

Chapter 9 Construction Plan and Project Implementation Plan

9.1 Construction plan

9.1.1 Port (Dongo Kundu)

(1) Construction Items

The port facilities to be implemented in the port development project are classified into the following construction items. Types of work and facility components are also listed below. The jacket type jetty structure is applied and the cost share of the materials/working vessels related to Japanese technology is expected to be approximately 40%.

a. Quay

- Wharf (Detached pier): Dredging of basin. Pile driving work. Pile foot protection work. Deck Construction work. Appurtenant work. Pavement work of apron.
- Trestle: Dredging. Pile foundation work, Deck construction work. Appurtenant work, Pavement work of road,

b. Yard

- Revetment of reclamation perimeter: Slope protection by rubble stone, Crown work,
- Reclamation: Landfill work, Soil improvement work. Preloading embankment work
- Pavement work: Base course work, Pavement work, Road ancillary work,
- Drainage work in the premises: Runoff drainage work

c. Cargo Handling Equipment

- Mobile harbor crane, reach stacker, toplifter, tractor chassis

d. Port related Facilities

- Administration building, gate, fence, workshop, security system

e. Dredging of Navigation Channel

- Dredging work: Dredging by TSHD pump dredger, Dredging by grab dredger
- Waste soil dumping: Hauling of dredged soil, Dumping,
- Navigation aid: Navigation beacon light. Indication buoy

The above listed components of the facilities may be changed when the design policy is finalized.

(2) Determination of Temporary Yard

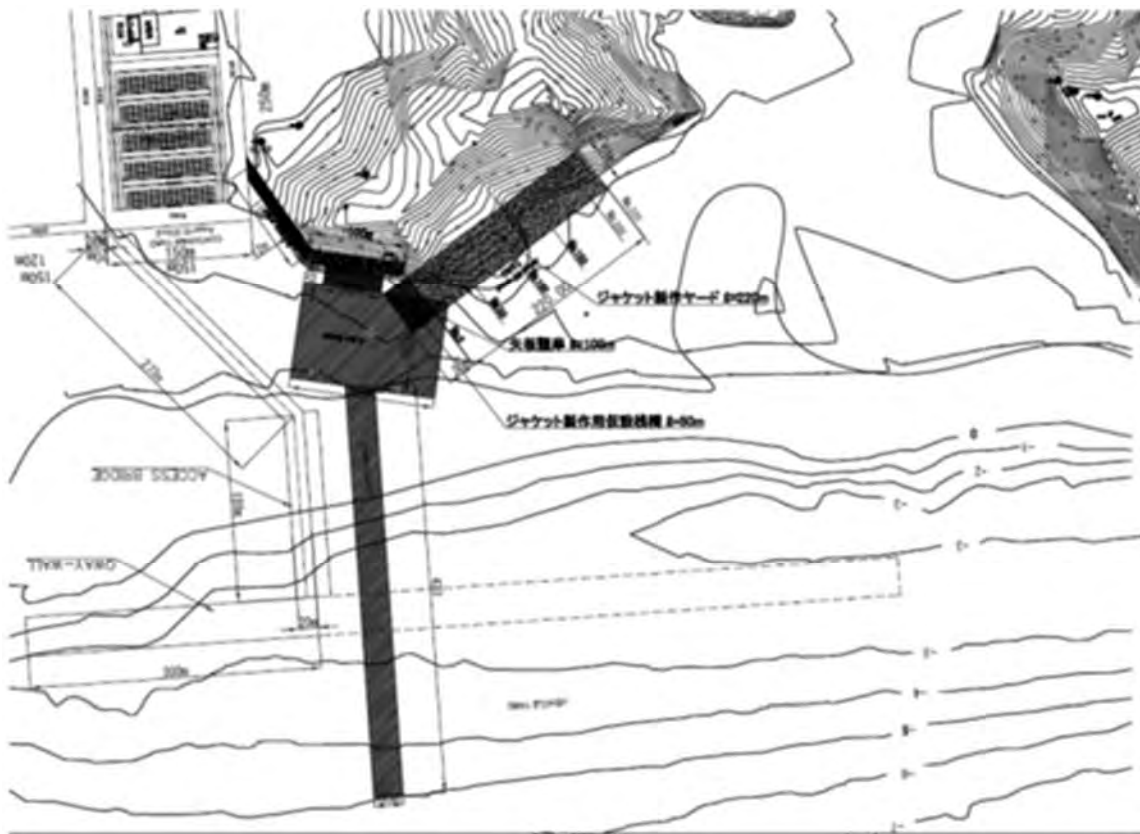
Since there is no mooring facility for cargo ship at Dongo Kundu area, it is necessary to construct a temporary wharf and a yard near the project site for unloading the stocking materials and equipment needed for the port construction.

A temporary access channel to the temporary wharf for the barges carrying construction materials and equipment shall also be constructed along the east side of the planned main pier and trestle. The temporary wharf shall be a piled pier type and it shall be constructed at the end of the temporary access channel where there is a headland of hilly part of the Dongo Kundu area. The structure type of the temporary wharf is a

deck on steel piles having a H-shape cross section. The temporary yard behind the temporary wharf shall be constructed with the soil obtained by excavation of the ground of the hilly area.

The scale of the temporary yard shall be determined considering the stock volume of the materials, the required working area of the working vessels and equipment and other conditions.

The water depth of the basin in front of the pier should be deep enough to accommodate the working vessel having a largest capacity of 1,300 m³, and, therefore, the water depth of the wharf is determined to -4.0 m. The temporary wharf shall be used not only for the transportation of construction materials and equipment, but also used as a stock yard of the construction materials needed for the main pier.



Source : JICA Design Team

Figure 9.1.1 Temporary Jetty and Yard

(3) Procurement of stone and sand

i) Procurement of Rubble and Armor Stone

a. Required volume

To be used for the slope of the foundation of the pier, the revetment of the reclamation and the temporary wharf.

- Slope of the foundation of the pier: 39,000 m³
- Revetment of the perimeter of the reclamation: 7,900 m³
- Temporary wharf: 4,000 m³
- Total: 50,000 m³

b. Procurement

- Source of the procurement: Jaribuni Quarry,
- Schedule of the procurement: 6,200 m³/month*
*) transported via sea by gut-ships with capacity of 500 m³,
- Duration of the procurement: 9 months

c. Procedure of the work

- Pier:
The transportation and the dumping of rubbles are done by marine work. Short distance transportation and the shaping work are done in accordance with the following procedure:
- Slope of the foundation of the pier;
Dumping and adjustment of the unbalanced size of armor stones by Grab- or Gut—ships and shaping of the armor stones by divers.
- Reclamation revetment;
Dumping and shaping of rubbles after the shaping work of the slope.
- Temporary wharf:
Dumping and shaping of rubble mound after the driving of H-cross-sectional steel piles.

ii) Procurement of Sand**a. Required volume**

Sands are used as filling materials of the reclamation, sand mat for the soil improvement and fine aggregates of concrete.

- Filling of yard reclamation: 45,000 m³
- Sand mat of the soil improvement: 80,000 m³
- Aggregate of concrete for the wharf: 7,000 m³
- Aggregate for yard concrete: 5,000 m³
- Total: 137,000 m³

iii) Procurement of Coarse and Fine Aggregates

Concrete and asphalt concrete plants shall be constructed near the project site. The coarse and fine aggregates used for concrete and asphalt shall be transported from Kilifi by water transportation and unloaded at the project site, it shall then be transported to the plant overland. However, the coarse and fine aggregates to be used for the construction of the wharf shall be brought to and directly unloaded to the plant barge.

iv) Locally available heavy Construction Equipment

Mombasa City is the largest city in the east coast area of Kenya and its population is the second largest in the country. Heavy construction equipment for multi-purpose can be locally leased with operators. There

are three marine contractors who have experiences of port constructions and have own construction equipment.

It is said that marine contractors also own general-purpose working vessels. Availability of working vessels shall be confirmed through interview to the marine contractors.

Information of the availability of heavy construction equipment and working vessels in Mombasa shall be collected from Japan or from third countries fed back to the construction plan of this project. A Japanese marine contractor who was involved in the Mombasa Port expansion project still stays in Mombasa and useful information may be obtained from them.

v) Safety Control

The dredging area of this project is located at the end of the navigation channel of Mombasa Port. On the other side of the channel, the expansion project of Mombasa port is currently on-going and the project includes the construction of a new container terminal. It is foreseen that the water area at the end of the navigation channel will be congested by working vessels and calling ships after the completion of the new facilities. In addition, dredgers and hopper barges related to this project also move around the area. Therefore, safely control in the navigation is vital and must be installed in the construction plan.

Small fishing boats also pass through the dredging area of this project, and safety control measures such as watch keeping and deployment of buoys showing perimeters of the construction site shall be implemented.

(4) Procedure of Construction

i) Mobilization and transportation

Most of the working vessels are most likely procured in Japan or in the third countries. Among construction equipment for land work, heavy crane and machines for paper drain required for soil improvement are procured in Japan. Painted and fabricated steel pile piles used for the construction of the pier and the trestle and prefabricated Jacket steel units are transported from Japan.

Regarding working vessels, except self-propelling TSHD, are transported on a semisubmersible cargo transport ship (designed for pelagic area).

ii) Dredging

Dredging in relatively shallow water area such as trestle, access channel to temporary wharf and basin and the foot of the main wharf, is done by a grab dredger. The construction of the trestle is marine work and it is necessary to dredge the work area of the trestle deep enough for working vessels.

iii) Wharf (Pier type)

After the slope of revetment is constructed, pile driving and rubble bed leveling are done simultaneously. The super structure of the wharf is designed as a jacket type structure. The span of a jacket unit is 30m and three (3) spans are constructed simultaneously.

iv) Trestle

The trestle is constructed from the reclaimed land side toward sea side.

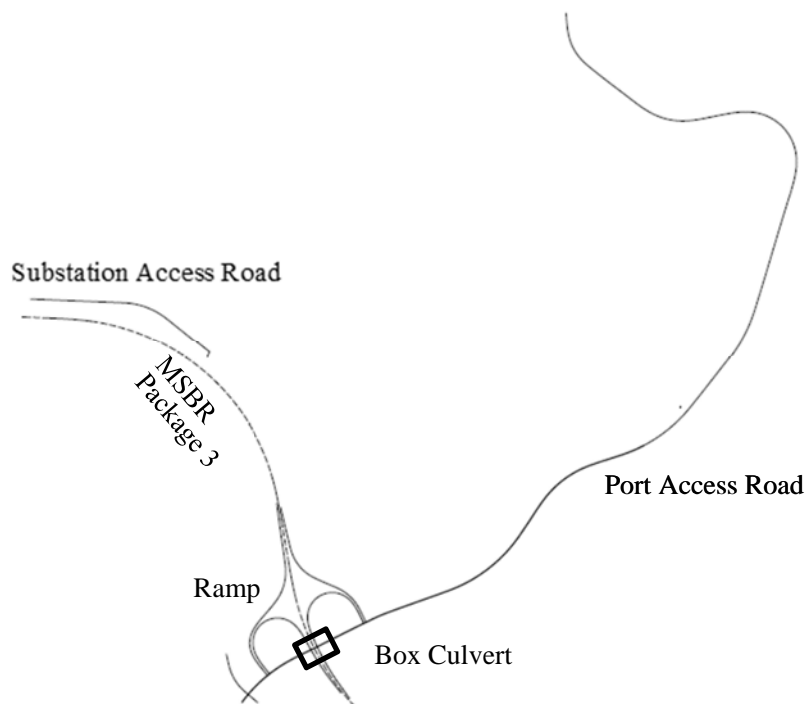
v) Yard

The surface layer of the ground beneath the site of the construction of reclamation revetment is soft layer and, therefore, needs to be improved. Sandy soil to be transported by barge for the reclamation landfill shall be placed along the perimeter of the reclamation over the area up to 10 m outside of the face line of the reclamation revetment. Employing the paper drain method with preloading embankment, the ground shall be improved, and after certain period, construction of the revetment and the pavement shall be carried out.

9.1.2 Road

(1) Construction packages

This chapter is described about four construction packages such as i) the port access road and ramp which connects the port and MSBR, ii) the box culvert and service road which cross MSBR as underpass, iii) the sub-station access road which connects sub-station and MSBR and iv) land development for sub-station. The port access road will be implemented as the port project by loan. The sub-station access road and the land development for sub-station will be implemented as the power supply project by loan. The box culvert and service road will be implemented by MSBR project.



Source : JICA Design Team

Figure 9.1.2 Schedule Comparison of Construction Cases

i) SEZ Main Road and Ramp

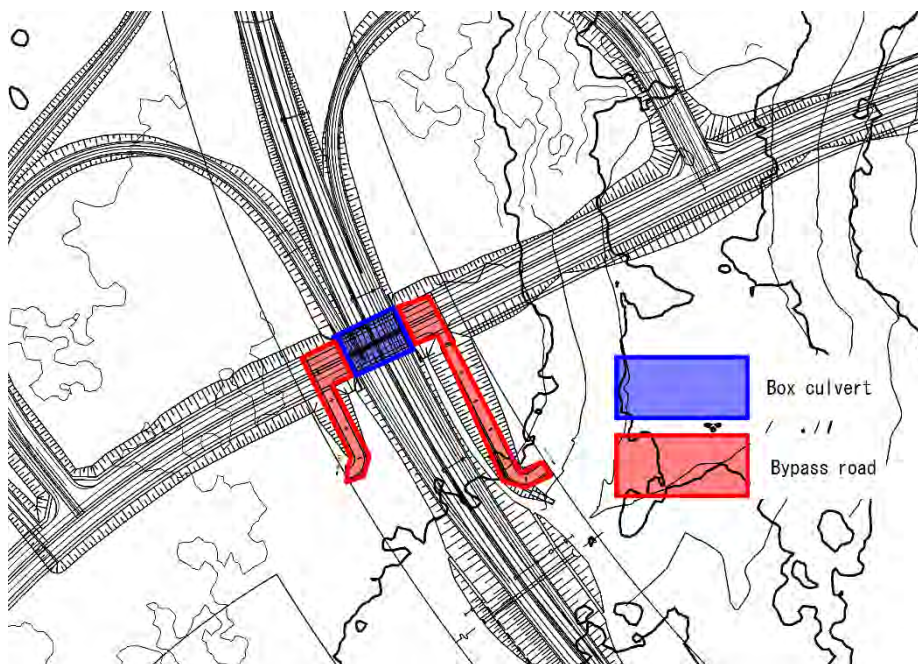
A construction package of the SEZ Main Road covers a road from port to MSBR including ramp. The SEZ Main Road construction under JICA’s loan will be implemented initially, then water supply construction will be implemented. Following table shows construction packages and components related the SEZ Main Road.

Table 9.1.1 Expected Components and Items for SEZ Main Road

Construction Package	Components	Items
SEZ Main Road	1. Drainage for existing water flow	
	Drainage	Cross box culvert
	2. SEZ Main Road	
	Road development	Foundation improvement, Roadbed, Subgrade, Slope protection
	Drainage system	Side ditch, Cross box culvert
	Pavement	Subbase course, Surface course
	Road facilities	Median
	Miscellaneous	Lighting system, Guard rail, Marking
	3. Ramp	
	Road development	Foundation improvement, Roadbed, Subgrade, Slope protection
	Drainage system	Side ditch, Cross box culvert
	Pavement	Subbase course, Surface course
	Road facilities	Median
Miscellaneous	Lighting system, Guard rail, Marking	

Source: JICA Design Team

There is interchange where the SEZ Main Road passes under MSBR, therefore, a box culvert is applied at underpass point. In addition, MSBR cut across an existing community road, thus, a service road is also applied instead of existing road. Construction of both box culvert and service road are constructed by MSBR project.



Source JICA Design Team

Figure 9.1.3 Plan of Box Culvert and Bypass Road

9.1.3 Power Supply

(1) Procurement Package Plan

The procurement package plan is formulated based on the following: (i) present ability of the contractors, (ii) characteristics and volumes of the works, (iii) minimization of implementation period, and (iv) minimization of the number of packages to reduce the burden and responsibility of the Project Implementation Agency. The following contract package (CP) is proposed according to the priority for carrying out the works:

- ① CP-1: Power supply system (220 kV transmission line, 220/33 kV substation and 33 kV distribution line)

9.2 Project Implementation Plan

9.2.1 Project Packages

The project packages for construction works and procurement of equipment currently proposed are listed below.

- i) Construction of Port (including dredging)
- ii) Procurement of Cargo Handling Equipment
- iii) Construction of SEZ Main Road (including ramp)
- iv) Construction of Electrical Transmission and Distribution Lines

9.2.2 Implementation Plan

(1) Implementation Plan

Proposed implementation plan for the Japanese ODA loan project is listed below.

Table 9.2.1 Implementation Plan

	Detailed Design	Bidding for Contractor	Construction/Procurement of Equipment	Defect Liability
Construction of Port	12 months	16 months	34 months	12 months
Procurement of Cargo Handling Equipment	12 months	16 months	12 months	12 months
Construction of SEZ Main Road	12 months	15 months	21 months	12 months
Construction of Electrical Transmission/Distribution Lines*	12 months	12 months	23 months	12 months

Source: JICA Design Team

*Outline design for Electrical Transmission/Distribution Lines

(2) Bid Assistance and Construction Supervision

i) Required Man-Months

Expected man-months for foreign/local experts and supporting staff for consulting services (detailed design, bid assistance and construction supervision) are summarized in Table 9.3.2.

Table 9.2.2 Assumed Man-Months

	Foreign Experts	Local Experts	Supporting Staff
Construction of Port including Procurement of Cargo Handling Equipment (Detailed Design)	228 M/M	235 M/M	393 M/M
Construction of Port including Procurement of Cargo Handling Equipment (Bid Assistance and Construction Supervision)	126 M/M	105 M/M	75 M/M
Construction of SEZ Main Road (Detailed Design)	99 M/M	167 M/M	270 M/M
Construction of SEZ Main Road (Bid Assistance and Construction Supervision)	44 M/M	50 M/M	76 M/M
Construction of Electrical Transmission/Distribution Lines (Outline Design, Bid Assistance and Construction Supervision)	132 M/M	194 M/M	288 M/M

Source: JICA Design Team

ii) Scope of Consulting Services

The scope of the consulting services required for bid assistance and construction supervision includes the following tasks;

- Assist the Employer in bid announcement, conducting pre-bid conferences, and issuing addendum for clarifications to bidders' inquiries,
- Evaluate Bids and prepare bid evaluation report,
- Assist the Employer in contract negotiations,
- Prepare a draft and final contract agreement,
- Act as the Engineer to execute construction supervision and contract administration,
- Provide assistance to the Employer concerning variations and claims,
- Check and approve Contractor's method of works,
- Monitor physical and financial progress,
- Review and approve Contractor's working drawings and shop drawings,
- Organize management meetings with the Contractor
- Supervise the works to confirm all the contractual requirements are met by the Contractor,
- Supervise field tests, sampling and laboratory tests,
- Inspect the construction methods, equipment to be used, workmanship,
- Survey and measure the work output performed by the Contractor,
- Modify the design, technical specifications and drawings, if any,
- Carry out timely reporting to the Employer,
- Inspect, verify and evaluate claims issued,
- Perform inspection of the works including tests on completion,
- Supervise commissioning and carry out tests during commissioning, and
- Provide periodic inspections during defect liability notification period.

9.2.3 Procurement of Consultant**(1) Method of Selection**

Quality-based selection (QBS) is an appropriate method in consideration of following particular conditions of the project;

- 1) The project consists of various work items, e.g. dredging, reclamation, piling, quay-wall, pavement, road, electrical transmission/distribution lines, utilities, and cargo handling equipment, and accordingly complex technical consideration/coordination base on the characteristic of each item are required for the succeeding stages;
- 2) New technological construction method, namely jacket-type berth structure and long steel pipe pile driving method will be applied in the project. These works require advanced technology and abundant experiences; and,
- 3) Safety measures is particularly important for major infrastructure. The project consists of marine works under the water. Under-water work is invisible from the land, thus work method statement including safety management is quite important.

(2) Terms of Reference

Once JICA and the borrowers agree on the engagement of the consultant, terms of reference will be prepared, which includes project background, objectives of consulting services, scope of consulting services, expected time schedule, staffing (international expertise, local engineer, and supporting staff), and obligations of the executing agency.

(3) Short List of Consultants

Once JICA and the borrowers agreed on the terms of reference for the consulting services, the borrower will prepare a short list of consultants to be invited to submit proposals. In general, a short list consists of not less than three and not more than five consultants. In consideration of experiences on similar projects in foreign countries, several consultants seem to be well-qualified and the number is limited.

9.2.4 Procurement of Contractors

Procurement of the contractor is normally conducted under International Competitive Bidding (ICB). Packages for construction works should comply with “Standard Bidding Documents under Japanese ODA Loans for Procurement of Works (October 2012)”. However, if the Special Terms for Economic Partnership (STEP) of Japanese ODA loans are applied for procurement of contractors, relevant JICA guidelines and operational rules should be observed.

Prequalification, in principle, requires advance bidding for large or complex works to ensure that invitations to bid are extended only to those who are technically and financially capable. Accordingly, prequalification should be adopted as a procedure in tender process. In order to procure technically and financially capable contractors in a transparent and efficient manner, Single-Stage Two-Envelope Bidding with Prequalification” will be adopted, which is stipulated in the “Guidelines for Procurement under Japanese ODA Loans” (April 2012). Two-Envelope consists of Technical Proposal and Financial Proposal. The general order of main procedures for procurement of the contractors is mentioned below:

- 1) All tender documents are prepared by the Executing Agency and concurred by JICA.
- 2) The Executing Agency advertises invitations to Bidding in at least one newspaper of general circulation in the Borrower's country.
- 3) Bidders submit Technical Bid including the required conditions of Prequalification and Financial Bid, simultaneously to the Executing Agency in two separate envelopes.

- 4) Evaluation of Technical Bid.
- 5) Evaluation of Financial Bid.
- 6) Promptly after executing a contract but before implementation, the contract should be concurred by JICA.

Chapter 10 Economic and Financial Analysis

10.1 Operation and Effect Indicator

10.1.1 Quantitative Effect

Project effect is assessed in two ways: viz., 1) quantitative effect and 2) qualitative effect. In examining quantitative effect, it is important to set quantitative indices such as operation efficiency, handling volume, and other effect indices, with a clear baseline since they will be used to measure the operational target two years after operation commences. The quantitative effect of this project is shown as follows.

Project effect will depend on the number of companies moving into the SEZ. The area where each company moves in will be developed after the completion of the project. And at the two years after completion of the project, the index is set on the assumption that 20% of the Phase 1 target area will be occupied.

Table 10.1.1 The Qualitative Effect of this Project

	Item	Target
Port and Roads Power Supply	Cargo volume in SEZ	60,000 Units/Year (Vehicle)
		15,000 TEU/Year (Container)
	Traffic volume in SEZ	400 Unit/day
	Cargo volume in SEZ	1,100 ton/day
Port and Roads	Power demand of DK1 area	3.8 GWh
	Power demand of D1 area	3.1 GWh
	Power down	0 (almost 0)
	The percentage power loss in transmission line	0.45%

Source: JICA Design Team

10.1.2 Qualitative Effect

The qualitative effect of this project is shown as follows.

Table 10.1.2 The qualitative effect of this project

	Item
Port and Roads	<ul style="list-style-type: none"> • Effect on the acceleration of regional development including SEZ • Additional employment and income opportunities induced by port construction and operation • Increasing added values induced by the increase of output in the port related industry and port-dependent industry
Power Supply	<ul style="list-style-type: none"> • Effect on the acceleration of regional development including SEZ • Increasing added values for Mombasa SEZ due to the stable supply of power • Improvement of the convenience by the stable supply of power to the surround area of SEZ

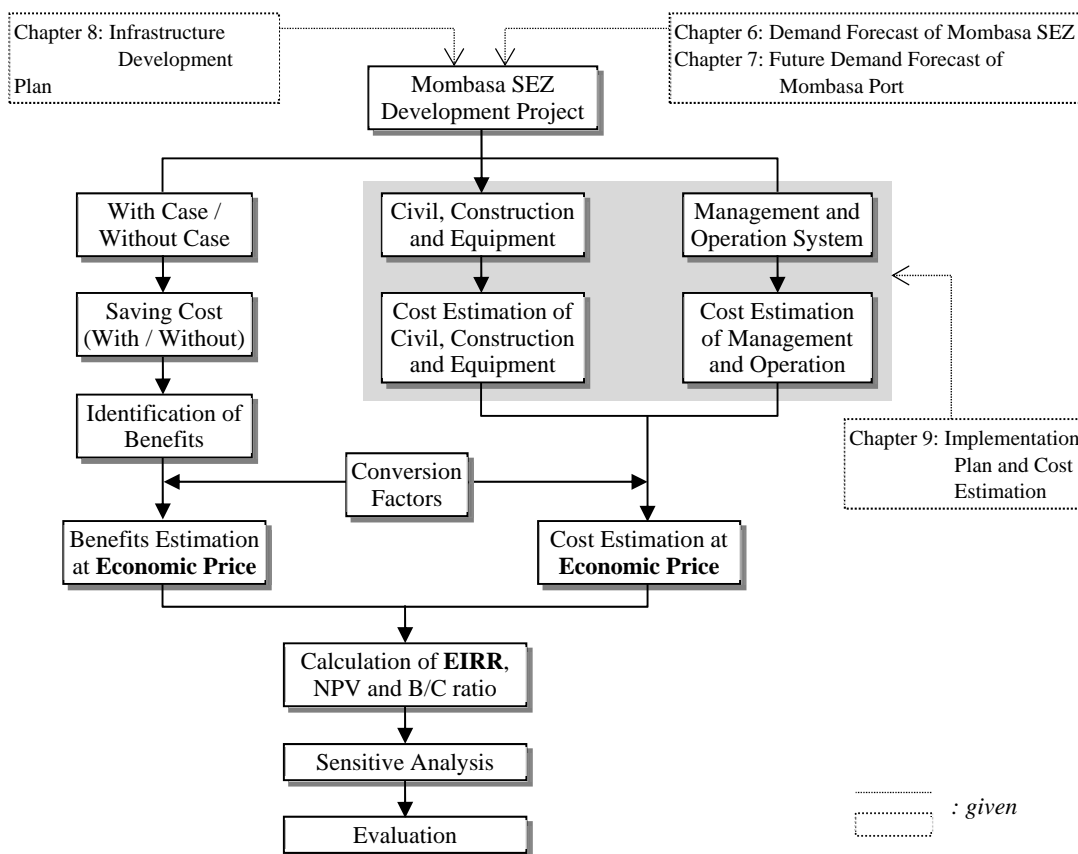
Source: JICA Design Team

10.2 Overview of Economic and Financial Analysis

10.2.1 Economic Analysis

The purpose of the economic analysis is to assess the economic feasibility of the Project on the target year, from the viewpoint of the national economy. In this clause, the economic benefits and costs are calculated with economic price and to evaluate whether the benefits exceed those that could be obtained from other investment opportunities in Kenya.

The flowchart for the economic analysis is shown in the figure below.



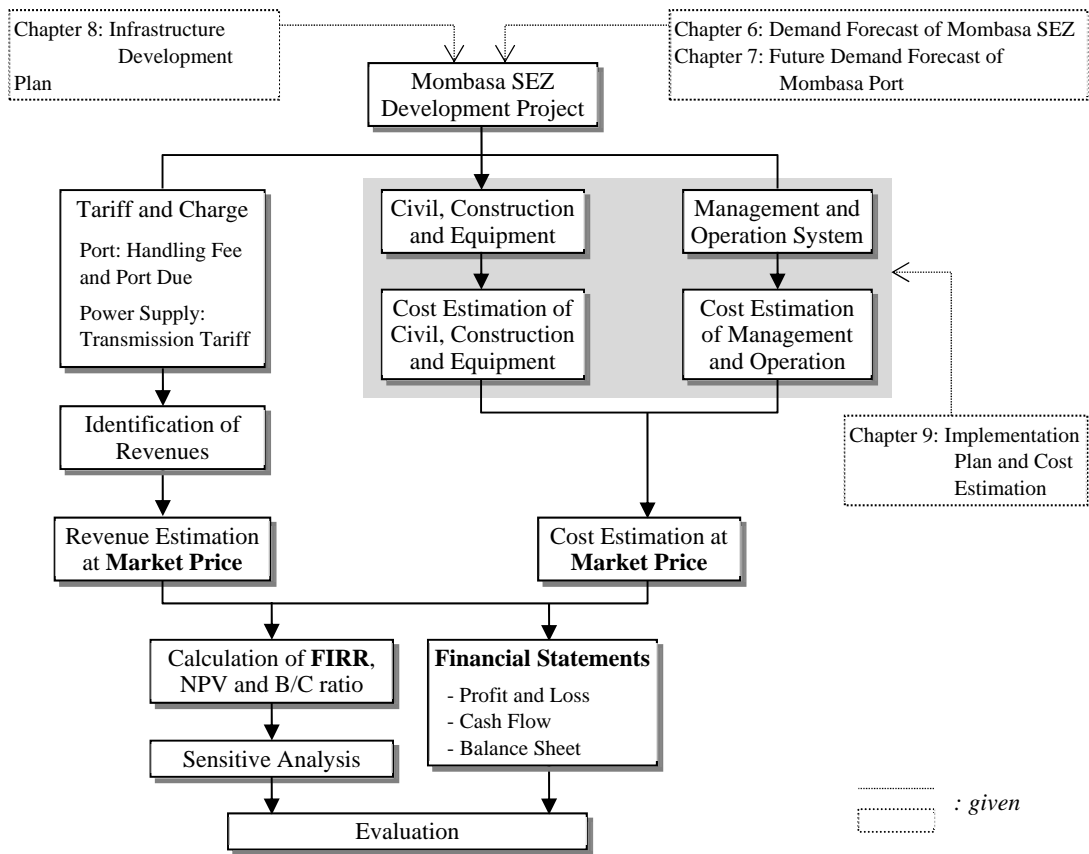
Source: JICA Design Team

Figure 10.2.1 Procedure of Economic Analysis

10.2.2 Financial Analysis

The purpose of the financial analysis is to assess the financial feasibility of the Project on the target year, from the viewpoint of the financial soundness. In this clause, the financial revenues and expenditures as costs are calculated with market price and to evaluate whether the revenues exceed those that could be expended from capital cost of investment of the Project.

The flowchart for the financial analysis is shown in the figure below.



