not at Juba Bridge in 2025. For all the other cases, air pollutions are within respective environmental targets.
- All the air pollutions at Juba Bridge are improved of Nile Bridge.
- Concentrations of NO₂ at Nile Bridge, 124 mg/m³ during construction in 2012 and 126 mg/m³ while operation in 2025 are almost same as environmental target of 123 mg/m³.

In addition, dust may be arising from unpaved accesses and material stock piles.

(26) Water Contamination (Project impact)

Water contamination caused by pier construction was estimated assuming that a soil volume equivalent to total volume of steel piles installed below river bed before rock reach to rock is considered to be dissolved out completely into river water as Suspended Solid (SS) for safety side. Figure 7-6 is the procedure of pier construction while Figure 7-7 shows the cross section.

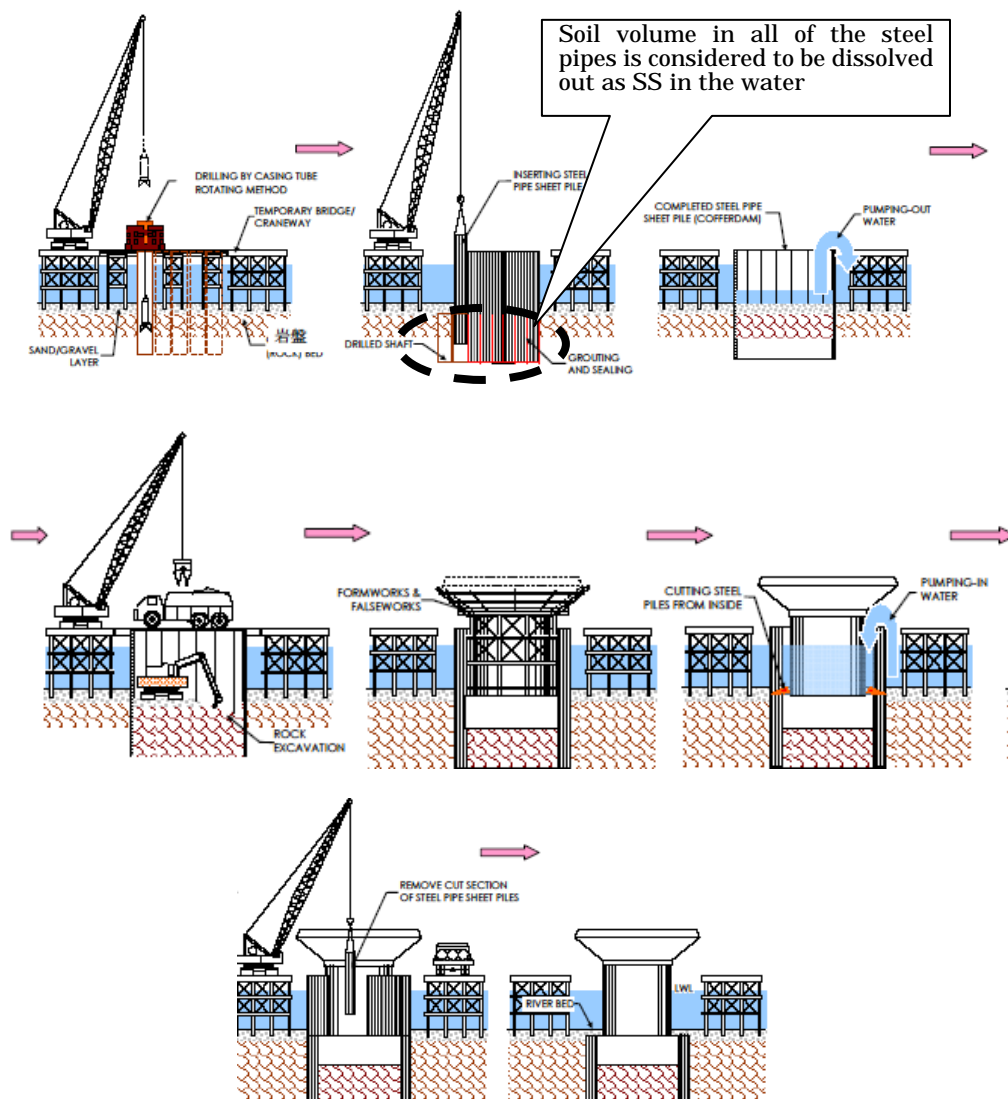


Figure 7-6 Procedure of pier construction

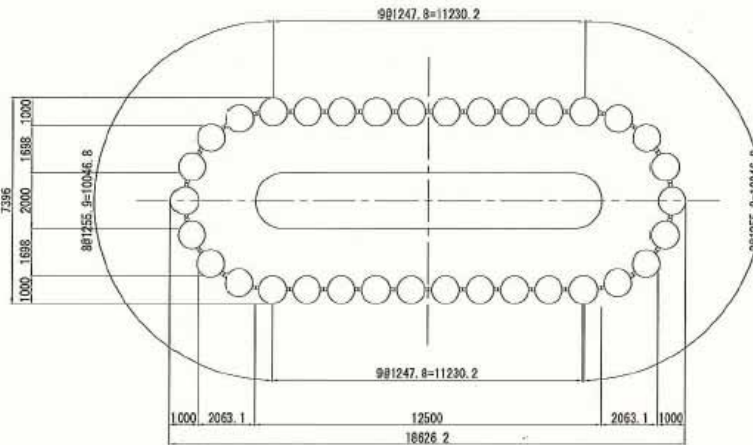


Figure 7-7 Configuration of sheet piles installed (34 Numbers)

Table 7-6 presents our estimation.

Table 7-6 Estimation of Suspended Solid by the pier construction in the river

	Parameters	Formula	Results
a	Steel pile diameter (m)		1
b	Length in the soil (m)		5
c	Silt and clay content %		5
d	Unit weight ton/m ³		2
e	Construction period month		1
f	River discharge (dry season) m ³ /s		1,300
g	SS in the present condition mg/L		78
h	Number of pier		3
i	Pile number installed around the pier	See drawing	34
j	Area of pile section m ²	$(a/2)^2 * 3.14$	0.79
k	Total volume of all piles in the soil per pier m ³	$j * b * i$	133.45
l	Silt and clays portion in the total volume pier ton	$k * c / 100$	6.67
m	Weight of above ton	$l * d$	13.35
n	Velocity of soil weight dissolved mg/s per pier	$m / e / 30.5 / 24 / 60 / 60 * 1,000,000,000$	5,149
o	Generated SS by the construction mg/L	$n / f * h / 1,000$	0.01
p	Total SS mg/L	$g + o$	78.0

As shown, increment of SS by the pier construction work is as less as 0.01 mg/L only and this much contamination is considered negligible.

(27) Soil pollution (Project impact)

Minor soil pollution can be caused by leakage of fuel oil if equipment/fuel drums are not properly maintained.

(28) Waste (Project impact)

Some amount of construction waste will be generated including wood, concrete, paper etc. Concrete waste and riverbed material dug can be generated. As for kitchen waste, sanitary waste and other garbage collected from the workers' camps (600 persons x 40 months) are to be generated. In addition, there is a chance of generation of hazardous waste such as cans for paint as may contain harmful heavy metals.

(29) Noise and vibration (Project impact)

Noise and vibration levels were also estimated same as air pollutions. Figure 7-8 presents the noise prediction for daytime, for which the hourly average traffic volumes is estimated as times of daily average traffic volume.

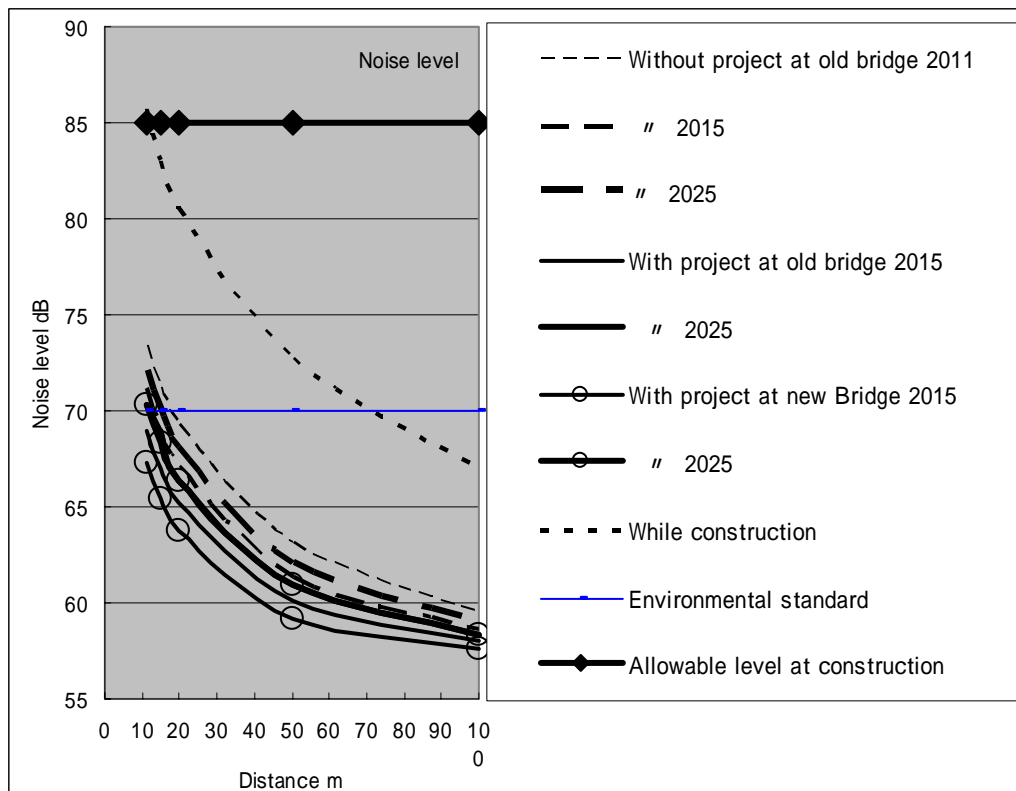


Figure 7-8 Prediction of daytime noise

Figure 7.9 indicates the distance of a nearest sensitive facility (church) and is 50m away from noise source (center of the lane). As shown, the distance is about 50m from noise source (car lane) and the noise expected in the day time is about 60dB in 2025 based on Figure 7-8.

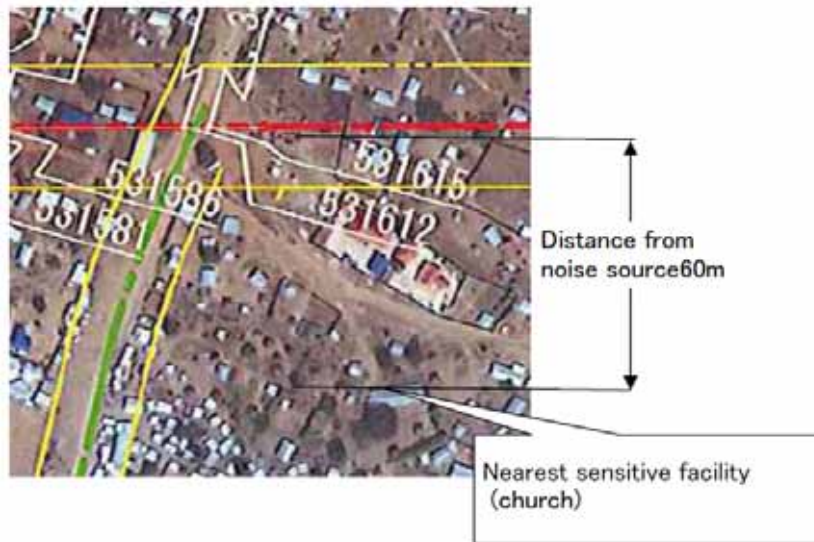


Figure 7-9 Location of the nearest- by sensitive facility

The environmental targets set are as shown in Table 7-7 that will clear the standard for sensitive facilities.

Table 7-7 Tentative environmental target set for noise and vibration

Unit: dB

	World Bank (WHO)	Kenyan Standard (other than controlled area)	Japan Road Environment	Environmental target proposed in the Project
Noise	Daytime 55 -70 Nighttime 45-70	-	Daytime: 70 Nighttime: 65 During construction: 85 (daytime)	Daytime 70 (60 for sensitive facilities) Nighttime 65 (55 for sensitive facility) During construction: 85 (daytime)
Vibration	-	-	Daytime:70 Nighttime: 65	Daytime 70 (60 for sensitive facilities) Nighttime 65 (55 for sensitive facility) During construction: 85 (daytime) Daytime 70 Nighttime 65

Table 7-8 summarizes the prediction of noise and vibrations.

Table 7-8 Noise and vibration in cases of with and without projects

Location: 15m away from center line of the road

Unit: dB

			2011		2015		2025		2012	Environmental standard
			Juba Bridge	Nile Bridge	Juba Bridge	Nile Bridge	Juba Bridge	Nile Bridge	Nile Bridge	
-	Without project	Traffic volume per day	10100	-	18300	-	38300	-	During construction	-
		Velocity km/h	15	-	10	-	5	-		
	With project	Traffic volume per day	-	-	11000	14500	23100	30400		
		Velocity km/h	-	-	10	50	5	40		
Noise	Without project	Daytime	73	-	71	-	72	-	-	70
		Nighttime	66	-	66	-	66	-	-	65
	With project	Daytime	-	-	69	67	70	68	86	70 (85*)
		Nighttime	-	-	64	62	65	63	57	65
Vibration	Without project	Daytime	49	-	48	-	48	-	-	70
		Nighttime	48	-	46	-	46	-	-	65
	With project	Daytime	-	-	48	62	49	62	69	70
		Nighttime	-	-	45	59	47	60	40	65

*During construction

From above tables, following can be concluded:

- Every time, noises and vibrations are almost within environmental targets at operation time.
- Although a high figure is predicted at the time of construction, it is still same as allowable target set.
- By the project implementation, they are always improved compared with case when project is not implemented.

(30) Ground Subsidence (Project impact)

No ground subsidence is caused.

(31) Odor (Project impact)

Offensive odor can be generated if sanitation measures are ignored from kitchen waste, toilet and incineration of waste. After construction, offensive odor can be generated by the driving vehicle emission.

(32) Bottom Sediment (Project impact)

No harmful substance and liquid/solid wastes are dumped into the river, bottom sediment is contaminated.

8. Environmental Management Plan (EMP)

8.1 General

(1) Policy

During construction work, all the reasonable steps shall be taken to protect the environment both on and off sites and to limit the damage and nuisance to people and resulting from pollution, noise and others as the result.

This is an Environmental Management Plan (EMP) that details (a) the measures to be taken during the implementation and operation of a project to eliminate or offset adverse environmental impacts, or to reduce them to acceptable levels; and (b) the actions needed to implement these measures.

(2) Acknowledgement of laws and regulations

The contractor/engineers shall acknowledge the law, regulations and target set forth for the project of Republic of South Sudan pertaining health, safety and environmental protection related to:

- Air pollution
- Water quality
- Prevention of social impact
- Noise and vibration
- Fuel and chemical storage
- Protection of historic and cultural heritage/activity
- Waste management
- Re-vegetation and landscaping
- Protection of ecological environment
- Protection of utilities

Compliance with such laws/target shall be ensured by

- Preparation, submission and approval of the EMP
- Updating and supplementing of EMP as required
- Appointing suitable environmental safety officers
- Establishing suitable organization to undertake environmental protection and monitoring activities as specified
- Consulting and coordinating with the Ministry of Environment (MOE)

(3) Staffing with contractor's responsibilities

Environmental/safety/health officers are appointed whose responsibilities include:

- Assisting contractor to implement health, safety and environmental protection and management as set forth in the contract
- Undertaking day to day environmental management tasks
- Maintaining a site diary recording all relevant matters concerning environmental management including protection, control, audit, inspection and interviews.
- Regular checking and keeping records of all safety and protective apparatus, equipment and clothing provided and
- Organizing the orientation courses on safety and health for new comers, including provision of measures for awareness and prevention of Sexually Transmitted Infection (STI) and HIV/AIDS among all.

(4) Regular meeting with communities

Monthly meeting shall be held to explain the work progress and take any concern/complains about construction raised by the residents to mitigate.

(5) Reporting

Following reports shall be prepared, submitted and coordinated:

- Weekly environmental and safety reports, documenting the safety and environmental inspection/audit taken on a weekly basis
- Monthly summary of weekly inspection
- Accident report of workers or staff on site or off site whichever
- Monthly report and accidental report are submitted to JICA office timely with regular meeting with JICA office every three months.

8.2 Environmental management plan

Table 8-1 summarizes the proposed environmental mitigation plans. The monitoring itself is implemented by the contractor/third party, the MOE is in the first position to supervise the monitoring activities and evaluate the results except resettlement issue.

Presently there are 3 sections as (1) inspection for EIA, (2) inspection for environmental audit and (3) inspection for pollution control including 9 staffs. However they have not much experience to implement these duties since such an EIA system did not exist. Therefore, capacity building has to be implemented during monitoring and report making through experienced consultants during monitoring activities.

Table 8-1 Summary of environmental impacts, mitigation measures and monitoring plan

Item	Negative impact predicted	Mitigation measures proposed*		**Cost for monitoring plan	Cost borne by	
		(Mitigation)	(Monitoring)			
1	Involuntary resettlement	See RAP, different volume		\$150,000	MRB	
2	Local economies, such as employment, livelihood, etc.	Moderate: Tentative/permanent loss of working places for farmer, fisherman, brick bakery etc	Priority employment during construction if requested (RAP)	External monitoring to ensure the proper implementation of resettlement activities	-	-
3	Land use and utilization of local resources	Moderate: Loss of productive land	Provision of alternative land or cash compensation by market prices (RAP)	-	-	-
4	Social institutions such as social infrastructure and local decision-making institutions	Negligible: Only police station affected but easy to move (tent)	Provision of alternative land (RAP)	-	-	-
5	Existing social infrastructures and services	Negligible:	Not required	-	-	-
6	Poor, indigenous, or ethnic people	Moderate to severe: Loss of shelter, livelihood and life	Provision of alternative land and priority employment during construction (RAP)	External monitoring to ensure the proper implementation of resettlement activities	-	-
7	Misdistribution of benefits and damages	Moderate: No project benefit (ex. economic development) may be provided for informal residents	Provision of land cheaply to landless and job training (RAP)	External monitoring to ensure the proper implementation of resettlement activities	-	-
8	Cultural Heritage	No cultural heritage	Not required	-	-	-
9	Local conflicts of interest	Moderate: Possible land dispute by encroaching by displaced people	Strictly prohibit not encroach (RAP)	External monitoring to ensure the proper implementation of resettlement activities	-	-
10	Usage of Water and Water Right	Negligible	Not required	Water is sampled from river or wells dug inside construction camps.	-	-
11	Accident	Moderate: Possible increase of accident while construction and after operation	Preparation for possible dangerous works and provision of emergency response system as Health Management Plan (HMP) and prevention of traffic accidents as in	Traffic safety and construction safety are monitored and reported monthly.	-	-

			Traffic Management Plan (TMP) Provision of fences at camps and construction site injury of residents			
12	Sanitation	Moderate: Possible increase of hygiene problem	Provision of enough clean water and sanitary facilities at the site and camp (HMP)	Inspection if sanitation is properly controlled as per HMP	\$20,000	Contractor
13	Infectious diseases such as HIV/AIDS	Moderate: Possible increase of infected people	Campaign of awareness and provision of preventive goods to workers and adjacent community (HMP)	Inspection if campaigns are properly implemented		
14	Gender	Moderate: Salary discrimination between genders	Prohibit salary discrimination between genders	Check payment records of contractor to workers regularly	-	-
15	Children's right	Moderate: Possible increase of children's labor	Prohibition of children's labor	Patrol if child is working at the site	-	-
16	Topography and Geology	Negligible: change of landscape at the borrow pits but acceptable	Not required	-	-	-
17	Soil Erosion	Negligible: Estimated erosion on river bed is not serious (<1m) while the west bank is now being eroded by its nature but no impact is predicted which is caused by the project due to proper disposition of piers	Not required	Monthly inspected and reported, since, as a natural phenomenon, soil erosion can be caused regardless of the project	-	-
18	Groundwater	Negligible: construction work as would affect groundwater such as pumping or grouting	Not required	Monitoring of groundwater qualities monthly since, as a natural phenomenon, groundwater level can be changed regardless of the project Groundwater level is monitored using the well in the camp.	-	-
19	Hydraulic Situation	Negligible: Water level rises 1cm by the bridge	Not required	-	-	-
20	Costal Zone	No coastal zone	Not required	-	-	-
21	Fauna, Flora and Biodiversity	Negligible: The ecosystem at the site is common species and is widely distributed and loss of small area does by the project not affect the total ecosystem there.	Not required	-	-	-
22	Meteorology	Negligible	Not required	-	-	-
23	Landscape	Negligible: no resident thinks landscape will deteriorated by the project.	Re-vegetation of side slopes of earth embankment and bank at abut by	Monitoring of grass/ tree planting activities and the growth	-	-

			lawn/ tree to improve the landscape quality.			
24	Global Warming	Improved: emitted CO2 when project implemented is helved of without project	Minimize the consumption of fuel during construction (EMP)	-	-	-
25	Air Pollution	Moderate to severe at the site since there had been no vehicles. Improved by the project until 2015, but worsen in 2025 in Juba. Allowable during construction.	<ul style="list-style-type: none"> - Prohibit open burning - Idling stop - Fitting exhausted gas control devices - Spraying water on the earth road regularly (EMP) 	Measurement of NO2, SPM, CO, SO2 before(wet and dry seasons), during (wet and dry seasons)and after construction (wet and dry seasons) for roadside and behind the road(back ground) at the site and existing Nile Bridge road respectively together with traffic volume counting Frequency: 4 locations (Juba and Nile Bridges and their back grounds) x 2 days x 6 seasons (3 years) during construction and 2 season (2 years)after construction Monitoring of SO2 may be continued after 2018 based on the concentrations and damages to human and vegetation observed before 2018.	\$300,000	Contractor
				Regular inspection of exhausted gases from equipments every month by gas detector.	\$10,000	Contractor
26	Water Contamination	May be moderate: Muddy water generated during earthwork, although impact by pier construction work is negligible Oil leakage from vessels for construction	Proper treatment of muddy water liquid waste before discharged (EPM)	Measurement of DO (dissolved oxygen), Ec (Electric Resistivity), NTU (Turbidity) Frequency: before (2 seasons), during (every month) and after (2 seasons for 2 years) construction at upstream and downstream to the proposed bridge.	\$5,000 (equipment cost only)	Contractor
				Patrol ensuring no dumping material/muddy water into the river	-	-
27	Soil pollution	Moderate: leakage of fuel	Proper prevention of fuel leakage (EMP)	Inspection of equipment and fuel tank	-	-
28	Waste	Moderate: Generation of non-organic construction waste and organic domestic waste from camp	Proper treatment of construction waste/domestic waste from camp (EMP) including waste deduction/recycling planning Insoluble treatment for hazardous substance containing waste	Supervising and monitoring to ensure all wastes are properly handled	-	-
29	Noise and vibration	Improved to moderate: By the project from unacceptable range to allowable	Minimization of noise and vibration during construction (EMP)	Measurement of noise and vibration levels	\$360,0	Contra

		range while operation until 2015 and worsen in 2025. Allowable during construction.		and after construction (2 season x 2 years) for roadside and behind the road(back ground) at the site and existing Nile Bridge road respectively together with traffic volume counting (4 locations x 1day x 12 times)		
				Regular inspection of equipment and monitoring of NOx and CO by detector	-	-
30	Ground Subsidence	Not caused	Not required	-	-	-
31	Oder	Moderate: from exhausted from equipment/lorry but not serious	Minimization of generation of offensive order during construction n	Patrol ensuring no open burning of waste	-	-
32	Bottom Sediment	Moderate: by dumping of waste/used oil into river but avoidable	Control of waste (EMP)	Patrol ensuring no dumping in the river	-	-

* Although here is no impact is predicted for some items, still some measures/ monitoring are proposed for the purpose to reconfirm that the environment is not affected, observation of natural phenomenon/disaster or to be further improved as routine procedure.

**All the cost for mitigation/monitoring is included in the construction costs.

Table 8-2 Monitoring schedule

Monitoring item	Location/time	Responsible/ Implementing agency	Before construction		During construction (40 months)						After construction						Total	Environmental target	
			2012		2013		2014		2015		2016		2017		2018				
			Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet			
Air pollution, noise and vibration*	NO ₂ , SPM, CO, SO ₂ , noise level and vibration level	1. Road to Nile Bridge	MOE/ Contractor	1	1	1	1	1	1	1	1	1	-	1	-	1	11	Daily, μ g/m ³ NO ₂ <123 SPM<80 CO<12,500 SO ₂ <125 Noise<70: daytime <65: nighttime <85: during construction Vibration<70: daytime <65: nighttime See Table 7.7 for details	
		2. Back ground of the road to Nile Bridge (200m away from road)	1	1	1	1	1	1	1	1	1	-	1	-	1				
		3. Road to Juba Bridge	1	1	1	1	1	1	1	1	1	-	1	-	1				
		4. Back ground of the road Juba Bridge (200 m away from road)	1	1	1	1	1	1	1	1	1	-	1	-	1				
	Traffic count for heavy vehicle, bike and other than those	1. Road to Nile Bridge	MOE/ Contractor	1	1	1	1	1	1	1	1	1	-	1	-	1	11	Visually not over speeding	
		3. Road to Juba Bridge		1	1	1	1	1	1	1	1	1	-	1	-	1			
	Exhausted gas detecting NO _x , CO	Equipment depo	MRB/ contractor	-	-	6	6	6	6	6	6	6	-	-	-	-	36	Unit: g/km NO _x <0.2 CO:<2	
		Dust suppressing		Accesses	-	-	6	6	6	6	6	6	6	6	6	6	6	72	Visually not dusty
	Water pollution	pH, NTU(Turbidity), Ec (Electric conductivity) by hand held type meter	1. 200m down stream of Nile Bridge at river center	MRB/ contractor	1	1	6	6	6	6	6	6	1	1	1	1	1	44	pH: 6.5-8.5 DO>5mg/L Ec<400 μ S/m NTU<25
			2. 200m upstream of Nile Bridge at river center		1	1	6	6	6	6	6	6	1	1	1	1	1		
Oil, Coliform, SS (Suspended solid)	1. 200m down stream of Nile Bridge at river center 2. 200m upstream of Nile Bridge at river center	MOE/ Contractor	1	-	-	-	1	-	-	-	-	1	-	1	-	1	5	Oil:Not detected, Coliform<1,000MNP/100mL SS<200mg/L	
			1	-	-	-	1	-	-	-	-	1	-	1	-	1			

	Monitoring item		Location/time	Responsible/ Implementing agency	Before construction		During construction (40 months)						After construction						Total	Environmental target	
					2012		2013		2014		2015		2016		2017		2018				
			Season (6 months)		Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet			
		Muddy water control	Side drain/sediment pond	MRB/ contractor		-	6	6	6	6	6	6	-	-	-	-	-	-	36	NTU<40	
	Waste management	Collection of wastes	Camp/construction site		-	-	6	6	6	6	6	6	-	-	-	-	-	-	36	Properly collected -	
	River bank erosion	Observation if any erosion	Riverbank		-	6	6	6	6	6	6	6	-	1	-	1	-	1	45	Not being eroded	
	Landscaping	grass/ tree planting	Embankment/ river bank slope		-	-	6	6	6	6	6	6	-	1	-	1	-	1	40	Properly rooted	
	Health	Hygiene and health condition	Camp clinic				6	6	6	6	6	6	-	-	-	-	-	-	42	Properly maintained	
		HIV seminar	Camp				1	1		1		1							5		
	Accident	Accidents by traffic or construction with ax road monitoring	Site				6	6	6	6	6	6	6	6	6	6	6	6	78	No serious accident /casualty	
	Technical transfer through monitoring		Site	Monitor/consultant		1	1	1	1	1	1	1			1			11	Able to operate equipment and evaluate results		
	Seminar		Office	Consultants		1	1		1		1						1	5	Able to plan mitigation measures		
	RAP monitoring implemented by the independent agency	Census, Asset inventory, Contracting and Negotiation	Every three months, interview to 20% of directly affected people and 10% of indirectly affected people in the minimum	The independent third party	4	-	-	-	-	-	-	-	-	-	-	-	-	4	AP was properly explained about compensation/relocation		
Resettlement site		Purchase of sites by MRB and plot selection				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	AP was timely moved and the site was satisfactory for them
Payment		Payment				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	AP was timely and fully paid
Transport of private effects		Assistance by MOPI				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Timely and satisfactorily transported
Public consultation		In each step of above activities				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Monitoring item		Location/time	Responsible/ Implementing agency	Before construction		During construction (40 months)						After construction						Total	Environmental target
				2012		2013		2014		2015		2016		2017		2018			
Season (6 months)			Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet			
Grievance	Mediation and committee member				-	-	-	-	-	-	-	-	-	-	-	-		GRC functioned as per RAP. Solution was properly delivered	
Post relocation survey	Socioeconomic survey for livelihood and life level			-	-	1	-	1	-	-	-	-	1	-	1	-	1	6	Livelihood/life level are not worsen before the project

*As for the air pollution, the necessity of continuation of monitoring after 2018 shall be discussed based on the results or environmental damages caused to human and fauna/flora if any.

(1) Involuntary resettlement (Mitigation measures)

Detailed in RAP.

(2) Local economies, such as employment, livelihood, etc (Mitigation measures).

Most people are thought to be benefited by the project, but there can be people who cannot such as farmers and brick manufacturers of affected land, fisherman etc. At first such people shall be identified and assistances shall be provided to those people.

Assistance includes

- To employ affected people by the project with priority such as farmers, brick manufacturer, fisherman whoever his/her business is affected by the project together with job training is requested.
- Special attention is paid for woman, aged or handicapped for easy work such as cook for canteen, cleaner for camp, night watch, flag person etc.
- To purchase locally produced material from them to the maximum extent possible

Afterward, monitoring is proposed to affected people including relocated/vulnerable people and, based on the results if the livelihood has been found to be lowered, further assistance may be provided able to regain the livelihood as before relocation

(3) Land use and utilization of local resources (Mitigation measures)

The owner of agricultural land is fairly compensated with replacement cost for lost. The problem is that alternative agricultural land may not be available on the west bank, although they can cultivate the flooded land for 3 months only every year. They have to be consulted to regain livelihood.

(4) Social institutions such as social infrastructure and local decision-making institutions (Mitigation measures)

No mitigation measure is required or monitoring is required except the issues of religious activities. It is required to respect the traditional/religious lifestyle of local communities. No impacts are given to the religious activities.

- Suspend noisy construction activity close to the church especially on Sunday
- Comply fully with the custom of the local community especially to move the graves to other place organizing the required ceremony for the community
- Implement public meeting about explanation of the work schedule and hearing of complaints or any request, inviting local community

- (5) Existing social infrastructures and services (Mitigation measures)
No mitigation measure is required or monitoring is required.
- (6) Poor, indigenous, or ethnic people (Mitigation measures)
The affected households without land title shall be properly assisted as proposed in RAP.
- (7) Misdistribution of benefits and damages (Mitigation measures)
Both titled (land owner) and non-titled (landless) shall be benefitted by the project as proposed in RAP. External monitoring is also required to ensure these.
- (8) Cultural Heritage (Mitigation measures)
No mitigation measure is required since there is no cultural heritage.
- (9) Local conflicts of interest (Mitigation measures)
Landless shall be provided with land very cheaply as to avoid conflict caused by land encroaching of landless people as proposed in RAP.
- (10) Usage of Water and Water Right (Mitigation measures)
No mitigation measure or monitoring is required
- (11) Accident (Mitigation measures)
Accident prevention measures during construction are presented in Health Management Plan (HMP) such as earlier identification of dangerous works and provision of emergency response system in accident. Serious injuries to road workers can result from careless or improper construction practices.

Road traffic accident can occur where the passage of normal traffic through road works is not adequately managed. Following are proposed to mitigate traffic accidents during construction and after operation:

- The safety of construction workers and road users should be taken into consideration during design process as well as the construction stage of the project. Training and protective equipment should be provided.
- Appropriate speed limits should be imposed to reduce the number and severity of accidents. To reduce the speed, hump shall be installed at the right places
- Good vehicle weight should be regulated to reduce the negative impacts of

overweight vehicles on the road safety, road structure and environment. Portable axis load measurement device (truck scale) shall be prepared at the site.

- Junction should be constructed to allow all road users to join, leave or cross the main route safely. Where possible, the side road junction should be perpendicular to the mainline in order to afford best visibility for drivers. Road marking and vertical signals should be provided at junction
- Tree planting and landscape should be designed so that it does not obstruct forward visibility and side visibility on the junction.
- An effective maintenance schedule should be implemented, with regular inspections and expeditious repair of identified defect.
- During construction, trucks have to take predetermined routes only around the site and flag persons are positioned at important points to minimize the inconveniences and risk caused by construction vehicles.

(12) Sanitation and health (Mitigation measures)

Hygiene management is presented in Health Management Plan (HMP), such as provision of enough clean water and sanitary/health facilities at the site and camp as shown in next chapter.

(13) Infectious diseases such as HIV/AIDS (Mitigation measures)

Prevention of these issues is discussed in Health Management Plan (HMP) including campaign of awareness and provision of preventive goods to workers and adjacent community.

(14) Gender (Mitigation measures)

Although gender issues can be considered as not serious, external monitoring is implemented if gender issues are arisen during construction and after operation. At least, it is required to ensure no wage differences between male and female workers during construction.

(15) Children's right (Mitigation measures)

Never permit the use of kidnapped or children labouring

(16) Topography and Geology (Mitigation measures)

No mitigation measure or monitoring is required.

(17) Soil Erosion (Mitigation measures)

The surfaces of embankment slope around the piers are to be protected so that no erosion will be caused by rain water etc. Types of bank protection include gabion wall, concreting or other method. Observation of river bank is required since west bank is under the tendency of erosion by its nature even if without project.

(18) Groundwater (Mitigation measures)

No mitigation measure is required. However, monitoring of groundwater qualities is implemented during construction.

(19) Hydraulic Situation (Mitigation measures)

No mitigation measures required.

(20) Coastal Zone (Mitigation measures)

No mitigation measure or monitoring is required.

(21) Fauna, Flora and Biodiversity (Mitigation measures)

Re-vegetation of slope/embankment for accesses by grass/tree is studied in detailed design stage.

SO_x is said to be harmful to vegetation. Based on the monitoring of SO_x for time being after construction, mitigation measures are to be studied either to reduce SO_x or to protect/replant sulphur resisting type vegetation together with continuation of monitoring of SO_x.

(22) Meteorology (Mitigation measures)

No mitigation measure or monitoring is required.

(23) Landscape (Mitigation measures)

No mitigation measure is required. However, it is implemented to re-vegetate surface of bare soil at slopes and embankment as below:

- Select fast growing grazing resistant species
- Immediately re-vegetate all the slope and embankment
- Place fiber mat to secure the growth
- Monitoring is made and reported in monthly monitoring about the seed/ nursery tree is rooted and grow up.

(24) Global Warming (Mitigation measures)

No special mitigation measure or monitoring is required since the amount of emission decreases to half by the project in 2015 and later on. However it is planned to minimize the emission of global warming gas from equipment during construction as same procedure of air pollution as below

(25) Air Pollution (Mitigation measures)

Air pollutions predicted Although air pollution during construction and after operations complies with environmental standards, it is recommended to minimize air pollutions during construction as:

- Adhere the regulation of Republic of South Sudan if prepared
- Prohibit the open burning of waste and materials
- Ensure all the construction equipment will be maintained in good condition and fitted with pollution control devices.
- Exhausted gases from equipment shall be regularly checked with hand- held pollution monitoring devices
- Discourage the idling of equipment
- Ensure that all the vehicles transporting potentially dust producing material is not overloaded and is properly provided with sides and tail boards, covered with tarpaulin (covering the entire material, secured at all the sides during transportation. Axis load of trucks shall be measured monthly to discourage overloading.
- Secure enough distance between concrete batching plant and residential area/sensitive facilities such as school, church etc
- Measurement of NO₂, SPM, CO, SO₂ are proposed before(wet and dry seasons), during (wet and dry seasons)and after construction (wet and dry seasons) for roadside and behind the road(back ground) at the site and existing Nile Bridge road respectively together with traffic volume counting
- Environmental target are set as Table 8-1 during construction to follow.

Table 8-3 Environmental targets for air qualities to be followed during construction

Unit:µg/m³

	NO ₂	SPM	CO	SO ₂	Dust
Allowable limits	123	100 (daily) 200 (hourly)	12,500	110 (daily) 290 (hourly)	600

- If some of them exceed any of the targets, corrective action shall be taken.

- As a dust suppression plan, following is proposed:
 - Locate material stock piles in the sheltered area and cover them with tarpaulin to prevent the material becoming airborne.
 - Undertake regular spraying of water on the road and offsite road, if necessary, to suppress the generation of dust during dry season in the minimum.
 - The situation of dust suppressing activities shall be witnessed by the environmental officer and reported as an environmental monitoring report regularly.
 - Monitoring of SO₂ may be continued after 2018 based on the concentrations and damages to human and vegetation observed before 2018.

(26) Water Contamination (Mitigation measures)

In order to prevent water pollution by the on-land construction activities, following shall be implemented to:

- Protect water course, rivers, streams, drain and canals within and adjacent to the site from polluting, silting, eroding and flooding as a result of construction activities
- Ensure that all storm drainage is adequately designed and constructed including sediment ponds.
- Sediment pond water shall be used for dust suppression.
- Equip construction workers camp and site offices with sanitary toilets not to pollute surface water
- Ships used for construction on water shall be strictly inspected before use not to cause any oil leaking.
- Silt fence may be installed surrounding piers in the river during construction.
- Measurement of DO (dissolved oxygen), Er (Electric Resistivity), Coliform, and Oil are measured before, during and after construction in two times (wet and dry seasons) at upstream and downstream to the proposed bridge. Environmental target is presented in Table 8-4.

Table 8-4 Environmental target as river water

	DO mg/L	Conductivity μS/cm	Turbidity NTU	Coliform MNP/100mL	Oil mg/L
Allowable limits	5	400	25	1000	Not detected

(27) Soil pollution (Mitigation measures)

In order prevent ground and groundwater pollution, following measures are proposed:

- Strictly control filling and refueling to the same procedure to avoid leakage or spills
- Store all inflammable or chemical agents in water proof and secured tank, compound or rooms with an impervious floor which are not located close to the water course.
- Ensure all the content of any drums, tanks or vessels are clearly marked
- Ensure all necessary measures that such contaminants can not enter into water course.
- Prepare an emergency response plan which covers contamination by hazardous material, oil spills and off-site accidents.
- Report the situation of storage, handling and use monthly.

(28) Waste (Mitigation measures)

In respect of management of solid and liquid waste,

- Prohibit any waste including polluted, hazardous, chemical or sanitary waste in solid or liquid conditions into water courses
- Store wastes at predetermined places, periodically collect and dump at the authorized site by the government
- Construct temporary drainage and treatment systems. Muddy water generated by earthwork shall be collected and treated (sedimentation) before discharge. Treated water shall be used for spraying for dust rising suspension
- Facilitate drain system for liquid waste in camp
- Prepare the plan for above activity
- Ensure all workers shall comply with EMP.
- Hazardous waste such as paint cans as may contain heavy metal are to be treated insoluble by cementing.

Construction waste to be generated and the measures to minimize/recycle are:

- Soil excavated during sheet pile drilling during pier construction can be used as earth filling soil after drying since they are supposed to be coarse material
- Concrete debris for access or bridge can be utilized backfilling material
- Paper and wood for packing/formwork can be used as energy
- Cut re-bar can be sold

For hazardous waste such as cans for paint, which may contains harmful substances such as heavy metals, shall be treated as insoluble by cement.

Following monitoring is proposed:

- Wastes are properly collected and heaped at predetermined places/ponds
- When the garbage truck or vacuum truck comes, the types and amounts of wastes are recorded
- The name of driver and charges are al so recorded
- Above shall be included in the monthly environmental reports.

(29) Noise and vibration (Mitigation measures)

Basically, no measure is required according to the numerical analysis of noise and vibration levels. However to minimize the impact and to confirm the environmental standard is followed, following measures and monitoring are proposed to be taken,

- Prohibit any construction activities at night time
- Ensure all equipment, especially exhausted system is properly maintained
- Consult with community in respect of construction activities and potential noise and vibration.
- Environmental targets during construction are proposed as shown Table 8-3.

Table 8-5 Environmental target for noise and vibration during construction

Unit: dB

	Noise		Vibration	
	Day time (7:00-19:00)	Night (19:00-7:00)	Day time (7:00-19:00)	Night (19:00-7:00)
Allowable limits	85 (during construction)	65	70	65

- If the noise is found to be unendurable, noise barrier sheet is installed in front of the house for time being or other construction method is employed.
- Measurement of noise and vibration levels before (2 season), during (2 season x 3 years) and after construction (2 season x 2 years) for roadside and behind the road(back ground) at the site and existing Nile Bridge road respectively together with traffic
- Construction noise can be a Moderate problem for residents residing close to the road. Monthly meeting shall be held to inform surrounding communities about work schedule, to hear complains or requests and to take measures for them.

(30) Ground Subsidence (Mitigation measures)

No mitigation measure or monitoring is required.

(31) Oder (Mitigation measures)

The effort to minimize the cause of offensive gases, incineration of waste or emission of exhausted gas, is planned as per EMP

(32) Bottom Sediment (Mitigation measures)

No measure is required since the bottom sediment at the project site is without impurity like what you call eutrophicated sludge as may be distributed at the shallow bay into which nutrient over-loaded water flows and the sludge is causing de-oxidization reaction.

9. Health Management Plan including HIV/AIDS

9.1 General

At all the time, precautions to maintain the health and safety of all workers shall be exercised. In collaboration with local health authorities, medical staff, first aids facilities, sick bay and ambulance service shall be available at the site all the times and suitable arrangement is made for all necessary welfare and hygiene requirements and prevention of epidemics.

A health management officer at the site responsible for maintaining health and safety against accidents shall be appointed. This person shall be qualified for this responsibility and shall have the authority to issue instructions and take protective measures to prevent accidents.

Health report shall be submitted to JICA together with environmental report for their review.

9.2 Health management plan

Following is measures to be taken in the minimum,

- Prepare the emergency response plan to deal with accidents and emergency
- Provide fully equipped first aid base in each construction camp
- Provide at least one clinic stationed with a nurse and a doctor every working day
- Establish mobile phone link with nearest hospitals
- Ensure safety, rescue and industrial health issues are given the first priority to all persons at the site.
- Train all workers in basic sanitation, health care, safety matters and specific hazard of the work
- Provide personnel protection equipment such as safety boots, helmet, gloves, protective cloths, goggles and ear protection in accordance with type the work he/she is engaged
- Provide clean and sufficient fresh water at construction site, camp, office, laboratory and workshop.
- Provide enough number of latrines with septic tanks at the site
- Provide a tentative waste dumping space is facilitated in each camp so that the garbage car can collect regularly.
- Ensure that the drains in the camp are sufficiently provided so that no standing

water be generated

- Protect all employees from mosquito, rats and other pest bearings
- Ensure that critical operations which could lead to incidents with potential of severe loss are identified, assessed, evaluated and documented so that adequate control measures are taken.
- The safety of construction workers, nearby residents and road users should be taken into consideration during design process as well as the construction stage of the project. Training and protective equipment should be provided.
- Appropriate speed limits should be imposed to reduce the number and severity of accidents. To reduce the speed, hump shall be installed at the right places
- During construction, trucks have to take predetermined routes only around the site and flag persons are positioned at important points to minimize the inconveniences and risk caused by construction vehicles.
- For traffic safety, the proposed item in (11) of Section 8.2 shall be followed.

9.3 Awareness and prevention of STIs and HIV/AIDS.

An HIV-AIDS awareness campaign via approved service provider shall be implemented and other measures to reduce the risk of the transfer of the HIV virus between and among contractor's personnel and local community, to promote early diagnosis and to assist affected individuals. It is proposed,

- To conduct Information, Education and Consultation Communication (IEC) campaign at least every other months to all site staff, employees, and immediate local communication concerning the risks, dangers and impact and appropriate avoidance behaviour with respect to , of Sexually Transmitted Disease (STD) or Sexually Transmitted Infection (STI) in general and HIV/AIDS in particular,
- To provide male or female condoms for all staff and labourers as appropriate and
- To provide for STI and HIV/AIDS screening, diagnosis, counselling and referral to dedicated national STI and HIV/AIDS program.
- This program shall indicate when, how, where and what cost the contractor plan implement.