Source: JICA Design Team

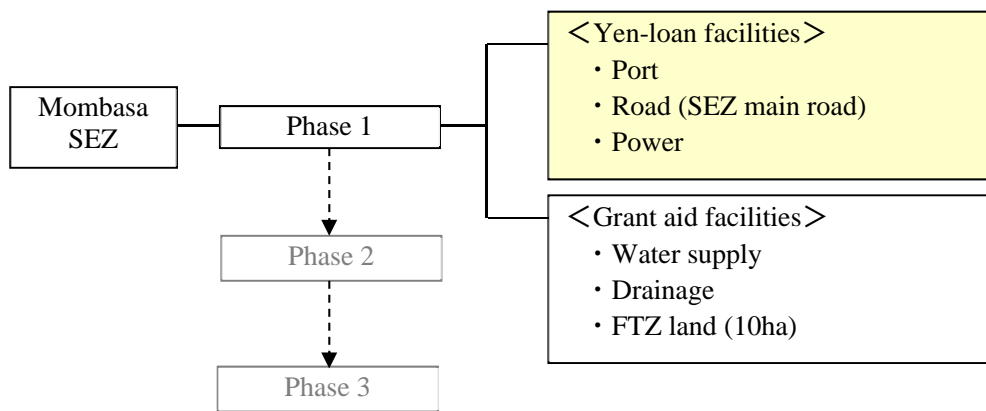
Figure 10.2.2 Procedure of Financial Analysis

Chapter 11 Environment and Social Consideration

11.1 Background and Basic Policy of Environmental and Social Consideration

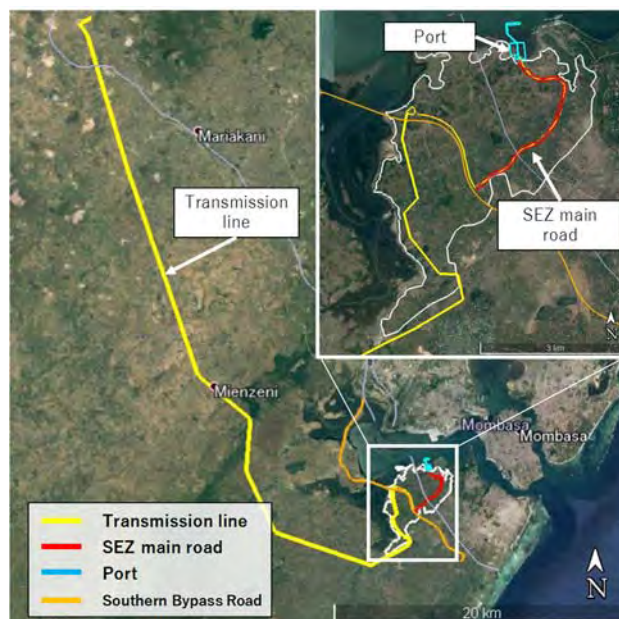
Mombasa SEZ will be developed in three phases. In phase 1, infrastructures such as port, road, power and water supply will be developed. Around 100 ha of land will also be developed for the planned Free Trade Zone (FTZ) and Industrial zone.

The port, road and power infrastructures are planned to be developed through Japan yen-loan. These infrastructures are the target of the environmental and social consideration study. Water supply, drainage and FTZ land development (approx. 10 ha) are planned to be developed through Japan grant aid. Figure 11.1.1 shows the Mombasa SEZ phase 1 projects that are planned to be supported under yen-loan and grant aid. Figure 11.1.2 roughly shows the location of the yen-loan project (port, road and power infrastructures).



Source: JICA Design Team

Figure 11.1.1 Facilities to be Developed under Yen-Loan and Grant Aid



Source: JICA Design Team

Figure 11.1.2 Location of the Port, Road and Power Infrastructures

The yen-loan and grant aid project are required to follow JICA Guidelines for Environmental and Social Considerations (2010). Other SEZ projects should also be consistent with this guideline.

As per Kenyan EIA regulation, the power, port and road components are subject to prepare EIA report. The JICA design team subcontracted NEMA certified consultants to prepare EIA report for these components. Note that the port and road components are prepared under one EIA as these facilities were considered indivisible.

The EIAs will be prepared taking into consideration the conditions stipulated in the NEMA's approval of the Strategic Environmental Assessment (SEA) of the Mombasa SEZ. Relevant conditions are as follows:

- Specific projects within the Master Plan to undertake Environmental Impact Assessments (EIAs)
- Ensure conservation and preservation of the Kaya forests and the pressure on resources is minimized
- Ensure that there is adequate public participation
- Preparation of an integrated ecosystem conservation and management plan for the entire SEZ

In response to NEMA conditions, The Ministry of Industry, Trade and Cooperatives prepared "Comprehensive Environmental Management and Conservation Plans (CEMCP)" covering the entire SEZ, which was submitted to NEMA in September 2018. The CEMCP covers management of ecosystem such as wetlands, mangrove, wildlife and so on.

The JICA design team subcontracted consultants to prepare Resettlement Action Plan (RAP) for the power and road components. Chapter 11 is structured as follows:

- Chapter 11.2: Power component
 - Chapter 11.2.1-11.2.11: Environmental and social consideration of power component
 - Chapter 11.2.12-11.2.21: RAP of power component
- Chapter 11.3: Port and road components
 - Chapter 11.3-11.3.11: Environmental and social consideration of port and road components
 - Chapter 11.3.12-11.3.20: RAP of port and road components

11.2 Power Component

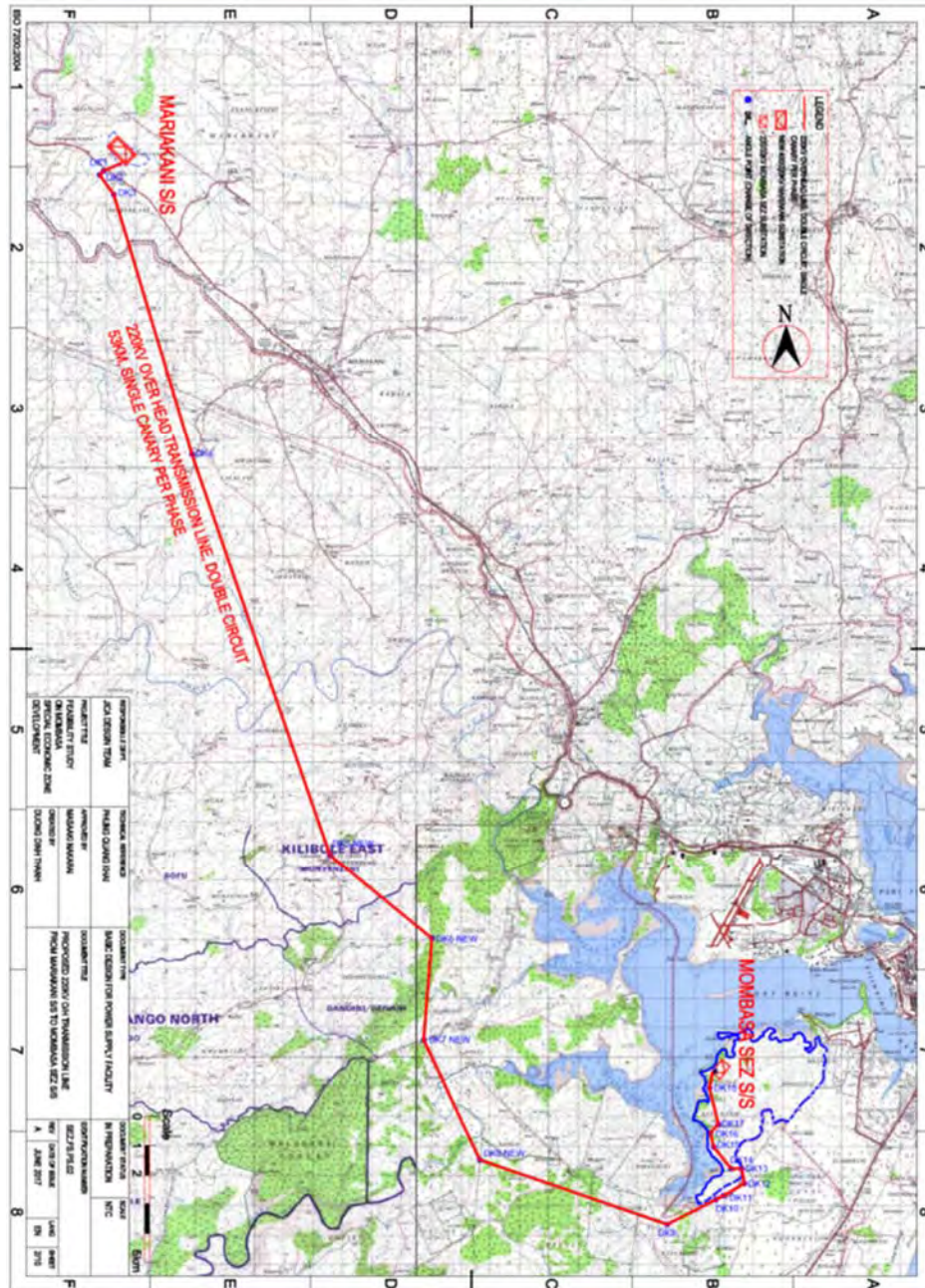
11.2.1 Background

Kenya Electricity Transmission Company Limited (KETRACO) is the proponent of the power component. The power component consists of the following components:

- Development of 220 kV Transmission Line from Mariakani 400/220 kV substation to Mombasa SEZ (Mariakani 400/220 kV substation will be constructed through Mombasa-Nairobi 400kV Transmission Line project)
- Development of 220/33 kV substation inside Mombasa SEZ
- Development of 33 kV distribution line inside Mombasa SEZ from 220/33 kV substation

(4) 220 kV transmission line

The 220 kV transmission line will be an overhead double-circuit transmission line, and will traverse through three counties namely Kilifi, Kwale and Mombasa covering a distance of 53 km. Figure 11.2.1 shows the layout of the transmission line route.

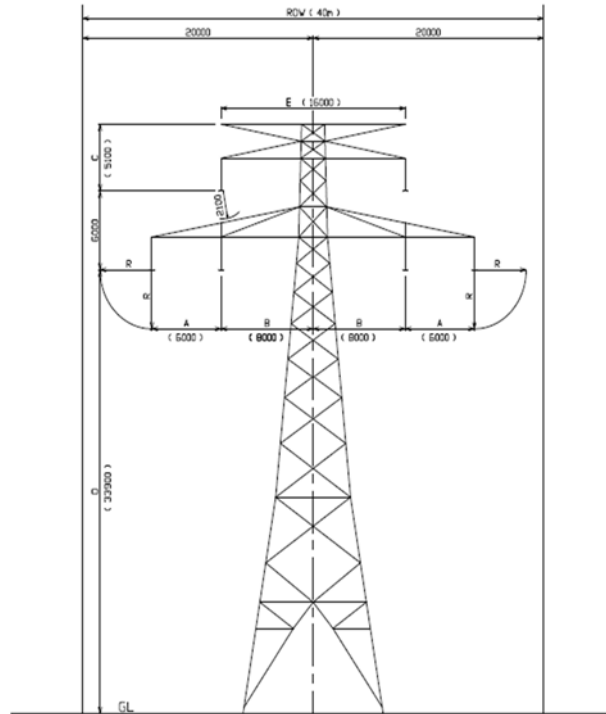


Source: JICA Design Team

Figure 11.2.1 Layout of the Transmission Line Route

The width of the transmission line wayleave will be 40 m (20m on either side from the center of the transmission line) as per KETRACO rules. The transmission line will be supported by steel-lattice type transmission towers. The transmission tower will be placed at an interval of around 300-400 m, and the

height will be around 45 m but may vary depending on the site topography and surrounding structures. Figure 11.2.2 shows a typical design of steel-lattice type transmission tower (Suspention type).

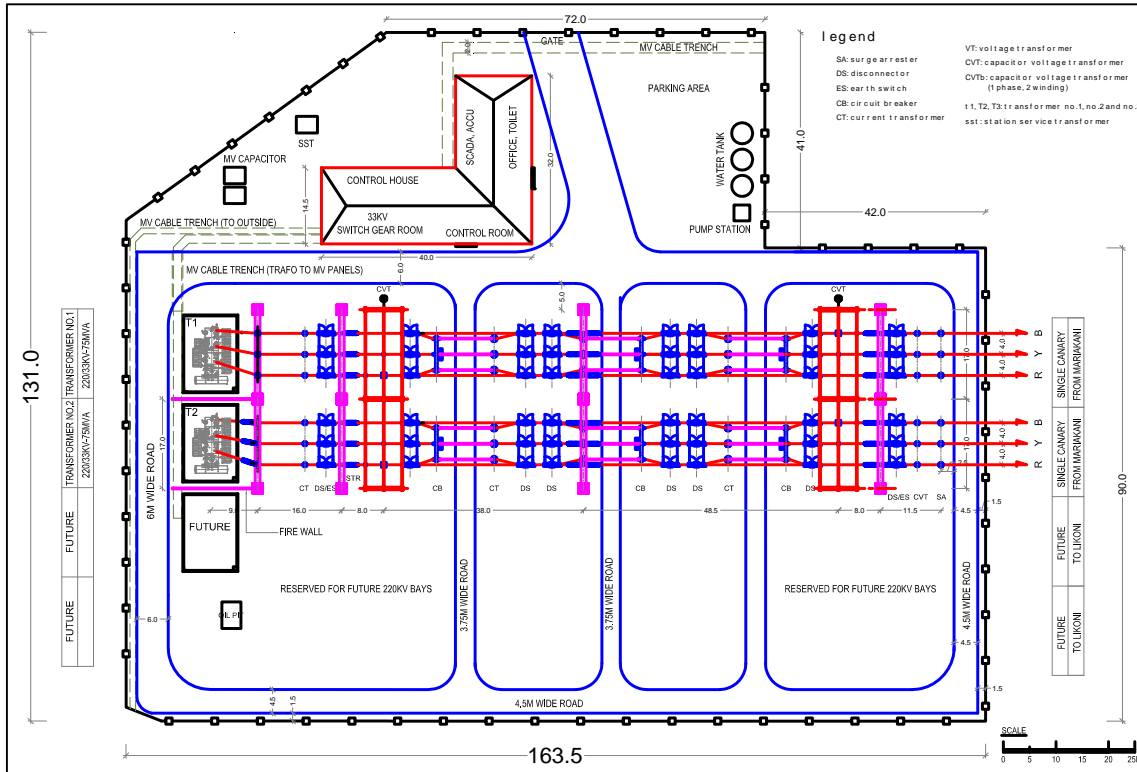


Source: JICA Design Team

Figure 11.2.2 Typical Design of Steel-Lattice Type Transmission Tower (Suspention Type)

(5) 220/33 kV substation

The substation will be constructed on top of a hill adjacent to the Southern Bypass Road. The substation will mainly consist of transformers (75 MVA x 2 units), switchgear (220 kV) and control building. Oil pit will be installed to contain any spills from the transformer. The area of the substation will be approximately 1.9 ha with some vacant space for future expansion. Figure 11.2.3 shows the layout of the substation.

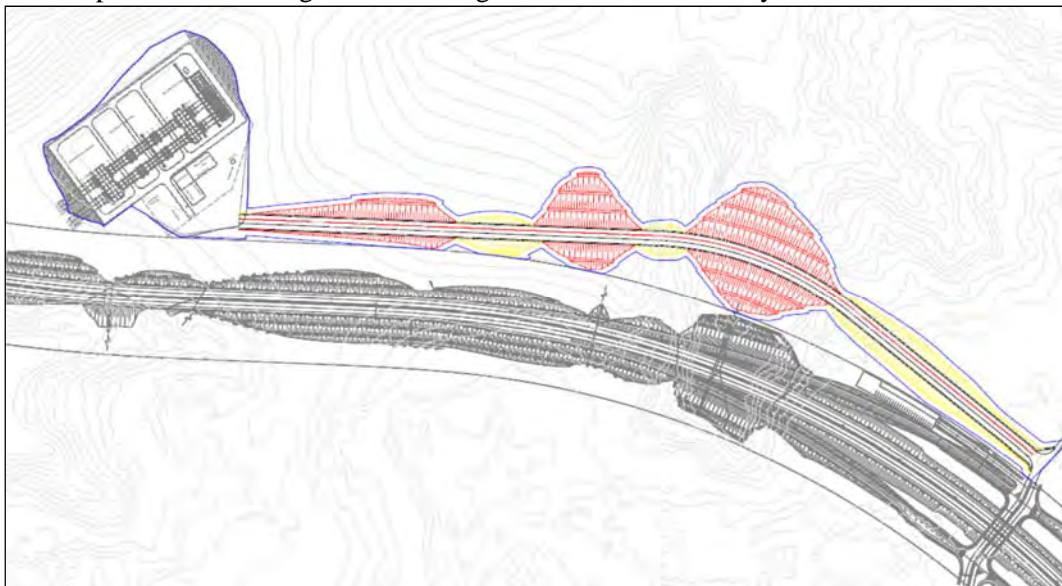


Source: JICA Design Team

Figure 11.2.3 Layout of the 220/33 kV Substation

(6) Substation access road

The access road will have a distance of approx. 800 m, which will connect the substation with the existing road. The road will be constructed through cut and fill works. Box culverts will be installed along the road where it intercepts natural drainage channels. Figure 11.2.4 shows the layout of the substation access road.

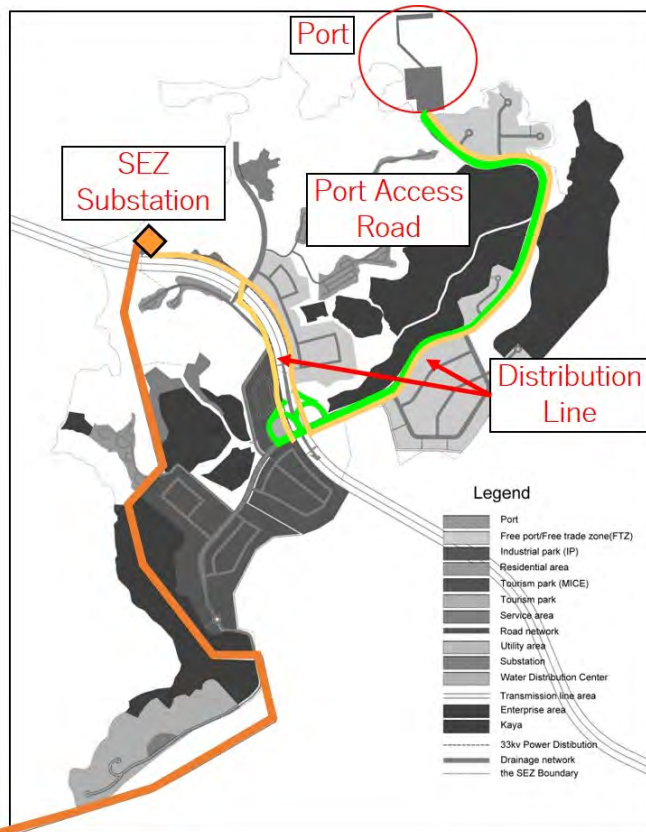


Source: JICA Design Team

Figure 11.2.4 Layout of the Substation Access Road (Red: Fill Areas, Yellow: Cut Areas)

(7) 33kV distribution line

The 33 kV distribution line will be an overhead double circuit type supported by concrete pole/foundation. Figure 11.2.5 shows the route of the distribution line.



Source: JICA Design Team

Figure 11.2.5 Route of the Distribution Line

(8) Construction plan

i) Substation

Construction of substation will typically involve the following construction works:

- Clearance of vegetation within the substation/access road site
- Establishment of temporary construction yard
- Construction of access road (cut and fill, grading, slope protection)
- Site development of substation (cut and fill, grading, slope protection)
- Construction of substation equipment foundation (concrete placement)
- Construction of control house and installation of equipment and steel structures
- Pavement of access road

ii) Transmission line and tower

Construction of transmission lines will typically involve the following works:

- Clearance of vegetation along the transmission line corridor and within the footprint of the transmission tower base. Low-lying vegetation along the transmission line corridor will be maintained.
- Establishment of temporary construction yard and access road.
- Construction of concrete foundation of the transmission tower. This will include excavation of tower base, concrete placement and backfilling.
- Erection of transmission tower (assembling of prefabricated components of the lattice structure)
- Stringing of transmission cable. Transmission cable will be installed by installing a winch at one end of the line, and a tensioner and cable drum at the other end.

iii) Temporary construction facilities

Temporary construction facilities such as stockyard are planned to be established within the site boundary of the substations and corridor of the transmission lines. Other temporary construction facilities may include concrete batching plant, access road and workers camp.

iv) Construction workers

Around 20 workers (e.g. mason, supervisor, unskilled laborer) are expected daily to be working at the substation construction sites. Around the same number of workers will also be working at the transmission line sites. Most workers will be procured locally, although skilled foreigners may be hired for highly technical works. The entire recruitment process for the workers will be managed by the contractors in accordance with Kenya labor laws.

v) Construction materials

Construction works will require raw materials such as fill soil, cement, aggregates, gravel and wood. Fill soil will be procured from excess soil generated from substation/access road cutting works. Other materials will be procured locally from licensed suppliers and there will be no need for the Project to develop any new quarries and borrow pits as all necessary raw materials (e.g. sand and aggregates for concrete) are readily available from existing local suppliers.

vi) Construction Machines

Table 11.2.1 shows the main construction machines that will be required for construction.

Table 11.2.1 Main Construction Machines Required for Construction

Type	Type
Truck (3 ton)	Excavator
Truck with crane (2 ton)	4-wheel tractor
Mobile crane (20 ton):	Light truck
Power shovel	Dump truck (10 ton)
Hydraulic rotary drilling rig	Water tank truck
Pile driving equipment	Concrete mixing machine
Back hoe	Diesel engine generator
Stringing winch	Welding machine
Stringing tension	Cutting machine

Source: JICA Design Team

vii) Construction schedule

Construction works is expected to take around 2 years. Table 11.2.2 shows the tentative construction schedule.

Table 11.2.2 Tentative Construction Schedule
Construction Schedule of Power Supply (Tentative Plan)

Procee Name	Month																															Remarks
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
1.Design,Manuf.Transport ofS/S equipment	←—————→											11																				
2.Mombasa SEZ substation	←—————→																				16											
3.Mariakani Substation	←—————→																			16												
4.Steel tower																																
1) Steel Tower Design	←————→																															4
2) Foundation Design	←————→																															3
3) Survey Work	←————→																															3
4) Soil Investigation	←————→																															2
5)Foundation work	←—————→													13																		
6)Steel Tower construction	←—————→													13																		
7)Stringing (Overhead wiring)	←—————→													10																		
8) Final Inspection																									←————→		2					
Tower Manufacturing and Delivery	←—————→													13																		
Conductor Manufacturing and Delivery	←—————→													11																		
Insulator manufactuirng and Delivery	←—————→													11																		

Source: JICA Design Team

11.2.2 Environmental and Social Status

(1) Pollution

i) Air quality

Air quality (PM10, SO2 and NO2) was measured in April 2018 at 5 locations along the Project site as shown in Figure 11.2.6. Sampling and analysis were conducted by SGS Kenya Ltd. a NEMA authorized firm. The results are shown in Table 11.2.3. All parameters were below Kenyan and WHO standards at all the sites.



Source: JICA Design Team

Figure 11.2.6 Locations of Air Quality Sampling Sites

Table 11.2.3 Results of Air Quality Survey

No	Location/sampling date	UTM	PM ₁₀ (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
A1	Near residential house located approx. 200 m east of the substation (2018/4/16-17)	0565996, 9549494	15	BDL	BDL
A2	At Kiteje Secondary School located approx. 150 m west of DK11 (2018/4/17-18)	0565855, 9545251	15	BDL	BDL
A3	Near Mwanda Dispensary located approx. 500 m south of DK4 (2018/4/18-19)	0548000, 9570150	31	BDL	BDL
A4	Katundani Shopping Centre located approx. 400 m south of DK5 (2018/4/18-19)	0552400, 9556600	19	BDL	BDL
A5	Near Shangia Primary School located approx. 150 m south of DK3 (2018/4/19-20)	0545149, 9579529	11	BDL	BDL
WHO guideline value (NO ₂ : annual, PM ₁₀ /SO ₂ : 24 hrs)			50	20	40
Kenyan standard (Residential, rural & other area) 24 hrs			100	80	80

BDL: Below Detection Level, DL (SO₂): 1.7µg/sample, DL (NO₂): 0.17µg/sample

Source: JICA Design Team

ii) Noise

Noise was measured in April 2018 at 5 locations along the Project site (same location as air quality survey). Noise measurements were conducted by SGS Kenya Ltd covering daytime (8:00-18:00) and nighttime (20:00-21:00). The results are shown in Table 11.2.4.

Table 11.2.4 Results of Noise Survey (LAeq)

No	Location/sampling date	UTM	Day (dBA)	Night (dBA)
N1	Near residential house located approx. 200 m east of the substation (2018/4/16-17)	0565996, 9549494	79	71
N2	At Kiteje Secondary School located approx. 150 m west of DK11 (2018/4/17-18)	0565855, 9545251	66	52
N3	Near Mwanda Dispensary located approx. 500 m south of DK4 (2018/4/18-19)	0548000, 9570150	76	48
N4	Katundani Shopping Centre located approx. 400 m south of DK5 (2018/4/18-19)	0552400, 9556600	69	45
N5	Near Shangia Primary School located approx. 150 m south of DK3 (2018/4/19-20)	0545149, 9579529	66	42
Kenyan standard (Residential outdoor)			50	35
WHO guideline value (Residential outdoor)			55	45

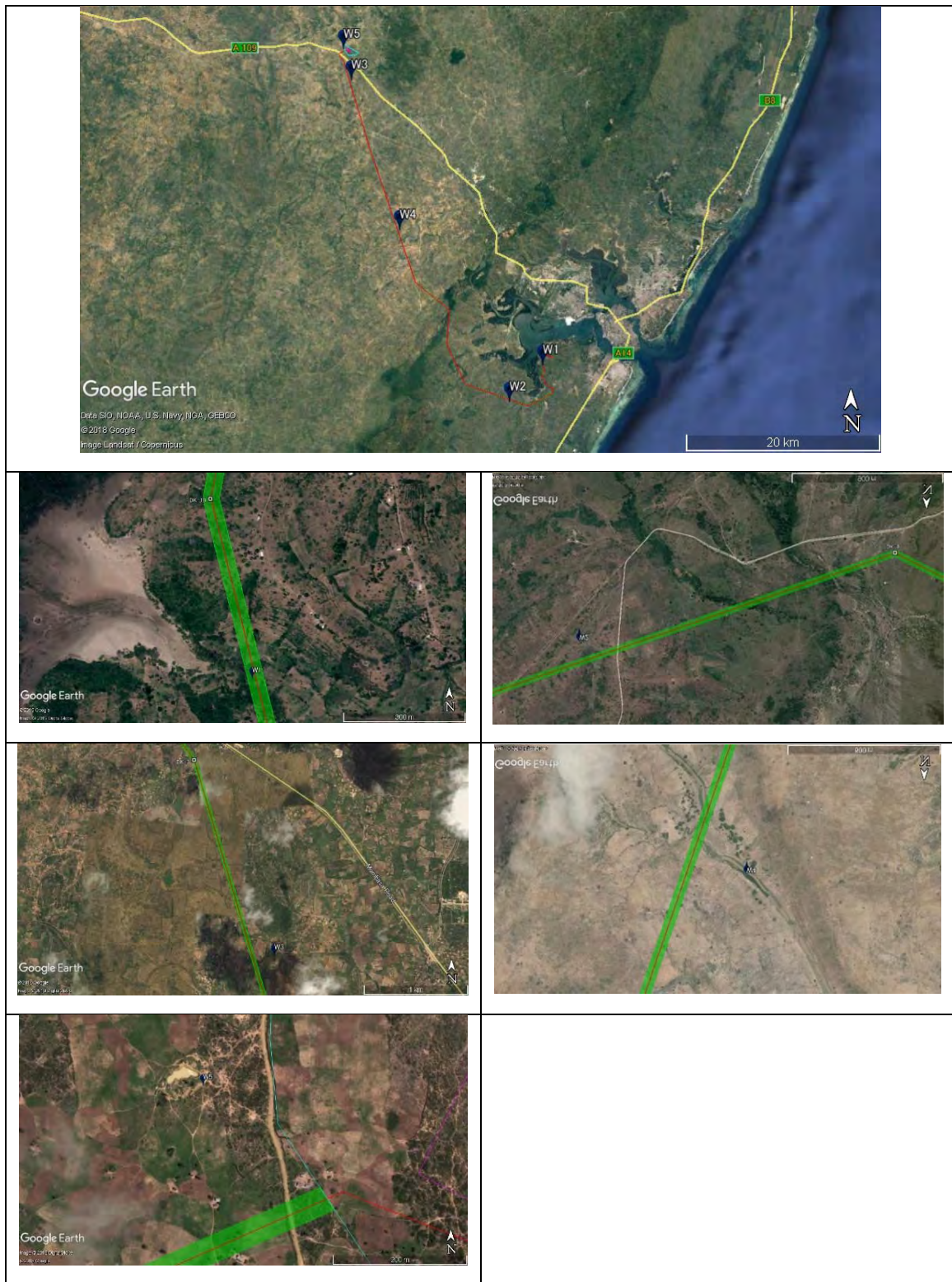
Source: JICA Design Team

All sites exceeded the Kenyan standard for both day and nighttime. All sites also exceeded the WHO standard except 2 sites at nighttime. As there are no major noise sources in the vicinity, the obtained values are higher than expected. Baseline noise survey will be undertaken prior to commencement of construction works.

iii) Water quality

Water quality (EC, pH, TPH, PAHs) was measured in April 2018 at 5 locations along the Project site (see Figure 11.2.7). EC and pH were measured in situ with a portable water quality meter. TPH and PAHs were analyzed at SGS Kenya Ltd laboratory. Apart from pH, the results were compared with either Dutch or EU

standards as appropriate. The results are shown in Table 11.2.5. Although TPH was relatively high all the sites satisfied the respective standards.



Source: JICA Design Team

Figure 11.2.7 Locations of Water Quality Sampling Sites

Table 11.2.5 Results of Water Quality Survey

No	Sampling site	UTM	EC (µS/cm)	pH	PAHs (µg/l)	TPH (µg/l)
W1	Well located approx. 400 m south of DK18	0565614, 9548578	764	7.4	<50	290
W2	Well located approx. 2 km west of DK9	0562179, 9544810	498	7.1	<50	410
W3	River located approx. 2 km south of DK3	0545893, 9577726	33	8.47	<50	230
W4	River located approx. 6 km north of DK5	0550870, 9562395	212	7.99	<50	200
W5	Water pan located approx. 200 m northwest of transmission line starting point	0545096, 9580880	42	7.95	<50	280
Reference standard			2,500*1	6.5 – 8.5*2	-	600*3

*1: EU Drinking Water Directive 98/83/EC

*2: Environmental Management and Coordination (Water Quality) Regulations 2006, Quality Standards for Sources of Domestic Water

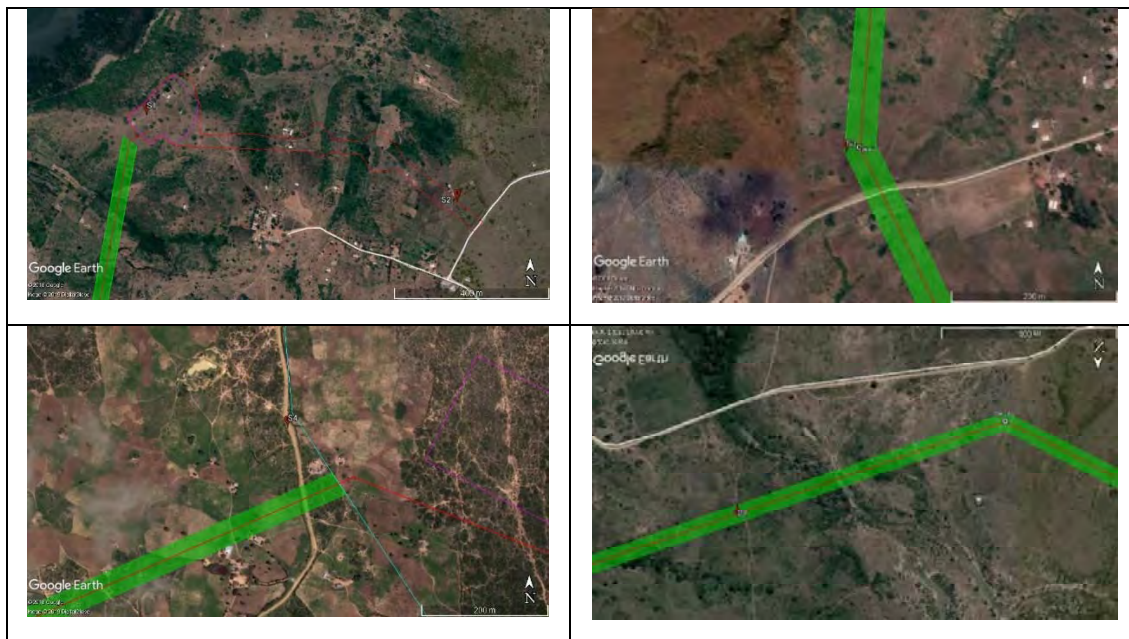
*3: Dutch Soil Remediation Circular 2013

Source: JICA Design Team

iv) Soil quality

Soil quality (TPH and PAHs) was measured in April 2018 at 5 locations along the Project site (see Figure 11.2.8). Samples were analyzed at SGS Kenya Ltd laboratory. The results were compared with Dutch standard. The results are shown in Table 11.2.6. All the sites satisfied Dutch standard.





Source: JICA Design Team

Figure 11.2.8 Locations of Soil Quality Sampling Sites

Table 11.2.6 Results of Soil Quality Survey

No	Sampling site	UTM	PAHs (mg/kg)	TPH (mg/kg)
S1	Inside substation area	0565650, 9549577	0.34	0.65
S2	Inside substation access road area	0566451, 9549356	0.29	0.72
S3	Inside transmission line wayleave at DK7	0555700, 9550650	0.63	0.61
S4	Roadside located approx. 100 m northwest of transmission line starting point	0545200, 9580800	0.44	0.83
S5	Inside transmission line wayleave located approx. 600 m west of DK9	0563450, 9544549	0.70	0.74
Reference standard*			40	5,000

*: Dutch Soil Remediation Circular 2013, Intervention values for soil remediation

Source: JICA Design Team

(5) Natural environment

i) Protected area

There are three protected areas around DK6-DK8 namely: Kaya Gandini, Mwaluganje Forest Reserve and Shimba Hills National Reserve. Inside the Mombasa SEZ, there is one protected kaya namely Kaya Kiteje. Figure 11.2.9 shows the location of the protected areas.



Source: JICA Design Team

Figure 11.2.9 Location of Protected Areas around the Transmission Line

1) Kaya Gandini

Kaya Gandini is located east of DK6 having a total area of 100 ha. The edge of Kaya Gandini is around 30 m from the nearest transmission line. It was gazetted as natural monument in 1992 under the Antiquities and Monuments Act, Notice No. 200. Kaya Gandini is also designated as an Important Bird Area (IBA). Presence of endangered bird species such as Spotted Ground Thrush and Sokoke Pipit are reported by Leon Bennun and Peter Njoroge (1999). According to KWS expert, the area is occasionally visited by mammals such as elephants, baboon and wild pig.

2) Mwaluganje Forest Reserve

Mwaluganje Forest Reserve is an area designated for forest conservation and management. The reserve starts approximately 2.5 km south west of DK7. It was gazetted in 1941 under the Forest Act and covers an area of approximately 17 km². According to KWS expert, the forest reserve is a habitat for mammals such as elephants (large families of about 150 residing here), monkeys, warthog, baboon, impala and waterbuck. Notable birds are Crested Guinea fowl, Brown-hooded Kingfisher, Black-collared Barbet, African fish eagle and Golden palm weaver, which none are IUCN threatened species.

3) Shimba Hills National Reserve

Shimba Hills National Reserve is a protected area designated in 1968 under the Wildlife Conservation and Management Act. It has an area of approx. 300 km² and is located around 12 km south west of DK8. This reserve hosts the highest density of African elephant in Kenya. Other animal species found in the area are Sable antelope, elephant shrew, bushy tailed mongoose and fruit bats. The forest is also designated as an Important Bird Area (IBA), where endangered species such Spotted Ground Thrush and Sokoke Pipit are

present. Migratory birds such as Common cuckoo, Sand martin, Golden orioles and Ringed plover flyover the area mainly in November-April season.

Table 11.2.7 Threatened Species in Shimba Hills National Reserve

	Species	IUCN	Kenya*
Mammal	Sable Antelope (<i>Hippotragus niger</i>)	LC	CR
	African elephant (<i>Loxodonta Africana</i>)	VU	EN
	Leopard (<i>Panthera pardus</i>)	VU	EN
	Black and Rufous elephant shrew (<i>Rhynchocyon petersi</i>)	LC	VU
Bird	Spotted ground thrush (<i>Geokichla guttata</i>)	EN	EN
	Sokoke Pipit (<i>Anthus sokokensis</i>)	EN	EN

*: Classification under the Wildlife Conservation and Management Act

Source: JICA Design Team

4) Kaya Kiteje

Kaya Kiteje was gazetted as natural monument in 1992 under the Antiquities and Monuments Act, Notice No. 200. It is located at the west coast of Mombasa SEZ with an area of around 10 ha. It is around 500 m from the transmission line.

ii) Ecosystem

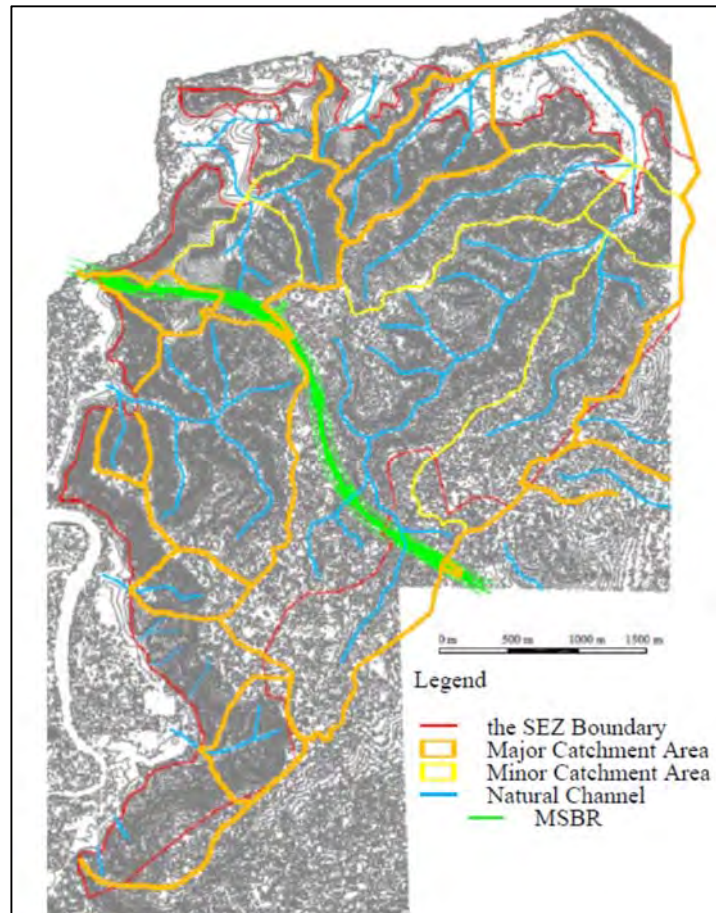
The natural environmental of the Project area has been degraded and altered over the years through cultivation and other human activities. However, some forests do remain in Kuwale County hosting wildlife. Tidal flats and mangroves are distributed along the Mombasa SEZ coast. Figure 11.2.10 shows the forest and mangrove areas near the Project area.



Source: JICA Design Team

Figure 11.2.10 Forest and Mangrove Areas near the Project Area

There are no perennial rivers inside Mombasa SEZ. During heavy rain, rainwater will flow through natural channels and eventually into the bay. Figure 11.2.12 shows the catchment area of Mombasa SEZ.



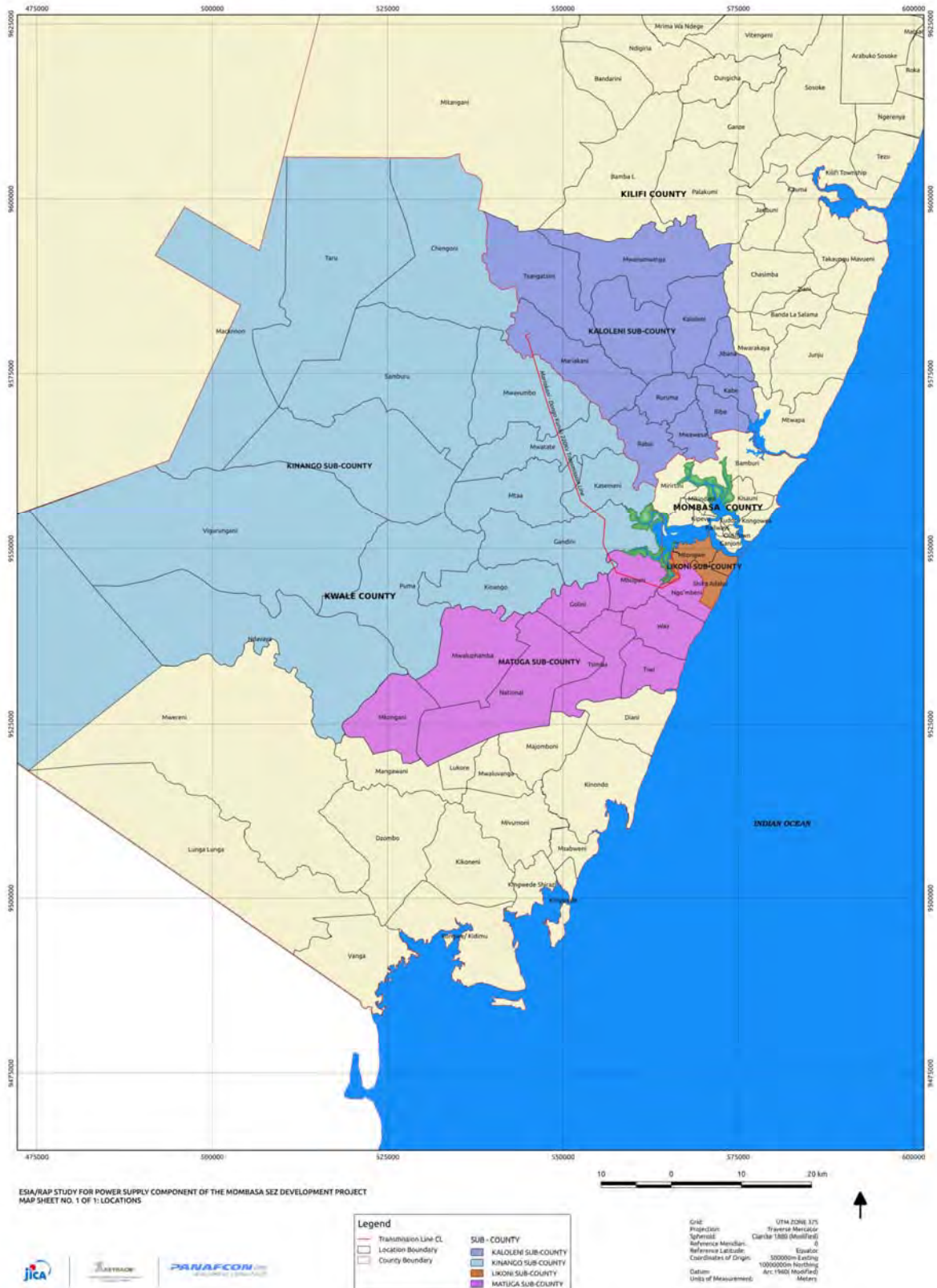
Source: JICA Design Team

Figure 11.2.12 Catchment Area of Mombasa SEZ

(6) Social Environment

i) Administrative boundary

Figure 11.2.13 shows the administrative boundary around the Project site.



Source: JICA Design Team

Figure 11.2.13 Administrative Boundary around the Project Site

ii) Land use

The main land use in the Project area is agriculture and grazing. Population density ranges between 67-189 person/km².

iii) Social infrastructure and services

There are several roads that intersect with the transmission line including Mombasa Road (109) and Southern Bypass Road. A railway line used by the Mombasa-Nairobi Standard Gauge Railway also intersect with the transmission line. The transmission line traverses inside school boundary near DK11 (Kiteje Secondary School).

iv) Tribe

The majority of people in the Project area belong to the Mijikenda tribe. The Mijikenda tribe is comprised to 9 sub-tribes namely: Kauma, Chonyi, Jibana, Giriama, Kamabe, Ribe, Rabai, Duruma and Digo. The Mijikenda tribe is considered to have migrated to the coastal area of Kenya around 300 years ago from south of Somalia. Agriculture and fishing are their main means of livelihood. Around 5%¹ of the Kenya population belong to the Mijikenda tribe.

v) Livelihood and living standard

Socioeconomic survey was conducted in April 2018 targeting the Project affected households (607 HH). The main findings of the survey are as follows:

- Main occupation was retail (24%), agriculture (19%) and employment in formal sector (16%). Around 30% were unemployed. Around half had monthly income below 3,000 KSh.
- Most houses were not connected to public electricity, water and sewage facilities.
- Around 70% were Muslims and the rest Christians.
- Around 50% left school at primary level and around 40% had no education.

vi) Cultural heritage

There are two tree shrines located inside the transmission line wayleave. The trees are used by locals for prayer, worship and so on.

¹ Minority Rights Group International (2005), Kenya: Minorities, Indigenous Peoples and Ethnic Diversity



Source: JICA Design Team

Figure 11.2.14 One of the Tree Shrine inside the Transmission Line Wayleave

vii) Language / literacy

The main language used by the locals is Kiswahili. According to MDG Status Report for Kenya 2007, literacy rate of 15 years and above in the coastal provinces are 72.2% (male) and 57.5% (female).

11.2.3 Legal and Institutional Framework

(4) Environmental policy

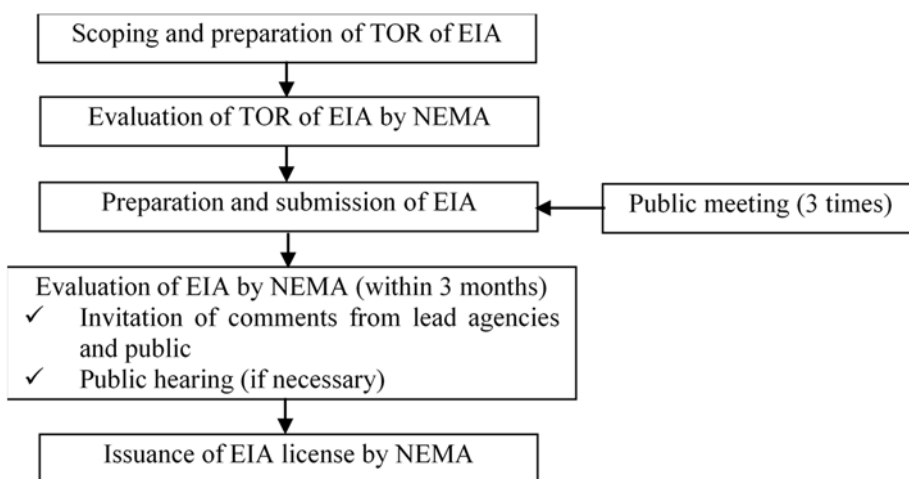
The Kenya Government's National Environment Policy, 2013 aims at integrating environmental aspects into national development plans. The objectives of the national environmental policy include:

- Provide a framework for an integrated approach to planning and sustainable management of Kenya's environment and natural resources.
- Strengthen the legal and institutional framework for good governance, effective coordination and management of the environment and natural resources.
- Ensure sustainable management of the environment and natural resources, such as unique terrestrial and aquatic ecosystems, for national economic growth and improved livelihoods.
- Promote and support research and capacity development as well as use of innovative environmental management tools such as incentives, disincentives, total economic valuation, indicators of sustainable development, Strategic Environmental Assessments (SEAs), Environmental Impact Assessments (EIAs), Environmental Audits (EA) and Payment for Environmental Services (PES).
- Promote and enhance cooperation, collaboration, synergy, partnerships and participation in the protection, conservation, sustainable management of the environment and natural resources.
- Ensure inclusion of cross-cutting and emerging issues such as poverty reduction, gender, disability, HIV&AIDS and other diseases in the management of the environment and natural resources.
- Promote domestication, coordination and maximization of benefit from Strategic Multilateral Environmental Agreements (MEAs).

(5) EIA system

As per Section 58 of the Environmental Management and Coordination Act 1999, projects prescribed under the Second Schedule² of the Act are required to obtain environmental approval from NEMA. The Second Schedule classifies projects into “Low Risk”, “Medium Risk”, and “High Risk”, and projects classified under “High Risk” must undergo an EIA study and other lesser risk projects will be subject to the decision of NEMA whether an EIA study is required or not. Since the high-voltage transmission line is classified as “High Risk” projects, the power component of this Project will automatically require an EIA study. The procedures of the EIA study are stipulated in the Environmental (Impact Assessment and Audit) Regulations 2003.

The National Environment Management Authority (NEMA) is the EIA authority, which is responsible for evaluation, publication, issuing of license and so on. Figure 11.2.15 shows the main procedures of EIA. The TOR of this project has been approved by NEMA on March 1st, 2018, and subsequently the EIA report was submitted on January 29th, 2019.



Source: Prepared based on Environmental (Impact Assessment and Audit) Regulations 2003

Figure 11.2.15 Main Procedures of EIA (in case of High Risk Projects)

Table 11.2.8 analyzes the gaps between Kenyan law and JICA Guidelines for Environment and Social Consideration (2010).

² The Second Schedule was amended in May 2016 through Legal Notice No. 150.

Table 11.2.8 Results of Gap Analysis

	JICA Environmental Guideline	Kenyan law	Gaps and Project's gap filling policy
General	Environmental impacts that may be caused by projects must be assessed and examined in the earliest possible planning stage. Alternatives or mitigation measures to avoid or minimize adverse impacts must be examined and incorporated into the project plan.	Projects that require EIA is listed in Second Schedule of EMCA. High-voltage transmission line project is categorized as "High risk" hence it is necessary to conduct EIA in the planning stage. As per Article 16 of the EIA regulation, it is necessary to consider alternatives and mitigation measures.	There is no notable gap. The Project will consider alternatives and mitigation measures during the planning process.
Information disclosure	EIA reports must be written in the official language or in a language widely used in the country in which the project is to be implemented. When explaining projects to local residents, written materials must be provided in a language and form understandable to them.	There is no specific regulation on EIA report language but English is the norm as it is the official language. There is no regulation on language use for when explaining projects to local residents.	The EIA report will be prepared in English. Explanation and written materials for local residents will be provided in Kiswahili, which is the locally common language.
	EIA reports are required to be made available to the local residents of the country in which the project is to be implemented. The EIA reports are required to be available at all times for perusal by project stakeholders such as local residents and copying must be permitted.	As per Article 21 of the EIA regulation, the public have the opportunity to submit oral or written comments on the EIA during the EIA evaluation period, which will be announced through gazette and newspaper with nationwide circulation. The announcement will include the time and place where the EIA can be reviewed. There is no specific regulation on the availability period of EIA and permission for copy.	While there is no specific regulation on the availability period of EIA and permission for copy, the EIA report will be disclosed continuously through KETRACO website.
Consultation	For projects with a potentially large environmental impact, sufficient consultations with local stakeholders, such as local residents, must be conducted via disclosure of information at an early stage, at which time alternatives for project plans may be examined. The outcome of such consultations must be incorporated into the contents of project plans.	As per Article 17 of the EIA regulation, it is necessary to hold at least 3 public meetings during the EIA preparation stage. However, there is no specific regulations on information disclosure and when to hold the meetings.	While there are no specific regulations on information disclosure and when to hold the meetings, the Project will start to hold meetings with relevant stakeholders from the early planning stage to explain and discuss the Project plans.

	JICA Environmental Guideline	Kenyan law	Gaps and Project's gap filling policy
	In preparing EIA reports, consultations with stakeholders, such as local residents, must take place after sufficient information has been disclosed. Records of such consultations must be prepared.	As per Article 17 of the EIA regulation, it is necessary to hold at least 3 public meetings during the EIA preparation stage. Minutes of the meeting is required to be submitted to NEMA.	No notable gap.
	Holding consultations is highly desirable, especially when the items to be considered in the EIA are being selected, and when the draft report is being prepared.	It is required to consult stakeholders during the EIA preparation and also hold public hearing during EIA evaluation as necessary.	While there are no specific regulations on when to hold the consultations, public meetings will be held at the scoping and draft report stages.
Assessment items	The impacts to be assessed with regard to environmental and social considerations include impacts on human health and safety, as well as on the natural environment, that are transmitted through air, water, soil, waste, accidents, water usage, climate change, ecosystems, fauna and flora, including trans-boundary or global scale impacts. These also include social impacts, including migration of population and involuntary resettlement, local economy such as employment and livelihood, utilization of land and local resources, social institutions such as social capital and local decision-making institutions, existing social infrastructures and services, vulnerable social groups such as poor and indigenous peoples, equality of benefits and losses and equality in the development process, gender, children's rights, cultural heritage, local conflicts of interest, infectious diseases such as HIV/AIDS, and working conditions including occupational safety.	Second Schedule of the EIA regulation describes the items to be considered such as: <ul style="list-style-type: none"> Natural environment (e.g. biodiversity, wildlife, wetland, water resource, hydrology, vulnerable ecosystem) Social environment (e.g. economy, social, health, migration/immigration, social infrastructure, culture, landscape, amenity, land use) 	There is no notable gap. The Project will nevertheless cover the JICA environmental items.
	In addition to the direct and immediate impacts of projects, their derivative, secondary, and cumulative impacts as well as the impacts of projects that are indivisible from the project are also to be examined and assessed to a reasonable extent. It is also	As per Article 18 of the EIA regulation, it is necessary to consider secondary, and cumulative impacts but does not mention impacts of projects that are indivisible from the	Impacts of Projects that are indivisible from the project will be considered as necessary. Impact will also be considered throughout the life cycle of the Project including pre-construction, construction and operation stages.

	JICA Environmental Guideline	Kenyan law	Gaps and Project's gap filling policy
	desirable that the impacts that can occur at any time throughout the project cycle should be considered throughout the life cycle of the project.	project and to consider impacts throughout the life cycle of the project.	
Monitoring, grievance	Project proponents etc. should make efforts to make the results of the monitoring process available to local project stakeholders.	There is no regulation on disclosure of monitoring results.	Monitoring results are planned to be disclosed through KETRACO website.
	When third parties point out, in concrete terms, that environmental and social considerations are not being fully undertaken, forums for discussion and examination of countermeasures are established based on sufficient information disclosure, including stakeholders' participation in relevant projects. Project proponents etc. should make efforts to reach an agreement on procedures to be adopted with a view to resolving problems.	As per Article 39 of the EIA regulation, the public may, after showing reasonable cause in writing, petition the Authority to cause an audit to be carried out on any project.	KETRACO will establish Project Implementation Team, which will include environment and social officers. The team will have the role of responding against any grievances.
Ecosystem and biota	Projects must not involve significant conversion or significant degradation of critical natural habitats and critical forests.	As per Second Schedule of the EIA regulation, it is necessary to assess impacts on vulnerable ecosystem.	While there are no specific regulations on ecosystem and biota, the Project will confirm the presence and status of critical natural habitats and critical forests through field surveys and expert consultations. In case any are identified, the Project will consider to the extent possible to avoid any impacts.
Indigenous Peoples	Any adverse impacts that a project may have on indigenous peoples are to be avoided when feasible by exploring all viable alternatives. When, after such an examination, avoidance is proved unfeasible, effective measures must be taken to minimize impacts and to compensate indigenous peoples for their losses.	The 2010 Kenya Constitution protects the rights of minority or marginalized communities such land rights and political participation.	While there are no specific regulations on indigenous peoples, the Project will confirm the presence and status of indigenous peoples through field reconnaissance and interviews. In case any are identified, the Project will consider to the extent possible to avoid any impacts.

Source: JICA Design Team

(6) Other environmental related laws and regulations

Table 11.2.9 shows environmental related laws and regulations relevant to the Project.

Table 11.2.9 Environmental Related Laws and Regulations Relevant to the Project

	Law/regulation	Relevance to the Project
Natural environment	Environmental Management and Coordination (Wetlands, Riverbanks, Lake Shores and Sea Shore Management) Regulation 2009	Regulates wetland conservation and management. Requires permission in case of extraction of resources from wetlands.
	Wildlife Conservation and Management Act 2013	Prescribes protected areas and wildlife flora/fauna.
	Forest Conservation and Management Act 2016	Regulates forest conservation and management. Requires permission in case of cutting of forests.
	Water Act 2002	Regulates water resource conservation and usages. Requires permission in case of water extraction of from water resources.
	National Museums and Heritage Act 2006	Regulates protection of Kaya.
Social environment	Land Act 2012	Regulates land acquisition process and compensation.
	Occupational Safety and Health Act 2007	Regulates occupational safety and registration for construction premises.
	Employment Act 2007	Regulates child labor. Prohibits employment of child under the age of 13.
	HIV and AIDS Prevention and Control Act 2006	Regulates HIV/AIDS education and testing.
Pollution	Environmental Management and Coordination Act (Air Quality) Regulations 2014	Prescribes standards for ambient air, industrial emissions, vehicle emission and requirement for emission license.
	Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009	Prescribes standards for ambient noise, construction site boundary noise/vibration, night-time construction, vehicle noise and requirement for noise/vibration license.
	Environmental Management and Coordination (Water Quality) Regulations 2006	Prescribes standards for effluent water, domestic water use and requirement for effluent license.
	Environmental Management and Coordination (Waste Management) Regulations 2006	Regulates waste transportation, treatment/disposal.

Source: JICA Design Team

(7) Referred national/international standards**i) Air quality**

The Environmental Management and Coordination (Air Quality) Regulations 2014 prescribes ambient air quality standards for 12 substances. Table 11.2.10 shows the Kenyan standards applicable to the Project and corresponding WHO guideline values.

Table 11.2.10 Kenyan Air Quality Standards (SO_x, NO_x, PM₁₀) and WHO Guideline Values

	Unit	Kenya standard* ¹				WHO Guideline Value* ²		
		Time weighted ave.	Industrial	Residential, rural, other area	Controlled areas	Interim target 1	Interim target 2	Guideline
SO _x	μg/m ³	Annual	80	60	15	-	-	-
		24 hours	125	80	30	125 (SO ₂)	50 (SO ₂)	20 (SO ₂)
NO _x	μg/m ³	Annual	80	60	15	-	-	-
		24 hours	150	80	30	-	-	-
NO ₂	μg/m ³	Annual	150	0.05 ppm	-	-	-	40
		24 hours	100	0.1 ppm	-	-	-	-
PM ₁₀	μg/m ³	Annual	70	50	50	70	50	20
		24 hours	150	100	75	150	100	50

*1: Environmental Management & Co-ordination Act (Air Quality) Regulations, 2014

*2: World Health Organization (WHO). Air Quality Guidelines Global Update, 2005

Source: JICA Design Team

ii) Noise/vibration

The Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009 prescribes various noise standards. Table 11.2.11 shows the Kenyan ambient noise standard and corresponding WHO guideline values. Table 11.2.12 shows the maximum permissible noise levels for construction sites.

Table 11.2.11 Kenyan Ambient Noise Standard and Corresponding WHO Guideline Values (LAeq)

	Kenya standard* ¹		WHO guideline value* ²	
	Day (6:01-20:00)	Night (20:01-6:00)	Day (7:00-22:00)	Night (22:00-7:00)
Silent zone	40	35	-	-
Places of worship	40	35	-	-
Residential: indoor	45	35	-	-
Residential: outdoor	50	35	55	45
Mixed residential	55	35	-	-
Commercial	60	35	70	70

*1: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

*2: Guidelines for Community Noise, World Health Organization (WHO), 1999

Source: JICA Design Team

Table 11.2.12 Kenyan Maximum Permissible Noise Levels for Construction Sites

	Kenya standard* ¹	
	Day (6:01-20:00)	Night (20:01-6:00)
Health facilities, educational institutions, homes for disabled	60	35
Residential	60	35
Others	75	65

*1: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

Source: JICA Design Team

For vibration, the Kenyan regulation sets maximum permissible levels of $f0.5$ cm/sec for construction sites. Under Japanese regulation (Vibration Regulation Act), vibration standards are set for certain prescribed construction activities such as pile driving, where the maximum permissible level is 75 dB at construction site boundary. The Vibration Regulation Act also prescribes road-side vibration standards as shown in Table 11.2.13.

Table 11.2.13 Japanese Road-Side Vibration Standard

	Daytime (dB)	Nighttime (dB)
Type 1 area	65	60
Type 2 area	70	65

Source: Vibration Regulation Act

iii) Water quality

The Environmental Management and Coordination (Water Quality) Regulations 2016 prescribes standards for domestic water source and effluent discharge to the environment as shown in Tables 11.2.14 and 11.2.15 respectively.