10. Public Participation

Public participation is always required in project cycles, from project preparation to implementation, up to operation and maintenance. The strategy for public participation is focused on:

- When and where participation is required
- Who should be participated
- What results are expected

(1) When and where public participation is required:

Participant is usually required at:

- Project finding (completed)
- Prefeasibility study (completed)
- EIA/RAP study
- Feasibility study
- Technical designing
- Project implementing
- Post project stage

(2) Who should be participated

As key- stakeholders, following shall be attended:

- Ministry of Transport and Roads (MRB), Republic of South Sudan as a project proponent, planning, implementing and budget preparing of mitigation measures
- Ministry of Environment (MOE), Republic of South Sudan, auditing the EIA and environmental monitoring
- Ministry of Physical Infrastructure (MOPI), Central Equatorial State, implementing resettlement activities
- Value Assessment Committee, determining compensation unit prices of replacement cost
- Juba County Office, helping MOPI
- Rajef Payam Office, helping MOPI
- Lologo and Gumbo Communities, helping MOPI
- UN Habitat, helping MOPI
- PAPs and non-PAPS around
- NGO
- Universities

- Mass media
- Anybody interested in the project

(3) What results are expected

By frank and accurate dissemination of project information, project impacts and mitigation measures, including compensation details, to build up a trust between PAPs and project officers. Once the trust is built, collaboration between them becomes easier. Collaboration can integrate technical know-how and of project officers and the popular wisdom of PAPs. As a result of collaboration, a participatory step can be expected in which PAPs also take responsibilities for what they discussed and agreed about mitigating environmental impact. Responsibility is the final object of participatory process. Participation of PAPs is essential in understanding their priorities and need and formulating resettlement options that balance their needs and capabilities. This is where the project team and the communities make a commitment to work for the project. In addition, grievance redressing mechanism should be established to solve the dispute quickly without cost or lengthy procedure like a court.

For Category A projects, MRB carries out stakeholders meeting at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. For above, MRB implemented following public consultations as in Table 10-1. The minutes of meetings are attached in the appendix. Also presented in the table is the proposed public meeting to be held in the future.

Table 10-1 Public meetings held/to be held

No.	Title	Content	Attendants (inc.MRB)	No. of participants	Date (proposed)
1	1 st stakeholders meeting	- Explanation of the project outline and schedule - Explanation about compensation - Information disclosure is requested	MOPI, MOE, Payam, UNHCR	14	11/9/2010
2	2 nd Stakeholders meeting	- Explanation of screening results - TOR for EIA and RAP and its approval	Pyam, Paramount chief, community	39	15/12/2010
3	Group discussion	- Explanation about project - Obtained agreement about the project	Payam, farmers	21 on 24 th and 29 on 25 th February	24-25/2/2011
4	3 rd stakeholders meeting	- The biggest meeting - Explanation of mitigation measures for affected people - Declaration of Cut-off-day	MOPI, MOE, Payam, Community	About 160	27/2/2011
5	Joint site	- Site reconnaissance together	MOPI, MOE,	15	2-4/3/2011

	survey	with consultant and governmental officers concerned to confirm the ROW and houses/people in it	Payam, Community		
6	4 th stakeholder meeting	- Meeting especially for Gumba PAPs - Opinion hearing about project/compensation	Community	62	17/3/2011
7	5 th stakeholders meeting	- Explanation of study progress - Questioning about no. of affected people and compensation policy	MOPI, MOE, Payam	24	24/3/2011
8	6 th stakeholders meeting	Explanation of draft EIA and RAP	-		(October 2011)
9	Public meeting	Explanation of resettlement policy and implementation schedule	MOPI, Payam, Communities and affected tribe association		(Nov 2011)
10	-ditto-	For compensation payment	-ditto-		(Jan 2012)
11	-ditto-	For relocation of titled PAPs	-ditto-		(Jan 2012)
12	-ditto-	For relocation of non titled PAPs	-ditto-		(Jan 2012)
13	Group discussion	For vulnerable group	Small number		(Any time when concerns are raised)

Opinions/questions raised are summarized in Table 10-2. Their major concern is compensation is made or not and they were told to be compensated as per policies of GRSS and JICA Guidelines.

Table 10-2 Opinions/questions raised during public meetings

Time	Raised by	Opinion/question raised	Response	Action taken
The 1 st stakeholder meeting etc	Payam chief	Requesting frequent dissemination of information project progress	Agreed by MRB	Frequent meeting held afterword
		Involvement of community to the project.	Their opinion is incorporated.	Incorporated in RAP
Very often in public meetings	Residents and government agencies	Environmental impact predicted: Air / water pollutions or noise	Basically they are not serious, but monitoring is implemented and mitigation measures are to be taken when it has been found serious.	Incorporated in EIA report
		Project outline?	Explained properly	-
	Residents	His/her house has to move or not? Compensation is paid or not?	After the demarcation of ROW they will know. Based on RAP	- Incorporated in RAP
Census, March 2011	Affected residents	I have no land to go.	Alternative land is provided	Incorporated in RAP
		My income source is agricultural land only. I cant lose it	Alternative agricultural land or compensated with replacement cost	

Findings of public meetings

Totally, 4 times of public meetings (stakeholders meetings) were held so far. As a conclusion from the meetings, most of PAPs agree with the project for its very positive impacts in term of economic development and increase of business chances in the area, under the condition of reasonable compensation are to be made for assets and livelihood lost.

11. Conclusion and Recommendation

11.1 Conclusion

- Environmental impact assessment was implemented for the construction of a new bridge over Nile River with gravel paved accesses on the both banks to obtain the environment permit from MOE.
- By the construction of the bridge, (1) communication between Juba and other cities improves, (2) development of south of Juba for returning refugee and soldiers will be promoted, (3) traffic congestion in Juba downtown will be reduced and, finally, (4) economic development, including employment promotion and sale increase for local residents can be achieved in Juba, Central Equatoria State and Republic of South Sudan
- Construction period is 39 months.
- Regulation about environmental protection in MOE is not yet approved or environmental standards (noise & vibration, air pollution, water pollution etc) are not yet determined.
- Project proponent, MRB, and monitoring agency, MOE, have limited capacity to implement environmental activities without enough budget, proper equipment and sufficient man power, and support for them is required.
- This project has been chosen as most feasible for the development of Juba for the preparation to receive tens of thousands of returning refugees and soldiers including road network improvement.
- Directly impacted areas by the project are as follows:
 - Bridge of 560m long and 15m wide in the river
 - Access of 2.3km in Lologo Community on the west bank and 1.4 km in Gumbo Community on the east bank with a width of 30m respectively.
 - 2 temporary yards on east and west banks respectively with areas of 1.5 to 2km²
 - 2 relocation sites are prepared; one in Lologo Community and another at outside Lologo Community.
- Possible 32 environmental related items were screened and, as the results, only the impact of “involuntary resettlement was categorized as A, severe negative impact, while most of other impact were considered at most category B, Moderate impact.
- Baseline, impact and mitigation measure about above 32 items are as follows:
 - (1) Involuntary resettlement

Detailed are discussed in Resettlement Action Plan (RAP) of separate volume.

(2) Local economy, such as employment, livelihood, etc

There is not much job at the sites with low salary. By the implementation of the project, the job chances can be increased as a labor/technician, material provider or land/space/utility provider for the local residents and, after the completion of the project, the development of many housing with infrastructures is scheduled. Then, further economic development by construction boom and population increase may be expected.. However for those who may lose base of economic activities such as agricultural land and brick manufacturing, job at the construction site is provided with high priority and for maintenance of road afterward. Details are discussed in RAP.

(3) Land use and utilization of local resources

Present use of land as residential/agricultural/brick manufacturing activities is affected. Provision of alternative land, cash compensation with market price, or employment for the project is planned based on the actual conditions of land titles they have. Details are discussed in RAP.

(4) Social institutions such as social infrastructure and local decision-making institutions. s

No social institution or social service is affected except tented police station.

(5) Existing social infrastructures and services

The only social infrastructure is pumping well, avoiding which, the access is designed. No impact.

(6) Poor, indigenous, or ethnic minority

There are socially vulnerable groups including widowed, handicapped etc. Such group are provided with assistances. Details are discussed in RAP.

(7) Misdistribution of benefit and damage

If the households, whose land title was not confirmed by the census, may be just kicked out of the site, as may be common practice some times in Juba, can suffer for further poverty with unstable life while the titled will enjoy the

project benefit of economy development at the site. To prevent this misdistribution, non titled also be properly assisted.

(8) Cultural heritage

There is no cultural heritage at the site.

(9) Local conflict of interest

Landless residents are also provided with cheap plots, not to encroach again other people's land. Details are discussed in RAP

(10) Usage of water and water right

Water is provided either pump well, river water or tank lorry and none of them is affected by the project.

(11) Accident

Accidents by construction work and traffic can be caused. To prevent these, RMP and HMP shall be full-filled.

(12) Sanitation

The sanitation condition at the site is poor with less number of latrines and dumping of law kitchen wastes anywhere. Not to make the situation worse by the inflow of 500 workers at the site, HMP shall be full-filled.

(13) Infectious disease such as HIV/AIDS

The prevalence rate of HIV positive can be 20% or higher at the site. This rate can be further more increased by

- inflow of 500 construction workers during construction
- continuous returning of soldiers and refugees
- improved mobility by the bridge and road

Awareness campaigns and provision of condom are planed as mitigation. Blood check at VCT (Voluntary Counseling and Testing) center also is promoted through the campaign.

(14) Gender

It should be monitored to ensure there is no salary discrimination between genders for construction work.

(15) Children's right

Children's labor at construction site should be prohibited and monitored if any.

(16) Topography and geology

Topography and geology are not affected except rock quarry where some rocks are exploited. However the stability is not affected or no mud flow caused since no loose material in the quarry. No measure is required.

(17) Soil erosion

Riverbed may be eroded to 1m deep and this much is negligible hydraulically and in term of structural stability. West river bank, although as is in the tendency of erosion by nature, has been found to be not physically affected by the project.

Slope surface of pier embankments are protected from rain/river water erosion. Monthly monitoring is implemented if river bank erosion is caused.

(18) Groundwater

Groundwater will not be affected in term of quality and quantity due to no large pumping or grouting will be implemented. Groundwater qualities are monitored.

(19) Hydraulic Situation

Change of hydraulic situation by the project in terms flow rate or water level is completely negligible. No measure is required.

(20) Coastal zone

No coastal zone at the site.

(21) Fauna, flora and bio-diversity

Basically there is no protected species at the site according to specialists of MOFA and UNEP, and site reconnaissance by a local specialist from Kenya. The ecosystems cleared on land and in water by the project are minimal and are still abundant at the surrounding area, recoverable at nearby place.

(22) Meteorology

Climate is not affected by the project. No measure is required.

(23) Landscape

Local residents are indifferent in the view of future bridge. However for creation of green landscape, re-vegetation of slopes of embankment is proposed, and the process is monitored and reported monthly.

(24) Global warming

The amount of emission of CO₂ in Juba in 2015 and 2025, in case of project is implemented, will be halved due to clearance of traffic jam. Basically no measure is required except that the reduction of consumption of fuel during construction is strictly implemented.

(25) Air pollution

Air pollutions predicted are within tentative environmental standards during construction and after operation and, furthermore, the situation of pollutions in Juba downtown will be improved by the project in 2015. But in 2025 it is predicted to be much worsened than environmental standard. The development of other road network surround Juba is highly required.

An effort is taken to minimize the emission of air pollutions during construction and after operation. After operation, spraying of water over gravel surfaced accesses is continued same as during construction. Also air pollutions are to be monitored before, during and after construction to evaluate the impact of the project.

(26) Water contamination

Liquid waste and muddy water shall be properly controlled. Monitoring is river water quality is implemented before, during and after construction for basic indices.

(27) Soil pollution

For the information that there was no soil polluting activities was done before. To prevent spoil pollution during construction, leakage of fuel from

tank/equipment is minimized during construction by proper maintenance.

(28) Waste

Wastes generated from camp and construction field are completely collected and dumped properly. The process of waste collection and dumping are monitored and reported monthly.

(29) Noise and vibration

Noise and vibration during construction and after operation are estimated within the tentative environmental standards. An effort to minimize the noise/vibration is taken during construction. Two times in every year noise and vibration are monitored.

(30) Ground subsidence

No ground subsidence will take place due to firm ground and no measure is required.

(31) Odor

Open burning will be prohibited and toilets are properly prepared to minimize the offensive odors.

(32) Bottom sediment

Dumping of anything into the river will be prohibited so that no bottom sediment pollution will take place.

11.2 Recommendation

- Although no serious impacts other than involuntary resettlement are predicted to take place by the implementation of the project, effort shall be made to reduce the environmental impact wherever possible. For this, practical and detailed Environmental Management Plan (EMP) and Health Management Plan (HMP) shall be prepared based on the actual construction plan incorporated with the policies in this EIA before construction has been started for the approval from MOE/MRB.
- Capacity building about environmental monitoring is required for MOE and MRB, through environmental monitoring.

- Monitoring shall be implemented including followings:
 - Air pollution
 - Noise and vibration
 - Water contamination
 - Landscape
 - Soil erosion
 - Accidents and health
 - Waste
 - Resettlement activities

Results of monitoring shall be reviewed timely, and, if necessary, proper mitigation measures are taken and monitoring period shall be extended after 2018

Appendix A
Photos at the site

 <p>1. Nile River</p>	 <p>2. Residential area on the west bank</p>
 <p>3. Agricultural area on the west bank</p>	 <p>4. Agricultural area on the east bank</p>
 <p>5. Tukul, traditional residential house</p>	 <p>6. Kiosk</p>

Land use and houses at the site



7. Chicken hut



8. Bath room



9. Pump well



10. Bedroom



11. Cooking



12. Waste dumping and incinerating

Domestic activities



13. Brick drying



14. Brick shaping



15. Mango taking



16. Fish catching



17. Thatch selling



18. House constructing

Livelihood at the site



19. View of flood plain agriculture



20. Cassava



21. Sweet cone



22. Vegetable



23. Papaya



24. Okra

Harvest on the flooded plain (available from February to April only every year)



25. Eagle and crane at dumping site



26. Cranes at dumping location

Large size birds at the dumping lot un Juba



27. Baobab tree



28. Neem tree

Trees at the site



29, Quarry site



30. Screening machine

Borrow area

Appendix B
Methodology of predictions
for Noise, Air pollutions
and vibration

Numerical analyses were made based on the formula proposed by:

(Ref.1) Road Environment, Sankaido, 1997

(Ref. 2) Technique of the Road Environmental Impact Assessment, Road Environment Institute 2007

(Ref. 3) Technique for Environmental Impact Assessment, Chuou-hoki 1999

Noise

(1) Traffic noise

$L_{Aqe} = L_{AE} + 10 \log N - 35.6$

ASJ CN-Model 2000 (Ref.2)

L_{Aeq} Equivalent noise level, d(B(A))

Noise increment ration in case of concrete pavement

0.1 Experimental(Shoji)

$L_{AE} = 10 \log (1/T \cdot \sum (10^{L_{A,i}/10} \cdot \Delta T))$

L_{AE} Power level in average from a vehicle, dB(A)

$L_{A,i}$ Power level from I'th vehicle, dB(A)

r_i : Distance from I'th source to the location of prediction

$L_{WA} = 46 + 6 \cdot a_2 + 30 \log V$ (high gear driving)

Modified ASJ RTN-Model2003, Table2.3(Ref.2)

$L_{WA} = 90 + 6 \cdot a_2 + 10 \log V$ (low gear driving)

"

a_1 : Ratio of smaller vehicle	0.5
a_2 : Ratio of larger vehicle	0.5

l Distance from source to the location of prediction (m)

H Effective emission height 0.3 m

d Average car head spaces, $d = 1000V / N$

V Average driving speed km/h

N Average hourly number of vehicle num/h

α_d Reduction by diffraction [dB(A)] in case:

$\alpha_d =$	$-9 \log_{10} \delta - 14.3$	$0.5 \leq \delta$
	$-2.7(\log_{10} \delta)^2 - 10.5 \log_{10} \delta - 14.5$	$0.07 < \delta \leq 0.5$
	$-3 \log_{10} \delta - 9.5$	$0.01 < \delta \leq 0.7$
	$-10 \log_{10} \delta (0.2 + 2.5 \delta) - 10$	$-0.001 < \delta \leq 0.01$
	$0.24 \delta \log_{10} \delta - 2.2$	$-0.015 < \delta \leq -0.001$
	$0.2 \delta \log_{10} \delta + 1$	$-0.3 < \delta \leq -0.015$

δ : difference of transmission distance

(2) Noise level from construction work and lorries

ASJ CN-Model 20003 (Ref.2)

$L_{Aeq, T, Total} = 10 \log (10^{L_{Aeq, T, con}/10} + 10^{L_{Aeq, T, ve}/10})$

$L_{Aeq, T, Total}$ Sum of noise by construction work and lorries

$L_{Aeq, T, con}$ Total noise by construction work

$L_{Aeq, T, ve}$ Total noise by construction lorries

Table: Construction work power level at the reference point

		$L_{WAeff, i}$ dB(A)	ΔL d(BA)
Asphalt paving	Subbase/base course	103	5
	Asphalting	113	6
Concrete paving	Subbase/base	116	5
	Concreting	108	5

a. Noise by construction work

$L_{Aeq, T, con} = 10 \cdot \log (1/T \cdot (\sum T_i \cdot 10^{L_{Aeff, i}/10}))$

$L_{Aeq, T, con}$: Total noise by construction work

T Working time

$L_{Aeff, i} = L_{WAeff, i} - 8 - 20 \cdot \log(r/r_0) + \Delta L_{d, i} + \Delta L_{g, i} + \Delta L$
Noise level by i-th construction work unit

$L_{WAeff, i}$ Power level by i-th construction work unit at the reference point

ΔL Correction

r Distance to the location of prediction

r_0 Distance to the reference point

$\Delta L_{d, i}$ Reduction by diffraction, neglected for safety side

$\Delta L_{g, i}$ Reduction by the ground surface condition, neglected for safety side

b. Noise by construction lorries

$L_{Aeq, T, ve} = 10 \log (10^{L_{A,i}} \cdot N)$ (Assuming only one type of lorry)

$L_{A,i} = L_{WA} - 8 - 20 \log(r/r_0) + \Delta L_{d, i} + \Delta L_{g, i}$

L_{WA} Power level of 10 tone Lorry =

N Number of lorry/hour 10

r Distance to the location of prediction

r_0 Distance to the reference point

$\Delta L_{d, i}$ Reduction by diffraction, neglected for safety side

$\Delta L_{g, i}$ Reduction by the ground surface condition, neglected for safety side

Air Pollution

(1) Air pollution by traffic during operation (Ref.1)

Assuming infinite line source with wind direction right angle to the traffic

$$c(x,z)=Q/\text{sqrt}(2\pi\sigma_zU) \cdot (\exp(-(H-z)^2/2\sigma_z^2) + \exp(-(H+z)^2/2\sigma_z^2))$$

c(x, z)	Concentration of air pollutant, $\mu\text{g}/\text{m}^3$	
x	Distance m ℓ	
Q	Strength of emission of air pollutants ($\text{g}/\text{m}\cdot\text{s}$) $Q=E\cdot N/1,000/3,600$	
E:	NO ₂	$E=-0.902/V-0.00578V+0.0000439V^2+0.026$ for Medium Car ($V<20\text{km}/\text{h}$: $E=0.118\text{g}/\text{km}$) $E=-7.12/V-0.0895V+0.000735V^2+3.93$ for Large Car ($V<20\text{km}/\text{h}$: $E=2.08\text{g}/\text{km}$)
	SPM	$E=-0.0687/V-0.000385V+0.0000287V^2+0.017$ for Medium Car ($V<20\text{km}/\text{h}$: $E=0.007\text{g}/\text{km}$) $E=0.0318/V-0.0031V+0.0000227V^2+0.158$ for large Car ($V<20\text{km}/\text{h}$: $E=0.107\text{g}/\text{km}$)
	CO	$E=-12.5/V-0.0599V+0.000448V^2+2.2$ for Medium Car ($V<20\text{km}/\text{h}$: $E=0.636\text{g}/\text{km}$) $E=10.9/V-0.0168V+0.000115V^2+1.19$ for Large Car ($V<20\text{km}/\text{h}$: $E=1.45\text{g}/\text{km}$)
	SO ₂	$E=0.0783/V-0.000162V+0.00000131V^2+0.0112$ for Medium Car ($V<20\text{km}/\text{h}$: $E=0.012\text{g}/\text{km}$) $E=0.0411/V-0.000699V+0.00000551V^2+0.0424$ for Large Car ($V<20\text{km}/\text{h}$: $E=0.033\text{g}/\text{km}$)
	CO ₂	$E=976V^{(-0.43)}$ $\text{g}/\text{km}/\text{day}$ (By regression analysis, Shoji)

H	Effective height of emission	<input type="text" value="1"/>
	In case of viaduct, add that height	
σ_z	Vertical dispersion factor m	
	$\sigma_z=1.5+0.31x0.83$	Without barrier or less than 3m high
	$\sigma_z=4.0+0.31x0.83$	With a barrier equal or higher than 3m
Z	Height of prediction m	
	Z ₀ : Initial height of prediction	<input type="text" value="1"/>
	$Z=Z_0+\Delta Z \times N$	
	Δz : interval	<input type="text" value="1"/>
U	Wind velocity, right angle to th	<input type="text" value="1"/>
	Width of road lane m	<input type="text" value="4"/>

Table: Correction factor for the emission strength

Year	Correction factor (multiply the emission)
2000	3.4
2001	3.3
2002	3.1
2003	2.8
2004	2.7
2005	2.3
2006	2.1
2007	1.8
2008	1.6
2009	1.4
2010	1.3
2011	1.2
2012	1.1
2013	1.1
2014	1.0
2015	1.0
2016	1.0
2017	1.0
2018	1.0

(2) Air pollution during construction (applicable to NO2 and SPM only)

(Ref. 2)

Total of air pollutions by construction work and by lorries

a. Air pollution by construction work

Assuming wind direction of right angle to the road(y=0)

- $\Sigma c(x,z)$ Sum of concentration by respective construction activity
 $c(x,z) = \frac{Q}{2\pi\sigma_z\sigma_yU} \times (\exp(-\frac{(H-z)^2}{2\sigma_z^2}) + \exp(-\frac{(H+z)^2}{2\sigma_z^2}))$
 $c(x, z)$ Concentration of air pollutants
 x Distance of prediction m
 Q Emission strength ($\mu g/s$)
 H Emission height m
 In case of viaduct, add that height
 σ_z Vertical dispersion factor m
 $\sigma_z = 2.9 + \sigma_{zp}$
 σ_{zp} : Pasquill-Gifford's vertical dispersion factor
 σ_y Horizontal dispersion factor m
 $\sigma_y = W/2 + 1.82\sigma_{yp}$
 σ_{yp} : Pasquill-Gifford's horizontal dispersion factor
 Z Prediction height m

Table: Emission strength for earth filling work (g/unit/day)