Table 11.2.14 Kenyan Water Quality Standard for Domestic Water Source

Parameter	Guide Value (max allowable)
pH	6.5 – 8.5
Suspended solids	30 (mg/L)
Nitrate-NO ₃	10 (mg/L)
Ammonia -NH ₃	0.5 (mg/L)
Nitrite -NO ₂	3 (mg/L)
Total Dissolved Solids	1200 (mg/L)
Scientific name (<i>E.coli</i>)	Nil/100 ml
Fluoride	1.5 (mg/L)
Phenols	Nil (mg/L)
Arsenic	0.01 (mg/L)
Cadmium	0.01 (mg/L)
Lead	0.05 (mg/L)
Selenium	0.01 (mg/L)
Copper	0.05 (mg/L)
Zinc	1.5 (mg/L)
Alkyl benzyl sulphonates	0.5 (mg/L)
Permanganate value (PV)	1.0 (mg/L)

Source: Environmental Management & Co-ordination Act (Water Quality) Regulations, 2016

Table 11.2.15 Kenyan Effluent Discharge Standard

Parameter	Max Allowable(Limits)
1,1,1-trichloroethane (mg/l)	3
1,1,2-trichloroethane (mg/l)	0.06
1,1-dichloroethylene	0.2
1,2-dichloroethane	0.04
1,3-dichloropropene (mg/l)	0.02
Alkyl Mercury compounds	Nd
Ammonia, ammonium compounds, NO ₃ compounds and NO ₂ compounds (Sum total of ammonia-N times 4 plus nitrate-N and Nitrite-N) (mg/l)	100
Arsenic (mg/l)	0.02
Arsenic and its compounds (mg/l)	0.1
Benzene (mg/l)	0.1
Biochemical Oxygen Demand (BOD 5days at 20 °C) (mg/l)	30
Boron (mg/l)	1.0
Boron and its compounds – non marine (mg/l)	10
Boron and its compounds –marine (mg/l)	30
Cadmium (mg/l)	0.01
Cadmium and its compounds (mg/l)	0.1
Carbon tetrachloride	0.02
Chemical Oxygen Demand (COD) (mg/l)	50
Chromium VI (mg/l)	0.05
Chloride (mg/l)	250
Chlorine free residue	0.10
Chromium total	2
cis -1,2- dichloro ethylene	0.4
Copper (mg/l)	1.0
Dichloromethane (mg/l)	0.2
Dissolved iron (mg/l)	10
Dissolved Manganese(mg/l)	10
E.coli (Counts / 100 ml)	Nil
Fluoride (mg/l)	1.5
Fluoride and its compounds (marine and non-marine) (mg/l)	8
Lead (mg/l)	0.01
Lead and its compounds (mg/l)	0.1
n-Hexane extracts (animal and vegetable fats) (mg/l)	30
n-Hexane extracts (mineral oil) (mg/l)	5
Oil and grease	Nil
Organo-Phosphorus compounds (parathion,methyl parathion,methyl demeton and Ethyl parantropheny phenylphosphorothroate, EPN only) (mg/l)	1.0
Polychlorinated biphenyls, PCBs (mg/l)	0.003
pH (Hydrogen ion activity---marine)	5.0-9.0
pH (Hydrogen ion activity--non marine)	6.5-8.5
Phenols (mg/l)	0.001
Selenium (mg/l)	0.01
Selenium and its compounds (mg/l)	0.1
Hexavalent Chromaum VI compounds (mg/l)	0.5
Sulphide (mg/l)	0.1
Simazine (mg/l)	0.03
Total Suspended Solids, (mg/l)	30
Tetrachloroethylene (mg/l)	0.1
Thiobencarb (mg/l)	0.1
Temperature (in degrees celcius) based on ambient temperature	± 3
Thiram (mg/l)	0.06
Total coliforms (counts /100 ml)	30
Total Cyanogen (mg/l)	Nd
Total Nickel (mg/l)	0.3
Total Dissolved solids (mg/l)	1200
Colour in Hazen Units (H.U)	15
Detergents (mg/l)	Nil
Total mercury (mg/l)	0.005
Trichloroethylene (mg/l)	0.3
Zinc (mg/l)	0.5
Whole effluent toxicity	
Total Phosphorus (mg/l)	2 Guideline value
Total Nitrogen	2 Guideline value

Source: Environmental Management & Co-ordination Act (Water Quality) Regulations, 2016

(8) Environmental-related permits required in the Project

Table 11.2.16 shows the environmental-related permits required in the Project.

Table 11.2.16 Environmental-related Permits Required in the Project

	Activity	Statute	Type of permission	Competent Authority	Responsible organization	Period	Duration
1	Construction and operation	EMCA	EIA License	NEMA	KETRACO	Upon approval of ESIA report	90 days from date of submission of ESIA Report
2	Cutting of forest trees between DK6-7	Forest Management and Conservation Act, 2016	Permission to cut forest trees	KFS	KETRACO	Before forest clearance works	Indefinite
3	Construction of overhead transmission line tower (approx. 45 m height)	Civil Aviation Act, 2013	Permission to install overhead transmission line tower	Kenya Civil Aviation Authority (KCAA)	KETRACO	After D/D study	Indefinite
4	Construction activities	Occupational Safety and Health (OSHA) Act, 2007	Registration of premises	Directorate of Occupational Safety and Health Services (DOSHS)	Contractor	Before commencement of construction	1-4 weeks
5	Construction and operation of transmission line and substation in 3 different counties	County Governments Act, 2012	Clearance of ESIA report	Kilifi, Kwale, Mombasa County	KETRACO	Upon approval of ESIA report	Indefinite
6	Setting up of construction camp sites	EMCA	EIA License	NEMA	Contractor	Before commencement of construction	1-1.5 months
7	Water abstraction from water resource (if required)	Water Act, 2012	Permission to abstract water	Water Resources Authority (WRA)	Contractor	Before commencement of construction	1-1.5 months
8	Drilling of boreholes (if required)	EMCA	EIA License	NEMA	Contractor	Before commencement of construction	1-1.5 months

	Activity	Statute	Type of permission	Competent Authority	Responsible organization	Period	Duration
9	Storage, transport and disposal of waste including hazardous waste	EMCA	Waste License	NEMA	Contractor	Before commencement of construction	1-1.5 months
10	Blasting of construction site bedrocks (if required)	Explosives Act, 2016	Blasting permit	Mines and Geology Department, Ministry of Environment and Forestry	Contractor	Before blasting works	1 month
11	Emission of excessive noise/vibration (if required)	Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009	Permit to emit excess noise/vibration	NEMA	Contractor	Before excessive noise/vibration works	2 days
12	Effluent from temporary construction facilities	Environmental Management and Coordination (Water Quality) Regulations 2006	Discharge permit	NEMA	Contractor	Before commencement of construction	Indefinite

Source: JICA Design Team

(9) International convention

Following are international conventions ratified by Kenya that are relevant to the Project.

- Convention on Biological Diversity
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
- United Nations Framework Convention on Climate Change
- Convention concerning Minimum Age for Admission to Employment
- Stockholm Convention on Persistent Organic Pollutants
- The Convention on the Conservation of Migratory Species of Wild Animals

11.2.4 Alternative Analysis

(4) No Project option

The no project alternative has been considered where the development of the 220 kV transmission line from Mariakani-Dongo Kundu would not be carried out. One possible option will be to use the existing 132 kV transmission line network in Mombasa, but considering future demand of the Mombasa area, this network does not have sufficient capacity to support demand of Mombasa SEZ. Besides, the Mombasa SEZ will require more reliable 220 kV power supply rather than 132 kV. An alternative option may be to construct a new power station inside or near Mombasa SEZ, but that will likely entail greater environmental and social impacts due to the following reasons:

- A new power station will generate additional pollution risks such as through wastewater discharge, stack emission and hazardous wastes.
- A new power station may further stress the sensitive natural environment in the Dongo Kundu area (e.g. mangroves, mud flats and creeks) through accumulative impacts with the Mombasa SEZ.
- A new power station will require larger resettlement and hence greater social impacts.

In conclusion, the proposed Project is considered as the most appropriate option.

(5) Alternative analysis of transmission line route

The following alternative analysis was conducted in the process of finalizing the transmission line route:

- Alternative analysis of shortest transmission line route between Mariakani substation and Mombasa SEZ substation
- Alternative analysis of transmission line outside Mombasa SEZ area including route analysis to avoid Kaya Gandini
- Alternative analysis inside Mombasa SEZ area

Results of each analysis are explained below:

i) Alternative analysis of shortest transmission line route between Mariakani substation and Mombasa SEZ substation

The transmission line route was planned by referring to KETRACO’s route selection criteria. One of its priority criteria is to select as far as possible the shortest route between the pre-determined substations. Therefore, as an initial step, the following two routes between Mariakani substation and Mombasa SEZ substation was considered.

- Option A: transmission line with the shortest distance from Mariakani substation and Mombasa SEZ substation
- Option B: transmission line with the shortest distance from Mariakani substation and Mombasa SEZ substation that avoids mangrove area

Figure 11.2.16 shows the alignment of the two routes (Option A and B).



Source: JICA Design Team

Figure 11.2.16 Alignment of Option A (Blue Line) and Option B (Red Line)

Table 11.2.17 compares the two transmission line options based on natural and social impacts and technical difficulties.

Table 11.2.17 Alternative Analysis of Options A and B

No	Project Aspect	Option A	Option B
1	Route	Mariakani substation – Mombasa SEZ substation	Mariakani substation – south Mombasa SEZ -Mombasa SEZ S/S.
2	Distance	Approx. 38 km	Approx. 50 km
3	Land use	Agriculture	Agriculture
4	Impact on natural environment	Approx. 24 ha of forest clearance necessary including mangrove	Approx. 4 ha of forest clearance necessary

5	Impact on social environment	Resettlement of around 70 HH is estimated.	Resettlement of around 70 HH is estimated.
6	Technical difficulties and other issues	Need to cross over a mangrove/creek area	No notable difficulties
7	Recommended option	Not recommended for the following reasons: - It will require large area of forest clearance including mangroves - Some technical issues as transmission line will need to cross over a mangrove/creek area	Recommended for the following reasons: - Area of forest clearance is less the Option A - No need to cut mangrove - No technical difficulties

Source: JICA Design Team

Based on the alternative analysis, Option B was selected as the suitable transmission line route mainly as it requires less forest clearance and no crossing of mangrove/creek area.

ii) Alternative analysis of transmission line outside Mombasa SEZ area

After selecting Option B, the route was studied in more detail to identify any issues. One major issue was encountered at around 25 km from the Mariakani substation, in which a primary school (Migunemi Primary School) was found inside the transmission line corridor. Since KETRACO route selection criteria recommends avoiding such public properties, the following two alternative routes were considered that avoids Migunemi Primary School (see Figure 11.2.17 for the alignment of the two routes):

- Option A: The route avoids Migunemi Primary School by diverting to the east direction. The angle of diversion was set in a manner to avoid another school (Chizini Primary School) located in the vicinity. In addition, the route was planned to minimize transmission line distance and angle point.
- Option B: The route avoids Migunemi Primary School by diverting to the west direction. The angle of diversion was set in a manner to avoid another school (Gandini Central Primary School) located in the vicinity. In addition, the route was planned to minimize transmission line distance and angle point.



Source: JICA Design Team

Figure 11.2.17 Two Alternative Route Options to avoid Migunemi Primary School

Table 11.2.18 compares the two route options based on natural and social impacts and technical difficulties.

Table 11.2.18 Alternative Analysis of Route Options to avoid Miguneni Primary School

No	Project Aspect	Option A	Option B
1	Distance	Approx. 8 km	Approx. 8 km
2	Impact on natural environment	Approx. 10 ha of forest clearance is necessary	Approx. 3 ha of forest clearance is necessary
3	Impact on social environment	Less than 10 structures identified along the route	More than 10 structures identified along the route
4	Technical difficulties and other issues	No notable difficulties.	The route crosses the same public road multiple times and also at small angles which needs to be avoided as per KETRACO criteria.
5	Recommended option	Recommended for the following reasons: <ul style="list-style-type: none"> - Displacement/relocation of homestead/structures will be less than Option B. - No issues on road crossing as in Option B. 	Not recommended for the following reasons: <ul style="list-style-type: none"> - Displacement/relocation of homestead/ structures will be greater than Option A. - It requires multiple crossing of the same public road and also crossing at small angles which needs to be avoided as per KETRACO route selection criteria.

Source: JICA Design Team

The critical difference between Options A and B is that Option B requires multiple crossing of the same public road which needs to be avoided as per KETRACO route selection criteria. While multiple crossing can be avoided by bending the route at a steeper angle, this will either significantly extend the length of the transmission line or create more angle points. Therefore, Option A was selected as the suitable option. After Option A was selected, it was established through field survey that DK6 was touching the edge of Kaya Gandini, which is a gazetted natural monument site. An alternative route to avoid Kaya Gandini was therefore considered. Figure 11.2.18 shows the alignment of the two options. Table 11.2.19 compares the two route options based on natural and social impacts and technical difficulties.



Source: JICA Design Team

Figure 11.2.18 Alternative Route Options along Kaya Gandini
 (Left: kaya affecting route, right: kaya avoiding route)

Table 11.2.19 Alternative Analysis of Route Option to avoid Kaya Gandini

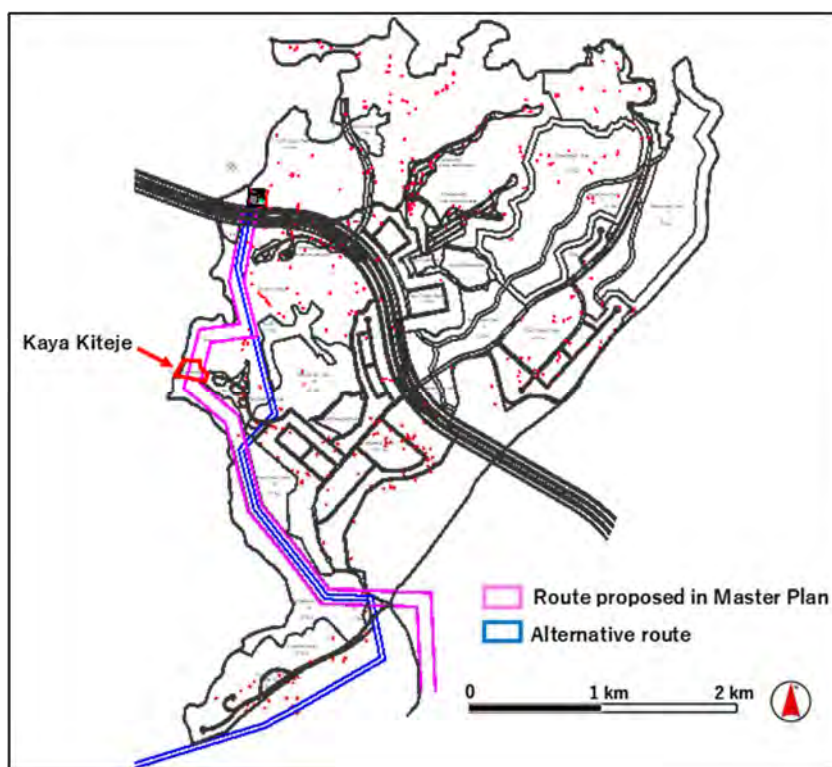
No	Project Aspect	Option A (kaya affecting route)	Option B (kaya avoiding route)
1	Overlapping area with Kaya Gandini	Approx. 0.2 ha	No overlap
2	Impact on natural environment	Some trees inside Kaya Gandini will need to be cut.	Some trees will need to be cut but it will be outside Kaya Gandini.
3	Impact on social environment	<ul style="list-style-type: none"> It will result in partial loss of cultural site used by community. It will occupy more land area than Option B. 	<ul style="list-style-type: none"> It will result in no loss of cultural site used by community. It will occupy less land area than Option A.
4	Technical difficulties and other issues	No notable difficulties.	Need to install one extra tower but technically not an issue but the cost will increase.
5	Recommended option	Not recommended for the following reasons: <ul style="list-style-type: none"> It will overlap with Kaya Gandini, resulting in loss of trees and cultural site inside Kaya Gandini. 	Recommended for the following reasons: <ul style="list-style-type: none"> Although it will be more costly by installing an extra tower, natural and social impacts are less than Option A and as there will be no technical issues.

Source: JICA Design Team

In conclusion, the route to avoid Kaya Gandini (Option B) was selected as natural and social impacts are less than Option A and due to no technical issues.

iii) Alternative analysis of transmission line inside Mombasa SEZ area

The transmission line route inside SEZ basically follows the route proposed in the Mombasa SEZ Master Plan. However, the route was identified to pass over a kaya (Kaya Kiteje), which socially is not recommended. Therefore, a new alternative route was considered as shown in Figure 11.2.19. The alternative route was set in a manner so that it will not affect the planned land use under the Mombasa SEZ Master Plan. Table 11.2.20 shows the results of the alternative analysis. In conclusion, the newly proposed route was analyzed to be the better option, firstly as it avoids the kaya and also due to less number of households in the wayleave, and less number of angle points.



Source: JICA Design Team

Figure 11.2.19 Transmission Line Route Alternative inside Mombasa SEZ

Table 11.2.20 Alternative Analysis of Route Options inside Mombasa SEZ

No	Project Aspect	Master Plan route	Alternative route
1	Distance	Approx. 4.3 km	Approx. 4 km
2	Impact on natural environment	transmission line will pass over Kaya area (Kaya Kiteje) and tall trees inside the Kaya will need to be cut.	Does not pass over Kaya area (Kaya Kiteje avoided) and tall vegetation is limited along the route.
3	Impact on social environment	Four structures identified inside the transmission line.	One structure identified inside the transmission line.
4	Technical difficulties and other issues	<ul style="list-style-type: none"> • More angle points than alternative route. • Steeper angle points than alternative route which needs to be avoided as much as possible as per KETRACO criteria. 	Less angle points than Master Plan route.
5	Recommended option	Not recommended for the following reasons: <ul style="list-style-type: none"> - Will pass over Kaya and require cutting of Kaya trees - Displacement/relocation of homestead/structures will be more than alternative route. - More angle points and steeper angle points than alternative route. 	Recommended for the following reasons: <ul style="list-style-type: none"> - Does not pass over Kaya - Displacement/relocation of homestead/structures less than Master Plan route. - Less angle points than Master Plan route.

Source: JICA Design Team

11.2.5 Scoping and TOR of Environmental and Social Consideration Study

The TOR of the environmental and social consideration study was determined through scoping exercise. Table 11.2.21 shows the scoping results and TOR of environmental and social consideration study.

Table 11.2.21 Results of Scoping and TOR

No.	Item	Phase	Rating	Rationale	TOR of EIA study
1	Air pollution	C	B-	Construction works may cause air pollution such as through exhaust and fugitive dust emissions from construction vehicles / machines and heavy construction works.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Implement baseline air quality survey. • Identify construction air pollution sources. • Identify sensitive receptors.
		PC, O	D	There are no notable air pollution sources.	—
2	Water pollution	C	B-	Construction works may pollute surface/ground water through rainwater runoff and discharge of concrete wash water.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Implement baseline water quality survey. • Collect hydrological information around project area. • Identify construction water pollution sources. • Identify sensitive receptors.
		PC, O	D	There are no notable water pollution sources.	—
3	Soil pollution	C	B-	Oil spills and leaks from construction vehicles and machines may cause soil pollution.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Implement baseline soil quality survey. • Identify construction soil pollution sources.
		PC, O	D	There are no notable soil pollution sources.	—
4	Waste	PC	B-	Vegetation waste will be generated from forest clearance.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Review waste management practices of vegetation wastes.
		C	B-	Various construction wastes will be generated including excavated soil.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Identify type and volume of construction wastes • Review waste management facilities.
		O	B-	Waste will be generated from operation and maintenance activities.	<ul style="list-style-type: none"> • Identify type of operation and maintenance wastes • Review waste management facilities.

No.	Item	Phase	Rating	Rationale	TOR of EIA study
5	Noise and vibration	C	B-	Heavy construction works and movement of construction vehicles may cause noise and vibration nuisance.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Implement baseline noise survey. • Identify construction noise/vibration sources. • Identify sensitive receptors.
		PC, O	D	There are no notable noise/vibration sources.	—
6	Ground subsidence	PC, C, O	D	There are no activities that may cause ground subsidence.	—
7	Offensive odor	PC, C, O	D	There are no notable odor sources.	—
8	Bottom sediment	PC, C, O	D	There are no notable sediment pollution sources.	—
9	Conservation area	PC	D	There are no activities that may have adverse impact on conservation areas.	—
		C	B-	Construction works may affect Kaya Gandini and Mwaluganje Forest Reserve.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Collect information on Kaya Gandini and Mwaluganje Forest Reserve and consult with kaya elders
		O	D	There are no activities that may have adverse impact on conservation areas.	—
10	Ecosystem	PC	B-	Forest along the DK6-DK7 transmission line corridor will need to be cut.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Review existing information and conduct expert interview. • Implement flora/fauna survey. • Identify presence of threatened species. • Estimate area of forest clearance
		C	B-	Construction works may disturb wildlife along the DK6-DK7 forest area.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Review existing information conduct expert interview. • Implement flora/fauna survey. • Identify type of construction works that may affect wildlife.
		O	B-	transmission line generally have risk of bird collision and wildlife electrocution.	<ul style="list-style-type: none"> • Review existing information conduct expert interview. • Identify wildlife susceptible to collision and electrocution.
11	Hydrology	PC, C, O	D	While some sections of the transmission line will cross rivers, adverse impacts on river hydrology are not expected as no structures will be built inside the river.	—

No.	Item	Phase	Rating	Rationale	TOR of EIA study
12	Topography	C	D	While the topography at the substation site will change due to cut and fill works, such change is unlikely to entail any impacts.	—
		PC, O	D	There are no activities that may cause alteration of existing topography.	—
13	Resettlement	PC	B-	Some resettlement will be required but is not expected to be large scale.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Review compensation and assistance measures proposed in the RAP.
		C, O	D	Resettlement will not be required.	—
14	Vulnerable social groups	PC	B-	Vulnerable groups are susceptible to resettlement related impacts.	<ul style="list-style-type: none"> • Implement socioeconomic survey and identify vulnerable groups. • Review assistance measures proposed in the RAP.
		C, O	D	There are no activities that may affect vulnerable groups.	—
15	Indigenous/minority people	PC, C, O	C-	Uncertain whether there are any indigenous/minority people	<ul style="list-style-type: none"> • Literature review • Implement field reconnaissance and interviews
16	Livelihood, living environment	PC	B-	PAPs may lose income if not appropriately compensated and assisted.	<ul style="list-style-type: none"> • Implement socioeconomic survey • Identify factors that may result in income reduction. • Review assistance measures proposed in the RAP.
		C	B-	Construction works may restrict some livelihood activities.	<ul style="list-style-type: none"> • Implement socioeconomic survey • Identify factors that may result in income reduction. • Review assistance measures proposed in the RAP.
		O	D	There are no activities that may affect livelihood activities.	—
17	Land use	PC	B-	Land use at the substation site will change due to land acquisition for substation. There will be some restriction of land use along the transmission line corridor.	<ul style="list-style-type: none"> • Implement socioeconomic survey and identify current land use.
		C	B-	There will be temporary restriction in land use at the construction site.	<ul style="list-style-type: none"> • Implement socioeconomic survey and identify current land use.
		O	D	There are no activities that will require land use change.	—
18	Local resource	PC, C, O	D	There are no activities that may have adverse impacts on local resources.	—

No.	Item	Phase	Rating	Rationale	TOR of EIA study
19	Water use	C	D	No impacts are expected as transmission line construction (i.e. stringing works) will disturb only a small section of the rivers crossing the transmission line and will be short-term.	—
		PC, O	D	There are no activities that may affect water use.	—
20	Social infrastructures and services	PC	B-	Social infrastructures along the transmission line corridor may require relocation.	Implement socioeconomic survey and identify social infrastructures along the transmission line corridor.
		C	B-	Construction works may temporarily affect social infrastructures.	Implement socioeconomic survey and identify social infrastructures along the transmission line corridor.
		O	D	There are no activities that may have adverse impacts on social infrastructures and services.	—
21	Social institutions	PC, C, O	D	There are no activities that may affect social institution.	—
22	Misdistribution of benefit and losses	PC, C, O	D	There are no activities that may cause misdistribution of benefit and losses.	—
23	Local conflicts of interest	PC, C, O	D	There are no activities that may trigger local conflicts of interests.	—
24	Cultural heritage	PC	B-	Two tree shrines are located inside the transmission line corridor and may have to be cut.	<ul style="list-style-type: none"> Identify the height of the tree shrine. Consult tree shrine owners.
		C, O	D	There are no activities that may affect cultural heritage.	—
25	Landscape	PC, C, O	D	The Project will somewhat change the surrounding landscape but such change will not be of any significance because the area of interference of the transmission line will be minimal and the substation area will become an industrial area under the SEZ.	—
26	Gender	PC	B-	The Project may trigger gender issues due to the patriarchal nature of the society.	Implement socioeconomic survey and identify women HH that may be affected.
		C, O	D	There are no activities that may trigger gender issues.	—
27	Children's rights	C	B-	Construction contractor may exploit children for cheap labor.	<ul style="list-style-type: none"> Review applicable laws/regulations. Review child labour status in Kenya.
		PC, O	D	There are no activities that may trigger children's rights issues.	—

No.	Item	Phase	Rating	Rationale	TOR of EIA study
28	Infectious diseases (HIV/AIDS etc.)	C	B-	There is a certain risk of infectious diseases spreading through influx of construction workers.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Assess risk of infectious diseases.
		PC, O	D	The risk of spreading infectious diseases is low.	—
29	Occupational safety	C, O	B-	There is a certain risk of occupational accidents.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Identify high risk works related to transmission line construction and operation.
30	Accidents	C	B-	There is a certain risk of accidents (e.g. traffic accidents).	Identify type of works that may cause accidents.
		PC, O	D	The risk of accidents is low.	—
31	Climate change	PC, C, O	B-	Forest clearance along the transmission line may to some extent enhance global warming through loss of CO ₂ storage sources.	Asses impact on climate change by estimating area of forest clearance and consequent loss in carbon storage capacity.

A+/-: Significant positive/negative impact is expected, B+/-: Positive/negative impact is expected to some extent., C+/-: Extent of positive/negative impact is unknown., D: No impact is expected

PC: Pre-construction, C: Construction, O: Operation

Source: JICA Design Team

11.2.6 Results of Environmental and Social Consideration Study

(4) Air pollution

The main source of air pollution will be exhaust gas and fugitive dust emission especially from heavy construction works (e.g. cut and fill works) at the substation/access road. However, significant impacts are not anticipated as construction activities are temporary and intermittent in character. There may however be certain impacts on the few residential houses located in the vicinity of the construction site especially during dry weather where dust is more readily suspended. Strict air pollution control measure will therefore be required when working near residential houses.

(5) Water pollution

Water pollution may occur when large volume of soil from exposed construction areas are eroded and discharged to downstream surface water body via rainwater runoff. Such risk is highest at the substation/access road where soils will be exposed through cut and fill works. According to the catchment map of Mombasa SEZ area, there are no perennial streams in the downstream area. Rainwater runoff will flow through valleys and natural channels and eventually drain towards the extensive mud flat area in Port Reitz as shown in Figure 11.2.20.

Impacts on water quality will likely not be significant for the following reasons:

- Sediment load from rainwater runoff will not increase significantly from present as area of exposed soil is relatively high even as of now.

- The catchment area of the substation/access road is around 100 ha, whereas the area that will be developed for the substation/access road is around 5 ha. The sediment load from the substation/access road is therefore limited compared to the entire catchment area.
- Most of the rainwater from the substation/access road will eventually end-up in the downstream mud flat area. It is likely that most of the sediment will in the process settle before or after discharging to the mud flat area as runoff velocity reduces.



Source: JICA Design Team

Figure 11.2.20 Expected Passage of Rainwater Runoff from Substation/Access Road

Other sources of water pollution will be concrete wash water which in general has high pH levels. Hence if untreated concrete wash water is discharged it will raise the pH of the receiving water body, but significant impacts are unlikely as it will gradually be neutralized naturally.

(6) Soil pollution

Oil spill/leaks from construction vehicles/machines and fuel tanks may cause soil pollution. Risk of pollution will be high in case of using old and poorly-maintained vehicles/machines, using maintenance facilities with inadequate pollution control and on-site fueling activities. However, considering that the source of potential oil pollution is limited to construction vehicles/machines and fuel tanks, the extent of soil pollution will be limited to a relatively small area in case of oil spill/leaks events. Therefore, significant impacts are not expected

(7) Waste

Wastes will be generated throughout the Project period. As per Environmental Management and Coordination (Waste Management) Regulations 2006, wastes are required to be transported and treated/disposed through NEMA authorized firms.

Non-hazardous wastes are generally disposed at the county's waste disposal facility. Mombasa has two waste disposal sites namely: Kibarani and Mwakirunge. While Kibarani was closed recently, Mwakirunge is still under operation.

The main waste during pre-construction will be vegetation remains from forest clearance. However, disposal will not be required as they will be reused locally such as for fuel wood, furniture and building material. Therefore, no impacts are expected.

During construction, wastes such as excavated soil, packaging material, metal scrap and waste oil will be generated. In terms of volume, excavated soil will be most significant (around 11,600 m³), which is the top soil that will be removed during cutting works at the substation/access road. However, since top soil can be reused for other purposes (e.g. agriculture soil), disposal will not be required. Non-hazardous wastes that cannot be reused/recycled will be disposed at the county's waste disposal sites. In Mombasa there are two waste disposal sites namely Kibarani, Mwakirunge and Shonda. However, since Kibarani is now closed, wastes from the substation/access site can be disposed either at the Mwakirunge or Shondawaste disposal site. Due to the limited waste volume, this is not expected to be an issue. Hazardous wastes such as waste oil can be recycled through local NEMA authorized recycling firms. In conclusion, while significant waste impacts are not expected, it will be necessary to consult the county government waste authority when developing the Construction Waste Management Plan (CWMP).

Wastes during operation stage will be mainly from the substation such as domestic waste from control office and recovered waste oil from oil pits. No significant impacts are expected as the volume of these wastes are limited and can be readily accommodated by the county's waste disposal site. Hazardous wastes such as waste oil can be recycled through NEMA authorized recycling firms. Therefore, significant waste impacts are not expected.

(8) Noise/vibration

The main noise sources will be from construction vehicles/machines especially from pile driving works at the substation and transmission line towers. Noise impacts of pile driving works was predicted by assuming the use of hydraulic pile-driver, which has a source noise level of 108 dB (Sarsby R.W, 2000). Noise attenuation was calculated using the following standard noise attenuation formula:

$$LA_{eq} = LA_w - 8 - 20 \times \log_{10} r$$

LA_{eq}: Equivalent continuous A-weighted sound pressure Level

LA_w: Source power level

R: Distance from source

Table 11.2.22 shows the prediction results.