	NO2	SPM
No exhausted gas measure	8,600	260
Primary exhausted gas measure	4,800	190
Secondary exhausted gas measure	3,400	100

b. Air pollution by lorries

See "air pollution by traffic"

(Ref. 2)

Vibration

(1) Vibration by traffic during operation

- L_{10} Upper limit of 80% range (dB)
- $L_{10} = L_{10}^* - \alpha l$
- L_{10}^* Upper limit of 80% range dB at the reference point
- $L_{10}^* = a \log(\log Q) + b \log V + c \log M + d + \alpha \sigma + \alpha f + \alpha s$
- Q Equivalent traffic volume per 500 seconds per lane (number/500s/lane)
= $500 / 3,600 / M * (Q1 + KQ2)$
- Q1 Number of large vehicles per hour (Number/hour)
- Q2 Number of medium vehicles per hour (Number/hour)
- K Conversion factor to medium vehicle from large vehicle=13
- V Driving velocity, km/h
- M Total number of lanes
- $\alpha \sigma$ Correction factor by the evenness of the road surface(dB)
= $8,2 * \log_{10} \sigma$ (in case of asphalt pavement)
 σ : Standard deviation of $\square\square$ on the road surface mm
- αf Correction factor by the prevailing frequency of ground (dB)
= $-20 \log f$: $f \geq 8$ \geq
= -18 : $8 > f \geq 4$
= $-24 + 10 \log f$: $4 > f$
- f Prevailing frequency of the ground
- αs Correction factor by the road structure (dB) : Not considered for this analysis
- αl Damping factor by distance (dB)
= $\beta \log(r/5 + 1) / \log 2$
 $\beta = 0.068 L_{10}^* - 2.0$ (Clay)
 $\beta = 0.130 L_{10}^* - 3.9$ (Sand)
- r Distance m

(2) Vibration during construction

- L_{total} Total vibrations by construction work and lorries
= $10 \log(10 \log L(r) / 10 + 10 \log L_{10,ve} / 10)$
- $L(r)$ Vibration by construction work
- $L_{10,ve}$ Vibration by Lorries

a. Vibration by construction work

- $L(r) = L(r0) - 15 \cdot \log(r/r0) - 8.68 \alpha (r-r0)$
- $L(r)$: Vibration level
- $L(r0)$: Vibration level at the reference point
- r Distance to prediction
- r0 Distance to the reference point
- α Internal damping factor =0.01 (given by the work type)

Table: Vibration by construction work at the reference point

		Damping factor	L_{10}^* d(BA)
Asphalt paving	Subbase/base course	0.001	59
	Asphalting	0.001	56
Concrete paving	Subbase/base course	0.001	59
	Concreting	0.001	75

b. Vibration by lorries

- $L_{10,ve}$ Upper limit of 80% range (dB)
- $L_{10,ve} = L_{10}^* + \Delta L$
- ΔL Increment of vibration by lorries
= $a \cdot \log(\log Q') - a \cdot \log(\log(Q))$
- Q' Equivalent traffic volume per 500 seconds per lane (number/500s/lane)
= $500 / 3,600 / M * (Q1 + K(Q2 + Qcon))$
- Q1 Number of medium vehicles per hour (Number/hour)
- Q2 Number of large vehicles per hour (Number/hour)
- Qcon Number of construction vehicles(=lorries) per hour (Number/hour)
- K Conversion factor of large vehicle to medium vehicle

Dust

(Ref. 2)

Rd=

Weight of dust fallen ton/km²/day
=N·Cd·(3.5·(0.2·x + 0.35))

Cd=

N: Daily total traffic volume

a·(u/u0)^{-b}·(x/x0)^{-c}

Cd: Amount of dust fallen at the location of prediction
which was raised by a truck ton/km²/m²/truck

a: Unit dust fallen at the referent point

Dust fallen raised from 1m² by a construction vehicle, ton/km²/truck/m²

u: Wind velocity, right angle to road

u0: Reference wind velocity 1m/s

b: Factor by wind 1

x: Distance m

x0: Reference distance m 1

C: Coefficient of dispersion of fallen dust 2

Table: Unit dust fallen at the referent point

Surface conditions	ton/km ² /truck/m ²
Unpaved	0.23
Unpaved/steel plate	0.03
Unpaved/water sprinkled	0.012
Paved	0.0014
Paved with tire washed	0.0007

Appendix C
Minutes of Meetings

Report on 1st Stakeholders meeting on 9th November 2010

Report of the 1st Stakeholders Meeting,

Prepared by MTR

9th November 2010

Attachment:

- Minutes of Meeting (3 pages)
- Attendant Lists
 - Original with Signature
 - Typed
- Invitation Letter (2 pages)
- Proposed Participant
- Handout
 - Program (same as 2nd page of invitation letter)
 - Presentation - Project Outline
 - Presentation - Environmental and Social Consideration
- Photos

Report on 1st Stakeholders meeting on 9th November 2010

Minutes of Meeting for the 1st Stakeholders Meeting

Date: 8th November 2010

Venue: Home and Away Business Center

Time: 10:00-12:30

Chaired by: Mr. Otim, Deputy Director, MTR

Opening Speech 10:10:25

Mr. Murice Rahman, Director of Road Safety, Ministry of Transport and Bridge (MTR), GoSS

Stating that the resettlement issue is very important in this project

Mr. Louis Gore George, the 1st Director General of Ministry of Physical Infrastructure (MOPI), CES:

Stating the proposed bridge is critically important. We should follow the findings and recommendation made through the study

Presentation of Project Outline 10:25-10:35 as per Power Point Attached

Mr. Otim Bong, Deputy Director, MTR

Presentation of Environmental and Social Considerations 10:50-11:50 as per Power Point Attached

Mr. Shoji, Social Specialist of JICA Study Team

Discussion:11:50-12:30

Mr. Butrus Apollo, Southern Sudan Land Commission (SSLC), GoSS.:

Presently, there is no proper land policy or act. We are now trying to prepare. However we have a referendum on coming January and are afraid that approval of these new laws will delayed further more.

Mr. Shoji: Study team will fully support you to prepare proper compensation plan.

Mr. Joseph Lam, Ministry of Environment (MOE), GoSS.

The compensation is made one time only or continuously?

Mr. Shoji: Basically one time only and, based on the results of post construction monitoring, we provide another assistance if their life levels are found to be deteriorated.

Report on 1st Stakeholders meeting on 9th November 2010

Mr. Dorina Keji, MOE: (a) How about impact to global warming? (b) How about the quality of river water since we have a drinking water treatment plant down stream?

Mr. Shoji: (a) Released Carbon Dioxide, green house gas, from vehicles will be reduced due to reduction of consumed fuel since efficiency of traffic flow will be improved by the new bridge. (b) As for river water contamination, we will study the most suitable construction methods to minimize the disturbance of river bed/sediments

Ms Gloria H.Sao, UNHCR: (a) Compensation amount will be replaceable amount? (b) How about treatment of landless people?

Mr. Shoji: Value-Assessment Committee will be set up and determine replaceable prices. A minimum plot will be provided to landless people

Mr. Butrus Applo, SSLC: A group relocation site, 14 miles west from Juba, is being planned.

Mr. Charls Andrea Joda, Director of Rejaf Payam, Information disclosure to is critically important. Without it, the project can result in failed.

Mr. Otim, MTR: It is impossible to implement the project without notifying to the residents. Please continue to joining to these stakeholders meetings from now on as well.

Ms Cecilia, MOE: How to secure the ROW area after declaring Cut-Off Day, since many people will come back to Southern Sudan after referendum?

Mr.Otim, MTR: It is important that everybody meet together and study various measures for all people.

Closing remark

Mr. Maurice Rahman. MTR

Mr.Emmanuel Matay, MPOI

Mr. Kiyotak Tamari, JICA Juba Office

Report on 1st Stakeholders meeting on 9th November 2010

No.		Title	Organisation	Mobile Phone	Signature
1	Maurice Reham	D/G Road Safety	MTR	903838551	
2	Peter Makuol	Senior Officer	MTR	926660194	
3	Otim Bong	D/Director	MTR	955234088	
4	Butrus Apollo	Coordinator	SSLC (GOSS)	955361971	
5	Gloria H. Sao	Prof. Asst	UNHCR	955444619	
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7	Emmanuel Matay	D/G Housing CESM	MOPI CESM	959002169	
8	Lewis Gore	1st D/G infrastructure	MOPI	477112364	
9	Kiyotaka Tamari	Project Fomulation Aduson	JICA	914636201	
10	Joseph Lam	Director	MOE	121676755	
11	Moses Gogonya	A/Inspector for E/A	MOE	123803085	
12	Dorina Keji	A/Inspector for GIS	MOE	915307103	
13	Cecilia Mogga Kenyi	S/Insp for Pollution	MOE	955059046	
14	Charles Andrea Joda	Director/ Rejaf Payam	L.Govt.CES/Juba	129077267	

Report on 1st Stakeholders meeting on 9th November 2010

No.	Name	Title	Organization	Mobile Phone	Signature
1	Maurice Rehan	PIG Road Safety	MTR	0903838551	
2	Peter ma kuol	Senior Officer	MTR	0926600194	
3	ofim Bong	PI Director	MTR	0955934088	
4	Butrus Apollo	Coordinator	SSLC (Goss)	0955361971	
5	Gianna H. Sano	PIGT - ASST.	UNHCR	0955444619	
6	Afsushi Nashimoto	Ass. Relocation officer	UNHCR	nashimat@unhcr.org	
7	Shamsud Moatiny	IG/Head CESM	MOP I CES	8559002169	
8	Leis Gore	1st IG Infrastructure	MOP I	0477172364	
9	Kiyotaka Tamura	Project Formulation Advisor	JICA	091-4636201	
10	Joseph Lam	Director	MPE	0121676755	
11	Moses Gonyea	A/Insp. for EIA	MOE	0123808085	
12	Dorinda KETI	A/Insp for GIS	MOE	0915307103	
13	Cecilia Mogga Kungu	S/Insp for Pollution	MOE (Goss)	0955059046	
14	Charles Andrew Jada	Director/Rejaf pangin	Local Govt. CES/Tubalay	0129077267	
15					
16					
17					
18					
19					
20					



Report on 1st Stakeholders meeting on 9th November 2010
**PREPARATORY SURVEY ON THE PROJECT FOR
CONSTRUCTION OF NILE RIVER BRIDGE
IN SOUTHERN SUDAN**



Date 4th November-2010

Subject: Invitation for 1st Stakeholders Meeting on Environmental /Social Survey Study Planning for the New Nile River Bridge Project

Dear Sir /Madam

The Following the Road Network Development Master Plan proposed under the Juba Transport Infrastructure and Capacity Development Study completed by JICA in December 2009, Government of Southern Sudan emphasized on the development of Roads Network and identified the urgent of construction Circumferential road including the New River Nile Bridge with the objective of the following ;

1. To improve the International road network and provide direct link to Uganda and Kenya through Juba –Nimule Road.
2. Politically; I will symbolize the fruits of peace and catalyze economic development of Government of Southern Sudan.

Based on this the Government of Japan has entrusted study to be conducted to identify the viability of the Project through the Japan International Cooperation Agency-JICA. This is to be done through a Preparatory Survey to be conducted in stages and during this study the existing Environmental and Social Conditions related to the Nile River Bridge will be assessed for planning purposes like the Resettlement Action Plan for people who will be affected by the project in accordance to the Legal frame works of both Japan Guidelines and World Bank. Therefore you are invited to attend the 1st Environmental /Social Consideration Stake holders Meeting to introduce the concept of the project on the 8th November 2010 at 9:30 Am at Home and Away Business Centre the program as attached .Your participation is highly appreciated.

Yours Sincerely;

Eng.Jacob Marial
Director General-Roads and Bridges
Ag.Under Secretary
Ministry of Transport and Roads;
Government of Southern Sudan –GOSS.

Report on 1st Stakeholders meeting on 9th November 2010

Program Outline or the 1st Stakeholders Meeting Environmental /Social Survey Study planning on 8th November 2010 at 9:30Am.

- Date: 8th (Monday) November; 2010.
- Venue: Home and Away Business Centre
- **Program :**

- 9:30 -10.00am Arrival and Registration

- 10:00-10:15am Opening by the D/G Roads and Bridges –Ministry of Transport and Roads Goss
Opening Remarks by 1ST Director General; Mr. Louis George Gore –MOPI

- 10:15 -11:30am Outline of the Project ,presented by the D/Director Urban Roads
Eng.Otim Bong

- 11:45 -11:45Am - Tea Break

- 11:45-12:30Pm Environmental and Social Considerations, Presented by Mr. Shoji
/Ms Umiguchi

- 12:30 -12:45Pm Discussions and Observations.

- 12:45-13:00Pm -Closing Remarks by 1ST Director General; Mr. Louis George Gore
–MOPI and Lunch

Report on 1st Stakeholders meeting on 9th November 2010

List of Proposed Participant:


- Goss
- 1) Mr. Jacob, Director General, Ministry of Transport and Road
- 2) Undersecretary, Ministry of Environment Ministry
- 3) Chairman, Southern Sudan Land Commission
- 4) Undersecretary, Ministry of Forest and Agriculture
- 5) Undersecretary, Ministry of Health
- 6) Chairman, Commission of Census and Statics
- 7) Traffic Police, Ministry of Interior
- 8) Road Safety Officer, Ministry of Transport and Road
- CES
- 9) Mr. Louis, The First Director General, Ministry of Physical Infrastructure
- 10) Director General, Road and Bridge, Ministry of Physical Infrastructure
- 11) Director General, Housing, Ministry of Physical Infrastructure
- 12) Director General, Land and Survey, Ministry of Physical Infrastructure
- 13) Director General, Agriculture and Forest
- 14) Minister, Ministry of Environment
- 15) Commissioner of Juba County
- 16) Executive Director of Rajaf, Payam (East bank)
- 17) Executive Director of Lorogo, Payam (West bank)
- 18) Paramount Chief of Rajaf
- 19) Paramount Chief of Loroggo
- Donor
- 20) UNDP
- 21) USAID
- 22) UNEP
- 23) UNHCR
- 24) World Bank
- 25) Tamari, JICA

Report on 1st Stakeholders meeting on 9th November 2010

PREPARATORY SURVEY ON THE PROJECT FOR CONSTRUCTION OF NILE RIVER BRIDGE IN SOUTHERN SUDAN


Ministry of Transport and Roads, GOSS
Ministry of Physical Infrastructure, CES

Japan International Cooperation Agency
CTI Engineering International Co., Ltd.
Eight-Japan Engineering Consultants, Inc.



1

Location Map



Project Scope

Facility	No. Lanes	Length (m)
Bridge	2	560
Road	2	3,900

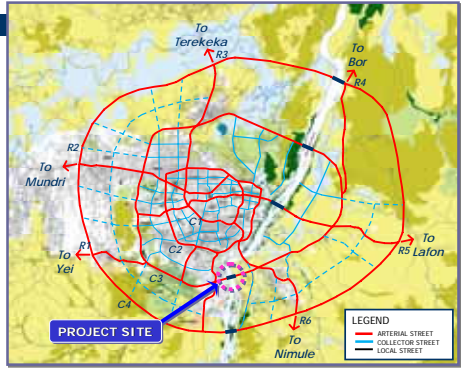
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Project Objective

The objective of the project is to construct, in close collaboration with GOSS, a new Nile River Bridge and its approach roads to divert and distribute the traffic within and around the city areas without concentrating at the central part of Juba.

3

Juba Road Network Master Plan



4

Preparatory Survey Schedule

Work Items	2010		2011												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
1) Preparatory Works in Japan															
2) First Site Survey in Juba															
3) First Data Analysis in Japan - 1															
4) Second Site Survey (Social Considerations)															
5) First Data Analysis in Japan - 2															
6) Third Site Survey in Juba															
7) Second Data Analysis/ Preliminary Design in Japan															
8) Explanation of Preliminary Design Report (Digest)															
9) Submission of Preparatory Survey Report (Draft & Digest)															
10) Submission of Preparatory Survey Report (Final)															

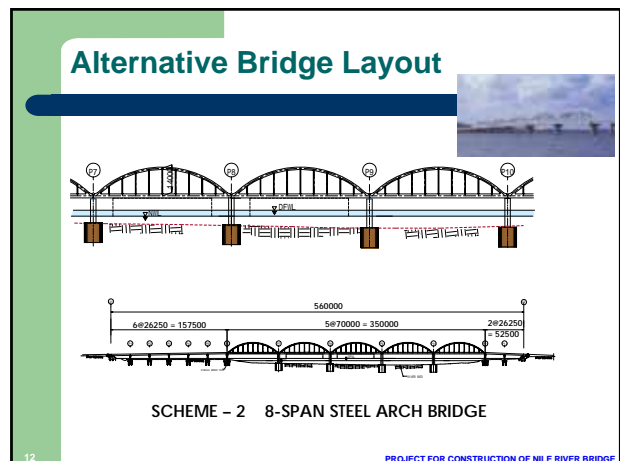
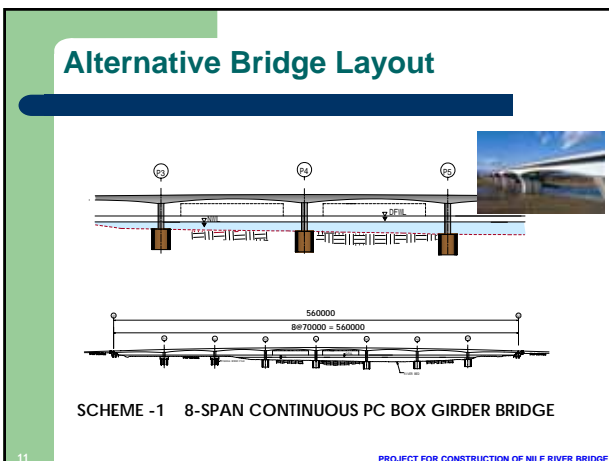
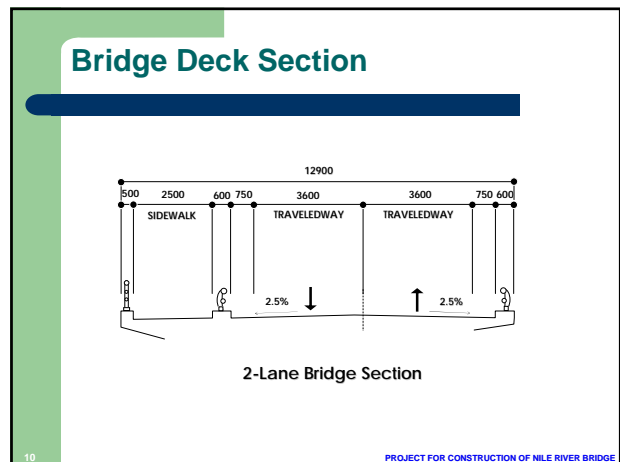
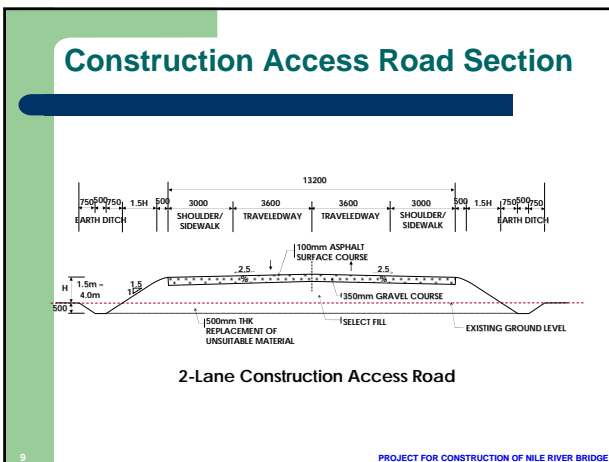
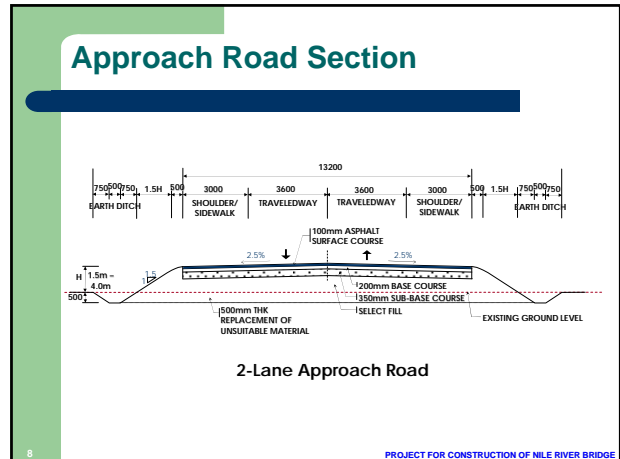
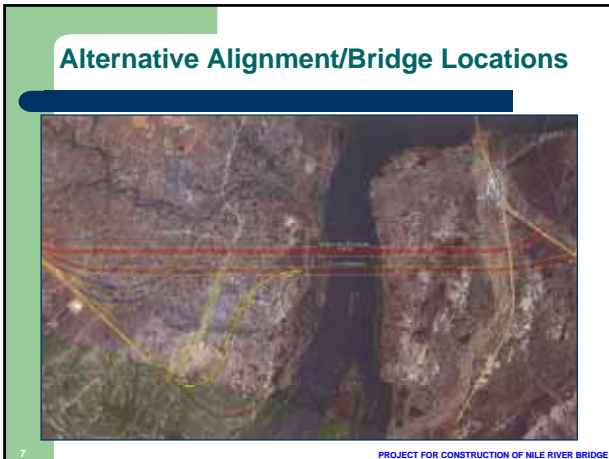
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Undertakings by Southern Sudan to Achieve Project Goals/Objectives

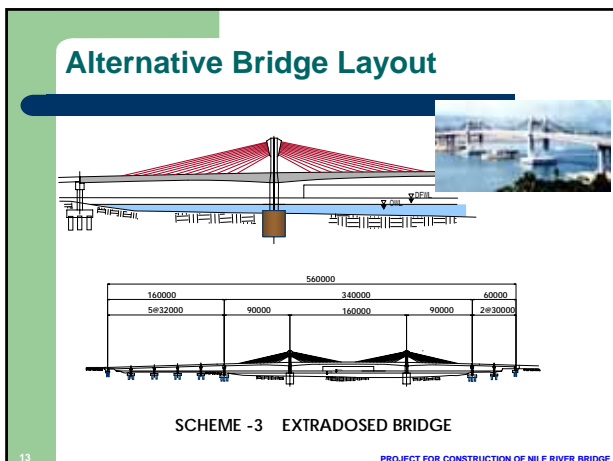
- ✓ Dialogues with PAPs and information disclosure
- ✓ Carry-out procedures and obtain approvals for project
- ✓ Expropriation of land for project right-of-way and resettlement of affected persons
- ✓ Securing resettlement site and temporary yard areas for construction
- ✓ Preparation of Resettlement Site
- ✓ Removal of existing structures and other obstructions
- ✓ Obtaining approvals for environmental permits, mining and quarrying, removal of trees, safety and occupational hazards
- ✓ Relocation of utilities
- ✓ Operation and maintenance of the subject facilities
- ✓ Bank handling charges
- ✓ Taxes and duties

6

Report on 1st Stakeholders meeting on 9th November 2010



Report on 1st Stakeholders meeting on 9th November 2010



Report on 1st Stakeholders meeting on 9th November 2010

THE PROJECT FOR CONSTRUCTION
OF
NILE RIVER BRIDGE
IN
SOUTHERN SUDAN

Environmental and Social Considerations By Shoji/Umiguchi

Japan International Cooperation Agency
CTI ENGINEERING INTERNATIONAL CO.,LTD
EIGHT-JAPAN ENGINEERING CONSULTANS, INC.

1

Content of Presentation

- A. Terminology
- B. Flow of Grant
- C. Required Policy for EIA/RAP
- D. Content of EIA
- E. Content of RAP

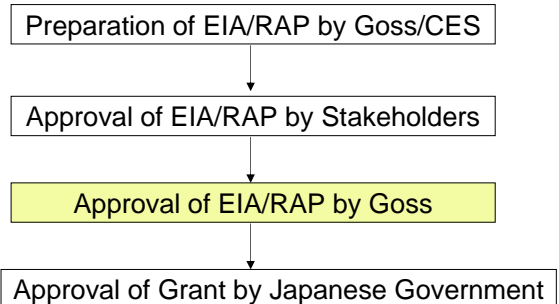
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A. Terminology

- EIA: Environmental Impact Assessment
- RAP: Resettlement Action Plan
- ROW: Right of Way
- GoSS: Government of Southern Sudan
- CES: Central Equatoria State
- JICA: Japan International Cooperation Agency
- WB: World Bank

3

B. Flow of Grant



4

B.1 Approval by Stakeholders Meetings

Following Stakeholders Meetings (SHM) are required as the process of EIA/RAP

- 1st Stakeholders Meeting for Project outline (this time meeting)
- 2nd stakeholders meeting for TOR approval (December 2010)
- 3rd Stakeholders Meeting for Study Progress approval (March 2011)
- **4th Stakeholders Meeting for Draft Final Reports Approval (July-August 2011)**
- 5th Stakeholder Meetings for Study Report Explanation (October 2011)

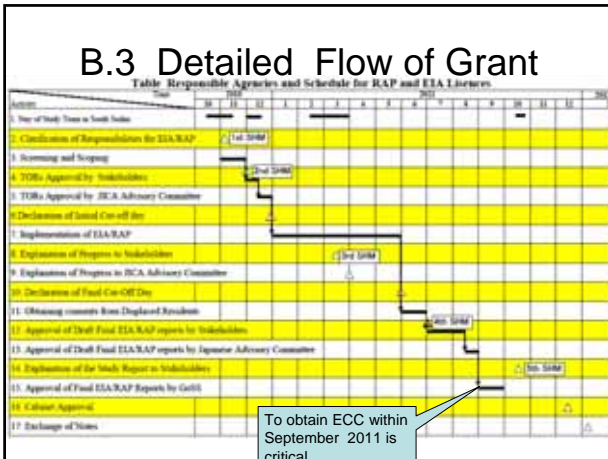
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B.2 Approval by JICA Environment Advisory Committee

- Approval of TOR
- Approval of Study Progress
- **Approval for Draft Final EIA/RAP Reports**

6

Report on 1st Stakeholders meeting on 9th November 2010



C. Requirement for EIA/RAP

- To fulfill the laws, policies and practices in Southern Sudan, in addition to that,
- To follow the JICA Environmental and Social Considerations Guideline

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D. Content of EIA as per JICA Guidelines

- D.1 Screening and Scoping
- D.2 Understanding of the Project
- D.3 Prediction of Environmental Impacts
- D.4 Environmental Management Planning
- D.5 Monitoring and Evaluation Planning
- D.6 Cost Estimation

9

D.1 Screening and Scoping

- The purpose is to determined the necessity of EIA and what items to studies
- To pick up possible items which can be negatively impacted.

10

D.1.1 Natural Environmental Impacts

- Air pollution
- Water pollution
- Soil pollution
- Waste
- Noise and vibrations
- Ground subsidence
- Offensive odors
- Geographical features
- Bottom sediment
- Biota and ecosystems
- Water usage
- Accidents
- Global warming

11

D.1.2 Social Environmental Impacts

- Involuntary resettlement
- Local economies, such as employment, livelihood, etc.
- Land use and utilization of local resources
- Social institutions such as social infrastructure and local decision-making institutions
- Existing social infrastructures and services
- Poor, indigenous, or ethnic people
- Misdistribution of benefits and damages
- Local conflicts of interest
- Gender
- Children's rights
- Cultural heritage
- Infectious diseases such as HIV/AIDS

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Report on 1st Stakeholders meeting on 9th November 2010

D.2 Understanding of the Project

- Description of the project including,
 - Site
 - Structure
 - Work Period
 - Cost
 - Labors
 - Material used
 - Waste generated

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D.3 Prediction of Environmental Impacts

- Based on the content of project assume the degree of impacts thorough:
 - experiences
 - hearing
 - site surveys
 - environmental monitoring
 - numerical analysis

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D.4 Environmental Management Planning

- To propose mitigation measures to each of the negative impacts predicted. For example:
 - Resettlement Action Planning for possibly displaced people
 - Environmental management planning while construction/after operation
 - Safety/Health management planning

15

D.5 Monitoring and Evaluation Planning

- To verify and correct, if necessary, environmental managing activities
- Monitoring shall be basically continued while construction and after operation to be confident that negative impacts have been properly mitigated.

16

D.6 Cost Estimation

- To prepare the budget for the cost to implement environmental mitigation plans, for example:
 - Compensation for displaced people
 - Spraying of water while earth filling work

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E. Contents of RAP as per JICA guidelines

- E.1 Screening and Scoping
- E.2 Understanding project
- E.3 Alternative study
- E.4 Policy and Legal Framework
- E.5 Participation and Consultation
- E.6 Socio-economic Survey
- E.7 Compensation Policy Planning
- E.8 Grievance Redressing
- E.9 Monitoring and Evaluation

18

Report on 1st Stakeholders meeting on 9th November 2010

Continued:

- E.10 Implementation Schedule Planning
- E.11 Replacement Cost Survey
- E.12 Compensation Matrix Planning
- E.13 Income Restoration Planning
- E.14 Declaration of Cut-Off Day
- E.15 Demarcation
- E.16 Census
- E.17 Asset Inventory
- E.18 Cost Estimation

19

E.1 Screening and Scoping

- Same as D.1

20

E.2 Understanding project

- Same as D.2

21

E.3 Alternative study

- To select the most feasible option with the minimum negative environmental impact, for example;
 - Comparison of Possible Routes 1,2,3,4,5 by number of displaced people/construction cost
 - Zero option, in case of without project, shall be considered together

22

E3.1 Alternative routes



E.4 Policy and Legal Framework

- To understand the present laws, sub-laws and practices of recipient government
- To clarify the responsible/mandated agencies for environmental management activities
- By these, to propose what rules and organizations shall have to be established, if necessary, to fulfill the requirement of JICA Environmental and Social Considerations Guidelines

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Report on 1st Stakeholders meeting on 9th November 2010

E.5 Participation and Consultation

- To incorporate the opinion, request, desire of Project Affected Peoples as much possible
- Stakeholders meetings (4 times more)
- Small group discussion for vulnerable people (aged, poor, landless, widowed, handicapped)

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E.6 Socio-economic Survey

- To know the response to the project
- To clarify the levels of life, livelihood/income of affected peoples so that the level of compensation/assistance can be properly determined
- The maximum numbers of 500 households shall be door to door interviewed including directly and indirectly affected people.

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E.7 Compensation Policy Planning

- The levels of life, livelihood/incomes of affected people shall be maintained or improved by the project (digging of tube well?)
- Compensation prices shall be replaceable/purchasable amount to regain the lost assets, as is determined by the Value-Assessment Committee
- Additional assistants (money, in kind) to those, if their life level/livelihood are not restored.

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E.8 Grievance Redressing

- Fair, impartial and quick responded grievance committee shall be established, if necessary, to take immediate action to resolve the grieves raised
- The committee member shall includes representatives of affected people and NGOs.

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E.9 Monitoring and Evaluation

- To verify if resettlement activities are properly implemented such as:
 - Asset inventory was properly done
 - Compensation was paid as per agreed
 - Relocation plot is allocated beforehand
 - Life level/livelihood are restored as before

29

E.10 Implementation Schedule Planning

- To propose the detailed time table of resettlement activities

30

Report on 1st Stakeholders meeting on 9th November 2010

E.11 Replacement Cost Survey

- To establish the replaceable/purchasable compensation unit prices for the lost assets by the project, Value-assessment Committee including not only government agencies but also representatives of displaced people/communities and human-right NGO shall be established
- Based on the committee, compensation unit prices are finalized, to which prices every affected people shall follow.

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E.12 Compensation Matrix Planning

Loss type	Application	Entitled Person	Entitlements
1. Land	Land in the 25-m AQ-4 corridor at the relocation area site: <ul style="list-style-type: none"> o titled land o squatted land 	<ul style="list-style-type: none"> o Owner of titled land (2) o Resident informal settlers occupying land used for: <ul style="list-style-type: none"> o residence (179) o commerce (30) o community services (1) 	Compensation at replacement cost Relocation assistance for loss of buildings plots, 2 OPTIONS: <ul style="list-style-type: none"> o P15,000 rehabilitation in self-relocation zones; o 1.40 sq/m plot considered on a lease agreement of AP as not willing to pay for land titling. In such a case the AP will have to pay a monthly P100 rent.
2. Easels or free use of buildings	Both with Residential and commercial purposes	<ul style="list-style-type: none"> o Renters (11 APs) o Rent-free (20 APs) 	o As above.
3. Structures	Residential and commercial structures	<ul style="list-style-type: none"> o Owners of: <ul style="list-style-type: none"> o residential structures (241) o commercial structures (33) o auxiliary structures (12) 	Compensation at replacement cost of affected structure Movable structures will not be compensated but owners will get

E.13 Income Restoration Planning

- To provide the program for those whose income level can be deteriorated.
- Generally program includes:
 - Provision of allowances
 - Micro finance
 - Job training (agriculture, etc)
 - Priority provision of work at construction site

33

E.14 Declaration of Cut-Off Day

- To prevent the encroacher into the possible project area
- To prohibit new development (building construction, new cultivation of farm)
- To freeze the transaction of lands to prevent speculation

34

E.15 Demarcation

- To install the pegs on ground surface to indicate the boundary of ROW, within which, all properties shall be cleared before construction work

35

E.16 Census

- To confirm the number, type, entitlement etc of people with in the ROW to be displaced

36

Report on 1st Stakeholders meeting on 9th November 2010

E.17 Asset Inventory

- To estimated the assets with in the ROW based on the prices determined by Value-assessment Committee
- Note that if the remaining portion out of ROW is too less, all the assets outside ROW shall be compensated as well

37

E.18 Cost Estimation

- To estimate the total cost for above resettlement activities

38

End

- Thank you very much

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Report on 1st Stakeholders meeting on 9th November 2010



Venue of the 1st Stakeholders Meeting
(Home and Away Business Center)



Participants



Presentation made by MTR

Photo The 1st Stakeholders Meeting held on 8th November 2010

Report on 2nd stakeholders meeting 18th December 2010

**PREPARATORY SURVEY ON THE PROJECT FOR CONSTRUCTION
OF NILE RIVER BRIDGE IN SOUTHERN SUDAN**

Minutes of Meeting for the 2st Stakeholders Meeting

Purpose: Explanation of Study Process to the Community and Approval of TOR (Terms of Reference) for the Study based on the Scoping Results

Date: 18th December 2010

Venue: Open space near Khor-Klaliang Bridge, Luluggu

Time: 10:30-12:30

Number of Participants: About 40 including 2 ladies

Chaired by: Mr. Shoji Takeo, JICA Study Team

Opening Speech 10:30-10:35

Mr. Prudensio Wani, Chairman, Luluggu Community

Project Outline: 10:35-10:50

Ms Patricia, Environmentalist, Ministry of Transport and Bridge (MTR), GoSS

Explanation of Procedure for Environmental and Social Consideration: 10:50-11:10

Mr. Shoji Takeo, Social Specialist, JICA Study Team: made explanation based on the handout

Discussion: 11:10-12:30

Mr. Denis Daramollo F, Paramount Chief of Juba County: mentioned that the area between Nile River and Luluggu Street is a community's land approved by the government. If the governments want to take the land, they have to get approval of the project, first of all, from the community and then have to make compensation to either the community or affected people directly.

Mr. Zacharia Kharamis Peter, Administrative Officer, Rajef Payam, stressed the importance of the project for the community development, although minor negative impacts at the very initial stage shall be overcome.

Following questions/requests were raised (reply):

- Explanation by the local Arabic was proposed for better understanding for local

Report on 2nd stakeholders meeting 18th December 2010

residents and language has changed into Arabic.

- Who will make compensation? (GoSS)
- Minutes of understanding shall be exchanged between GoSS and Community to protect affected people
- Is railway attached on the bridge? (No)
- Mango trees are compensated
- Farm Land are to be compensated
- Similar public consultation shall be held for the land owners on the east bank
- Grievance redressing committee should be established including members from the communities.

After discussion, finally following declaration was made by the paramount chief:

1. Luluggu community approved the project, accepting to implementing the study in the site
2. Community will make the final decision to determine the route
3. Community members shall be involved in the members of the compensation committee

Closing remark:

Dr. Kimo Aban Aietbo, Assistant Professor of Economics, College of Social and Economic Studies, University of Juba:

- Emphasizing the importance of protection of community lands

Mr. Moses Gogonya Cosmas, EIA Officer, Ministry of Environment, GoSS

- Woman participation is very important (2 ladies only in this meeting).
- Other organizations such as Ministry of Water Resources, GoSS/CES should be participated

Attachments:

- A. Participants list
- B. Handout
- C. Photos

Report on 2nd stakeholders meeting 18th December 2010

List of Participants

No.	Name	Title	Organisation	Mobile Phone	Signature
1	Patricia Gibril Ali	Enviromental Officer	MTR GOSS	955000310	
2	Moses Gogonya Cosmas	E/A Officer	MOE GOSS	123803085	
3	Dorina Keji Zachariah	G/S Officer	MOE GOSS	915307103	
4	Zacharia Khamis Peter	Adminstrative Officer	Rajaf Payam	955229922	
5	Methodius Emilliano	Secretary Lologo Comm.	DRWD/CES/JUBA	907665763	
6	Preduensio Wani Tombe	Chairman L.Comm.	Lologo-JUBA	918300948	
7	Peter Wani Jafa		Lologo.Comm	18967223	
8	Kiyotaka Tamari	Project Formulation Advisor	JICA	914636201	
9	Alsoshi Nashimoto	Associate Reintegration	UNHCR	nashimot@unhcr.org	
10	Thomas Lokor		Lologo.Comm	955059408	
11	Gabriel Edward		Lologo.Comm	955237495	
12	Campeio Jada		Lologo.Comm	111665596	
13	Gabriel Lada		Lologo.Comm	111591193	
14	Yokwe Jugu		Lologo.Comm	924779987	
15	Simon Jada		Lologo.Comm		
16	Tom Mokawi		Lologo.Comm	95545339	
17	Marcel Ladu		Lologo.Comm	920392612	
18	Akim Ali		Lologo.Comm		
19	Richard Keny		Lologo.Comm	14667840	
20	Denis Doramollo F	Paramount Chief	Juba County	126713552	
21	Fadul Issa		Lologo.Comm		
22	Faustil Lege		Lologo.Comm		
23	Samir Mofi		Lologo.Comm		
24	Conscano Gone		Lologo.Comm		
25	Morris Bangwe		Lologo.Comm	911579140	
26	Jerabio Tangur		Lologo.Comm	111799848	
27	Jemesa Sowka		Lologo.Comm	128613101	
28	Emanuel Ladu		Lologo.Comm	111664463	
29	Phillip Wani		Lologo.Comm	927066240	
30	Paul Lado	Enviromental Officer	Rajaf East	912617531	
31	Emmanuel Halo Andrea	Teacher	Rajaf East	129053594	
32	Leone Ladu		Lologo.Comm	919122402	
33	Stephen Wer		Lologo.Comm	911103306	
34	Dr. Kimo A. Adiebo	Assistant Prof. Economics	Juba University	912215983	
35	Daniel Fado B	Chief Gumbo a/Coast	Gumbo	128320805	
36	Peter Duku Wani	MP	CESLA	126226553	

Report on 2nd stakeholders meeting 18th December 2010

No.	Name	Title	Organization	Mobile Phone	Signature
1	Patricia Gibal Ali	Environmental Officer	MTR Goss	0955000310	
2	Mores Gogonya Cosmas	EIA officer	MOE Goss	0123803085	
3	Dorinda Keyi Zachariah	GIS officer	MOE Goss	0915307103	
4	Zacharia Khamsis Peter	Administrative Officer	Raja P. Payam	0755339933	
5	Methodius Emilliano	Secretary Luluggu Comm	ARWIS/CEIS / Juba	0907665763	
6	Prudensio Wan-Tambi	Chairman L. Comm.	Luluggu - Juba	0918300949	
7	Peter Wari Jada		Lolago Juba	018967223	
8	Kiyotaka Tamari	Project Formulation Advisor	JICA	0918626201	
9	Atsushi Nashimoto	Associate Reintegration Officer	UNHCR	nashimoteunhcr.org	
10	THOMAS LOKAR		LULUGGU	0955057608	
11	Juan Eduardo		Luluggu		
12	Gabriel Edmond		Lolago	0955227495	
13	Campeio Jada		LULUGGU	011665696	
14	Gabriel Lada		Luluggu	011591193	
15	Yokwe Yugu		Luluggu	0924779987	
16	Simon Jada		Luluggu	095545339	
17	iom MOKAWU		Lolago		
18	malcelo Lada		lolago	0920392612	
19	Akim Ali		lolago		
20	Richard Keny		Lolago	0124667840	
21	Denis D'Amello F.	Procurement Chief	Juba County	0126711352	

Report on 2nd stakeholders meeting 18th December 2010

No.	Name	Title	Organization	Mobile Phone	Signature
22	Fadiah LISA		Lologo	-	
23	Faustii Lege		Lologo	-	-
24	Samir maj lego		Lulige	-	-
25	Chasiano Gene		Lologo	-	-
26	Mouha Bayura		Lologo	0911579140	
27	Jenabio Tangin		"	0111799848	
28	JEMESA Sawka		"	0128613101	
29	Emanuel Aa Lachu		Lologo	0111664463	
30	PHILIP ULANI				
31	Paul Lado		Lologo Lologo	09127066240	
32	Paul hadu	Environmental officer	Rejaf East -	0912617531	
33	Emmanuel holo Andrea	Teacher	Rejaf East	0129053594	
34	LEONE Lada		Lologo	0919122402	
35	STEPER WER		Lologo	091103306	
36	Dr. King A. Adiebo	Assistant Prof. Economics	University of Juba	0912215983	
37	Chief Daniel Jabo B	Chief Lumbu A/Pawal	Lumbu	0128320805	
38	Peter Duku Klani	MP	CEFLA	0126226550	
39					
40					
41					
42					



Report on 2nd stakeholders meeting 18th December 2010
**PREPARATORY SURVEY ON THE PROJECT FOR
 CONSTRUCTION OF NILE RIVER BRIDGE
 IN SOUTHERN SUDAN**



Handout for the 2nd stakeholders meeting
18th December 2010

1. Introduction

Purposes of the stakeholders meeting are:

1. To explain the project to affected people
2. To explain the procedure of environmental and social considerations

2. Outlines of the project

Study Name: PREPARATORY SURVEY ON THE PROJECT FOR CONSTRUCTION OF NILE RIVER BRIDGE IN SOUTHERN SUDAN

Proponents: Ministry of Transport and Roads, GOSS
 Ministry of Physical Infrastructure, CES

Study Fund: Japan International Cooperation Agency

Study Firm: CTI Engineering International Co., Ltd.
 Eight-Japan Engineering Consultants, Inc.

Components: a bridge 550-700m in length and 2km access roads respectively on both banks

Construction Period: 3 years from October 2012

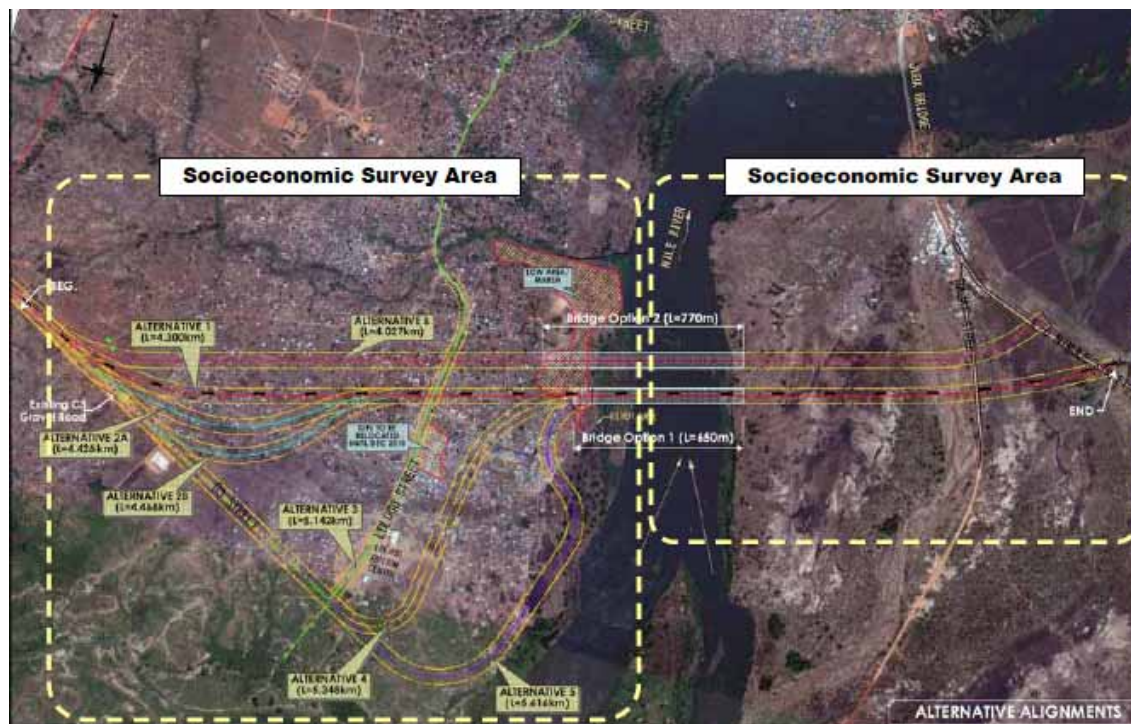


Figure 1 Location of Study Area



Report on 2nd stakeholders meeting 18th December 2010
**PREPARATORY SURVEY ON THE PROJECT FOR
 CONSTRUCTION OF NILE RIVER BRIDGE
 IN SOUTHERN SUDAN**



3. Procedures for Environmental and Social Considerations

3.1 Project Impacts Prediction

- **Positive impacts**
 - ✓ For community:
 - Economic benefit: employment, roadside business, hike of properties values
 - Convenience: access to downtown, promotion of infrastructure preparation such as piped water/electricity
 - ✓ For Juba County:
 - Mitigation to traffic congestion and air pollution in downtown
 - Acceleration of land development resulting in regional economic growth
 - ✓ For GoSS/CES:
 - Empowerment of international / inter-state transportation ability resulting in economic growth
 - ✓ For Globe
 - Reduction of green house gas emission by the smooth traffic
- **Negative impacts**
 - ✓ For community:
 - Resettlement of residential houses and agricultural sources
 - Pollution problem such as dust rising from passing heavy vehicles, tentative river water contamination during bridge construction
 - Safety problem during and after bridge construction
 - Hygiene Problem including HIV/AIDS
 - Impact to natural environment is negligible/unknown

Please see attached screening table for details.