Table 11.2.22 Predicted Noise Attenuation of Hydraulic Pile-driver

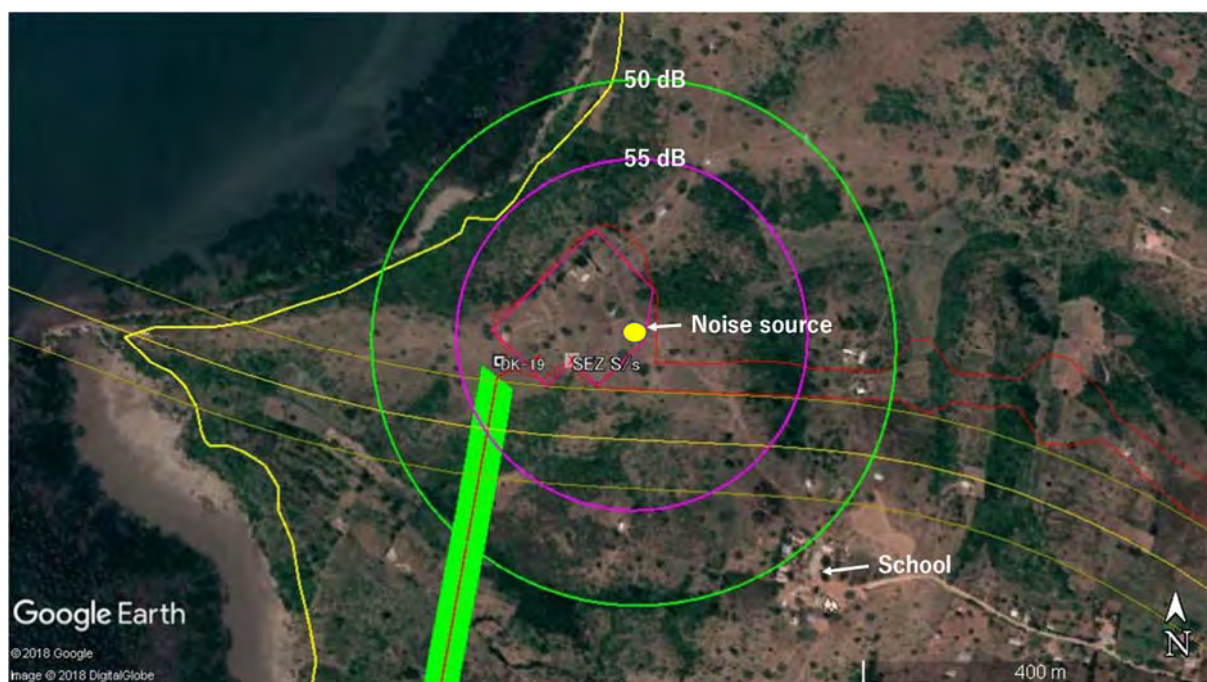
	Distance from noise source (m)								
	10	20	50	100	150	200	250	300	350
Noise level (dB)	80	74	66	60	57	54	52	51	49

Source: JICA Design Team

According to the prediction, noise from pile driving works will attenuate to around the same level as the Kenyan noise standard of 50 dB (residential daytime) at a distance of around 300 m. If compared with WHO guideline value (55 dB), noise level will attenuate below the guideline value at a distance of around 200 m.

In the case of substation, there will be some impacts within the 300 m to 200 m zone as there are several residential houses and a school located in the area as shown in Figure 11.2.21 (few residential houses that exist in the 0-200 m zone will not be present in the construction stage due to resettlement). While this may cause some nuisance to the residents and school, impacts are not significant considering that the level of exceedance is relatively minor and the fact that the duration of pile-driving works will be limited to few months. The noise level however could be slightly elevated than the prediction if vehicle noise from the Southern Bypass Road are high.

Similar noise levels will be experienced during the construction of the transmission line towers but impacts will be less, as pile-driving works will be of much shorter duration (i.e. 1-2 weeks).



Source: JICA Design Team

Figure 11.2.21 Predicted Noise Attenuation from Pile-Driving Works

The main source of vibration will be from pile driving works at the substation and transmission line towers. According to the manual of “Japanese Technical Association for Steel Pipe Piles and Sheet Piles”, vibration levels of hydraulic pile-driver will in general attenuate to below 75 dB (construction site-boundary vibration

standard of Japan) after 25 m. No impacts are expected for the substation site as there are no structure within such distance. There may be certain impacts at the transmission line tower sites in case there are any structures within the 25 m radius. It is therefore recommended to place the transmission line towers in an area that can maintain a distance of least over 25 m from the nearest structure.

(9) Conservation area

There are four protected areas around the transmission line route namely: Kaya Gandini, Mwaluganje Forest Reserve, Shimba Hills National Reserve and Kaya Kiteje. A brief overview of the protected areas is provided in Table 11.2.23.

Table 11.2.23 Overview of Protected Areas around the Project Site

Name	Law	Designated year	Distance from Project site	Location / area	Reason of designation	National threatened species	IUCN threatened species
Kaya Gandini	Antiquities and Monuments Act	1994	30 m	Kwale County 100 ha	Protection of Kaya and vegetation	[Bird] Spotted ground thrush (EN) Sokoke Pipit (EN)	[Bird] Spotted ground thrush (EN) Sokoke Pipit (EN)
Mwaluganje Forest Reserve	Forest Act	1941	2.5 km	Kwale County 1,700 ha	Protection and management of forest	[Mammal] African elephant (EN)	[Mammal] African elephant (VU)
Shimba Hills National Reserve	Wildlife Conservation and Management Act	1968	12 km	Kwale County 19,200 ha	Protection of wildlife	[Mammal] Sable antelope (CR) African elephant (EN) Leopard (EN) [Bird] Spotted ground thrush (EN) Sokoke Pipit (EN)	[Mammal] African elephant (VU) Leopard (VU) [Bird] Spotted ground thrush (EN) Sokoke Pipit (EN)
Kaya Kiteje	Antiquities and Monuments Act	1994	500 m	Kwale County 10 ha	Protection of Kaya and vegetation	None	None

Source: JICA Design Team

Mwaluganje Forest Reserve, Shimba Hills National Reserve and Kaya Kiteje are located around 2.5 km, 12 km and 500 m from the transmission line respectively. There will most likely to be no direct impacts on these protected areas as transmission line construction work (e.g. tower erection and stringing works) impacts are spatially limited and can be completed in a relatively short period. However, Kaya Gandini may be susceptible to impacts of transmission line construction works (e.g. noise) due to its proximity to the transmission line. Impacts will however not be significant as construction will only be around 1 month in the area. Nevertheless, impacts on Kaya Gandini will be minimized through the following measures:

- Before commencement of construction, hold meetings with Kaya elders to inform about the construction schedule and works, and consult for necessary mitigation measures.
- Prohibit entrance of construction workers inside the Kaya.
- Establish temporary construction yard as far as possible from the Kaya.
- Use as far as practical low-noise construction machines.
- Construction to be conducted as far as possible outside of migratory season (March-November) of Spotted Ground-thrush.
- Surround noisy non-mobile equipment (e.g. generator) with noise barrier.

(10) Ecosystem

The transmission line passes through a community forest between the DK6-7 area over a distance of around 2,500 m (see Figure 11.2.22). Consequently, as per KETRACO policy, the forest trees inside the transmission line corridor that are or may grow to heights above 12 feet will need to be cut down, which will lead to some degradation and fragmentation of forest habitat. The community forest has an area of around 400 ha, in which the affected portion will be around 5 ha (2,500 m x 20 m)³, resulting in cutting of around 500 trees.

³ To minimize tree cutting, KETRACO will only cut the trees within the 20 m width of the transmission line corridor instead of the entire 40 m wayleave. Hence the extent of forest tree clearance will be 2,500 m x 20 m = 5 ha.



Source: JICA Design Team

Figure 11.2.22 Community Forest Area between DK6-7 Transmission Line Corridor

The forest area along the DK6-7 were studied through field surveys and interviews. The main findings are summarized as follows:

- A total of 15 tree species were identified consisting of cash crops (e.g. mango and coconut trees) and common indigenous trees (e.g. *Brachystegia spiciformis*, *Bridelia micrantha*, *Cassia abbreviate*). None of the identified trees are classified as nationally or IUCN threatened species.
- Tree cover was relatively low and often fragmented along the forest edge compared to the denser inner forest area.
- Apart from some common bird species such as Pied crow, Rock Dove and Willow Warbler, no notable fauna were identified in the area. Threatened bird species such as Spotted Ground-trush and Sokoke Pipet that inhabit the nearby Kaya Gandini were also non-existent.
- According to KWS, the forest area was occasionally visited by elephants, baboons and wild pigs from the surrounding protected areas. However, presence of these animals are now very rare due to fencing of the protected areas and frequent usage by the local community resulting in forest degradation. It was however mentioned that there is risk of electrocution by climbing baboons and hence need for some prevention measures.

Based on the above findings, it is considered that tree clearance along the DK6-7 will not have any significant ecological impacts for the following reasons:

- The forest is not a protected area and was not recognized as a critical natural habitat as per interview with WWF expert.
- It is considered that there will be sufficient alternative habitats for the forest dependent species as the area of tree clearance (approx. 5 ha) will be around 1% of the entire community forest area (approx. 400 ha).
- While the transmission line will fragment part of the forest it is unlikely to significantly hinder the movement of wildlife apart from perhaps some birds.

Nevertheless to mitigate impacts, tree planting is planned to be conducted. The plantation plan will be developed in consultation with KFS and local community during the D/D stage after the design and construction plan are refined further. Following are currently proposed plantation policies/methods:

- Target species: species used by the community, native species, species with readily available seedlings
- Planting quantity: 2 times the number of cleared trees
- Location: Forest edge of the community forest where tree density is relatively low.
- Implementation structure: KETRACO (planning, financing), KFS (technical assistance), local community (plantation, monitoring)

Construction of the transmission line along the DK6-DK7 area may disturb wildlife in the forest area mainly through noise and presence of labor force. However, impact will not be significant as transmission line construction will be short-term (i.e. 1-2 months) and will not involve large labor force (around 20 workers). There are certain risks that migratory birds will be killed or injured through collision with transmission line. Information on migratory birds were therefore collected through expert interview and literature review. The main findings are summarized as follows:

- According to National Museums of Kenya publication, around 21% of birds (229 species) in Kenya are migratory, in which around half are waterbirds. These migratory birds use the Rift Valley, coast, eastern bushlands, central and western grasslands as their flyway. In the coast, beaches, reefs and mangrove creeks are used by the migratory birds.
- According to BirdLife International website, vast numbers of Common cuckoo (*Cuculus canorus*) and Golden orioles (*Oriolus oriolus*) visit Shimba Hills National Reserve.
- According to Nature Kenya expert, the threatened Spotted Ground-thrush found in Kaya Gandini and Shimba Hills breed in the forest in south of Tanzania, then migrate to south coast of Kenya from March to November. Other notable migratory species in the area are European Honey-buzzard, European Bee-eater and White-throated Bee-eater, which none are threatened species.

Based on the above findings, it can be considered that there is some risk of bird collision as the transmission line is relatively close to migratory bird flyway (e.g. coastal and mangrove areas) and also the forest habitat

for Spotted Ground-thrush. Residential forest birds may also be at risk as they fly between forest areas. In conclusion, the risk of bird collision is considered highest between DK5-DK19 area. To reduce risk of bird collision, it is planned to install avian flight diverters.

(11) Resettlement

As per RAP study, the Project will affect 598 households (3,849 PAPs). Subsequently this will result in displacement of 16 households (89 PAPs) and relocation of 60 households (403 PAPs). Impact is considered significant as more than 200 PAPs will require resettlement.

(12) Vulnerable social groups

Within the PAPs, there are 198 household heads (HH) classified as vulnerable due to being ill, paralyzed, poor, women and so on. Within the 198 HH, 79 HH are classified as poor either not having any regular income or having monthly income of less than 3,000 KES. These PAPs will be vulnerable to resettlement related impacts especially as they often have limited financial resources to cope during the transition period.

(13) Indigenous/minority people

The majority of people living around the Project area belong to the Mijikenda tribe. As per the screening criteria of World Bank OP4.10 (Article 4), the people in the Project area do not classify as indigenous/minority people. The World Bank OP4.10 (Article 4) and screening results are listed below.

1. Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others.
<Screening Results>
The Project affected people do self-identify as a member of a distinct indigenous cultural group nor are recognized by others as such.
2. Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories.
<Screening Results>
The kaya in the Project area has been customarily used by the locals but there are no groups that are physically present and have economic ties.
3. Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture.
<Screening Results>
The Mijikenda are the dominant ethnic community in coastal region of Kenya.
4. An indigenous language, often different from the official language of the country or region.
<Screening Results>
There are two predominant languages spoken by Mijikenda i.e. Mijikenda (widely spoken local language at the coast) and Kiswahili (The National Language).

(14) Livelihood and regional economy

Land and wayleave acquisition will affect the livelihood (i.e. income) of the locals through for example loss of farmland, cash crops and small-scale business. While such losses will have significant impacts on the affected persons without adequate compensation and assistance, in terms of regional economy impacts will be limited as the mentioned livelihood activities are conducted on a subsistence/small-scale level.

Since the transmission line will need to clear around 5 ha of community forest along the DK6-7 area, this may affect the livelihood of people relying on the forest resource of the community forest, which some use for building materials. However, since the community forest extends over an area of approximately 400 ha, the loss of 5 ha is not a major impact considering that there will be sufficient resources available in the remaining forest area for use. Furthermore, no concerns were raised of this impact by the locals including during public meetings.

During construction, livelihood activities such as farming will be temporary restricted at the transmission line construction sites (e.g. tower construction site, temporary construction yard). However, impacts will not be significant as construction works will be spatially limited and short-term, and activities can be resumed after construction is completed.

(15) Land use

The substation/access road site is currently a rural residential area with some farming and livestock rearing activities. Such land use will no longer be possible in this area, but impacts are not significant as the extent of land use alteration is not large scale. There will be no major change in land use along the transmission line corridor except for certain restrictions such as prohibition of building structures. Impact on land use is overall considered not significant.

There will be temporary restriction in land use at the construction site (e.g. tower construction site, temporary construction yard). However, impact is not significant as such restriction will be spatially limited and short-term

(16) Social infrastructure and services

The transmission line corridor will pass through part of Kiteje Secondary School land parcel which is currently vacant with only few trees. Figure 11.2.23 shows the transmission line route and boundary of Kiteje Secondary School. The school has around 80 students, 8 teachers and 4 assistant staffs, and is the only secondary school in the area. According to the school, the planned wayleave area was considered as a potential area for future expansion of school infrastructure in case of future increase of students. In such case, the area will no longer be possible for use as an area for school expansion due to the wayleave. The needs for future school expansion will be reconfirmed in the D/D stage and subsequently whether it will be possible to avoid the school area by altering the transmission line route.

For safety reasons, part of Kiteje Secondary School land parcel will be restricted for use during transmission line construction works but will not hinder school activities as the area is not in use and will only be of short duration.



Source: JICA Design Team

Figure 11.2.23 Boundary of Kiteje Secondary School and Transmission Line Route

The transmission line will cross several roads including Mombasa Road (A109), Southern Bypass Road and other rural roads. Although the use of these roads will be restricted during the stringing process, such restrictions will only be for few hours. The transmission line also crosses the Mombasa-Nairobi Standard Gauge Railway, but it will not have any impacts as necessary stringing works can be completed within the non-operating hours.

(17) Cultural heritage

There are two tree shrines located inside the transmission line corridor. As per KETRACO policy, these trees need to be cut as they are higher than 12 ft. This will deprive the community a place of worship, but it will only be temporary as a tree shrine transfer ceremony can be conducted to transfer the holy powers of the shrine from one tree to another designated tree/object. The trees owners have been consulted and agreed and have provided the requirements for carrying out the shrine tree transfer ceremony. Impacts are therefore not significant. Nevertheless, the route of the transmission line will be reconsidered in the D/D stage for whether the tree shrines can be avoided.

Note: The transmission line route will be reconsidered in the detailed design stage for possible options to avoid the shrine trees. If not possible, KETRACO will assist the shrine tree transfer ceremony.

(18) Gender

Within the PAPs, 136 household heads are women. Due to the patriarchal nature of the society, and the fact that most are widows who have limited educational background they will be more vulnerable to resettlement related impacts.

(19) Children's right

Since child labour is relatively common in Kenya, there is a possibility that underage children can be exploited for construction works. Also the majority of the households in the project area have low income levels hence there will be tendency for underage children to look for jobs to help their families.

Kenya is a signatory of ILO Minimum Age Convention 1973 and regulates child labour under the Employment Act as follows:

- Definition of child is a person who has not attained the age of eighteen years (Article 2)
- No person shall employ children under 13 years of age (Article 56).
- Light work is permitted for children between 13 to 16 years of age under certain conditions (Article 56)
- Children between 13 to 16 years of age are restricted to attend machinery (Article 58)
- No person shall employ a child in any opencast workings or sub-surface workings (Article 58)

The Act is consistent with the Minimum Age Convention for light work but does not set any age limits for potentially hazardous works (except machinery and mining), which is set as above 18 years under the Minimum Age Convention. Therefore, there is a certain possibility that children under 18 years can be employed for hazardous construction works. Furthermore, underage children may also be unintentionally employed as children may not have official documents to prove their age. It is therefore important to confirm the candidate's age through local government offices or other means.

(20) Infectious diseases

According to Mombasa County AIDS Strategic Plan 2016-2020, the HIV prevalence rate in Mombasa County is 7.4% (year 2014), which is higher than the national average of 5.6%. HIV prevalence rate is higher with women (10.5%) than men (4.5%). According to Kwale County AIDS Strategic Plan 2016-2019, the HIV prevalence rate in Kwale County is 5.7% (year 2014). Kilifi County AIDS Strategic Plan 2016-2020, the HIV prevalence rate in Kilifi County is 4.4% (NASCO 2014). HIV patients are relatively high with sex workers, drug users and so on. Considering such situation, there are certain risks that incoming construction workers can become infected by HIV as well as spreading HIV.

(21) Occupational safety

There is a moderate risk of occupational accidents such as falling from height during tower construction, falling into excavation pits and machine operation.

There is a moderate risk of occupational accidents such as electrocution during maintenance work.

(22) Accidents

There is a moderate risk of accidents such as by movement of construction vehicles along public access roads. Risks will be high along commuting roads used by children and intersection with busy roads.

(23) Climate change

transmission line construction will result in loss of around 5 ha of forest cover. Impacts on climate change is considered negligible for the following reasons:

- Carbon stock in Kenya forest is estimated at 137 ton per hectare (FAO 2010). Therefore, loss of 5 ha of forest can be roughly estimated to result in reduction of 685 tonnes of carbon stock. This is equivalent to only around 0.00014% of the total forest carbon stock of Kenya, which is 476 million tonnes (FAO 2010).
- Kenya's Nationally Determined Contribution (NDC) under the Paris Agreement aims to abate its GHG emissions by 30% by 2030 relative to the BAU scenario. One of the proposed measures to achieve this target is to increase tree cover to at least 10% of the total land area. According to FAO (2010), the total forest area in Kenya is approximately 3.5 million hectares. Since the total land area of Kenya is approximately 57 million hectares, to achieve the 10% target (i.e. 5.7 million hectares) it is necessary to increase the forest area an additional 2.2 million hectares. While the loss of 5 ha of forest from this Project will somewhat hinder in achieving this target, overall it is not a major setback to Kenya's NDC.
- The tree plantation that are planned in this Project, is expected to significantly minimize the Project's impacts on climate change.

11.2.7 Impact Assessment

Table 11.2.24 shows the results of the impact assessment, based on the environmental and social consideration study.

Table 11.2.24 Results of Impact Assessment

No	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
1	Air pollution	D	B-	D	D	B-	D	[Construction] The main source of air pollution will be exhaust gas and fugitive dust emission from heavy construction works at the substation/access road. However, significant impacts are not anticipated as construction activities are temporary and intermittent in character. There may however be certain impacts on the few residential houses located in the vicinity of the construction site especially during dry weather where dust is more readily suspended.
2	Water pollution	D	B-	D	D	B-	D	[Construction] Sediment-laden rainwater runoff from substation/access road may pollute downstream surface waters. Significant impacts are not expected mainly due to the limited area of the substation/access road in comparison to the catchment area and the fact that most of the sediment will likely settle before or after discharging to the receiving area (mud flat area in Port Reitz) as runoff velocity reduces. Uncontrolled discharge of concrete wash water may temporarily pollute the receiving water body as concrete wash water often has elevated pH levels. Impacts however will not be significant as pH will be gradually neutralized.
3	Soil pollution	D	B-	D	D	B-	D	[Construction] Oil spill/leaks from construction vehicles/machines and fuel tanks may cause soil pollution. Significant impacts are not expected as the magnitude of oil spill/leaks if it occurs will be limited to a relatively small area.

No	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
4	Waste	B-	B-	B-	D	B-	B-	<p>[Pre-construction] Felled trees will be generated from forest clearance. However, impacts are not expected as these can be reused for other beneficial purposes by the local community (e.g. fuel, building material, furniture).</p> <p>[Construction] Significant impacts are not expected as construction wastes can be readily accommodated by the county's municipal waste disposal site or recycled through NEMA authorized recycling firms such as for waste oil.</p> <p>[Operation] Significant impacts are not expected as operation wastes can be readily accommodated by the county's municipal waste disposal site or recycled through NEMA authorized recycling firms such as for waste oil.</p>
5	Noise/ vibration	D	B-	D	D	B-	D	<p>[Construction] Noise: The main source of noise will be from pile driving works at substation and transmission line tower. According to the noise impact prediction, noise from pile driving works will attenuate to around the same level as the Kenyan noise standard of 50 dB (residential day-time) at a distance of 300 m. Since there are several houses and a school within this 300m zone, pile driving works may cause some nuisance to the residents and school. However, impacts are not significant considering that the level of exceedance is relatively minor and the fact that the duration of pile-driving works will be limited to few months. Similar noise levels will be experienced during the construction of the transmission line towers but impacts will be less, as pile-driving works will be of much shorter duration (i.e. 1-2 weeks).</p> <p>Vibration: The main source of vibration will be from pile driving works at the substation and transmission line tower. According to existing literature, in case of hydraulic pile-driver, vibration levels will in general attenuate to below 75 dB (construction site-boundary vibration standard of Japan) after 25 m. No impacts are expected for the substation site as there are no structure within such distance. There may be certain impacts at the transmission line tower sites in case there any structures nearby.</p>

No	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
6	Conservation area	D	B-	D	D	B-	D	[Construction] Kaya Gandini may be susceptible to impacts of transmission line construction works (e.g. noise) due to its proximity to the transmission line. However, impacts will not be significant as construction will only last for around 1 month in the area.
7	Ecosystem	B-	B-	B-	B-	B-	B-	[Pre-construction] Around 5 ha of forest area (around 500 trees) will be cleared specifically the community forest area between DK6-DK7. Impacts of forest clearance is unlikely to have any significant ecological impacts due to: <ul style="list-style-type: none"> The area is unlikely to be a critical natural habitat as it is not a protected area and no threatened flora/fauna were identified The affected area is equivalent to only around 1% of the entire community forest area hence there should be sufficient alternative habitats for the forest dependent species The width of forest clearance is 20 m, so this is unlikely to significantly hinder the movement of wildlife [Construction] Construction of the transmission line along the DK6-DK7 area may disturb wildlife in the forest area mainly through noise and presence of labor force. However, impact is unlikely to be significant as transmission line construction will be short-term (i.e. 1-2 months) and will not involve large labor force (around 20) workers. There are also sufficient alternative habitats in the vicinity where animals can use. [Operation] Birds can be killed or injured through collision with transmission line. The risk of bird collision is considered highest between DK5-DK19 area where the transmission line passes near forest and mangrove areas.
8	Resettlement	B-	D	D	A-	D	D	[Pre-construction] The Project will result in displacement of 16 households (89 PAPs) and relocation of 60 households (403 PAPs). Impact is considered significant as more than 200 PAPs will require resettlement.

No	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
9	Vulnerable social groups	B-	D	D	B-	D	D	[Pre-construction] There are 198 household heads (HH) classified as vulnerable and 136 HH are classified as poor since they do not have regular income or have a monthly income of less than 3,000 KES. These HH will be vulnerable to resettlement related impacts especially as they often have limited financial resources to cope during the transition period.
10	Indigenous/ minority people	C-	C-	C-	D	D	D	No indigenous/minority people were identified along the Project corridor, hence impact on indigenous/minority people are not expected.
11	Livelihood	B-	B-	D	B-	B-	D	[Pre-construction] Land acquisition/easement will mainly have the following impacts on livelihood: <ul style="list-style-type: none"> • Loss of income from agriculture activities at the substation/access road site • Loss of income from cash crops (e.g. mango trees) that requires cutting • Loss of income from small-scale business (kiosk, quarry, Posho mill) operating in the transmission line corridor Impacts should not be significant as for the following reasons: <ul style="list-style-type: none"> • Agriculture activities at the substation/access road site is limited • Felled trees are left for the owner to use, which can be sold. • Affected small-scale business can be readily relocated and operated at another nearby area [Construction] Livelihood activities such as farming will be temporarily restricted at the transmission line construction sites. However, impacts will not be significant as construction works will be spatially limited and short-term, and activities can be resumed after construction is completed.

No	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
12	Land use	B-	B-	D	B-	B-	D	<p>[Pre-construction] The substation/access road site is currently a rural residential area with some farming and livestock rearing activities. Such land use will no longer be possible in this area, but impacts are not significant as the extent of land use alteration is not significant. There will be no major change in land use along the transmission line corridor except for certain restrictions such as prohibition of building structures. Impact on land use is overall considered not significant.</p> <p>[Construction] There will be temporary restriction in land use at the construction site. However, impact is not significant as such restriction will be spatially limited and short-term.</p>
13	Social infrastructure and services	B-	B-	D	B-	B-	D	<p>[Pre-construction] The transmission line corridor will pass through part of Kiteje Secondary School land parcel which is currently vacant with only few trees, but the area was earmarked for future expansion of school infrastructure. Hence the transmission line will affect to a certain extent future school operation.</p> <p>[Construction] The transmission line will cross several roads. Although the use of these roads will be restricted during the stringing process, such restrictions will only be for few hours. The transmission line also crosses the Mombasa-Nairobi Standard Gauge Railway, but it will not have any impacts as necessary stringing works can be completed within the non-operating hours. Part of Kiteje Secondary School land parcel will be restricted for use during transmission line construction works but will not hinder school activities as the area is vacant and will only be of short duration. Impact is overall considered not significant.</p>
14	Cultural heritage	B-	D	D	B-	D	D	<p>[Pre-construction] Two tree shrines are located inside the transmission line corridor, which need to be cut as they are higher than 12ft. This will deprive the community a place of worship, but it will only be temporary as a tree shrine transfer ceremony can be conducted to transfer the holy powers of the shrine from one tree to another designated tree/object. Impacts are therefore not significant. Nevertheless, the transmission line route is planned to be reconsidered in the D/D stage for whether the trees can be avoided.</p>

No	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
15	Gender	B-	D	D	B-	D	D	[Pre-construction] Within the PAPs, 136 household heads are women. Due to the patriarchal nature of the society, and the fact that most are widows who have limited educational background they will be more vulnerable to resettlement related impacts.
16	Children's right	D	B-	D	D	B-	D	[Construction] Since child labour is relatively common in Kenya, there is a certain possibility that underage children can be exploited for construction works. Majority of the households in the project area have low income levels hence there will be tendency for children to look for jobs to help their families. Impact is not significant providing the Construction Contractor complies with the Kenyan regulations and as necessary the Minimum Age Convention.
17	Infectious diseases (HIV/AIDS etc.)	D	B-	D	D	B-	D	[Construction] Around 20-40 construction workers will be present during construction. Since the Project area has relatively high rate of HIV prevalence, there are certain risks of spreading infectious diseases.
18	Occupational safety	D	B-	B-	D	B-	B-	[Construction] There is a moderate risk of occupational accidents such as falling from height during tower construction, falling into excavation pits and machine operation. [Operation] There is a moderate risk of occupational accidents such as electrocution during maintenance work.
19	Accidents	D	B-	D	D	B-	D	[Construction] There is a moderate risk of accidents such as by movement of construction vehicles along public access roads.
20	Climate change	B-	B-	B-	D	D	D	transmission line construction will result in loss of around 5 ha of forest cover. Impact on climate change is negligible as such loss of forest cover will have minimal impacts on carbon stock and forest area.

A+/-: Significant positive/negative impact is expected, B+/-: Positive/negative impact is expected to some extent., C+/-: Extent of positive/negative impact is unknown., D: No impact is expected

PC: Pre-construction, C: Construction, O: Operation

Source: JICA Design Team

11.2.8 Environmental and Social Management Plan

Table 11.2.25 shows the environmental and social management plan (ESMP).