3.2 Mitigation Measures Planning

- **Resettlement**
 - ✓ For people to be displaced
 - Consultation with affected people
 - Replaceable prices to regain for the lost assets including land, houses, valuable trees etc
 - Additional assistances necessary to regain the pre-project life level and livelihood such as provision of the land, job training, micro loan etc.
 - Proper planning to preparation of group resettlement site if needed
 - ✓ For natural environment
 - Interview to the residents about existing species
 - ✓ For pollution
 - Prepare proper environmental management plan
 - ✓ For safety problem
 - Prepare proper safety management plan
 - ✓ For Hygiene problem
 - Prepare proper hygiene management plan

4. Project Information

For detailed information, please contact:

- Mr. Otim Bong: Ministry of Transport and Roads: 0955234086

Table Results of Screening

Item		Category	Remark	
Social Environment	1	Involuntary resettlement	A	By the land acquisition with a width of 30m ROW, about 60 households (240 people?) may have to move out of ROW. However, impacts are considered to be not so serious since; (1) most houses can "set-back" just outside of ROW with moving distances at most about 100m only in the maximum to open space, (2) then, their life environment would not change, and (3) the site are already being rezoned by CES, by which proper resettlement is scheduled.
	2	Local economies, such as employment, livelihood, etc.	D	Employment of local residents will be promoted by the construction work. Also increased are the sales of goods of kiosks and agricultural product, as are same after operation period.
	3	Land use and utilization of local resources	B	By the construction of new road, present open spaces are fully utilized. Existing houses randomly situated will be properly realigned as per rezoning scheme. Impacts to small gardens along the river are minimized by compensated or provision with equivalent or more productive lands. Mango trees are compensated.
	4	Social institutions such as social infrastructure and local decision-making institutions	C	By the construction of roads/bridges the social institutions (e.g. school, market, churches, etc.) become more easily accessible, although some inconvenience may be predicted during construction. Traditional authorities are empowered by the economic benefit.
	5	Existing social infrastructures and services	B	During construction, some social services such as public buses may be affected. However by proper construction management plan including traffic control and provision of detour, such impacts can be minimized.
	6	Poor, indigenous, or ethnic people	B	Presently, a refugee camp of UNHCR is located 150m south of proposed access and is scheduled to be moved out within 2010 or soon or later. Apart from the camp, there may be several returned soldiers or refugees scattered at the site and may have to move out. However by proper resettlement planning including provision of free land, their life levels are improved.
	7	Misdistribution of benefits and damages	D	The compensation is provided based on the replaceable prices only and there is no chance that "somebody wins or other people lost". Life levels are basically same for ordinary people except for very poor/landless of whom life levels are improved.
	8	Cultural Heritage	D	There is no cultural heritages
	9	Local conflicts of interest	D	No conflict of interest shall arise.
	10	Usage of Water and Water Right	B	Present wells in ROW to be removed shall be replaced.
	11	Accident	B	Accidents are very common at construction. However by preparing a proper construction and traffic management plan, it is possible to minimize impact.
	12	Sanitation	B	Although kitchen/sanitary wastes can be generated from workers' camp, environmental impacts can be minimized by proper treatment
	13	Infectious diseases such as HIV/AIDS	B	Many outside construction workers will move in the site and there is a chance of spread of HIV/STD transmission. However these can be minimized through proper measures including campaign/education of residents/workers and provision of safety goods.
Natural Environment	14	Topography and Geology	D	There is no valuable topography/geology around.
	15	Soil Erosion	D	Surface water, previously randomly overflowed can be controlled by the side ditch along the road and the soil erosion will be minimized.
	16	Groundwater	D	There no work as would shut the groundwater flow or no large scale pumping of ground water
	17	Hydraulic Situation	C	By the installation of embankment/piers, flooded area can be widen. Hydraulic survey is proposed to minimize this impact..
	18	Costal Zone	D	There is no costal zone.
	19	Fauna, Flora and Biodiversity	B	There is no rare space around the site. Although the bushes will be cleared including cash /fruits trees.
	20	Meteorology	D	The project will not influence the climate condition.
	21	Landscape	D	Landscape is not impacted.
	22	Global Warming	D	Generation of global warming gas is reduced due to the reduction of consumption of fuel through smoother traffic flow as a result of the project.
	23	Air Pollution	C	May tentatively cause some air pollution during construction period. However, it will be reduced due to smoother traffic after operation.
Pollution	24	Water Contamination	B	The construction of abutments/piers in the river, some turbid water may be generated temporarily. It can be minimized through the selection of the suitable construction method.
	25	Soil pollution	B	Fuel can be leaked into the ground from storage/heavy equipment. Countermeasures for fuel leak can minimize impact.
	26	Waste	D	Some construction waste can be generated although their impact can be minimized through proper construction plan.
	27	Noise and vibration	B	May tentatively cause some noise/vibration by equipments during construction period. However, it will be reduced due to smoother traffic after operation.
	28	Ground Subsidence	D	There is no thick, very soft ground that will cause long term subsidence of ground surface
	29	Odor	B	May tentatively cause some air pollution by equipments during construction period. However, it will be reduced due to smoother traffic after operation.
	30	Bottom Sediment	D	No pollutant will be generated that will cause contamination of river bottom

A: Negative Impact Serious

B: Negative Impact Slight

C: Extent of impact is unknown at this stage or limited negative impact only

D: No negative impact is expected or positive impact

Report on 2nd stakeholders meeting 18th December 2010



Sign to the venue



Overall view of venue under the tree



Display at the venue



Presentation of alternative routes



Opening speech by Lologo Chief



Attendants from the community

Pictures of the 2nd Public Consultation

Report on group discussion with farmers 25 February 2011

Minutes of Meeting

Subject: Compensation for Possible Damages to Crops caused by Passing of Crawler Crane through the Farm

Location: Riverside on Lologo Village

Participants (Attendants list attached):

- Mr. Fellix Wani, Road Engineer, MTR
- Mr. Michael Francis, Vice Director of Payam Rajef
- Mr. Zakeo Pitia, Sub-chief of Lologo Village
- Affected farmers: 11 persons on 24th and 23 persons on 25th February 2011
- Drillers
- JICA Study Team

Summary of discussion

1. On 23rd February 2011, the drilling team tried to carry their drilling rig by a crawler crane (2m width) through crops farm land, farmers stopped entering the crawler since they were afraid their crops, which are their only livelihood, are disturbed, unable to harvest.
2. On 24th February 2011, the 1st farmers' meeting was held. Mr. Michael stressed the importance of the construction of new bridge and farmers agreed the project, except the issues of damages to their crops. Then, it was proposed to determine if farmers agree to let the crane pass through their farm land. However, since some of the affected farmers were absent, farmers claimed this decision shall be made following days.
3. On 25th February, the 2nd farmers' was held and they concluded that the crane can pass their farm land in case compensation are made. Based on the inspection by farmers and other participants made, compensation bellow table were agreed, to be paid within 25th or 26th February. Representative of MTR, as the project owner, informed them to pay after reporting to Mr. Otim, MTR.

Types of damages	Number of farmers	Compensation required (SGD/farmer)	Amount (SDG)
Crops	9	400	3,600
Seeding ground	6	200	1,200
Total	15	-	4,800

4. Afterward, MTR decided not to pay the compensation and entering to the farm land was suspended.

Report on group discussion with farmers 25 February 2011



Drilling rig trying to enter into field



Rig is carried by mini crawler crane
(Note the width is 2m only)



Proposed location of drilling



Nearby farm being cultivated



Sweet cone



Okura

Report on group discussion with farmers 25 February 2011



Cassava



Green vegetable



11 ladies from affected farmers also participated the meeting on 25th February 2011



Inspecting the possible damages to the crops by passing of crawler crane,
25th February 2011

Report on group discussion Participants 125, 24 Feb 2011

24 Feb 2011








No.	Name	Title	Organization	Mobile Phone	Signature
1	Paolino Duggale	on pension	Non		
2	Prudensio Alami	on pension	Malaygo	0918300948	
3	Manchello Iada	on pension		0930441609	
4	Michael Francis	At Director K. PATAK		0955358818	
5	YUZO MIZOTA	Bridge Engineer	JICA	0955-259755	
6	SHOTI TAKEO	Environmental Specialist	:	0901803703	
7	Attayut Rangsi Paiboon	Geotechnical Engineer	---	0955721874	
8	Zacharia Khonnis Peter	Admin/Officer	L-G	0955339933	
9	Seopans Boro	Worker of Bridge	JICA	0955410126	
10	Lowenoxa Pitia	Student	Non	Not	
11	JOSEPH TABAN	Worker of Bridge	JICA	0955394561	
12	ANTONIJ TOMISE	on pension	Non	Not	
13	PHILLIPH KIANI	on pension	Non	0927066260	
14	KILLSON SWAKA	on pension	Non	0121589457	
15	JOSEPH LEGGE	on pension	Non	Not	
16	COMPOE JADA	on pension	Non	011665596	
17	ALIS PONI MURI	on pension	Non	Not	
18	JACKSON KENYI	Post Graduat	Non	0916737515	
19	CONCIANO GORE	on pension	Non		
20	RAYMONDO GORE	on pension	Non	0914164128	
21					

Report on group discussion participants 125, 126th Feb 2011

25 / Feb / 2011

No.	Name	Title	Organization	Mobile Phone	Signature
1	PROVIDENSIO KIANI	ON PENSION	Non	0918300948	
2	PETER KIANI	"	Non	Not	
3	PERENNINO DOCCALE	"	"	Not	
4	RICHARD KENYI	"	"	0114667840	
5	MARCHELLO FRANS	Adm officer of local	"		
6	LAWRANCE PITIA	ON PENSION	"		
7	ALIBINA KAKA	"	"		
8	ANTONIJ TOMIRE	"	"		
9	JACKSON KENYI	post graduate	"	0916737515	
10	ZACHARIA	Director of Adm officer	"		
11	AGNIS PONI	on pension	"		
12	LILIANI PONI	"	"		
13	PETER LEGGE	"	"		
14	ELDA KIDEN	"	"		
15	Attaynt Rang sipi baam	Geotechnical Engineer	JICA "	0955721874	
16	MARCHELLO LHIDU	ON PENSION	"	0915394594	
17	ZAKEO PITIA	Sub CHIEF	"	0924234420	
18	STEPHEN YOUNG	ON PENSION	"	0927066240	
19	PHILIP KIANI	"	"		
20	EVELINA NENE	"	"		
21	LUCIA PONI	"	"		

Report on group discussionparticipantes 1, 25, 25th Feb 2014

No.	Name	Title	Organization	Mobile Phone	Signature
22	1 ALIS DONI	ON PENSION	NOT	NOT	
23	SP STEPHEN YOUNG	ON PENSION	NOT	095-55-99892	
24	EMMANUEL LADU	ON PENSION	NOT	0929129354	
25	1 SEDONIA DONI	ON PENSION	NOT		
26	1 CELEGINA PURU	ON PENSION	NOT		
27	1 MARIY PITA	ON PENSION	NOT		
28	1 CHRISTINA SIGI	ON PENSION	NOT		
29	SHOJI TAKEO	Environmental Sp	JICA		
30					
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Report on group discussion participants 1-25, 25th Feb 2014

AFFECTED AREAS ON AGRI LAND

No.	Name	Title	Organization	Mobile Phone	Signature
1	PHILLIPA WIANI	ON PENSION			
2	ALICE PONI	"			
3	METHEDIO TONGUN	"			
4	ZAKEU PITIA	"			
5	ALBINA KAKA	"			
6	EVELINA NENE	"			
7	EMMILIO LORO	"			
8	PETER WIANI	"			
9	EMMANUEL PITIA	"			
10	RICHARD PITIA	"			
11	ANTONY TOMBE	"			
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Minutes of Meeting held on 27 February 2011

27th Feb. 2011

**PREPARATORY SURVEY ON THE PROJECT FOR CONSTRUCTION
OF NILE RIVER BRIDGE IN SOUTHERN SUDAN**

Minutes of Meeting for the 3rd Stakeholders Meeting
Environmental/Social Survey and Declaration of Cut-Off-Day

Purpose: Declaration of Cut-Off-Day

Date: 27th December 2010

Venue: Near Lologo bridge off lologo street

Time: 15.00-8:00

Number of Participants: About 165 including 27 ladies

Chaired by: Mr. Michael Francis, Deputy Director Rejaf Payam

Prayers

- General introduction of the study team and government representatives
- Stating out the agenda/objectives of the meeting
- Overview of the road project by Engineer Otim MTR
- Formation of Committee: The committee will be composed CES, GOSS and community members. The committee will be charged with;
- Analysis of the assets affected which has been quantified by the engineers
- Community members will have a chance to be employed. The chief will identify community to work for the project.

Project Requirements

The contractors will require a workman's camp, water supply and other facilities that will remain for the community once the project is completed

Minutes of Meeting held on 27 February 2011

Question Time

Question 1 How do we know if we are affected or not

Ans. Survey studies are ongoing and not yet complete. It will be determine during the final alignment. As per the governments zoning procedures Lologo is classified as 4th class. Under this class buildings are made of temporary, materials and are under payam administration. Plots affected by the project area will be identified for compensation and presented to the committee and Payam commissioner. For open land the committee value rates of the plots as it appreciates (farmland, mangoes, agriculture forestry etc). The development is for country and the community

Question 2 Will government allocate land for PAP's identified in the assessment within the same the same payam

Answer by Chief Wani. Quarter council south no survey so far. But it is ongoing. The numbers of households that fall within the right of way are more in Lologo as compared to Rejaf East

Remark by chairman Lologo south quarter council – The compensation amount should include relocation cost to the new identified places. There is no need for giving money as compensation instead it should be house for house. Compensation should be calculated as per the existing market rates. The new relocation areas should have access to police station, water, schools and medical centres. The compensation exercise should also be carried with dignity.

Response to the remarks: The plots to be compensated will be allocated with reference numbers and identified properly with details. Access to the new relocation area will depend on the existing plan of that area.

Question 3 For how long will displacement demolition take place?

Answer The demolition will only take place for the Juba Bridge and access road project. Adequate time will be given for the PAPS relocation as soon as the alignment is determined.

Minutes of Meeting held on 27 February 2011

Question 4 Lologo East has never been demarcated unlike south and west lologo where land and surveyed and plots allocated. what will happen to the houses that lie within the proposed road reserve. We suggest that Lologo East be given special attention.

Answer Michael Francis , Payam Administrator

The interim constitution recognizes that land belongs to the community. Write to the payam and request land to be registered and surveyed and the exercise will be carried with the communities.

Question 5 There is word going round that the alignment of the road is targeting a few people, please clarify.

Answer by Eng Otim That statement is totally false and the alignment depends on the design.

Question 6 What will happen if the government refuses to compensate or rejects the project

What will happen in cases where the road dissects a 20m by 20m plot? How will that be handled? Will the compensation focus on the design of the affected house?

Answer Anybody who has stayed in the country for three years becomes a resident. PAPS will be identified after the final alignment is out and they will be handled by the commissioner. Consultation will also be done with the chief to get consent for the project. All the Members of the PAPS will be consulted.

Remark by Mary (The only lady to speak)

Allocation of new land for PAPS should not be given for double ownership plots. Occupants without allotment letters should be given special considerations.

Grave yard issue

For the grave yards with the road corridor the chief with community leaders will organize prayers and memorial service for the deceased

Minutes of Meeting held on 27 February 2011

Question 8 Are there standard approved rates for compensation?

Answer by Michael Payam administrator Compensation for trees and farmlands will be as per guidelines from ministry of agriculture. Compensation for house and other assets will as per guidelines from MOPI and CES

Closing Remarks

Meeting has adapted an approach in consultative meeting. A committee will be formed. photographs for records will be taken for the present status of the PAPS assets and developments.

Declaration of Cutt-Off-Day

The meeting declared 27th February 2011 as the Cut-Off-date

*Minutes of Meeting held on 27 February 2011***LIST OF PARTICIPANTS (KEY PARTICIPANTS)**

	Name	Designation	Tel. No
1	Otim Bong	Deputy Director, Urban Roads. MTR, GOSS	0955234086
2	Ms Patricia Gibril Ali	Environmental Officer, MTR, GOSS	0955259755
3	Eng. Felix Wani	Road Engineer, MTR, GOSS	0926754918
4	Michael Francis K.	Deputy Director, Rajaf Payam	09553558818
5	Eng. Roman Margkui Lukak	Director of Roads and Bridges, MOPI, CES	0955474646
6	Zacharia Khamis	Administration Officer, Rajaf Payam	0955358818
7	Zakayo Pitia	Sub-Chief, Lologo	
8	Prudensio Wani	Chairman, Lukugu	0918300948
9	Mary Kiden	Community Officer, world Vision	0918193020
10	Deny Arem Nyok	Director of Logistics, SPLA	0955411696
11	Mr. Richard Taban	Southern Sudan TV Reporter	0955629574
12	Jay Peter	Teacher, Ministry of Education, Juba	
13	Peter Duku Wani	M.P, CESLA	0955000310
14	Marko Edward Logel	Radio Presnter, Bakhita Radio 91FM	0926447469
15	Kiyatoka Tamari	Project Formulation Advisor, Southern Sudan Office, JICA ,	
16	Dr. Gose Shingo	JICA Study Team Members	
17	Dr. Jovito Santos		0901803706
18	Mr. Mizoto Yuzo		0901803703
19	Mr. Shoji Takeo		

NB: *Further participants are listed below*

Minutes of Meeting held on 27 February 2011



Officials from GOSS who attended the meeting.
They included



JICA Study Team members showing the location map of the proposed bridge and road to the meeting participants.



A section of the participants. A total of 165 community members attended the meeting.



A section of women who attended the meeting.
There was a total of 22 women who attended the gathering.

Minutes of Meeting held on 27 February 2011



A participant asks question



Mr. Otim Bong, Deputy Director, Urban Roads, Ministry of Transport and Roads, GOSS, responds to questions from community members who attended the meeting.



The owns the state-of-the-bungalow near the project road at Lologo, enquires from GOSS officials and JICA Team Members if his already constructed building will be affected (*see photo below*). The building is situated just a few meters from the 100m road reserve, and therefore not affected.



The bungalow with stone wall, razor wire protected stones perimeter wall.

Minutes of Meeting held on 27 February 2011



Mrs. Mary Kiden, a community officer in Lologo, enquires about resettlement procedures for the community members who will be affected.



Majority of the building situated in Lologo and Gumbo, are made of clay walls, plastered with cement, and iron sheet roofs.

Minutes of Meeting held on 27 February 2011

Minutes of Meeting held on 27 February 2011

List of Participants, 3rd Stakeholders Meetings held in Lologo.