Table 11.2.25 Environmental and Social Management Plan

Item	Potential impact	Mitigation measures	Implementation responsibility	Supervision responsibility	Approx. cost (KSh)
Pre-construction phase					
Ecosystem	Loss of forest trees and habitat due to forest clearance along the transmission line corridor	<ul style="list-style-type: none"> The width of forest clearance along the wayleave will be reduced to 20 m to minimize forest clearance. Undertake an ornithological study (bird survey) to identify locations to install bird flight diverters; identify the type of bird diverters to be installed and identify the bird flight routes within the project sight. Forest clearance to be conducted as far as possible outside of migratory season (March-November) of Spotted Ground-thrush and bird brooding period. KETRACO will support local/regional afforestation programs through consultation with KFS and local communities. 	KETRACO	KFS	Approx. 1,200,000 (afforestation) Approx. 4,000,000 (bird survey)
Resettlement	Displacement/relocation of persons, structures, trees due to land easement/acquisition	<ul style="list-style-type: none"> Carry out fair and adequate compensation as per RAP and provide livelihood restoration assistance to PAPs until that their livelihoods are restored to pre-project levels or better. Implement internal and external monitoring to ensure the RAP is implemented appropriately. A grievance redress mechanism (e.g. establishment of PAP Committee) will be put in place to address all emerging complaints and grievances from the PAPs and project area community. 	KETRACO NLC	-	409,487,758 (as per RAP report)
Vulnerable social groups	Vulnerable people are susceptible to resettlement related impacts	<ul style="list-style-type: none"> Vulnerable HH to be provided with extra assistance as per RAP (e.g. sourcing host land, support with dismantling of structures, moving and building new structures). 	KETRACO NLC	-	64,649,350 (as per RAP Report)
Livelihood	Loss of income due to land acquisition or easement	<ul style="list-style-type: none"> transmission line tower shall be located as far as possible outside of farming areas. Provision of compensation and assistance as per RAP until income are restored to pre-project levels or better. 	KETRACO NLC	-	Included in RAP budget
Land use	Alteration of land use due to land acquisition	<ul style="list-style-type: none"> Provision of compensation and assistance as per RAP until incomes are restored to pre-project levels or better. 	KETRACO NLC	-	Included in RAP budget

Item	Potential impact	Mitigation measures	Implementation responsibility	Supervision responsibility	Approx. cost (KSh)
Social infrastructure and services	Disturbance to Kiteje Secondary school operations	<ul style="list-style-type: none"> Avoidance of the school land during the detailed design to be considered. In case school expansion is necessary, support the school so that replacement land can be acquired. KETRACO to ensure the school obtains replacement land. 	KETRACO NLC	-	Included in RAP budget
Cultural heritage	Cutting of tree shrine due to transmission line corridor	<ul style="list-style-type: none"> Reconsider in the D/D stage whether cutting of trees/shrines can be avoided. Support implementation of tree shrine transfer ceremony (in case the tree shrine cannot be avoided). 	KETRACO	NMK	Approx. 350,000 (Shrine transfer ceremony)
Gender	Women are susceptible to resettlement related impacts	<ul style="list-style-type: none"> Women household heads to be provided with extra assistance as per RAP. Hold women focused group meetings as necessary. Allocate women representative in the PAP committee. 	KETRACO NLC	-	Included in RAP budget
Construction phase					
Air pollution	Fugitive dust and exhaust emissions from construction vehicles	<ul style="list-style-type: none"> Implement regular maintenance and vehicles emitting visible pollutants (e.g. black soot) to be removed from operation until repaired as per Environmental Management and Co-ordination (Air Quality) Regulations 2014. Construction vehicles without inspection certificate will not be allowed to operate. Slow driving on dusty roads within the community area. Regular water spraying of access road. Cover truck loading bed when transporting loose materials such as rock, sand and mud. Avoid to the extent possible passing through sensitive areas (e.g. residential area, schools). 	Construction contractor	Supervising consultant KETRACO	Included in construction base cost
	Fugitive dust emission from heavy civil works	<ul style="list-style-type: none"> Regular water spraying of exposed surfaces. Cover exposed cut and fill surfaces and unused stockpiles. 	Construction contractor	Supervising consultant KETRACO	Included in construction base cost
Water pollution	Sediment-laden rainwater runoff from construction site	<ul style="list-style-type: none"> Exposed cut and fill slopes at the substation/access road to be protected (e.g. by shotcrete) as soon as cut and fill works are completed. 	Construction contractor	Supervising consultant KETRACO	Included in construction base cost

Item	Potential impact	Mitigation measures	Implementation responsibility	Supervision responsibility	Approx. cost (KSh)
		<ul style="list-style-type: none"> Install temporary erosion control measures (e.g. sheet cover, sedimentation pond) as necessary. Stockpiles (e.g. topsoil) to be covered by sheet. Temporary construction yard to be located as far as possible from surface water bodies and wetlands. 			
	Uncontrolled discharge of concrete wash water	<ul style="list-style-type: none"> Discharge of untreated concrete wash water to the environment to be strictly prohibited. Concrete wash water to be treated at designated facilities (e.g. facilities with wash water treatment system). <p>Acquire effluent discharge license from NEMA in case of discharge to environment. Effluent quality (e.g. pH) to comply with discharge standard set under Environmental Management and Coordination, (Water Quality) Regulations 2006.</p>	Construction contractor	Supervising consultant KETRACO	Included in construction base cost
Soil pollution	Accidental spillage of oil to the ground	<ul style="list-style-type: none"> Regular inspection of vehicles and machines for oil and fuel leaks. Leaking vehicles and machines to be removed until repaired. Maintenance activities to be conducted at designated facilities with appropriate pollution control. Spill response kit (e.g. absorbents) to be readily available at the construction site. Fuel tanks to be installed on an impermeable base with bunds. 	Construction contractor	Supervising consultant KETRACO	Included in construction base cost
Waste	Generation of construction waste	<ul style="list-style-type: none"> Minimize waste generation through reuse and recycling. Wastes to be stored in designated areas and with containers specialized for each waste type. Wastes to be collected and disposed only by NEMA-authorized firms. Construction contractor to prepare a Construction Waste Management Plan (CWMP) through consultation with the county government, which identifies the different wastes that will be generated and their proposed storage and disposal procedure. 	Construction contractor	Supervising consultant KETRACO NEMA	Included in construction base cost
Noise	Noise from construction vehicles/machine and pile driving works	<ul style="list-style-type: none"> Equip vehicles and machines with exhaust mufflers and carry out regular maintenance/inspection. Prohibit using vehicles that exceed 84 dBA when accelerating as per Environmental Management and Coordination (Noise and 	Construction contractor	Supervising consultant KETRACO	Included in construction base cost

Item	Potential impact	Mitigation measures	Implementation responsibility	Supervision responsibility	Approx. cost (KSh)
		<p>Excessive Vibration Pollution) (Control) Regulations 2009.</p> <ul style="list-style-type: none"> • Avoid to the extent possible using roads that pass through sensitive areas. If unavoidable, drive slowly when passing through sensitive areas and avoid raving of engines and unnecessary idling. • Use to the extent possible low-noise pile driver. Conduct pile-driving works in a manner so that noise levels do not exceed the construction site noise standard set under Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. • In principal, pile-driving at nighttime shall not be allowed. 			
Vibration	Vibration from pile driving works	<ul style="list-style-type: none"> • Locate towers at least over distance of 25 m from the nearest structure. • Conduct pile-driving works in manner so that vibration levels do not exceed the construction site vibration standard set under Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. 	Construction contractor	Supervising consultant KETRACO	Included in construction base cost
Conservation area	Indirect disturbance to Kaya Gandini	<ul style="list-style-type: none"> • Before commencement of construction, hold meetings with Kaya elders to inform about the construction schedule and works, and consult for necessary mitigation measures. • Prohibit entrance of construction workers inside the Kaya. • Establish temporary construction yard as far as possible from the Kaya. • Use as far as practical low-noise construction machines. • Construction to be conducted as far as possible outside of migratory season (March-November) of Spotted Ground-thrush and bird brooding period. • Surround noisy non-mobile equipment (e.g. generator) with noise barrier. 	KETRACO Construction contractor	Supervising consultant KETRACO NMK	Included in construction base cost
Ecosystem	Disturbance to forest fauna along DK6-DK7	<ul style="list-style-type: none"> • Implement induction programs for the construction workers regarding prohibition of activities such as hunting, poaching, plant collecting, littering and fire burning. • Construction to be conducted as far as possible outside of migratory 	Construction contractor	Supervising consultant KETRACO KWS	Included in construction base cost

Item	Potential impact	Mitigation measures	Implementation responsibility	Supervision responsibility	Approx. cost (KSh)
		season (March-November) of Spotted Ground-thrush and bird brooding period. <ul style="list-style-type: none"> • Use as far as practical low-noise construction machines. • Surround noisy non-mobile equipment (e.g. generator) with noise barrier. 			
Livelihood	Temporary loss of income due to construction-related disturbances	<ul style="list-style-type: none"> • Establish temporary construction yard/road as far as possible outside of farmland. • Compensation to be provided to affected persons depending on the degree of impact. • Inform well in advance the affected persons about the construction plan so that they can harvest their crops and their request can be incorporated into the plan. • All casual labor to be resourced from the local community. 	Construction contractor KETRACO	Supervising consultant KETRACO	Included in construction base cost
Land use	Temporary restriction in land use due to construction	<ul style="list-style-type: none"> • Establish temporary construction yard/road as far as possible where land use is non-existent or limited. 	Construction contractor	Supervising consultant KETRACO	-
Social infrastructure	Temporary restrictions on road use	<ul style="list-style-type: none"> • Prepare Road Use Restriction Plan and obtain permission from the road authority (KeNHA, KeRRA). • Inform in advance the local community regarding road use restrictions. 	KETRACO Construction contractor	<ul style="list-style-type: none"> • Supervising consultant • KETRACO • KeHNA, KeRRA 	Included in construction base cost
	Temporary restrictions at Kiteje Secondary School	<ul style="list-style-type: none"> • Inform in advance the construction schedule and necessary safety restrictions. 	KETRACO Construction contractor	Supervising consultant KETRACO	Included in construction base cost
Children's right	Employment of underage children	<ul style="list-style-type: none"> • As per Employment Act 2007, children under 13 years of age will not be employed. • As per Employment Act 2007, children between 13 and 16 years of age will not be employed for works that are potentially harmful and prejudice the child's attendance at school. • Prohibit employment of children under 18 years of age for potentially harmful works. 	Construction contractor	Supervising consultant KETRACO	-

Item	Potential impact	Mitigation measures	Implementation responsibility	Supervision responsibility	Approx. cost (KSh)
Infectious diseases	Proliferation of infectious diseases due to influx of construction workers	<ul style="list-style-type: none"> Construction contractor to prepare HIV/AIDS Prevention/Awareness Plan in accordance to Kenyan laws and regulations. The plan shall among others include the following: <ul style="list-style-type: none"> ✓ Planned awareness programs for construction workers ✓ Code of Conduct to be complied by the construction workers ✓ Other measures (e.g. counselling and testing) 	Construction contractor	Supervising consultant KETRACO County government	Included in construction base cost
Occupational safety	Risk of occupational accidents (e.g. falling from height, falling into pits, machine operation)	<ul style="list-style-type: none"> Use of safety harness during working at height. Install barriers around excavated pits. Engage only qualified operators. Use of PPE. Construction contractor to prepare an Occupational Health and Safety Plan in accordance to Kenyan laws and regulations. The plan shall among others include the following: <ul style="list-style-type: none"> ✓ Risk assessment and planned safety measures ✓ Training plan for construction workers ✓ Organizational structure ✓ Emergency response plan 	Construction contractor	Supervising consultant KETRACO DOSHS	Included in construction base cost
Accidents	Risk of traffic accidents	<ul style="list-style-type: none"> Strict compliance to speed limits. Avoid to the extent possible using roads with high risk of accidents. Vehicle motion alarm to be installed on all construction vehicles Placement of warning signs and traffic control officers at high risk areas. 	Construction contractor	Supervising consultant KETRACO	Included in construction base cost
Operation phase					
Waste	Generation of operation waste (e.g. leaked transformer oil, domestic waste)	<ul style="list-style-type: none"> Use transformer oil free of PCBs. Wastes to be handled and disposed only by NEMA-authorized firms. Waste disposal containers to be provided onsite for each waste category. Oil pit to be regularly emptied and kept in containers for disposal by NEMA approved firms. Preparation of Waste Management Plan (WMP) that identifies the different wastes that will be generated and their proposed disposal procedure. 	KETRACO	NEMA	Included in operation base cost

Item	Potential impact	Mitigation measures	Implementation responsibility	Supervision responsibility	Approx. cost (KSh)
Ecosystem	Bird collision with transmission line	<ul style="list-style-type: none"> Installation of avian flight diverters (during construction) to minimize risk of bird collision. 	Construction contractor (for installation)	KWS	To be estimated in DD stage
	Electrocution from live transmission line	<ul style="list-style-type: none"> Installation of guards (during construction) on the transmission line tower in the forested area to deter climbing animals like baboons. 	Construction contractor (for installation)	KWS	Included in construction base cost
Occupational safety	Risk of occupational accidents for maintenance activities	<ul style="list-style-type: none"> Maintenance contractor to prepare an Occupational Health and Safety Plan in accordance to Kenyan laws. 	Maintenance contractor	KETRACO	Included in operation base cost

Source: JICA Design Team

11.2.9 Environmental and Social Monitoring Plan

Table 11.2.26 shows the environmental and social monitoring plan (ESMoP). Table 11.2.26 shows the environmental monitoring form.

Table 11.2.26 Environmental and Social Monitoring Plan

Category	Aim	Method	Frequency	Implementation responsibility	Estimated cost (KES)
Preconstruction phase					
Ecosystem	To check the progress and effectiveness of tree afforestation program	Confirm the growth status (e.g. height, survival, health) of planted trees.	<ul style="list-style-type: none"> 2/year until 5 years after plantation 	KFS KETRACO	Approx. 1,900,000
Involuntary resettlement	To check the progress and effectiveness of RAP implementation	[Internal monitoring] <ul style="list-style-type: none"> Assess whether compensation and other entitlements are being delivered in line with the RAP. Assess whether agreed measures to restore or enhance livelihood and sources of income are being implemented. Identifying any conflicts or problems, issues, or cases of hardship resulting from the resettlement process. 	<ul style="list-style-type: none"> 1/month during RAP implementation Quarterly after RAP implementation for 1 year 	KETRACO PAP Committee	Approx. 55,000,000
		[External monitoring] <ul style="list-style-type: none"> Assessment of compliance with RAP actions Assessment of pre- and post-resettlement socio-economic situation of the affected households Reviewing records of grievances and following up whether or not appropriate corrective actions have been undertaken and outcomes are satisfactory. 	<ul style="list-style-type: none"> Every 6 months during RAP implementation Once a year after resettlement for 2 years 	Independent agency	
Vulnerable social groups	To check the effectiveness of assistance measures for vulnerable PAPs	As part of RAP monitoring, check status of livelihood and standards of living of vulnerable PAPs.	<ul style="list-style-type: none"> 1/month during RAP implementation Quarterly after RAP implementation for 1 year 	KETRACO PAP Committee	Included in RAP monitoring budget
Livelihood, living environment	To check the effectiveness of livelihood recovery measures	As part of RAP monitoring, check status of livelihood and standards of living of PAPs.	<ul style="list-style-type: none"> 1/month during RAP implementation Quarterly after RAP implementation for 1 year 	KETRACO PAP Committee	Included in RAP monitoring budget

Category	Aim	Method	Frequency	Implementation responsibility	Estimated cost (KES)
Land use	To check the effectiveness of livelihood recovery measures	As part of RAP monitoring, check status of livelihood and standards of living of PAPs that were dependent on land for livelihood.	<ul style="list-style-type: none"> 1/month during RAP implementation Quarterly after RAP implementation for 1 year 	KETRACO PAP Committee	Included in RAP monitoring budget
Social infrastructure and services	To check the land acquirement and usage status of Kiteje Secondary School	Confirm status of school expansion plan and land acquirement if necessary.	<ul style="list-style-type: none"> 1/month during RAP implementation Quarterly after RAP implementation for 1 year 	KETRACO PAP Committee	Included in RAP monitoring budget
Cultural heritage	To check the usage status of the transferred tree shrine	Confirm usage status of the transferred tree shrine through interviews and field reconnaissance.	<ul style="list-style-type: none"> Once a year after transfer for 3 years 	KETRACO	Approx. 300,000
Gender	To check the effectiveness of assistance measures for women HH	As part of RAP monitoring, check status of livelihood and standards of living of women HH.	<ul style="list-style-type: none"> 1/month during RAP implementation Quarterly after RAP implementation for 1 year 	KETRACO PAP Committee	Included in RAP monitoring budget
Construction phase					
Air pollution	To check whether excessive dust and exhaust gas are not emitted from the construction sites	Visual inspection of: <ul style="list-style-type: none"> Fugitive dust emissions from construction sites Exhaust gas emissions from construction vehicles and machines 	Daily	Construction contractor	Part of construction base cost
		Field measurement of air quality (PM ₁₀) at sensitive receptors near the substation/access road sites (3 sites). Results to be compared with national ambient air quality standard.	Once before construction (baseline) 1/week during heavy construction works	Construction contractor	Approx. 3,000,000
Water pollution	To check whether rainwater runoff from construction sites are not causing water pollution	<ul style="list-style-type: none"> Visual inspection of rainwater runoff flow pattern (e.g. check whether there is any inflow of sediment-laden runoff from construction site). 	Before and after mitigation	Construction contractor	Approx. 500,000

Category	Aim	Method	Frequency	Implementation responsibility	Estimated cost (KES)
		<ul style="list-style-type: none"> In case there is significant inflow of sediment-laden rainwater runoff, measure water quality (turbidity and TPH) of the receiving water body before and after mitigation. 			
	To check the water quality of treated concrete wash water	Measurement of pH of treated concrete wash water. Results to be compared with national effluent standard in case discharged to environment/ natural drainage system.	Prior to discharge.	Construction contractor	Approx. 500,000
Soil pollution	To check of any oil leaks from construction vehicles/machines and fuel tank.	Visual inspection of oil leaks from construction vehicle/machines and fuel tanks.	Daily	Construction contractor	Part of construction base cost
	To check the soil quality of top soil at substation/access road	<ul style="list-style-type: none"> Sampling and analysis at 3 sites Parameter: PAHs and heavy metals (As, Cd, Cr+6, Hg, Pb, Ni, Zn) Results to be compared with Dutch Soil Remediation Circular 2013 	Once before construction	Construction contractor	Approx. 500,000
Noise	To check whether excessive noise is not emitted from the construction sites	<ul style="list-style-type: none"> Baseline noise survey at sensitive receptors (e.g. homestead, school, hospital) located near construction sites. Field measurement of noise level (LAeq) at construction site boundary. Results to be compared with national construction site noise standard. Field measurement of noise level (LAeq) at sensitive receptors (e.g. homestead, school, hospital). Results to be compared with national ambient noise standard. 	Once before construction (baseline) 1/week during heavy construction works	Construction contractor	Approx. 600,000
Vibration	To check whether excessive vibration is not emitted from the construction sites	<ul style="list-style-type: none"> Baseline vibration survey at sensitive receptors (e.g. homestead, school, hospital) located near construction sites. Field measurement of vibration level at construction site boundary. Results to be compared with national construction site vibration standard. 	Once before construction (baseline) 1/week during heavy construction works	Construction contractor	Approx. 600,000
Waste	To check whether wastes are stored and handled in	<ul style="list-style-type: none"> Visual inspection of waste storage sites and construction sites. Confirm records of waste treatment/disposal 	Daily 4/year	Construction contractor	Part of construction/su

Category	Aim	Method	Frequency	Implementation responsibility	Estimated cost (KES)
	accordance to the contractor's CWMP			Construction supervisor	supervision base cost
Conservation area	To check whether there are any impacts on Kaya Gandini	Hold meetings with Kaya Elders and check of any adverse impacts.	1/month	Construction contractor KETRACO	Part of construction base cost
Ecosystem	To check impacts on forest flora/fauna	<ul style="list-style-type: none"> • Conduct surprise inspection of construction workers to check of any possession of forest flora/fauna. • Visual inspection of any dead wildlife. 	1/week	Construction contractor	Part of construction base cost
Livelihood, living environment	To check impacts on livelihood due to acquisition of land for construction works	As part of RAP monitoring, check status of livelihood and standards of living of PAPs affected by acquisition of land for construction works.	1/month	KETRACO PAP Committee	Included in RAP monitoring budget
Land use	To check impacts on land use due to acquisition of land for construction works	Confirm construction land use plan prior to commencement of construction.	Once before construction	KETRACO	Included in RAP monitoring budget
Social infrastructure and services	To check impacts on operation of Kiteje Secondary School	Interview manager of Kiteje Secondary School	Once during transmission line stringing works	Construction supervisor KETRACO	Part of supervision base cost
Children's right	To check whether there are any child labour	<ul style="list-style-type: none"> • Checking of employment registration of the Contractor. • Confirmation of accuracy of employment registration with local administration office. 	Monthly	Construction supervisor KETRACO	Part of supervision base cost
Infectious diseases	To check implementation status of HIV/AIDS Prevention/Awareness Plan	Confirmation of implementation records of awareness programs, counselling and so on.	2 times/year	Construction supervisor KETRACO	Part of supervision base cost
Occupational safety	To check whether safety procedures are implemented in accordance to OHSP (All sites)	Visual inspection of work safety procedures and equipment.	Daily	Construction contractor Construction supervisor	Part of construction base cost

Category	Aim	Method	Frequency	Implementation responsibility	Estimated cost (KES)
Accident	To check status of accidents	Confirm status of accidents through weekly meetings	Weekly	Construction supervisor	Part of supervision base cost
Operation phase					
Waste	To check operation wastes are stored and handled in accordance to the Waste Management Plan	Inspection of oil leakages and waste management practices at the substation.	4 times/year (Quarterly)	KETRACO	Included in KETRACO's operation and maintenance budget
Ecosystem	To check whether any bird collision incidences have occurred along the transmission line corridor especially along the forest area	Field reconnaissance and community interview along the transmission line corridor.	2 times/year for 2 years	KETRACO	Included in KETRACO's operation and maintenance budget
	To check whether any animals have been electrocuted along the forest area	Field reconnaissance and community interview along the transmission line corridor.	2 times/year for 2 years	KETRACO	Included in KETRACO's operation and maintenance budget
Occupational safety	To check whether safety procedures are implemented in accordance to OHSP	Visual inspection of work safety procedures and equipment.	During maintenance work	KETRACO	Included in KETRACO's operation and maintenance budget

Source: JICA Design Team

Table 11.2.27 Environmental Monitoring Form**1. Pre-construction phase**

(1) Tree plantation

Planted species	Quantity	Planted date/location	Survival rate
			1 st year: 2 nd year: 3 rd year: 4 th year: 5 th year:

2. Construction phase

(1) Ambient air quality

Parameter	Date of measurement	Results (24 hr)	Baseline value	Kenya standard*1	Reference standard*2	Note
PM10				100 µg/m ³ (24 hr)	100 µg/m ³ (24 hr)	Method: Location: Actions taken in case of non-compliance:

*1: Environmental Management and Coordination (Air Quality) Regulations 2014

*2: World Health Organization (WHO). Air Quality Guidelines Global Update, 2005 Interim target 2

(2) Water quality of concrete washwater effluent in case of discharge

Parameter	Date of measurement	Results	Kenya standard*	Note
pH			6.5-8.5	Method: Discharge location:

*: Environmental Management and Coordination (Water Quality) Regulations 2016

(3) Soil quality

Parameter	Date of measurement	Results	Reference standard* (mg/kg)	Note
PAHs			40	Method: Location: Actions taken in case of non-compliance:
As			76	
Cd			13	
Cr ⁺⁶			78	
Hg			36	
Pb			530	
Ni			100	
Zn			720	

*: Dutch Soil Remediation Circular 2013

(4) Waste

	Waste type	Approx. volume	Method and location of reuse/recycle or treatment/disposal
	Non-hazardous waste		
	Hazardous waste		

(5) Ambient noise (sensitive receptors)

Parameter	Date of measurement	Results	Baseline	Kenya standard* ¹	Reference standard* ²	Note
L _{Aeq}				50 dB (day) 35 dB (night)	55 dB (day) 45 dB (night)	Method: Location: Actions taken in case of non-compliance:

*1: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

*2: Guidelines for Community Noise, World Health Organization (WHO), 1999

(6) Vibration at construction site boundary

Parameter	Date of measurement	Results	Baseline	Kenya standard*	Note
Velocity				0.5 cm/sec	Date: Method: Location: Actions taken in case of non-compliance:

*: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

(7) Working conditions

	Details	Actions taken and results
Status of safety management procedure and activity including occupational accidents		
Child labor		
Implementation of HIV/AIDS prevention/awareness activity		

(8) Grievances

Number of complaints	Content of complaint	Actions taken and results

3. Operation phase

(1) Reported bird strike accidents along transmission line

Species	Note
	Location: Injury status: Actions taken:

(2) Reported wildlife electrocution accidents along transmission line

Species	Note
	Location: Injury status: Actions taken:

(3) Working conditions

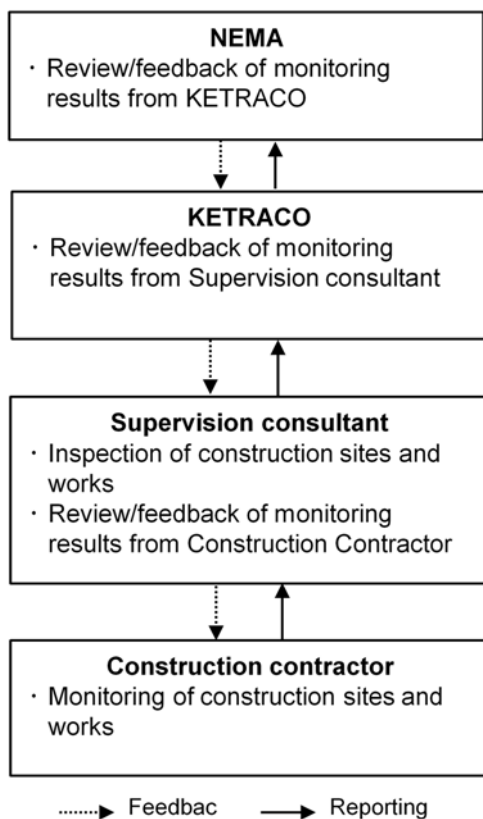
	Details	Actions taken and results
Status of safety management procedure and activity including occupational accidents		

Source: JICA Design Team

11.2.10 Implementation Structure

KETRACO will establish Project Implementation Team (PIT) consisting of two environmental specialists and two social safeguards specialists. They will supervise and coordinate implementation of the ESMaP, conduct additional studies where necessary and addressing any grievances. PIT will also be responsible for taking procedures for obtaining necessary licenses (e.g. ESIA License) and reporting monitoring results to NEMA during construction and operation phases.

During the construction stage, the construction contractor will be mainly responsible for implementing the ESMaP/ESMoP under the supervision of the supervising consultant. The construction contractor shall allocate at least one Health, Safety and Environment (HSE) officer for the substation and one for the transmission line. The HSE officer will be responsible among others for preparing construction specific environmental related plans (e.g. environmental management plan, waste management plan, health and safety plan), obtaining necessary permits, education of workers, supervision, review of monitoring results, reporting and so on. The supervising consultant will also need to allocate Health, Safety and Environment (HSE) officers for the substation and transmission line, who will be responsible for inspection and supervision of the construction contractor’s environmental performances, review/feedback of monitoring results and assist KETRACO as necessary. Figure 11.2.24 shows the implementation and reporting/feedback structure of the ESMoP for the construction stage.



Source: JICA Design Team

Figure 11.2.24 Implementation and Reporting/Feedback Structure of ESMoP

During the operation stage, KETRACO will be responsible for implementing ESMaP and ESMoP and reporting to NEMA.

11.2.11 Stakeholder Consultation

KETRACO held three public meetings and one PAP committee meeting. The meetings were held at multiple locations covering three counties. The meetings were advertised through local radio, notice in public places (e.g. school, church) and announcement using vehicles. The venues were selected where access is convenient for the locals. This chapter will explain the meeting results of the 1st and 2nd public meetings. The 3rd public meeting and PAP committee meeting is explained in Chapter 11.2.21 as the meetings were focused mainly on RAP.

The 1st public meeting was held in July 12-18, 2017 at 7 locations as shown in Table 11.2.28. A total of round 1,500 people participated.

Table 11.2.28 Outline of 1st Public Meeting

	Date	County	Location	Venue	No. participants
1	Wednesday July 12, 2017	Kilifi	Mariakani	Baraza Meeting Area near EMACO Hotel	85 M:64, F:21
2	Thursday July 13, 2017	Kwale	Mbunguni	Mbunguni Chief's Camp Grounds	308 M:200, F:107
3	Thursday July 13, 2017	Kwale	Ng'ombeni	Kiteje Assistant Chief's Office Ground	236 M:77, F:159
4	Friday July 14, 2017	Kwale	Kasemeni	Mnyenzi Assistant Chief's Office Grounds	125 M:99, F:26
5	Friday July, 2017	Kwale	Gandini	Lutsangani AP Camp Grounds	257 M:192, F:65
6	Tuesday July 18, 2017	Kwale	Mwavumbo /Mwatate	Mwanda Dispensary Grounds	183 M:131, F:52
7	Tuesday March 20, 2018	Mombasa	Mtongwe	Dongo Kundu AP Camp	367 M:258, F:109
					Total: 1,561* M:1021, F: 540

*: Includes KETRACO, government officials, consultant

M: Male, F: Female

Source: JICA Design Team

Questions and answers of the 1st meeting are shown in Table 11.2.29.

Table 11.2.29 Questions and Answers of 1st Public Meeting

No	Questions by Participants	Response
Mariakani Location Sensitization Meeting		
1	Previous KETRACO project in the neighbouring area had challenges related to release of compensation payment of disputed land which have not been resolved to-date. The community leaders	<i>All KETRACO projects are subject to Kenyan law governing power transmission and land acquisition and where the ownership of the affected asset is disputed, KETRACO waits for the dispute(s) to be resolved by the relevant bodies including</i>

No	Questions by Participants	Response
	wished to know how KETRACO will ensure this current project doesn't face similar challenges. (<i>Samuel Rimba</i>)	<i>the courts who determine ownership before KETRACO can disburse compensation money for the affected asset(s).</i>
2	Some PAPS recorded in the previous census may not be the genuine owners of affected assets. How will this be corrected to ensure only genuinely affected people are enumerated and recorded? (<i>Nelson Mundalo</i>)	<i>All the eligible PAPS will be enumerated during the current census survey with the confirmation of ownership of land by a title deed where available or using the established local mechanism to confirm ownership of affected land. The ownership of developments on the land such as structures, trees and crops will be established by the members of the affected household in the presence of the village elders</i>
3	The acquired corridor may divide the parcel of land belonging to one individual PAP into two halves. What will happen to such two portions of land on each side of the corridor; will the PAP be allowed to own both halves though divided by the corridor? (<i>Paul Kitula</i>)	<i>Depending on the portion of land on each side of the corridor, the project may take up the entire parcel of land and physically resettle the PAP on another equal parcel if the remaining portion outside the wayleave corridor is too small for any continued use/ settlement by the PAP. The wholly eased out parcel of land below the transmission line will still belong to the PAP as KETRACO does not own land. If the remaining portions are significantly big for use by the PAPS, the project will only acquire the corridor and leave the rest of the portions to the PAP. Each on above cases will be evaluated by KETRACO RAP implementation teams before drawing a conclusion on how to handle the remaining portions of land</i>
4	Will KETRACO therefore withhold compensation money for all disputed land until the dispute is resolved and will still build their line on such land still or the project will be put on hold to await the resolution of disputes so as to construct the line? (<i>Francis Wambua</i>)	<i>The compensation money for the disputed land will be put aside by KETRACO but will not be disbursed to any of the disputing parties until the dispute is resolved and ownership determined. In the meantime, KETRACO will construct the line across such land since government projects cannot be jeopardized by disputes which can sometimes take a long time to resolve.</i>
5	What will happen if there are trees or crops on the land whose ownership is disputed? (<i>Anthony Safari</i>)	<i>The trees, crops or even structures on such land whose ownership is disputed but the ownership of such developments isn't disputed, the developments will be promptly compensated disbursing payments to the established owners KETRACO however pays for trees after felling them. This process however may take time between felling and release of compensation payment</i>
Mbunguni Location Sensitization Meeting		
1	Many people do not have title deeds for the land they occupy. Who will be compensated for such land; the title holder or the current land occupier (<i>Musa Said</i>)	<i>Land ownership is known whether the land has title deed or not. However, without a title deed it will be difficult to ascertain ownership which cannot be confirmed until one produces a title deed or until it is issued by the relevant government entity. PAPS without title deeds to the land they occupy are encouraged to get them since with a title deed, compensation for affected land will be straightforward and prompt</i>
2	Will he get power in his home or will this power line just pass over him as happened in Ukunda? (<i>Juma Mwakoko</i>)	<i>The transmitted power is high voltage that cannot be connected directly to homesteads. Distribution of power to homesteads is the responsibility of Kenya Power. KETRACO only does power transmissions which is among the first steps that can enable people to access power in their homes. People get power in their homes after distribution is done by Kenya Power from the KETRACO Substations.</i>

No	Questions by Participants	Response
3	Will the proposed transmission line affect the whole Mbuguni Location or a section of it only (<i>Hamadi Dafujo</i>)	<i>Only a section of the location will be affected as per the already selected route that has been established through surveying</i>
4	What will happen if the line passed through a place where there are trees and crops? (<i>Juma Shauri Lamwenga</i>)	<i>Trees will be compensated for after they are felled and according to the rates provided by Kenya Forest Service while crops will be compensated as per the guidelines provided by the ministry of Agriculture if/if they are destroyed during the line construction.</i>
5	What will happen if the construction vehicles were to pass through and possibly destroy crops on the land outside the wayleave area? (<i>Mwelo</i>)	<i>Any damage of private property outside eased out wayleave by the transmission line contractors will be compensated.</i>
Ng'ombeni Location Sensitization Meeting		
1	About 50% of land in the whole location has no title deed; what will happen in this case? (<i>Suleiman Magomba</i>).	<i>The PAPs without title deeds for the land they occupy will be individually consulted and the land authorities including NLC will provide the way forward. However this process can and has been slow from KETRACO's similar experience elsewhere</i>
2	Most of the trees in the project area are indigenous trees which are have medicinal value yet the project/ KFS may be paying for planted exotic trees. How will KETRACO establish/ know the value of these indigenous trees? (<i>Ramadhan Mwalimu</i>)	<i>Project team get the value of all trees (both indigenous and exotic) from the Kenya Forest Service. There is no tree which grows on Kenyan soil that is not known and valued by KFS. Similarly, all crops grown in Kenya have values established by Ministry of Agriculture. Grass is not compensated for</i>
3	Could the project employ local youths in each location/ sub-location and village where the line passes? (<i>Suleiman Saitoti</i>)	<i>The project is expected to create employment opportunities for members of the local communities during construction specifically in areas where the transmission line is expected to pass. Besides the direct employment by the project, other forms of employment are likely to result from the spill-over effects including establishment of local markets for providing goods and services during construction. KETRACO policy requires the contractor to employ youths from the particular location where they are working for the unskilled works. The chiefs and their assistants will need to bear this in mind and ensure it is enforced during the construction phase of the project.</i>
Kasemeni Location Sensitization Meeting		
1	How will the courts confirm the true heirs of a deceased person's land in the succession process? (<i>Mohamed Hamisi</i>).	<i>The succession process starts at the local chief's office who know the members of the concerned family and village elders. If unresolved the matter is escalated further up to the courts who make a determination. All interested family members are involved in every step in the succession process</i>
2	During the previous census and asset inventory survey in 2014, he was advised not to continue with the construction of his family house whose construction was active at that time. He stopped construction but this has affected him negatively since the stonework which was incomplete has deteriorated/depreciated due to continued exposure to the weather elements. How will this his case handled	<i>Such cases will be evaluated and determined in a manner not to disadvantage the PAP. He was advised not to remove the house at all until such evaluation are completed and compensation paid out to him</i>

No	Questions by Participants	Response
	whether he is affected by the current line corridor or not (<i>Tungwa Mdoe Njira</i>)	
3	Will the PAPs be paid compensation promptly or will they wait till they die waiting as happens in many government projects? (<i>Abdalla Mwaile</i>)	<i>The government (KETRACO) pays promptly upon verification of true owners of affected property more so if the ownership of land or other affected assets is not in dispute.</i>
4	What will happen if the line corridor affects Kaya shrine(s) which are common in the project area (<i>Ndoro Simba Ndoro</i>)	<i>KETRACO route selection criteria aims to avoid public institutions such as shopping centres, schools, health centres and places of worship such as the shrines, churches and mosques. If such facilities were to be found during ground surveys, KETRACO will further aim to avoid them by changing the position of the line corridor in a particular locality</i>
Gandini Location Sensitization Meeting		
1	PAPs should not be oppressed nor disadvantaged in the valuation and compensation process (<i>Hamisi Menza</i>).	<i>Compensation for the losses will be done at prevailing market value and at the replacement cost for land and structures respectively. Trees will be compensated after they are felled according to the rates of various tree types, sizes, age and value as provided by Kenya Forest Service while crops will be compensated as per the guidelines provided by the Ministry of Agriculture if they are destroyed during the line construction. This way, nobody will be disadvantaged as the compensation will be just and commensurate with the impact on affected asset</i>
2	Will compensation cash be disbursed directly to the PAPs accounts or it will be paid through another government office e.g. through the chief's office. (<i>Hamisi Menza</i>).	<i>The disclosure of individual compensation packages will be made to the individual persons or households and not to 3rd parties such as the chiefs who are not entitled to know how much individual PAPs gets unless the PAPs choose to disclose their compensation packages to 3rd parties. Compensation cash will be wired directly to the particular PAPs bank accounts.</i>
Mwavumbo Location Sensitization Meeting		
1	Will the PAPs be allowed to salvage any building materials from their affected structures after compensation? (<i>Daniel Dalo</i>)	<i>PAPs will be allowed to salvage any building materials they may consider useful to them within the notice period. Any structures not removed from the corridor by the expiry of the notice period without a good and valid reason will be pulled down by the Contractor and the PAPs will not be able to salvage any materials after that. The felled trees belongs to the PAPs to sell or use them in any manner they deem appropriate.</i>
2	Will the community members be able to get power in their homes from the line or will this power line just pass over them? (<i>Jackson Mambo</i>)	<i>Distribution of power to people's homes is the responsibility of Kenya Power. KETRACO only does power transmissions which is among the first steps for people to access power in their homes after which distribution is done by Kenya Power from the KETRACO substations.</i>
3	Will the compensation rate paid for the land where the pylon/ tower is constructed be the same amount as where the line only passes over the land? (<i>Bagala Dalu</i>)	<i>Yes, the same land compensation rate applies regardless of whether the land will have a tower or towers erected on it or the power line will only pass over it.</i>
4	Will there be a special/ additional payment for the vulnerable group of people such as the physically challenged persons? (<i>Katana Ziro</i> – who looked like he is mildly mentally/ physically challenged but could communicate)	<i>Yes, KETRACO and JICA Resettlement Policies is keen to ensure that the vulnerable groups are identified, considered and provision made for their resettlement assistance during the resettlement implementation phase</i>

No	Questions by Participants	Response
Mtongwe Location Sensitization Meeting		
1	People residing in Mwangala area in Dongo Kundu do not have Title Deeds. Will they benefit from the project (<i>Suleiman Said Magomba</i>)	<i>Land will be compensated to the rightful owner. For those without titles the land agencies including NLC will provide a way forward but payment will only be done against a land document that the government can accept.</i>
2	All residents should be involved in the whole process-in meetings, compensation-timely flow of information? (<i>Suleiman Salim Manundu</i>)	<i>Panafrican will ensure all affected persons are duly informed and involved in the process of surveys, compensation and resettlement.</i>
3	Dongo Kundu Community Needs Title Deeds. Where will residents of Dongo Kundu go if they are not compensated for land? There is concern that residents of Dongo Kundu are being called invaders (<i>Abdallah Mwalimu Ali</i>)	<i>The issue of land ownership and land documents is in progress at very high level. NLC office in Mombasa is very ready to assist.</i>
4	How will children, mothers benefit since almost all property is owned by men (<i>Elizabeth Msindi</i>)	<i>The Land Act 2012 protects children, spouses from being denied access to compensation funds⁴.</i>

Source: JICA Design Team

The 2nd public meeting was held in June 18-22, 2018 at 9 locations as shown in Table 11.2.30. A total of round 1,400 people participated. Questions and answers of the 2nd meeting are shown in Table 11.2.31.

Table 11.2.30 Outline of 2nd Public Meeting

	Date	County	Location	Venue	No. participants
1	Monday June 18, 2018	Kilifi	Mariakani	Baraza Field near Tiba Petrol Station	117
2	Monday June 18, 2018	Kwale	Mwavumbo	Mwanda Dispensary	212
3	Tuesday June 19, 2018	Kwale	Mwatate	Mazirizirini Police Station	175
4	Tuesday June 19, 2018	Kwale	Mtaa	Bofu Chief's Camp	86
5	Wednesday June 20, 2018	Kwale	Kasemeni	Mnyenzi Health Centre	124
6	Wednesday June 20, 2018	Kwale	Gandini	AP Camp Lutsangani	187
7	Thursday June 21, 2018	Kwale	Mbunguni	Mbunguni Chief's Camp Ground	164
8	Thursday June 21, 2018	Kwale	Ng'ombeni	Kiteje Assistant Chief's Camp	103
9	Friday June 22, 2018	Mombasa	Mtongwe	Dongo Kundu AP Camp	218
					Total: 1,386

Source: JICA Design Team

⁴ Section 107 (7) of the Land Act protects the rights of spouses to compensation. Section 27 of the Land Act protects child's right to land.

Table 11.2.31 Questions and Answers of 2nd Public Meeting

No	Questions	Answers
Mariakani Location		
1	The project has taken up land belonging to private citizens of the project area. Will they ever receive compensation payment? (<i>Mr. Shaffi Muhammed</i>).	<i>All the affected property including land will be duly compensated by KETRACO and payment will go to the genuine owners.</i>
Mwavumbo Location		
2	Will payment be the same if I and my neighbour are affected but my affected area is slightly different from my neighbours? (<i>Kombo Ngoro</i>).	<i>The amount to be paid as compensation for land will depend on the size of land affected by the project. Whoever has a larger size of land within the the same area will be paid more commensurate with the size.</i>
3	If my house is very close to the transmission line corridor, will I not be affected? (<i>Daniel Dalu</i>).	<i>Even if one occupies about 1m away from the 40m corridor, there is no danger. The transmission only occupies approximately the central 8m. The remaining 16m on either side is unoccupied. So any structure located just outside the 40m corridor is safe.</i>
4	When will compensation payment be made? (<i>Harrison Dalu</i>).	<i>Compensation payment will be once verification is done. Panafcon is finalizing the RAP Report which will be submitted to JDT and KETRACO for review and thereafter once satisfied, they will submit the report to National Land Commission for verification and compensation payment</i>
5	How will affected crops outside the corridor be handled? (<i>Umazi Katembe</i>).	<i>Affected crops outside the transmission line corridor will be compensated by the contractor during construction. This is because determination of which crops are affected and which ones are not affected cannot be determined before construction commences</i>
Mwatate Location		
6	Project area community need to be connected to power and assisted to get good sanitation facilities? (<i>Hassan Wanini Mboga</i>).	<i>The request has been noted and will be forwarded to KETRACO. The current project is dedicated at supplying power to the SEZ in Dongo Kundu. The findings of the study on sanitation facilities will be shared with other agencies so that the community can be assisted.</i>
7	What will happen to mature trees within the transmission line corridor? (<i>Nyiro Nyawa</i>).	<i>Trees within the 40m corridor will be valued and owners compensated since they will be cut down.</i>
Mtaa Location		
8	Will a house that was recorded during the census survey be compensated if it collapses before payment is done? (<i>Rama Mangale</i>).	<i>Compensation will be done using photographs taken during census survey. However, PAPs are encouraged to inform project implementers (KETRACO) through the PAP Committees when such a thing happens to avoid issues during verification for compensation.</i>
9	What will KETRACO planning to do for the project area community? (<i>James Dena</i>).	<i>If the community has any public project that requires support, they are encouraged to forward such suggestions to KETRACO for consideration. KETRACO will work with other agencies to see what kind of support can be provided</i>
10	When will compensation payment be done? Can skilled workers be given job opportunities ? (<i>Tunu Beuchi</i>).	<i>When the RAP is completed, it will be forwarded to JICA Design Team and KETRACO for review after which KETRACO will submit it to National Land Commission (NLC) for verification and payment. NLC will provide details of the offers for compensation payment and rates used to calculate values of various assets. Those who have skills in various construction activities can forward their papers to the contractor through the local administration and KETRACO for consideration</i>

No	Questions	Answers
Kasemeni Location		
11	What will happen if a shrine is encountered? (Kombo Mangale Nyuni)	<i>KETRACO will review the design but if it is not possible to shift the line then a traditional ceremony to transfer the shrine will be conducted as advised by the elders.</i>
12	How will KETRACO ensure those outside the corridor are not affected? (Makanzu Rashid)	<i>All measures will be put in place to ensure that persons outside the corridor are not affected by the project activities during construction and operation. However, where this will not be possible, KETRACO and the Contractor will ensure that affected property is duly valued and compensated. PAP Committee members will ensure that during construction all impacts are noted and communicated to KETRACO for follow-up action.</i>
Gandini Location		
13	How will you handle people outside the corridor whose property is affected by the project? (Mwandano Gopholo/Jumaa Charles)	<i>Property affected by the project outside the transmission line corridor will be evaluated and compensated during construction. This is because it is not possible to determine at this moment who will be affected.</i>
14	What has KETRACO planned for the project area community beyond compensation and resettlement of the affected persons? (Jma Mbaruck Baushi)	<i>If the community has any public project that requires support, they are encouraged to forward such suggestions to KETRACO for consideration. KETRACO will work with other agencies to see what kind of support can be provided.</i>
Mbunguni Location		
15	Will those affected health wise be supported? (Juma Matano)	<i>Where it can be confirmed that persons have been affected by the project, KETRACO will provide support. However, KETRACO will ensure that measures are put in place to avoid accidents and impacts to community health</i>
16	What happens to housing structures which cannot last more than 2 years? (Mwatabu Ali)	<i>Ideally compensation should be done within one year of carrying out the census survey. If the structure starts developing signs of collapsing before compensation is paid, pass the information to KETRACO through the PAP Committee</i>
Ng'ombeni Location		
17	Will affected persons be evicted by force without any notice? (Hamisi Selewa)	<i>A notice period will be issued after compensation is paid to allow those whose houses have been affected to build new houses to relocate to. The notice period is usually 3 months but can be discussed with KETRACO if challenges are experienced</i>
18	Since land is small, consider providing Kiteje Secondary School with high rise buildings? (Hamisi Selewa Athman Jiti)	<i>The request will be forwarded to KETRACO for consideration if the line will not be moved away from the compound of Kiteje Secondary School.</i>
19	When will PAPs be paid their compensation so they can start organising their life? (Madam Biamu Saidi Bawa)	<i>The RAP Report will be finalised in the next 2-3 weeks and submitted to JDT and KETRACO for review. Once they are satisfied, the report it will be forwarded to NLC for verification and implementation. The payment is supposed to be done within a period of one year depending on availability of funds.</i>
Mtongwe Location		
20	Have fishermen been considered? (Kelly Konde)	<i>The proposed mitigation measures are intended to protect water sources that may end up in Mwache, Myeza and Bombo Creeks.</i>
21	What are the dangers of carrying out farming activities inside the corridor? (Raphael Juma)	<i>There are no major issues when there is no accidental snapping of the conductors since farming and grazing of animals is not a permanent activity within the corridor.</i>
22	How can those using kerosene lanterns and those lacking toilet facilities be assisted? (Rama)	<i>Recommendations regarding the impacts of using kerosene lamps have been highlighted in the report and KETRACO will see how best to martial assistance for the project area community.</i>

No	Questions	Answers
23	Where will PAPs go to? (Mohammed Ali)	<i>PAPs will either be resettled within the same parcel of land if the remaining land is large enough or a new parcel of land within the project area will be purchased for their resettlement.</i>
24	Will affected persons be given time to vacate the corridor? (Eliata Mathews)	<i>Ample notice will be given to the PAPs for them to construct the houses they be relocating to after vacating the corridor. A notice period is usually given however the period can be less or more depending on the relocation and resettlement challenges.</i>

Source: JICA Design Team

11.2.12 Necessity of Land Acquisition / Resettlement of Affected Residents

(4) Project components requiring land acquisition and resettlement

It is necessary to acquire the land use right of 40 m width over the transmission line route of 53 km, and to obtain land for the substation and its maintenance road. Land width 40 m is based on the KETRACO's Guideline, and it is applied nationwide in Kenya. It is necessary to relocate structures such as houses, commercial facilities and others within this range. There are public facilities such as schools, churches, cemeteries, and Kaya (sacred forest area) in the project area, so the transmission line route and the areas for the substation and maintenance road route should be designed to avoid these areas.

In the transmission line component, the right of land use is required for a long period in which the facilities exist. Steel towers which support the transmission lines will be also built within 40 m width range. The land will be secured for construction, maintenance, safety and security purposes.

For the substation and the maintenance road in the Dongo Kundu area, the land shall be completely acquired unlike under the transmission line.

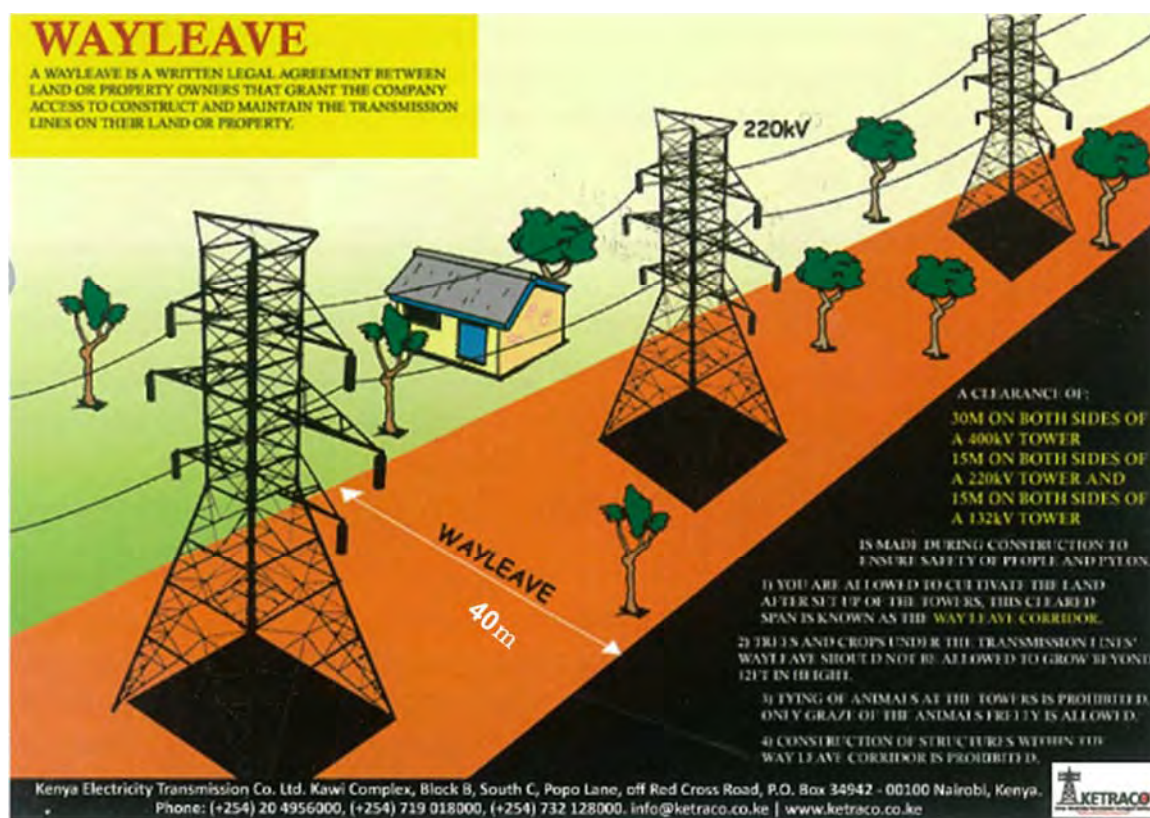
In the transmission line component, the project proponent needs to acquire land use rights called, wayleave. Wayleave refers to the right of way with the land concerned, which will be based on the agreement between KETRACO and land owners. The agreement will be documented. These matters are stipulated in Land Act 2012. Based on this agreement, KETRACO will be able to enter and use the land for construction and maintenance. The related land ownership for wayleave will not be transferred to KETRACO, but belongs to each original landowner continually.

According to KETRACO's criteria (Resettlement Policy Framework, December 2011 version), the wayleave width is classified by transmission voltage; 40 m width for 220 kV, 30 m for 132 kV, 60 m for 400 kV or more. For examples of wayleave, the transmission line project conducted by KETRACO in the past are shown as below.

KISII-AWENDO 132 kV (October 2012)	: 30 m
KINDARUMA-GARISSA 132 kV (September 2013)	: 30 m
DONGO KUNDU-MARIAKANI 400 kV (July 2015)	: 60 m

Within Wayleave, landowners are not allowed to build structures, but activities such as livestock breeding and farming are allowed to continue. Also, the height limit of trees is set at maximum 12 feet.

Figure 11.2.25 shows the image of Wayleave (land use right).



Source : KETRACO Project Information Booklet

Figure 11.2.25 Wayleave (Usage Right as Project Land) Image

(5) Initial design alternative plan for avoiding and minimizing land acquisition / resettlement of the affected residents

The comparative study of alternative transmission lines (including without project option) was described in detail in 11.2.4. According to the selection criteria of KETRACO, the transmission line route was designed to avoid the areas of higher population density such as urban areas, villages, markets, schools, churches, mosques, hospitals, cultural facilities and forests at the time of initial design stage.

(6) Method for minimizing resettlement as much as possible during the project implementation stage

If circumstances permit it may be possible to reduce the affected range by setting wayleave less than 40 m such as about 20 m. with this approach, it may be possible to minimize the number of resettlement, trees to be cut. KETRACO has been implementing this method nationwide as much as the site condition allows. Specifically, it is necessary to judge according to each site situation at the implementation stage. At the implementation stage, consultation with surrounding residents shall be conducted and only after confirmation on safety and maintenance aspects, necessary steps such as review of the construction plan shall be carried out. It will be reflected in the tender documents as environmental and social considerations clause because the matter shall be addressed by the contractor in the implementation stage. Also monitoring shall be carried out appropriately so that individual lands are not used more than planned.

Also, as a measure to mitigate environmental and social impacts by projects, planting trees to the logging site and surroundings, and using existing roads shall be adopted as much as possible during the construction stage.

11.2.13 Land Acquisition / Legal Framework for Resettlement

(4) Outline of Kenyan National Law System for land acquisition and resettlement

The main laws concerning land ownership, land use, transfer and compensation are "Constitution of Kenya, Section 40, Subsection 3" and "Land Act 2012".

The country's constitution has some stipulations for land acquisition. First is that the State must not deprive individuals of land for purposes other than achieving public benefits. Second is that they must comply with the provisions of the Constitution. Third is the Law in the case of land acquisition. In addition, it stipulates that in the case of expropriation of individual land, prompt payment of a full amount of justified compensation. In Section 40 and Subsection 4, a resident who does not possess the right of land (residents who reside over the years and maintain faithfully their families' livelihood by doing agricultural activities and others.) may be also possible to become an eligible person for compensation.

In the case of individual land is forcibly expropriated under Land Act 2012, it stipulates that the full amount of legitimate compensation amount shall be paid in advance once the rights and interests concerning the land of the target individual are finalized. The law stipulates that National Land Commission (NLC), an agency of the Ministry of Land, shall formulate rules to appropriately assess compensation amounts. Regarding wayleave, which was previously defined in the Wayleave Act, Cap 292, the law was abolished and was currently integrated into Section 143 - 148 (Public Right of Way) of Land Act No. 6 - 2012.

Table 11.2.32 shows the summary of the related Kenyan laws, JICA's Environmental and Social Considerations Guidelines and the World Bank OP 4.12.

(5) Land tenure system in Kenya

Every land in Kenya is classified to public land such as state-owned land, community land belonging to the community, and private land.

Public land refers to the land that the government has not handed over to individuals and communities. These lands are included where are used and occupied by national agencies. For example, this land includes following areas: mines, oil fields, national forest and wildlife conservation areas, sources of water, national parks, roads, rivers, lakes and other waters, territorial waters, exclusive economic zones, and the continental shelf. Public lands are owned by the central or county governments in trust, and NLC is entrusted with management.

The community land belongs to the community based on common ground such as tribes, customs, culture and tradition. The community land consists of the land owned, managed and used by the communities as registered in the name of the representative, transferred to a specific community such as forests, pastures or sacred places. In addition, land classified as a community land, there are lands that have traditionally been occupied by the hunting and gathering society and a trusted land of the county government.

Private land in Kenya refers to the land owned by individuals with free tenure, the land on which individual leasehold rights are set up, and the land certified as private by the law.

In the project area, there are public land, the community land, and the private land as mentioned above.

(6) Notice concerning structure relocation

The Wayleave acquisition procedure is a procedure applied to all the transmission line projects, the objective is to efficiently obtain a proper and binding agreement between the land owners and KETRACO. In order to give the residents sufficient preparation period, a notice concerning relocation of the structure is issued to the target residents before acquiring wayleave by KETRACO. The period from notice to relocation is roughly as below.

- Transfer of structures: 3 months
Period shall be adjusted (shortened, extended) depending on the nature of structure, location, scale and other conditions.
- Tree removal: 3 months
- Removal of perennial crops: 3 months
- Elimination of single year crops: 3 months
Most of the yearly crops mature in about three months and are considered to be harvestable. Crops that require a growth period of 3 months or more are adjusted for each case.

(7) Land acquisition process

NLC shall be the main body and collaborating with KETRACO and the concerned county government in land acquisition process. They will work in cooperation with local village chief and elders. The standard process is shown below. As a standard case, the procedure for compensation payment is completed in 45 days as fastest case.

1. Preparation of land boundary / ownership data by KETRACO and documents showing project land
2. KETRACO submits materials to the NLC indicating the land that needs to be acquired
3. Approval of land acquisition application by NLC
4. NLC publicizes land acquisition plan for 30 days in Official Gazette
5. After 30 days passed, NLC will set the date on which to receive asset and compensation questions, and publicly announce the schedule for at least 15 days in the Official Gazette
6. The NLC investigates the ownership of the land, determines the owner and accepts the compensation request from the subjected persons
7. The NLC notifies all concerned persons that compensation will be paid by certificate document
8. The NLC will transfer the entire amount of compensation to the bank account of the subjected person
9. NLC acquires the land and registers it as temporary NLC land
10. The NLC will then investigate the supplementary investigation on the land if necessary, and review the land title document

If the land ownership is not clear, the NLC head office first extracts the issues related to the land described in the RAP, and checks the current state of the land that needs to be addressed.

Second, the local NLC officers stationed in county will be directed to conduct a field survey, confirmation of land register, and interview survey to stakeholders and submit of verification report to the NLC head office.

Based on the result, the NLC consults with KETRACO and prioritize based on the urgency level, importance degree, scale etc., and starts the reconciliation to identify the owner. Compensation funds or which the land owner is not clear are deposited in a special account managed by NLC and remitted to the target individual's account once the owner is identified. In mediation, the appropriateness of the claim against traditional and customary land is also individually assessed.

Table 11.2.32 Kenya Country related Laws and Regulations

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
Country law of Kenya				
1	The Constitution of Kenya 2010	The Constitution of Kenya protects land and property owners as specified in: Chapter 4 Section 40 (3) The State shall not deprive a person of property of any description, or of any interest in, or right over, property of any description, unless the deprivation — (b) is for a public purpose or in the public interest and is carried out in accordance with this Constitution and any Act of Parliament that —(i) requires prompt payment in full, of just compensation to the person; and (ii) allows any person who has an interest in, or right over, that property a right of access to a court of law. Section 40 (4) Provision may be made for compensation to be paid to occupants in good faith of land acquired under clause (3) who may not hold title to the land.	<ul style="list-style-type: none"> • Restrictions on the use of land belonging to individuals and communities • Acquisition of land belonging to an individual • Loss of structures including houses • Loss of trees and crops • Living environment · Confusion of the community 	<ul style="list-style-type: none"> • To identify affected residents and affected assets and conduct RAP survey to examine appropriate compensation and support measures. • Establish appropriate compensation / relocation plan for land and assets of individual who acquired acquisition or restriction of usage rights as business land.
2	The Land Act 2012	The Land Act governs land acquisition as mentioned in: Section 7. Title to land may be acquired through—(c) compulsory acquisition; Application for Land Acquisition - Section 107. (1) Whenever the national or county government is satisfied that it may be necessary to acquire some particular land under section 110, the respective Cabinet Secretary or the County Executive Committee Member shall submit a request for acquisition of public land to the National Land Commission to acquire the land on its behalf. Just and Timely Compensation - Section 111. (1) Says If land is acquired compulsorily under this Act, just compensation shall be paid promptly in full to all persons whose interests in the land have been determined. Creation of Wayleave Section 144. (1) Unless the Commission is proposing on its own motion to create a wayleave, an application, for the	Acquisition of land and acquisition of right to use land are necessary for securing the project site. Accordingly, resettlement of residents and access restrictions may occur.	<ul style="list-style-type: none"> • To identify affected residents and affected assets and conduct RAP survey to examine appropriate compensation and support measures. • Establish appropriate compensation / relocation plan for land and assets of individual who acquired acquisition or restriction of usage rights as business land.

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
		<p>creation of a wayleave, shall be made by any State department, or the county government, or public authority or corporate body, to the Commission.</p> <p>Notice for Creation of Wayleave –Section 144 (4) The applicant shall serve a notice on— (a) all persons occupying land over which the proposed wayleave is to be created, including persons occupying land in accordance with customary pastoral rights; (b) The county government in whose area of jurisdiction land over which the proposed wayleave is to be created is located; (c) all persons in actual occupation of land in an urban and per-urban area over which the proposed wayleave is to be created;</p> <p>Settlement - Section 134. (1) The National Land Commission shall, on behalf of the national and county governments, implement settlement programmes to provide access to land for shelter and livelihood.</p> <p>Squatters – Section 160 (2) Without prejudice to the foregoing, the Commission shall have the powers to make regulations—(e) with respect to squatters—(ii) to facilitate negotiation between private owners and squatters in cases of squatter settlements found on private land;</p>		
3	The National Land Commission Act 2012	<p>The National Land Commission Act:</p> <p>The object and purpose of this Act is to provide—</p> <p>(a) for the management and administration of land in accordance with the principles of land policy set out in Article 60 of the Constitution and the national land policy;</p> <p>(d) for a linkage between the Commission, county governments and other Institutions dealing with land and land related resources.</p> <p>Section 5. Functions of the Commission ((a) to manage public land on behalf of the national and county governments; (e) to initiate investigations, on its own initiative or on a complaint, into present or historical land injustices, and recommend appropriate redress; (f) to encourage the application of traditional dispute resolution mechanisms in land conflicts;</p>	National Land Commission (NLC) will proceed to acquire the land on behalf of the central government / county government.。	<ul style="list-style-type: none"> In cooperation with KETRACO, NLC will take over land acquisition, compensation for affected residents and relocation of residents.