27th February 2011

3rd STAKEHOLDER MEETING JUBA RILE BRIDGE PROJECT

No.	Name	Title	Organization	Mobile Phone	Signature
1	HAROUS ATTMA	ENVIRONMENTALIST	CTI/NORKEN/JICA	0955783648	[Signature]
2	JOSEPH NAUNGU	ENVIRONMENTALIST	CTI/NORKEN/JICA	0955783645	[Signature]
3	Patricia Gabriel Ali	"	MTR/PMI	0955000310	[Signature]
4	Jovito Santos	JICA Study Member	CTI		[Signature]
5	JOSE Shingo	"	"		[Signature]
6	EDUARDO GITAN	"	NORKEN	0955277391	[Signature]
7	Cosmae Wani	Treasurer Comm. member	Lologo Community	0955237448	[Signature]
8	Wilson Suka	Community member	"	0121589457	[Signature]
9	Marcelo Wani	"	"	0914046567	[Signature]
10	Philipo Pitia Peter	"	"		[Signature]
11	Gabriel Lado	"	Lologo	0111591197	[Signature]
12	STEVEN WOOD	"	Lologo	0911102306	[Signature]
13	USPEP KALL	"	Lologo	0128636290	[Signature]
14	STEVEN LUKO	"	Lologo		[Signature]
15	ALPHONSE DUPARI	R/A INTERNATIONAL	Lologo B II south	0927312832	[Signature]
16	NICHOLAS DARIO	Community Member	Lologo Community	0121277864	[Signature]
17	Richard Taban	SSIV/Reporter	Lologo	0955629574	[Signature]
18	Santa A. PAUL	Community Member	Lologo South	0914885109	[Signature]
19	Awarl MAC AYOL M	Police	Lologo South	0126402587	[Signature]
20	MAJOK CHOL BACH	Police	Lologo South	0920470628	[Signature]
21	KO CE MICHAEL	Building	Lologo South	0920425091	[Signature]

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No.	Name	Title	Organization	Mobile Phone	Signature
22	Rose Kiden Gabek	Agri	Community C.	-	
23	Remija Lokong Ladu	Lab. Technician	J. T. Hosp.	0924126205	
24	DUKUN SUKOLE JAME	SECRETARY Lolohos	TEACHER	01120A1295	
25	MARY KIDEM	Commodity Officer	World VISION	0918193020	
26	TABAN FRANCIS	Community Member	Logogo Community	0955166263	
27	MAJOK CHUL (F)	"	"	"	M.I
28	ABRAM NYAL (F)	"	"	0955034386	
29	LENGBOL NGAL (F)	"	"	-	L.N
30	DANG YOL GAA (F)	"	"	-	D. Y. G
31	MOSET ACHICK (F)	"	"	-	M.A
32	MARY AKU (F)	"	"	-	M.A
33	ALEX ATEM (F)	"	"	-	A.A
34	MARTHA BUOL (F)	"	"	-	M.B
35	PRISCILLA ASIGUS (F)	"	"	-	P.A
36	RACHEL YONG (F)	"	"	-	R.Y
37	M EMMANUEL DICI DARIO	"	"	-	
38	M SAMUEL LADU SANIU	"	"	-	
39	M JAMES PHILIP	"	"	-	
40	M IANU LADU	"	"	-	
41	JACOB LABO SEVERINO	"	"	-	
42	John wani penetry	Community member	Logogo Community	0114813942	

(2)

Minutes of Meeting held on 27 February 2011

No.	Name	Title	Organization	Mobile Phone	Signature
43	YAR MAKUACH (F)	Community Member	Wologo Community		Y.M
44	NYVAL KOR (m)	"	"		
45	ANEI KSI KJAK	"	"	090769906	
46	ARGENTINO LADU JADA	"	"	095560117	
47	JUSTINE LADU EDWARD	"	"	0909091691	
48	PITUP WANI	"	"	0111606705	
49	EMMANUEL LADU	"	"	0927066090	
50	BENISA LORO	"	"	0929122354	
51	GABRIEL JADA	"	"	0903925649	
52	RICHARD PITIA	"	"	0955227495	
53	BENAYU MALU	"	"	0126109567	
54	MARTIN KRET	"	"	0925661203	
56	FAUSTINO LEGGE	"	"	0955599654	
57	STEPHEN YOUNGA	"	"	0955711263	
58	MOHAMED EROSA	"	"	0955599882	
59	DENISE WANI	"	"	0129361564	
60	ROBERT MODI	"	"	0923977288	
61	ZAKEO PITIA	Sub-Chief	Sub-Chief	0918250845	
62	MONIS BANGWA	community member	Lohoso	Sub-Chief	
63	SAMUEL MADKIN	Resident	Col. of Pdia SSPS	0911579110	
64	ACICK NZETHU	Resident		0926660692	
65	JAMES ABONIC	Police	Lohoso C.E.S	0477112580	
				0955735733	

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66. Comped Laku	"	"	0111665596	
67. James Atem	"	"	Not No	
68. Marcello Ladu Lenni	"	"	0920441874	
69. James Ladu Solomon	"	"	0126326682	
70. REV. JONAS ABENY MALUK	"	"	0955618888	
71. COPUS Kadon	"	"	0927121994	
72. SAMUEL Morris	"	"	0924489515	
73. Atanesio Wami	"	"	Not No	
74. Charles homugean Pitia	"	"	0955643265	
75. Tarisa Jba Kenyi	"	"	Not No	
76. ADALL AYOK	"	"	0129473498	
77. Agenes Micheal (F)	"	"	Not No	
78. Ludia Kesi (F)	"	"	Not No	
79. Rosalia Kaku (F)	"	"	Not No	
80. Agenes poni (F)	"	"	Not No	
81. Cecilia Wami (F)	"	"	Not No	
82. Richard Kenyi (F)	"	"	Not No	
83. Mary list (F)	"	"	0114667840	
84. Rebecca Igamu (F)	"	"		
85. Nanchol Ajach (F)	"	"		
86. Atocuu Mruwang (F)	"	"		
87. Roda Atem (F)	"	"		
88. Peter Henry	"	"		

Minutes of Meeting held on 27 February 2011

3rd STAKEHOLDER MEETING JHA JUBA NILE PROJECT

No.	Name	Title	Organization	Mobile Phone	Signature
22	Kiyotaka Tamari	Project Formulation Advisor	JICA	081-4636201	
23	MICHAEL FRANCIS K.	M/DIRECTOR	KEJAF PAYAM	0955358818	
24	Zacharia Whannis	Admin/Officer	Rajput payam	0955339933	
25	ing. Roman Marsiliu Lolak	Director of Roads/Brid	Directorate Roads/Bridse	0955474646	
26	Mettuchius Emblekian	Secretary Luluggu Canal	DRWSA KES/ Juba	0925705789	
27	JOSEPH JOY	Chief Lologgo-2		0955372895	
28	DANIEL KALEI	Chief Lologgo		0955083213	
29	YAGO MIZOTA	Pr Engineer	Study Team of JICA	0955-259757	
30	Takeo SHIJI	Environmentalist	-du-		
31	DIAM BONG	Deputy Director, Urban Rd.	HR- Goss	0955234086	
32	Felix Wani	Engineer	"	0927324215	
33	Peter Duan Klami	M.P. CESLA	CESLA	0926 754 7910	
34	Brucewario Wani	Chairman	Luluggu	0919300989	
35	Sokiri Lufoni Samuel	Chair/Lologgo S. D-C	Lologgo South D-C	0955083555	
36	Abel K. A. I.			119910000	
37	Abel K. A. I.			911178100	
38	Valery D. S. W.	En. Director	EES-1000	0927156664	
39	Simon Jada	Sub/Chief	Lologgo	0909546352	
40	Quintina Peter Kodu	Palace man	Lologgo South	0913273477	
41	Simon Leeka Wure	Administrative officer	M. Local Gov. CES	0957109705	
42	ABUJ ABEM NYOK	Director of Logistic	SPIA	0955411696	

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No.	Name	Title	Organization	Mobile Phone	Signature
43	David-erian Okey	0911989592			Ros
44	Veronika Keje	0911989592			Ros
45	Raimon Tam	0912571285			Ros
46	Joseph Reye	Blotia Mukher	Loligo	-	Ros
47	Joseph Jaja	SPLA	SPLA	-	Ros
48	Bernardin Yadu	Director	KIT	-	Ros
49	Philip Juma	Cultur & Informatic	SES	0914164995	Ros
50	Samuel Suba	-	-	018810085	Ros
51	Jay Peter	Teacher	Ministry Education		Ros
52	Charles Rado Tombe		Technical	09555750133	Ros
53	Julia John Pio	-	Loligo Centre	-	Ros
54	Harper Suba				Ros
55	Mat. Suliman Bado	security officer	SPLA	095500398	Ros
56	Michael Williams		JOSS	095533438	Ros
57	Marko Edward Logel	Radio Presenter	Bakhita Radio 91FM	0926447469	Ros
58	Joel & Coda	-	-		Ros
59					
60					
61					
62					

Minutes of Meeting held on 27 February 2011

	NAMES	TITLE	TEL	SNG.
89	Corsina Gore	Community member	0955644118	CSG
90	Elika Biar Knele	"	0122090541	CSG
91	Re Moses chol bal Deng	"		CSG
92	Suzan Peter (F)	"		CSG
93	David Takabal	"	0924658754	CSG
94	Jina Luril (F)	"	0955712186	CSG
95	Mary peter (F)	"	0929574913	APR
96	Deng Well (F)	"	0955597892	CSG
97	Achel Magur Nyang (F)	"	Not No	
98	Aluyal Well	"	Not No	
99	Kuei Garang			
100	Nyduul catkuel (F)			
101	Mary puat (F)			
102	Aluel Atem (F)			
103	Nyanolit Heel (F)			
104	Achel Hassen (F)			
105	List. Badri (F)			
105	Rebecca Abut (F)			
106	Jackson Orrek paul	"	0955010596.	
107	Jacob Ladu Severino			

Minutes of Meeting held on 27 February 2011

	NAMES	TITLE	TEL	SNG.
89	Corina Gore	Community member	0955646118	CPM
90	Eliyah Biar Kneka	"	0122090541	CPM
91	Re Moses chol bal Deng	"		CPM
92	Suzan Peter (F)	"		CPM
93	David Tabakal	"	0924658754	CPM
94	Jina Luril (F)	"	0955712186	CPM
95	Mary Peter (F)	"	0929574913	CPM
96	Deng Well (F)	"	0955597892	CPM
97	Achel Nugur Nyang (F)	"	Not No	
98	Aluyal Well	"	Not No	
99	Kuei Garang			
100	Nyanduik Gakkuat (F)			
101	Mary puat (F)			
102	Aluel Atem (F)			
103	Nyanduik Heel (F)			
104	Achel Hassen (F)			
105	List. Badri (F)			
105	Rebecca Abut (F)			
106	Jackson Orrek Paul	"	0955010596.	
107	Jacob Ladu Severino			

Report of Joint- Site Reconnaissane 4 March 2011

Result of Joint-Site Reconnaissance

Date: 4th March 2011 (Saturday)

Location: Lologo Village (west bank)

Time: 9:00-14:00

Participants:

- GOSS
 - Fellix Wani, Road Engineer, MTR
 - Abdalla Wani, Pollutant Control Officer, MOE
 - Moses Gogonya,
- CES:
 - Anthony Peter Swaka, Senior Divisional Engineer, Directorate of Housing and Construction, MOPI
 - Justin Pere Dilla, Town Planning Division, Directorate of Land and Town Planning, MOPI
 - Adelmo Augustiso Laku, Senior Surveyor, Directorate of Survey, MOPI
- Community
 - Prudencio Wani, Chairman of Lologo Community
 - Affected peoples
- Study Team
 - Shingo Gose, Team Leader
 - Yuzo Mizota, Bridge Engineer
 - Tetsuro Izawa, Road Engineer
 - Takeo Shoji, Social Specialist
 - Mitsue Umiguchi, Environmental Specialist
 - Shuichi Nishi, Cost Estimation
 - Shuichi Mori, Hydrologist,

Activities

- Identification of ROW and affected structures/trees by installed pegs and drawing
- Confirmation that all development activities within ROW be suspended
- Identification economic activities (farming, brick drying, shops)
- Interview to affected people
- Affected people are agreed to move out of ROW after proper compensation be made to them

Minutes of Meeting for the 4th Stakeholders Meeting in Gumbo, 17. 03. 2011

PREPARATORY, CONSTRUCTION OF NILE RIVER BRIDGE IN JUBA, SOUTHERN SUDAN.

STAKEHOLDERS MEETING IN GUMBO ON 17th MARCH 2011.

Purpose: Explanation of study process to the Gumbo area community members.

Date: 17th March 2011.

Venue: Open space near River Nile at Gumbo, along the project alignment area.

Time: 12:00 noon to 1:30pm

Number of Participants: 60 including 27 ladies

Chaired by: Mr. Dimitri Lakomori, Gumbo Community Member

Opening Speech and Project Outline: 11:50 am 12:15pm

Mr. Felix, Officer with MTR, GOSS explained to the participants about the alignment of the proposed project road and bridge using the project site aerial map. He indicated the areas where the road will traverse, where the bridge will be constructed. He indicated on the map and physically pointing the possible areas which will be affected within 30metres road alignment.

Question from Mr. Mr. Dimitri Lakomori, Gumbo Community Leader.

As the elder of Gumbo Community (next to sub-chief), he expressed his and community members' agreement with the project. However, It is true that the new development will attract other forms of development within Gumbo, especially encroachment of land grabbers upon Gumbo due to the presence of a new access road and new bridge. How will the GOSS or MTR address the issue?

Answer from Mr. Felix, Officer with MTR, GOSS

The GOSS is aware of possible post-project developments and such individuals who will unlawfully or illegally come and settle within Gumbo during construction or operation of the new bridge will be dealt with by the Government.

Question about the existing graves within Gumbo which might be affected by the project.

Minutes of Meeting for the 4th Stakeholders Meeting in Gumbo, 17. 03. 2011

Answer from Mr. Felix

Graves shall be excavated, bodies (or bones) exhumed and shifted to another locations fully in accordance with the customs of the community. Expenses which will incur during exhuming and relocation of the remains to new graves will be met by the Ministry of Transport and Roads (MTR). The Ministry has already agreed on the issue.

Question: *During the construction of the old Nile Bridge, the money which was given to the affected community by then was so little, just like chicken feed!. Are we going to have the same problem for the new proposed bride?*

Answer from Mr. Felix

The situation has changed and compensation will be done with accordance with results from area assets inventory survey and corresponding the current market value of the affected property.

Question: *The project will affect some farms. How will the issue be addressed to avoid damage of farming areas?*

Answer from Mr. Felix

Alternative garden shall be provided, by ploughing near the open space and bringing fertile soil from original place. Compensations will be made if they could not harvest crops.

Closing Remarks

Mr. Shoji thanked all those who attended the meeting and approval of the project. He explained to them once the survey preparatory work is over commencement of the second phase of the project should not take long. He requested the community to cooperate with the other stakeholders in implementing.

Minutes of Meeting for the 4th Stakeholders Meeting in Gumbo, 17. 03. 2011



Mr. Shoji and Mr. Dimitri Lakomori community leader, Gumbo, Community Leader, Gumbo, showing the community the road and bridge alignment map.



A section of the people who attended the meeting.



Women who attended the meeting.



A participant asks questions..

Source: Consultant Team, Juba, 2011.

Appendix C Minutes of meeting

57/75

No	Name	Profession	Address	Phone	Signature
1	James Leach Akki	local resident			
2	HEATHY Laku				
3	Vico				
4	MOSES				
5	Emmanuel				0985729761
6	Takete				
7	Gabriel				
8	Jakob				0928577060
9	Richard				0927360081
10	Fabian				
11	Richard				
12	Prosci				
13	James				
14	Emmanuel				
15	DAVID				
16	James				
17	Emmanuel				
18	James				
19	Prosci				
20	Prosci				
21	Rose	F			
22	Rina	F			
23	Christian	F			
24	Juprina	F			
25	FJAN	F			
26	Ailika	F			
27	Betty	F			
28	Carina	F			
29	Betty	F			
30	Rose	F			
31	FJAN	F			
32	MARILYN	F			

0126005917

Appendix C Minutes of meeting

No.	Name	Designation/Occupation	Organization	Phone No.	Signature
32	Mariam	Flora F	Local routes	58/75	
33	Lidia	Ariel F	"	"	
34	Agnese	Anna F	"	"	
35	Agnese	Neil F	"	0115119020	0227024206
36	Robin	Wen F	"	"	
38	Maria	Dora F	"	"	
39	Christian	Neil F	"	"	
39	Emmanuel James	Leah	"	"	
40	Emmanuel	Leah	"	"	
41	Emmanuel	Joseph	"	"	090668224
42	Lidia	Lucy	"	"	
44	Emmanuel	Lidia	"	"	
44	Joseph	Lidia	"	"	
45	Alfred	Gene	"	"	
46	Flora	Dora F	"	"	
47	Maria	Subiff	"	"	
48	Maria	Leah F	"	"	
49	Miriam	Juda	"	"	
50	Rose	Leah F	"	"	
51	Miriam	Pam F	"	"	
52	Peter	Maria	"	"	
53	Esther	Neil F	"	"	
54	Vivian	Lidia F	"	"	
55	Peter	Leah	"	"	
56	Stephan	Neil F	"	"	
57	Stephan	Neil	"	"	
58	Joseph	Neil	"	"	
59	Stephan	Neil	"	"	
60	Kevin	Gene	"	"	
61	Gabriel	Peter	"	"	
62	Calvin	Lidia F	"	"	

5th Stakeholders Meeting 24th March 2011

Report of the 5th Stakeholders Meeting

24th march 2011

Attachment:

- Minutes of Meeting
- Attendant Lists
 - Original with Signature
- Invitation Letter
- Proposed Participant
- Handout
- Photos

5th Stakeholders Meeting 24th March 2011

Minutes of the meeting for the 2nd key stakeholder meeting
Presentation of Key Finding EIA & RAP of preparatory survey on the project for
construction of Nile River bridge
in Southern Sudan

Date: 24th March 2011

Venue: Shalom Hotel and restaurant

Time: 9.30am – 12.30pm

Chaired by: Mr. Louis, the 1st Director General, Ministry of Physical Infrastructure, CES

Presenters: Mr. Haroub Ahmed and Mr. John Ndungu of the study team

9.30 – 10.00 am: Registration of Participants and introduction

10.00- 10.15am: Opening Speech: Mr. Louis Gore George, the 1st Director General of Ministry of Physical Infrastructure (MOPI), CES: Stated the importance of the project to GOSS, the state and the community, stressed the importance of consultation and understanding of the project environmental and social impacts

Introduction of the project by Ms Patricia Gibril of MTR

10.15-11.00am: Presentation of EIA finding by the consultant Mr. Joseph Ndungu

11.00 – 11.15am: Tea break

11.15-12.00am: Presentation of RAP findings by the consultant Mr. Haroub Ahmed

12.00 – 12.30 am: Discussion and Observation session chaired by Mr. Louis Gore George, the 1st Director General of Ministry of Physical Infrastructure (MOPI), CES:

Eng Romano of MOP CES remarked that the proposed cost for community agricultural land was too low and it should be raised to at least 15 SDG per metre square. He further said that the ministry of agriculture should also be consulted.

Mr. Emmanuel Matayo from MOPI remarked that more consultations have to be done not just for ROW road corridor of 30m but also the ROW 60m for the sake of future road expansion and future projects

Mr. Peter Laku Goro from Roads and Bridges department CES commented that more stakeholders should be consulted for instance ministry of agriculture and Forestry

The Director General of MOPI – Differentiate between legal occupants and illegal occupants, There exact numbers should be listed and be clearly defined. The director also added that temporary land will be offered to the contractors when the project commences for their camps and yards. The local communities will benefit in terms of employment and once the project is completed the contractor's camps will be used for other purposes like offices and community centers.

Mr Shoji from the study team remarked that the study have clearly identified all the affected people and classified them in such a way that genuine land owners and squatters can be identified. The genuine land owners will be compensated land for land and paid for their properties. They will be relocated to a proposed relocation site within Lologo that was provided by the community. Currently the place is used as a refugee camp but there are plans to move the refugees to a different location.

5th Stakeholders Meeting 24th March 2011

He continued that as for the squatters there are plan underway in conjunction with UN HABITAT to relocate to Durupi. This site is located about 12km out of Juba town. The squatters will be given training to build, materials by the donor. Land will be cheaply provided with low payments monthly of up to 100 SDG per month. The plots measuring 20m by 20m will cost 3000SDG.

The 1st Director General Mr. Louis Gore added that there are plans by his office to address issues of squatters within Juba County. His office has identified a piece of land measuring about 5km by 5km where landless people squatting in Juba can be moved. However he said tha it will take some time because they lack the necessary survey equipments to subdivide the land into plots.

The Administrator of Rejaf Payam Mr. Charles Andrew commented that he has received a list of people due to be compensated from the study team and the list is totally in accurate as it has left most genuine indigenous people especially the ones staying close to the River bank. He said he felt it was not fair and this situation might bring about problems in future for the project. He suggested that the people who have been left out should be interviewed and the status of their occupancy determined whether they are renting the places or the land belongs to them. He further said that a technical committee be formed to review and do a new survey of the affected people. The committee should be made up of persons nominated from the following bodies;

- Payam
- MOPI
- Community
- Consultants
- Environment
- Squatter Council

Mr. Shoji responded that the list he had was just a draft and the team now has an updated list complete with pictures and names of all the affected people. He further reiterated that the exercise the study team is carrying is just to get an compensation estimate for the final reports but not the actual payments which will come when the project is about to commence.

Mr. Gabriel Makur from MTR added that other social infrastructure developments should come along with the bridge like hospitals

Mrs. Roda Allison from UNHCR added that gender and Vulnerable people should be considered in compensation and consultation.

Closing Remark.

Mr Gabriel Makuor DG Roads and Bridges

Mr Louis Gore 1st DG MOPI

Patricia Gabriel MTR

5th Stakeholders Meeting 24th March 2011

200 KEY STAKEHOLDERS MEETING FOR THE PROPOSED JUBA NILE BRIDGE PROJECT.

24th March 2011.

No.	Name	Designation/Organization	Mobile Phone No.	Signature
1-	Daniel Kado Kobjo	Ministry of Environment (CES)	0129103008	
2.	John Wani Gaudenale	Ministry of Phy. Infrastruct (CES)	0955141915	
3	Shoji Takeo	JICA Study Team	091803703	
4	JACKSON N. Roberts	UN-Habitat	0927960874	
5	Emmanuel Malayo Wamu	HOUSING	0955002169	
6	Lewis Gere George	Physical Infrastructure	0477112364	
7	Mitsue Umiguchi	JICA Study Team	0955794494	
8	Jelly Etionai Andanago	Ministry Housing CES	0919143374	
9	Roda Allison Dokolo	UNHCR	0926830513	
10.	HAROUR AHMED	JICA STUDY TEAM/NORCEN	0955783645	
11.	JOSEPH NOUNGU	JICA STUDY TEAM/NORCEN	0955782648	
12	Mr. Roman Marphan Lukak	Directorate of roads and Brv	0955470646	
13	Peter Lukin hord	Roads & Bridges CES	0959737503	
14	Charles Andrea Jada	Rajaf Rajon Juba County	0129077267	
15.	Zacharia Khassis Peter	Rajaf Rajon	0955339933	
16.	Adwok Chol Awu	SSCLSE	0955017387	
17.	MOLLA MASMINDO	(CES) JUBA UAF	0955353110	
18	Gabriel Mathur Amunov	MTR	0477112052	
19.	DATRICK N. Gibil	MTR - CROSS	0955000310	
20.	Denis Deravellofiamli	P/Chief Juba county	0126371357	
	Samed Denis	Juba county	0955824200	
01	Anthony Kamsur	MAF/CES	0911866041	
02	MOLLA MASMINDO	MAF (CES) JUBA	0955353110	
3-	Adwok Chol Awu	SSCLSE	0955017387	
4	RUTRUS T. APOLLO	SSLC	0955361971	



5th Stakeholders Meeting 24th March 2011
**PREPARATORY SURVEY ON THE PROJECT FOR
CONSTRUCTION OF NILE RIVER BRIDGE
IN SOUTHERN SUDAN**



Date 21st March 2011

Subject: Invitation to 2nd Stakeholders Meeting on Environmental/Social Survey for the Proposed New Nile River Bridge Project

Dear Sir /Madam

Following the Road Network Development Master Plan proposed under the Juba Transport Infrastructure and Capacity Development Study completed by JICA in December 2009, Government of Southern Sudan emphasized on the development of Roads Network and identified the urgency of constructing a Circumferential road including the New River Nile Bridge with the objective of the following ;

1. To improve the International road network and provide direct link to Uganda and Kenya through Juba –Nimule Road.
2. Politically; I will symbolize the fruits of peace and catalyze economic development of Government of Southern Sudan.

Based on this the Government of Japan has entrusted a study to be conducted to identify the viability of the Project through the Japan International Cooperation Agency-JICA. A Preparatory Survey which includes the study of the existing Environmental and social conditions related to the Nile River Bridge commenced in November 2010 and is currently ongoing. During the study a resettlement action plan for people who will be affected by the project was also conducted in accordance to the existing Legal frame works of GOSS, Japan Guidelines and World Bank.

We wish to invite you to attend the 2nd Stake holders meeting to present the study progress and findings on the 24th March 2011 at 9.30 am at Shalom Hotel and Restaurant. The program is attached .Your participation is highly appreciated.

Yours Sincerely;

Eng. Jacob Marial
Director General-Roads and Bridges
Ministry of Transport and Roads;
Government of Southern Sudan –GOSS.



5th Stakeholders Meeting 24th March 2011
**PREPARATORY SURVEY ON THE PROJECT FOR
CONSTRUCTION OF NILE RIVER BRIDGE
IN SOUTHERN SUDAN**



**Program Outline or the 2nd Stakeholders Meeting Environmental /Social Survey Study planning on
24th March 2011 at 9:30Am.**

- Date: Thursday, 24th of March; 2011.
- Venue: Shalom Hotel and Restaurant

Program:

- 9:30 □10.00am Arrival and Registration
- 10:00 □10:15am Opening remarks by Eng.Jacob Marial Director General-Roads and Bridges Ministry of Transport and Roads.
- 10:15 □11:00Am □ EIA Findings , presented by Mr. Joseph Ndungu
- 11.00 – 11.15 am – Tea Break
- 11.15 – 12.00 pm - RAP Findings, presented by Mr. Haroub Ahmed
- 12:00 □12:45Pm Discussions and Observations.
- 12:45□13:00Pm □Closing Remarks by Eng.Jacob Marial Director General-Roads and Bridges Ministry of Transport and Roads and 1ST Director General; Mr. Louis George Gore –MOPI and Lunch



5th Stakeholders Meeting 24th March 2014
**PREPARATORY SURVEY ON THE PROJECT FOR
CONSTRUCTION OF NILE RIVER BRIDGE
IN SOUTHERN SUDAN**



List of Proposed Participant:

□ Goss

- 1) Mr. Jacob, Director General, Ministry of Transport and Road
- 2) Undersecretary, Ministry of Environment Ministry
- 3) Chairman, Southern Sudan Land Commission
- 4) Undersecretary, Ministry of Forest and Agriculture
- 5) Undersecretary, Ministry of Health
- 6) Chairman, Commission of Census and Statics
- 7) Traffic Police, Ministry of Interior
- 8) Road Safety Officer, Ministry of Transport and Road

CES

- 9) Mr. Louis, The First Director General, Ministry of Physical Infrastructure
- 10) Director General, Road and Bridge, Ministry of Physical Infrastructure
- 11) Director General, Housing, Ministry of Physical Infrastructure
- 12) Director General, Land and Survey, Ministry of Physical Infrastructure
- 13) Director General, Agriculture and Forest
- 14) Minister, Ministry of Environment
- 15) Commissioner of Juba County
- 16) Executive Director of Rajaf, Payam (East bank)
- 17) Executive Director of Lologo, Payam (West bank)
- 18) Paramount Chief of Rajaf
- 19) Paramount Chief of Lologgo

Donor

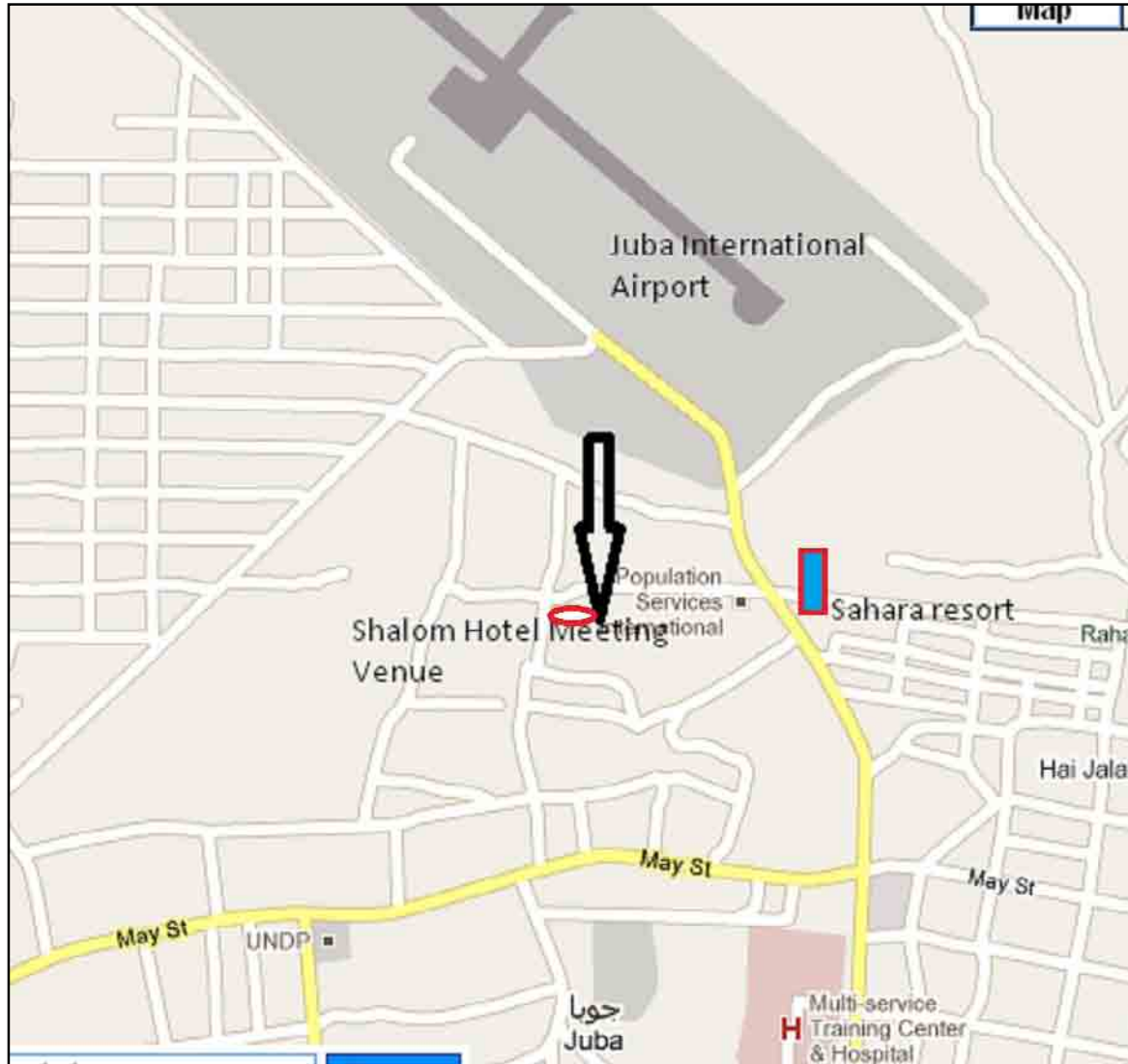
- 20) UNDP
- 21) USAID
- 22) UNEP
- 23) UNHCR
- 24) World Bank
- 25) Tamari, JICA
- 26) UN-HABITAT





5th Stakeholders Meeting 24th March 2011
**PREPARATORY SURVEY ON THE PROJECT FOR
CONSTRUCTION OF NILE RIVER BRIDGE
IN SOUTHERN SUDAN**




Shalom Hotel Location Map



 **PREPARATORY SURVEY ON THE PROJECT FOR CONSTRUCTION OF NILE RIVER BRIDGE IN SOUTHERN SUDAN** 

**Presentation on Progress and Findings
Environmental Impact Assessment(EIA)
and
Resettlement Action Plan (RAP)**

Norken International Ltd.
Engineering and Management Consultants
PO Box 9882 Nairobi 00100 Kenya
web: www.norken.co.ke

 **CTI ENGINEERING INTERNATIONAL CO.,LTD**

Objectives of EIA for the Proposed Initiative

- To help establish the baseline data, by having a thorough understanding and presentation of the existing environmental conditions of the area and its surroundings before any construction procedures commences.
- Create linkages during the project cycle (design, construction and operation) and try to gain a thorough understanding of some of the emerging impacts on the environment.
- Predict the extent of the impacts on the environment, develop an EMP and monitoring plan

The Project Area



JICA' S Environmental Guidelines

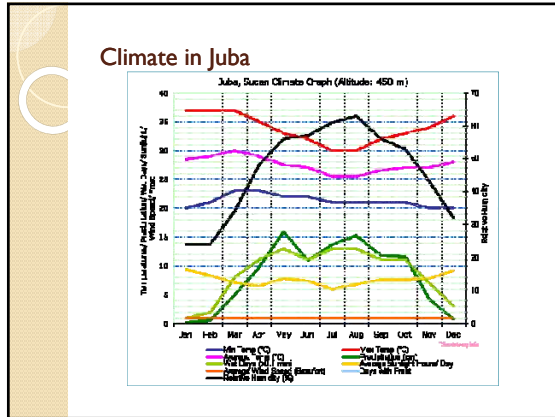
- Project should meet the requirements for environmental and social considerations stated in the JICA Guidelines on environment and social considerations, which are:
- Project to comply with the laws or standards related to the environment and local communities in the central and local governments of host countries.
 - Project to conform to those governments' policies and plans on the environment and local communities.
 - Project should not deviate significantly from the World Bank's Safeguard Policies, to internationally recognized standards, treaties, and declarations, good practices etc.

Findings on Natural Environmental Impacts

- Pollution (air, water, soil)
- Waste (construction debris)
- Noise and vibration
- Geographical features
- Biota and ecosystem
- Offensive odors
- Ground subsidence
- Poor and vulnerable people

Pollution

- Water related pollution during construction period of the bridge. Impacts on people who use Nile water and the aquatic life.
- Dust originating from material hauling vehicle to and from construction sites. Impacts of people living in close proximity to the project sites.
- Noise and vibration, - as a result of movement and running of heavy machinery and equipment.
- Soil pollution as a result of oil leakages from project's machinery and equipment



- ### Findings on Social Environmental Impacts
- Involuntary resettlement
 - Land use and utilization
 - Social institutions
 - Existing social infrastructure
 - Local conflicts of interests
 - Employment, livelihood
 - Infectious diseases (STDs, HIV/AIDS)



- ### Involuntary resettlement
- Land and property (houses etc) within a width of 30m ROW will be affected and will be first to be resettled.
 - PAPs will be compensated
 - Further details about PAPs in the next RAP presentation.



- ### Relevance Consultative Public Participation
- To gain views from the public and their concerns
 - Develop transparency and accountability during project cycle (design, construction and operation).
 - Identify possible bottlenecks
 - Avoid possible conflicts between the project proponents, PAPs and stakeholders
 - To avoid delay in project implementation and therefore saving unnecessary project costs

Issues of Concern during CPP in Lologo

- How the community will know if they are affected.
- Community is skeptic on compensation in case it is going to be handled by GOSS.
- Whether the project alignment is targeting specific community.
- Whether GOSS will allocate land for PAP's identified in the assessment within the same the same Payam.

Issues of Concern during CPP in Gumbo

- Development will attract illegal settlers.
- Post-project developments
- Whether the amount of money to be compensated to PAPs will be enough
- Project will affect farms: How farmers will be compensated.

Pending Work to Accomplished.

- Writing the draft Environmental Impact Assessment (EIA) report for the explanation to the stakeholders by July 2011.
- Writing the final EIA report, submit it to GOSS for approval in August 2011.

RAP

Components of Resettlement Action Plan

- Identification of project impacts and the affected population
- Step 1: Mapping
- Step 2: Census
- Step 3: Inventory of Affected Assets
- Step 4: Socioeconomic Studies
- Step 5: Analysis of Surveys and Studies
- Step 6: Consultation with Affected People Concerning Assistance Benefits and Development Opportunities

The Project Area



RAP Findings: Socioeconomic Studies

Issues studied included:

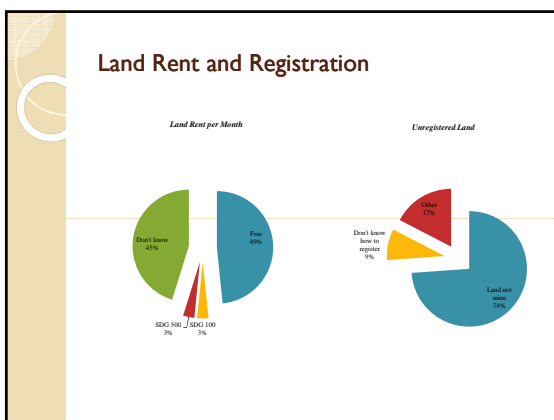
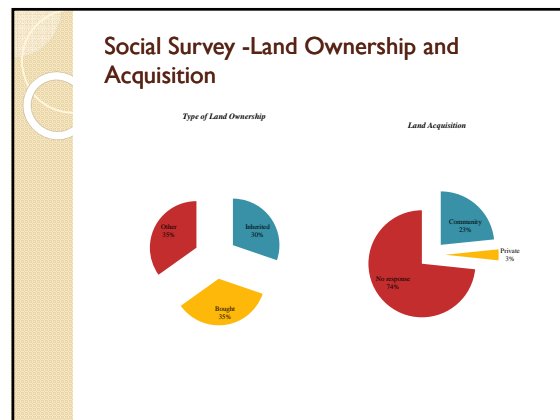
- Communities perception about the project.
- Social conditions of the study sites.
- Economic conditions.
- Education, culture and security issues.

Legal Framework

- The GOSS Land Act 2009 available and comparisons made with the JICA Guidelines, hence gaps and differences identified.
- The World Bank's resettlement policy which ensure that population displaced by a project receives benefits from it, is being observed during the resettlement action planning procedures.

JICA Guidelines and GOSS Land Law.


JICA GUIDELINE	GOSS LAWS	JICA GUIDELINES AND LAWS (CAPS)
1 Arbitrary resettlement and loss of access of livelihood are to be avoided when feasible by adopting appropriate methods. (JICA-GU)	Article 87 of the Land Act on Alternative Resettlement states that where the action is initiated by public authority (GOSS, IPT), against unlawful occupant, minimum standard alternative resettlement conditions may be provided by the authority.	Article 84 (2) of GOSS Land Law comes in gap after the statement that any person who unlawfully occupies a piece of land for 20 years without objection in no other name, from May 10 th 1993 shall be granted legal title rights thereon.
7 When population displacement is unavoidable effective measures to minimize impact and to compensate the losses should be taken. (JICA-GU)	Article 75 (1)(c) of the Land Act states that the compensation shall be just, equitable, and shall take into account the value of the investment in it by those affected and the interest.	None/Inbetween JICA and GOSS
3 People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost need to be suitably compensated and supported, so that they can improve or at least restore their standard of living, income opportunities and production levels to pre-project levels. (JICA-GU)	See Article 75 (1)(c) of the Land Act.	No gap.
5 Compensation and other kinds of welfare must be provided prior to displacement. (JICA-GU)	See Article 75 (1)(c) of the Land Act and Article 75 on Resettlement Plan.	Article on Land Law do not specify whether assistance must be provided prior to displacement.




Category of Project Affected Persons (PAPs).

Précis Review of Assets and Economic Activities within the Project Site.			
	With Title Deeds	No Title Deeds	Tenants
1 Residential homesteads			
2 Business Establishments	Types		
	Kiosks (food vendors, vegetables, shops)		
3 Farmers along River Nile	Eastern Bank (Gumbo)	Western Bank (Lologo)	
4 Clay Bricks Manufacturers			


Typical houses to be affected




Design of 80% of houses




The most expensive house within the alignment




Other types of structures within the alignment




Tukul under construction (left)



a business kiosk made of bamboo walls and iron sheets roof.



An earth brick house under construction



A dwelling shanty made of bamboo and canvas rags.

Assets Survey, House Area, Fence Length and Trees

Item	No Within Row 60m	Length/Area M ²
House Area	350	3442.74
Fence	61	2798m
Trees: Nocom mango	113	
banana	2	
	1	

Inventory of Affected Assets (Houses)

Compensation to total area of affected household		Compensation to affected by 30m only	
	No.		No.
Affected households	00		00
Total houses affected	155		112
Residential houses	121		103
Shop/business	7		5
Chicken hut	1		1
Fulawa	2		1
Under construction	2		2
Fence	51		26
*Owners of 7 buildings are unknown			
Total houses affected	155		112
Mid house	105		100
Small house	3		3
Commercial house	1		1
Bamboo/that hut	3		3

Proposed Compensation Cost for Land with unit prices

1. Land Area	Unit price	Unit	Compensation to total area of affected household		Compensation to affected by 30m only	
			Quantity	Unit	Quantity	Unit
				m ²		m ²
Westbank						
Private residential land	62.8 USD/m ²		92,500 m ²	5,816,250	49,500 m ²	3,093,750
Commercial land	18.5 USD/m ²		18,500 m ²	340,250	18,500 m ²	340,250
Private agricultural land	8.8 USD/m ²		8,800 m ²	77,440	5,200 m ²	45,760
Eastbank						
Commercial agricultural land	3.8 USD/m ²		6,000 m ²	22,800	6,000 m ²	22,800
				5,276,250		3,201,750

Proposed Compensation Cost for Building unit prices

2. Building	Unit price	Unit	Quantity	Compensation to total area of affected household		Compensation to affected by 30m only	
				Unit	Subtotal, USD Quantity	Unit	Subtotal, USD Unit price
Mid house	250 USD/m ²		250	62,500 m ²	15,625,000	5,840 m ²	1,460,000
Commercial house	500 USD/m ²		30	15,000 m ²	7,500,000	3,900 m ²	1,950,000
Concrete house	2,000 USD/m ²		191	382,000 m ²	764,000,000	191 m ²	382,000
Bamboo/that hut	18 USD/m ²		34	612 m ²	11,016	34 m ²	612
Fence	60 USD/m		1,411	84,660 m	5,079,600	1,346 m	80,760
Westbank							
Private agricultural land	0.8 USD/m ²		8,800 m ²	7,040	3,520,000	0	0
Eastbank							
Commercial agricultural land	0.8 USD/m ²		6,000 m ²	4,800	2,400,000	0	0
Sub Total					1,426,887	1,271,452	

Proposed Compensation Cost for Trees unit prices

Tree	Unit price	Unit	Quantity	Compensation to total area of affected household		Compensation to affected by 50m only	
				Unit	Subtotal (SGD)	Unit	Subtotal (SGD)
Mango Trees	10,000.00 SGD/Mu	2 mu	20,000	2 mu	20,000		
Burana	4,000.00 SGD/Mu	1 mu	4,000	1 mu	4,000		
Other trees	140,000 SGD/Mu	110 mu	14,000	110 mu	14,000		
					78,000	78,000	

Proposed Compensation Cost for Hand pump and Cemetery unit prices

Cemetery	Unit price	Unit	Quantity	Compensation to total area of affected household		Compensation to affected by 50m only		
				Unit	Subtotal (SGD)	Unit	Subtotal (SGD)	
			3 SDC/Mu	6,000 m2	18,000	6,000 m2	18,000	
Hand pump					0		0	
				20,000 SDC/m	2 Mu	0	0 Mu	0

Proposed Compensation Cost (with unit price)

Unit price (SGD)	Unit price	Unit	Qty	No.
	4.0 SGD/m2	Attached/semi-attached	80	80
	87.0 SGD/m2	Total house affected	121	121
	0.0 SGD/m2	Residential house	7	7
	30.0 SGD/m2	Shop/business	1	1
	950.0 SGD/m2	Shed/ku	1	1
	500.0 SGD/m2	Lobby	2	2
	2,000.0 SGD/m2	Under construction	2	2
	50.0 SGD/m	Fence	21	20
	0.0 SGD/m2	Owners of off buildings or unknown		
	80,000 SGD/mu		Yes	No.
	4,000 SGD/mu	Total house affected	133	132
	800 SGD/mu	Small house	128	126
	1.0 SGD/m2	Gate/backhouse	3	3
	20,000 SGD/mu	Concrete house	1	1
	50 m	Handpump/ku	1	1
	85 m			
	20 m	Additional width considering the compensation to total boundary of household		

Draft CES FY 2011 Land Rates

Source: MOP

S/NO	PARTICULARS	QTY	RATE SGD	TOTAL SGD
REVENUE ITEMS				
1.	Open Plot			
1.	Durand South (10m x 20m = 500 7.5m ²)	2200	750	6000000
2.	Kusala West (10m x 10m x 50m = 500m ²)	4780	750	3585000
3.	Konaka West (10m x 20m x 50m = 1.5km ²)	3448	750	1504000
4.	Kabonporaki (20m x 20m x 50m = 2.0km ²)	531	750	200000
5.	Kabonporaki (10m x 20m x 50m = 1.0km ²)	120	750	45000
6.	Munab (10m x 20m = 500 1.5km ²)	1186	750	889500

Declaration of Cut- off Date

Cut off date was set to:

- To prevent encroachment in the alignment,
- To prevent of developments within project sites
- To freeze the transaction of land to prevent speculation.

Cut off date for 100m was declared to be 27th February 2011, after consultative stakeholders meeting in Lologo.

Valuation and Compensation of Losses

- Market price and Assets inventory survey already done.
- Compensation to be done Value Assessment Committee is yet to be established.

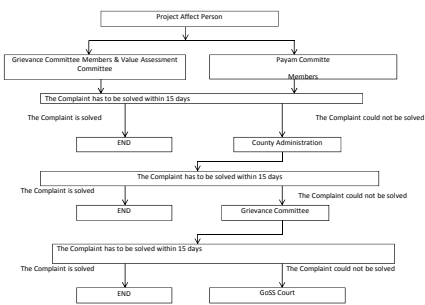
Pending Issues in RAP

- Establishment of Value Assessment Committee
- Resettlement site preparation
- Selection of site

Consultations with Affected Persons



Proposed Grievances Procedures



Shukran



5th Stakeholders Meeting 24th March 2011
**PREPARATORY SURVEY ON THE PROJECT FOR
CONSTRUCTION OF NILE RIVER BRIDGE
IN SOUTHERN SUDAN**



Photos

Minutes for 2nd Stakeholders Meeting



Ms Patricia Ali giving her opening speech.



DG addressing the participants



Consultant presenting his findings on RAP



5th Stakeholders Meeting 24th March 2011
**PREPARATORY SURVEY ON THE PROJECT FOR
CONSTRUCTION OF NILE RIVER BRIDGE
IN SOUTHERN SUDAN**



Payam Administrator asking question.



Venue of the Stakeholder Meeting – Shalom
Hotel