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
		Section 16 authorizes the commission to establish committees for better execution of their functions among them compulsory acquisition process as outlined in the Land Act (2012).		
4	The Valuers Act 2012	<p>The Valuers Act provides for the registration of valuers and for connected purposes</p> <p>Section 21. Unregistered persons not to practice as valuers (1) After the expiration of six months from the commencement of this Act or such further period as the Minister may, by notice in the <i>Gazette</i>, allow either generally or in respect of any particular person or class of persons—</p> <p>(a) no individual shall carry on business as a practising valuer unless he is a registered valuer;</p> <p>(b) no partnership shall carry on business as practising valuers unless all the partners whose activities include the doing of acts by way of such practice are registered valuers;</p> <p>(c) no body corporate shall carry on business as valuers unless the directors thereof whose duties include the preparation of valuations in respect of any type of movable or immovable property are registered valuers.</p> <p>Section 24. Dishonest practices Any person who—(c) knowingly and wilfully makes any statement, oral or written, which is false in a material particular or which is misleading with a view to gaining any advantage or privilege under this Act whether for himself or for any other person</p>	<p>There is a gap. It is clearly not stipulated by the re-acquisition price.</p> <p>Evaluation and appraisal to calculate compensation amount for affected assets needs to be done by Valuer which is formally registered.</p>	<p>Calculation shall be carried out based on the re-acquisition price.</p> <p>Evaluation of compensation amount in this project is done by Valuer which is officially registered.</p>
5	Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act, 2012	<p>The Act provides for prevention of displacement. Displacement and relocation due to development projects shall only be lawful if justified by compelling and overriding public</p> <p>Section 5. Prevention of displacement (1) Subject to the Constitution, the Government and any other organization, body or individual shall guard against factors and prevent and avoid conditions that are conducive to or have the potential to result in the displacement of persons.</p>	Acquisition of land and acquisition of right to use land are necessary for securing the project site. Accordingly, resettlement of residents and access restrictions may occur.	<ul style="list-style-type: none"> • Implement RAP survey to identify affected residents and affected assets and consider appropriate compensation and support measures.

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
		<p>Section 6. Protection from displacement (3) Displacement and relocation due to development projects shall only be lawful if justified by compelling and overriding public interests and in accordance with the conditions and procedures in Article 5 of the Protocol, Principles 7-9 of the Guiding Principles and as specified in sections 21-22 of this Act.</p> <p>Section 22. Says Procedures for displacement induced by development projects</p> <p>(1) Subject to the Constitution and section 21(2) of this Act and prior to the decision to give effect to the displacement of persons due to development projects or projects to preserve the environment, the Government shall—</p> <p>(a) seek the free and informed consent of the affected persons; and</p> <p>(b) hold public hearings on the project planning.</p> <p>(2) The decision to give effect to the displacement of persons shall give the justification for the displacement and demonstrate that the displacement is unavoidable and no feasible alternatives exist. The decision shall contain detailed justification on the alternatives explored.</p> <p>(3) The Government shall ensure that the displacement is not carried out unless —</p> <p>(a) reasonable time is given to the affected persons to review the decision and challenge it before an independent body on the grounds that the conditions in section 21(2) are not adhered to;</p> <p>(b) an effective remedy in accordance with articles 46 and 47 of the Constitution is available for those affected</p> <p>(4) The Government shall ensure that the displacement is carried out in manner that is respectful of the human rights of those affected, taking in particular into account the protection of community land and the special needs of women, children and persons with special needs. This requires in articular—</p>		<ul style="list-style-type: none"> Establish appropriate compensation and relocation plan for the land and property of individuals for which acquisition or use rights restrictions are set as business land.

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
		<p>(a) full information of those affected and their effective participation, including by women, in the planning, management of the displacement, and in defining suitable durable solutions;</p> <p>(b) provision of safe, adequate and habitable sites and to the greatest practicable extent, of proper accommodation; and (c) creation of satisfactory conditions of safety, nutrition, health and hygiene and the protection of the family unity.</p> <p>(5) The Government shall ensure the presence of a Government official when the displacement and relocation is effected and the monitoring by an independent body.</p>		
6	The Energy Act 2006 Revised in 2012	<p>The legislation provides for the establishment of the Energy Regulatory Commission (ERC) that regulates services offered by energy agencies like KETRACO.</p> <p>Section 47. Assent to proposal</p> <p>(1) An owner, after receipt of the notice and statement of particulars under section 46, may assent in writing to the construction of the electric supply line upon being paid such compensation as may be agreed and any assent so given shall be binding on all parties having an interest in the land, subject to the following provisions—</p> <p>(a) that any compensation to be paid by the licensee giving notice to the owner, in cases where the owner is under incapacity or has no power to assent to the application except under this Act, shall be paid to the legal representative of the owner;</p> <p>(b) that an occupier or person other than the owner interested in the land shall be entitled to compensation for any loss or damage he may sustain by the construction of the electric supply line, so long as the claim is made within three months after the construction of the electric supply line.</p> <p>Section 54. Compulsory acquisition of land</p>	Acquisition of land and acquisition of right to use land are necessary for securing the project site. Accordingly, resettlement of residents and access restrictions may occur.	<ul style="list-style-type: none"> • Implement RAP survey to identify affected residents and affected assets and consider appropriate compensation and support measures. • Establish appropriate compensation and relocation plan for the land and property of individuals for which acquisition or use rights restrictions are set as business land.

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
		<p>(1) Where a licensee requires the compulsory acquisition of land for any of the purposes of a licence, the licensee may apply to the Minister to acquire the land on his behalf.</p> <p>(2) Where the Minister in consultation with the Commission is satisfied that it is in the public interest to do so, he may acquire the land in accordance with the relevant laws.</p>		
7	Limitation of Actions Act Cap. 22 revised in 2012	<p>According to Limitations of Actions Act:</p> <p>Section 7 An action may not be brought by any person to recover land after the end of twelve years from the date on which the right of action accrued to him or, if it first accrued to some person through whom he claims, to that person.</p> <p>Section 9. Accrual of right of action in case of present interest in land</p> <p>(1) Where the person bringing an action to recover land, or some person through whom he claims, has been in possession of the land, and has while entitled to the land been dispossessed or discontinued his possession, the right of action accrues on the date of the dispossession or discontinuance.</p> <p>Section 13 Right of action not to accrue or continue unless adverse possession</p> <p>(1) A right of action to recover land does not accrue unless the land is in the possession of some person in whose favour the period of limitation can run (which possession is in this Act referred to as adverse possession), and, where under sections 9, 10, 11 and 12 of this Act a right of action to recover land accrues on a certain date and no person is in adverse possession on that date, a right of action does not accrue unless and until some person takes adverse possession of the land.</p> <p>Section 38. Registration of title to land or easement acquired under Act</p> <p>(1) Where a person claims to have become entitled by adverse possession to land registered under any of the Acts cited in section 37 of this Act, or land comprised in a lease registered under any of those Acts, he may</p>	It has no legal documents to prove ownership of the land, but the land of the inhabitants claiming ownership of the land is affected, residing for over 12 years.	In the RAP survey, in order to identify compensation targets, tasks related to ownership of land, including handling of residents who do not have legal documents but claim ownership of land, are arranged and solved. This will be done by the NLC and the local government with participation of local PAP Committee and local elders.

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
		apply to the High Court for an order that he be registered as the proprietor of the land or lease in place of the person then registered as proprietor of the land.		
8	The Land Registration Act, 2012 (No. 3 Of 2012)	<p>The Land Registration Act provides for the following:</p> <p>Section 24. Interest conferred by registration Subject to this Act—(a) the registration of a person as the proprietor of land shall vest in that person the absolute ownership of that land together with all rights and privileges belonging or appurtenant thereto;</p> <p>Section 26. Certificate of title to be held as conclusive evidence of proprietorship (1) The certificate of title issued by the Registrar upon registration, or to a purchaser of land upon a transfer or transmission by the proprietor shall be taken by all courts as <i>prima facie</i> evidence that the person named as proprietor of the land is the absolute and indefeasible owner, subject to the encumbrances, easements, restrictions and conditions contained or endorsed in the certificate, and the title of that proprietor shall not be subject to challenge</p> <p>Section 93. Co-ownership and other relationships between spouses: (2) If land is held in the name of one spouse only but the other spouse or spouses contribute by their labour or other means to the productivity, upkeep and improvement of the land, that spouse or those spouses shall be deemed by virtue of that labour to have acquired an interest in that land in the nature of an ownership in common of that land with the spouse in whose name the certificate of ownership or customary certificate of ownership has been registered and the rights gained by contribution of the spouse or spouses shall be recognized in all cases as if they were registered.</p>	Among the land affected by the project, owners have already applied for land registration procedures, and some are waiting for the issue of rights documents.	In the survey of RAP, it is necessary to grasp whether the land has been registered for the affected household, whether it is in the registration procedure or not registered, and take necessary measures so that compensation can be appropriately received.
9	Community Land Act, No. 27 of 2016.	<p>Section 22. Conversion of community land to public land (1) Community land may be converted to public land by—(a) compulsory acquisition;</p> <p>Section 23. Conversion of community land to private land</p>	Of the land belonging to Mwavumbo Ranch, the land of 5 households of Ranch is affected.	In order to allow the affected household to receive payment of compensation, NLC and the

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
		Registered community land ma), subject to the approval of the registered community, be converted to private land through— (a) transfer;		local government have started the mediation procedure, we are proceeding with the procedure to issue the land use right to the affected household.
JICA Environmental Guidelines				
1	Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives.	To ensure that there is reduction project impact through avoidance thereby minimizing displacement or relocation of project area person and loss of property.	In the project area, there are houses and other structures, villages, markets, public facilities, trees, and cultivated areas.	A study to minimize the influence by the transmission line route shall be conducted.
2	When, after such an examination, avoidance is proved unfeasible, effective measures to minimize impact and to compensate for losses must be agreed upon with the people who will be affected.	To ensure that project alternatives and appropriate designs are explored to minimise impact to project affected persons.	Resident relocation will occur.	A study to minimize the impact at initial stage shall be conducted. Also a study to mitigate impacts during project implementation stage shall be done. In case the influence will not be avoidable compensation and assistance measures shall be provided. If the influence can not be avoided, compensation and support will be given.
3	People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be	To ensure that project affected persons are not made poorer or worse off than before the project. Compensation for affected land and property is fully paid and livelihood of affected persons is made equal to or better than before the project implementation	· Loss of living infrastructure due to acquisition of land and acquisition of wayleave	Provide adequate support so that the living level of affected persons will be improved or will reach at

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
	<p>sufficiently compensated and supported by project proponents etc. in a timely manner. Prior compensation, at full replacement cost, must be provided as much as possible. Host countries must make efforts to enable people affected by projects and to improve their standard of living, income opportunities, and production levels, or at least to restore these to pre-project levels. Measures to achieve this may include: providing land and monetary compensation for losses (to cover land and property losses), supporting means for an alternative sustainable livelihood, and providing the expenses necessary for the relocation and re-establishment of communities at resettlement sites.</p>		<p>will occur (restriction of land use). · Relocation of structures including houses will occur. · Loss of trees and crops will occur. · Decrease in income due to business interruption (kiosk, flour grinding, and quarrying).</p>	<p>least equivalent level to the previous one. For this reason, the livelihood recovery and support measures will be prepared for all affected persons.</p> <p>Appropriate compensation measures according to the level of impact on the land will be prepared.</p> <p>Appropriate compensation for structures, trees, and crops including houses will be prepared.</p> <p>Appropriate compensation and support will also be given to operators such as affected small business.</p> <p>Appropriate compensation for income reduction due to business interruption will be provided.</p> <p>Payment of compensation is paid in advance by replacement cost.</p>

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
				Not to obstacle life after relocation adequate support will be provided.
4	Appropriate participation by affected people and their communities must be promoted in the planning, implementation, and monitoring of resettlement action plans and measures to prevent the loss of their means of livelihood. In addition, appropriate and accessible grievance mechanisms must be established for the affected people and their communities.	To ensure that project affected house heads are meaningfully consulted and given the opportunity to participate in the resettlement programs.	The project affects many back bodies existing in approximately 53 km along the line.	<p>In order to obtain residents and regional understanding, and cooperation, consultation meetings for the affected persons shall be conducted four times in each region.</p> <p>In the first meeting, project outline and the start of the survey will be shared, and obtain residents' cooperation for the survey.</p> <p>In the second meeting, impacts of the project on environmental and social aspects, and countermeasures will be presented.</p> <p>In the third meeting, detailed impacts and compensation policy will be presented.</p> <p>In the fourth meeting, final results of environmental and</p>

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
				<p>social study will be presented.</p> <p>An accessible and effective grievance redress mechanism will be prepared.</p>
5	<p>For projects that will result in large-scale involuntary resettlement, resettlement action plans must be prepared and made available to the public. In preparing a resettlement, action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance. When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected people. It is desirable that the resettlement action plan include elements laid out in the World Bank Safeguard Policy, OP4.12, Annex A.</p>	<p>To ensure that resettlement action plan reports are prepared for large scale projects and they are made available to project affected household heads.</p>	<p>Displacement more than 200 persons will occur.</p>	<p>A comprehensive and detailed RAP study will be conducted.</p> <p>Conduct public and transparent consultation meeting will be held. Affected persons can participate in all stages of the RAP process.</p> <p>Regarding the census survey to determine the eligibility for setting compensation and support measures will be provided by setting cut-off date. Especially to identified land ownership, local governments, NLC, and community elders will make necessary corabolation, In order to grasp land ownership clearly, survey will be conducted by involvement</p>

No.	Laws / guidelines	Related matter	Matters requiring impact and action by business	Coping policy in this project
				<p>of the experienced local persons who are familiar with local circumstances.</p> <p>Cultivation within wayleave, trees less than 12 feet, breeding of livestock are possible, compensation policy shall be in accordance with intension of the affected persons.</p> <p>Establish livelihood restration measures that can improve and maintain the lives of relocated persons.</p> <p>For business operators, the lost income will be compensated. Community based and mutual aid organizations will be utilized to facilitate relocation.</p> <p>Identify affected socially vulnerable households and prepare support measures that will not hinder livelihood maintenance.</p>

Source: JICA Design Team

(8) JICA Policy on involuntary resettlement

The basic policy of JICA relating to resettlement is shown in Table 11.2.33.

Table 11.2.33 JICA Basic Policy on Involuntary Resettlement Relocation

No.	policy
1	Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives. When, after such an examination, avoidance is proved unfeasible, effective measures to minimize impact and to compensate for losses must be agreed upon with the people who will be affected..
2	People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported by project proponents etc. in a timely manner. Prior compensation, at full replacement cost, must be provided as much as possible. Host countries must make efforts to enable people affected by projects and to improve their standard of living, income opportunities, and production levels, or at least to restore these to pre-project levels. Measures to achieve this may include: providing land and monetary compensation for losses (to cover land and property losses), supporting means for an alternative sustainable livelihood, and providing the expenses necessary for the relocation and re-establishment of communities at resettlement sites.
3	Appropriate participation by affected people and their communities must be promoted in the planning, implementation, and monitoring of resettlement action plans and measures to prevent the loss of their means of livelihood. In addition, appropriate and accessible grievance mechanisms must be established for the affected people and their communities.
4	For projects that will result in large-scale involuntary resettlement, resettlement action plans must be prepared and made available to the public. In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance. When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected people. It is desirable that the resettlement action plan include elements laid out in the World Bank Safeguard Policy, OP 4.12, Annex A.

Source: JICA Design Team

(9) Comparison between JICA Guidelines and partner country's legal system

The comparison between the JICA guidelines (including the World Bank's Safeguard Policy OP 4.12 Annex A) and the legal system of Kenya is shown in Table 11.2.34. As a special note, the Kenyan law neither have a requirement to avoid nor minimize project negative impacts like involuntary resettlement. There is also no clear provision for improvement and recovery of the standard livelihood for affected people. There is also no adequate provision for holding open consultation meetings with the participation of a wide range of stakeholders including affected people and the utilization of the meeting results. Therefore, consultation meetings in accordance with the JICA Guidelines will be held in this project with highly transparent and participatory approach. In addition, the basic policy will be maintained that consideration is given to obtain the understanding and cooperation of the residents, avoiding and minimizing project impacts including resettlement, and providing appropriate compensation and support measures.

Table 11.2.34 Comparison of JICA Guidelines and Kenya's Law (Gap Analysis)

No	JICA guidelines	Kenya's law	The gap between Kenya's law and the JICA guidelines	Policy in this project
1.	The involuntary resettlement of residents and the loss of livelihood measures should be avoided by considering all methods.	Eviction and Resettlement Bill 2012: Article 6 (1) regulates the procedures required before land compulsory detention takes place. Article 110 (1) of Land Act 2012 stipulates the case where land is forcibly acquired. These laws do not have provisions on avoidance, minimization, or mitigation of relocation of residents.	As stated on the left, there is no provision to Land Act 2012 to avoid, minimize, or mitigate citizen relocation as much as possible. In the case of public works, there is a tendency that involuntary resettlement is inevitable, but it is prescribed that compensation for non-influenced assets is necessary. In Article 5 of The Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act 2012, there is a requirement to avoid residents relocation.	As much as possible, in selecting the transmission line route, consider avoiding resettlement of residents and loss of living means. At the initial review stage, routes to avoid urban areas, densely populated areas, markets, schools, churches, mosques, hospitals, etc. were selected. As a result, it can be said that the resettlement of residents and the loss of livelihood measures were minimized as much as possible.
2.	In case inevitable relocation of residents, effective measures should be taken in consensus with the Target to minimize the impact and to compensate for the loss.	Land Act 2012 does not clearly state that it is necessary to take measures to minimize the impact. Compensation for land, structures, trees, and crops is stipulated. The Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act 2012: • Article 5 states that avoidance of resettlement • Article 22 (2) stipulates that residents' consultations will be held and the affected residents will agree.	Land Act 2012 stipulates to make complete compensation promptly. However, there is no provision that it is necessary to consider avoidance, minimization, or mitigation of relocation of residents. The Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities The contents of the provision relating to residents relocation of Act 2012 are the same as those of JICA guidelines.	In order to minimize the impact of the project and compensate for losses, consider the following support measures. • Compensation for assets such as land, structures, trees and crops • Compensation for loss of business income
3.	To those who are affected by involuntary resettlement and loss of livelihood measures, adequate compensation and support must be given at the	Land Act 2012 Article 134 (1) NLC stipulates that on behalf of the national and county governments, the affected population will implement a program to enable entry into the land on which residence and livelihood maintenance is based ing. (2) For the purpose of law, the	Kenya's law has provisions on recovery and resettlement of livelihood, but there is no provision for details. Kenya's law does not prescribe activities to raise the living standard of residents to be relocated. Meanwhile, JICA's policy requires sufficient compensation and support, including the transition period.	We plan to implement adequate compensation and support at an appropriate time.

No	JICA guidelines	Kenya's law	The gap between Kenya's law and the JICA guidelines	Policy in this project
	appropriate time by the recipient country etc. The partner countries, etc. shall endeavor to improve or at least recover the relocated residents in their previous living standards, income opportunities, production levels. This includes loss compensation (for loss of land and assets) by land and money, support for sustainable alternative livelihoods etc., support for expenses etc. required for relocation, support for community reconstruction at relocation destination, etc..	program shall include entry into the land for evacuation, movement, relocation due to illegal residents, natural disasters, development projects, land conservation, internal conflicts or other causes.		
4.	Compensation must be made in advance based on the re-acquisition price wherever possible.	Article 111 (1) of Land Act 2012 stipulates that in case of forcibly acquiring land, compensation shall be paid in full promptly to the residents identified as subject to payment.	There is no clear provision concerning the reacquisition price.	Compensation is to be paid as full as possible in advance based on the re-acquisition price wherever possible.
5.	Compensation and other assistance must be made before relocation.	Article 125 (1) of Land Act 2012 stipulates that NLC shall pay full and justifiable compensation to residents identified as eligible recipients as soon as practicable before acquiring land ing.	Clearly, there is no provision to pay before relocating.	Payment of compensation and support will be implemented before the residents relocate.
6.	In the case of large-scale involuntary resettlement relocation projects, residents relocation plan	There is no clear provision that it is necessary to prepare a Resettlement plan and publish it.	In Kenya 's law there is no provision that it describes all matters relating to resettlement, and that it will be made public.	Resettlement plan will be disclosed to affected community.

No	JICA guidelines	Kenya's law	The gap between Kenya's law and the JICA guidelines	Policy in this project
	must be prepared and released.			
7.	In preparing the Resettlement plan, consultation between the affected residents and the community must be done after sufficient information is provided in advance.	Article 35 of the Constitution To the right concerning access to information, (1) Every citizen, (A) information held by the state, and (B) Information held by others that is required for the exercise or protection of rights or fundamental freedoms, the information in this case having access to the case where the government forcibly acquires private property. Article 6 of the Evictions and Resettlement Bill 2012 specifies the procedures that must be observed before the compulsory detention of land. It is prescribed that appropriate consultation should be carried out under the provision.	There is no deviation.	Consultation with affected residents and target communities shall be carried out in advance by sharing information.
8.	At the time of consultation, the explanation by the language and the style which the affected people can understand has to be done	There is no specific provision.	There is a gap. In Kenya's law, it is not clearly stipulated that project explanations for affected people should be implemented in languages and styles that can be understood by residents.	Use Swahili words that can be understood by affected people. Because there are residents who can not read the letters, they give verbal explanations. As much as possible, the venue shall be the venue familiar to the residents as much as possible with the size suitable for the number of participants of the council. Take care so that everyone can hear it using the microphone and the speaker.◦
9.	Participation of affected residents at each stage of planning, implementation and monitoring related to	The Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communitieess Act 2012 stipulates participation of affected people.	Although there is no deviation in the basic part, there is no detailed provision in the law of Kenya, so it is necessary to promote participation of affected people at all stages of resettlement.◦	Plan to participate in affected people at all stages of resettlement plan.

No	JICA guidelines	Kenya's law	The gap between Kenya's law and the JICA guidelines	Policy in this project
	residents relocation plan must be properly taken.			
10.	Appropriate complaints handling mechanisms should be in place that can be easily accessed by affected residents and communities.	Land Act 2012 Article 128: The provision that land disputes will ultimately be adjudicated by the Land and Environment Court. The law provides for the following procedures to consider when raising complaints. •Utilize autonomous complaints handling measures widely accepted in the community •Utilization of an alternative local arbitration organization that is not official •Re-negotiation with NLC with Land and Environmental Court award in mind.	There is no regulation concerning the improvement of complaint handling mechanism concerning individual projects.	Complaints handling procedures shall be simple, convenient and reliable. Also prepare documents that can be alleged in Swahili language.
11.	In order to distinguish between the affected residents and those who flow in from outside in anticipation of the profits from the projects, in order to prevent the inflow from the outside, at the stage of business development, at the earliest possible time, the initial baseline survey (Including setting cut-off dates for qualified persons, population census, asset inventory, and socioeconomic investigation) to identify	Land Act 2012, Section 147 regulates the identification and documentation of residents in wayleave.	Kenya law does not have provisions on cut-off date.	Do community councils at the earliest possible stage and request cooperation to the residents and the community for investigation. Explain to the inhabitants and the community as a cut-off date at the start of the subsequent survey. The council also establishes a time frame for accepting questions.

No	JICA guidelines	Kenya's law	The gap between Kenya's law and the JICA guidelines	Policy in this project
	and record affected inhabitants. (WB OP 4.12 Para 6)			
12.	Eligible persons are (1) Affected residents with legal entitlements (including ownership of conventional and traditional land that may be legally allowed), (2) formal legal at the time of the census survey Affected residents who do not own entitlements but have claims against land and assets, and (3) Affected residents who do not have verifiable legal rights to the land they occupy. (WB OP 4.12 Para 15)	Sec 111. (1) of The Land Act 2012 stipulates that in case of forcibly acquiring land, promptly pay full compensation for all inhabitants whose rights to land have been confirmed promptly . However, the NLC has not developed rules for implementing legitimate compensation valuation. The Land Act 2012 stipulates that if the rights to official or customary land without written and written compliance conform to the Constitution of Kenya, it will be recognized as an effective right to the land. The law stipulates that residents to be compensated are persons who possess ownership of the aforementioned land. Land Act 2012 also certifies pastoralists, people who use land for living, people who have interests in the land, those making requests for land ownership. Section 40 (4) of the Constitution stipulates that there may be cases in which compensation is paid in good faith even for those who occupy land without having the right to land. However, those who acquired land illegally are not eligible.	There is no deviation.	Identify the affected residents and identify the availability of early entry. Cooperation between KETRACO, local administration, NLC, elder of the community, and PAP Committee is required for this work
13.	Regarding relocation of residents who use land as the basic goods of livelihood measures, it is	Land Act 2012 Sec 111. (1) stipulates that in case of forcibly acquiring land pursuant to this Act, promptly pay full compensation promptly to all persons	There is a gap. Cash compensation is widely used as a method for affected residents by the Kenyan government.	Explain the details of the impact and compensation policy in consultation with the residents, and consider it with

No	JICA guidelines	Kenya's law	The gap between Kenya's law and the JICA guidelines	Policy in this project
	desirable that priority is given to relocation strategies based on land. (WB OP 4.12 Para 11)	whose rights to land have been confirmed doing. The law presupposes compensation for citizens for affected residents.		an emphasis on the intention of residents.
14.	Provide assistance for the transition period (from transfer to livelihood recovery after relocation). (WB OP 4.12 Para 6)	Kenya's law provides for recovery and relocation of livelihood, but does not describe the details of livelihood recovery support measures.	As stated on the left, Kenya's law has no detailed provision on what kind of support should be provided to affected residents.	We will prepare necessary compensation and livelihood recovery support measures for affected residents and give consideration to maintenance and reconstruction of living without hindrance. For the affected structure add 15% annoying fee in addition to compensation for the main body.
15.	Special attention should be paid to the demands of socially vulnerable people who need relocation (in particular residents below the poverty line, residents without land, elderly people, women, children, minorities etc). (WB OP 4.12 Para 8)	Land Act 2012 Section 107 does not prescribe the need for special consideration for socially vulnerable people except for the provision that spouses are also included as parties to land and property transactions to protect spouses' interests.	There is a gap. In Kenya law there is no regulation concerning consideration for socially vulnerable people.	Identify the affected socially vulnerable and consider appropriate compensation and support measures.
16.	For projects where acquisition of land or less than 200 voluntary resettlement occurs, a simple resettlement plan will be prepared. (WB OP 4.12 Para 25)	Kenya's law does not have provisions relating to a simple resettlement plan.	There is a gap. In Kenya's law there is no guidance in accordance with the number of transfers concerning involuntary resettlement relocation.	Since more than 200 involuntary resettlement occurs, a detailed Resettlement plan will be prepared.

Source: JICA Design Team

(10) Land acquisition / Resettlement policy in this project

Obtaining land use rights, land acquisition and resettlement for residents are implemented appropriately in accordance with JICA Guidelines, World Bank Safeguard Policy OP 4.12 and the Kenyan laws and cases. In cases where avoidance and minimization of influence can not be achieved, consider appropriate compensation and support. Assistance and compensation shall be provided for the affected small businesses so that they can continue operation against losses due to business interruption. Socially vulnerable people shall be identified and provide compensation and support that will enable them to recover and maintain their livelihood if they need to relocate. The basic policy is described as below.

1. The Government of Kenya recognized there is a gap between current domestic law and international practice including JICA policy. Therefore, the government adopts this policy specifically for bridging the gap between domestic law and JICA policy. Here, we explain the policy of this project concerning the entitlements of affected residents according to the contents and degree of loss. The policy setting is a practical way to satisfy both domestic law and JICA policy.
2. Review alternatives and avoid or minimize relocation.
3. If relocation is inevitable, adequate compensation shall be provided and supported so that livelihoods of PAPs can be improved or recovered at least.
4. Compensation and support will be offered to all PAPs as follows:
 - Negative impact on living standards
 - Negative impact on permanent and temporary rights to houses, rights to land use, agricultural land, pasture land, commercial land, tenant, annual or perennial crops, trees, other real estate etc.
 - Temporarily or permanently negative affected income generation opportunities, sales, occupation, residents' place of business etc.
 - Impact on social and cultural activities and relations
5. All affected people are subject to compensation and support regardless of the ownership or social status. Anyone who has been confirmed to live, work, operate or cultivate in the affected area at the time of the latest census and asset survey will be subject to compensation and support.
6. If one loses a part of the asset, if the remaining assets are not enough to maintain one's livelihood afterwards, treat it as a person to be relocated. (The minimum scale of residuals, remaining assets, etc. will be determined at the time of relocation plan creation)
7. Temporary impacts are also considered in the relocation plan.
8. If impacts on the host community to be relocated are anticipated, ensure the participation of host communities in making relocation plans and decision-making.
9. Create a relocation plan in accordance with the JICA policy relating to the country legal system and resettlement.
10. The relocation plan shall be translated into local languages and made public for affected inhabitants and other interested people.
11. Compensation is provided based on the concept of replacement cost.
12. Compensation for affected people dependent on agricultural land shall be based on land as much as possible.

13. The alternative land shall be the same condition and same productivity as the land before relocation.
14. Transfer assistance will be provided not only for immediate damage but also for the transition period for recovery of the standard of living of affected people. Such assistance can take the form of short-term employment, special allowance, income compensation and the like.
15. The relocation plan shall be prepared with due regard to the needs of the most vulnerable people against the negative impact of the transfer. Also, assistance to improve their socio-economic situation must be provided. Vulnerable people include the poor, those without ownership of land, indigenous peoples, minority ethnic groups, women, children, aged people, people with disabilities, and others.
16. Affected residents participate in the creation and implementation of relocation plans.
17. Hear the opinions of the community to which affected residents and affected inhabitants belong, and make decisions regarding projects, the rights of affected residents, mitigation measures against the negative effects being considered, etc.
18. ◦ All expenses necessary for land acquisition including compensation and income recovery measures shall be available within the agreed implementation period. All costs necessary for relocation activities shall be borne by the government.
19. Infrastructure of the relocated area will be well developed before relocation. Acquisition of assets, payment of compensation fee, relocation, and start of livelihood recovery activity are completed before construction, except in cases where expropriation is decided by the court. (Since livelihood recovery support is an activity to be continued, it is necessary to start before relocation but it is not necessary to be completed.
20. The organization and management system for the effective relocation plan creation and implementation shall be established before the transfer process begins.
21. Appropriate monitoring, evaluation and reporting mechanisms are established as part of the transfer management system. An external monitoring group for this project is hired to evaluate the process and final results of relocation. As an external monitoring group, qualified NGOs, research institutes, universities, etc. can be considered.

11.2.14 Land Acquisition / Scale and Scope of Resettlement

(4) Scale and scope of resettlement

As a result of census and socio-economic survey, the number of households affected by the project is identified as 598 households, the number of affected land parcels is 565 and the total project land area is 519.71 acres. This breakdown is as follow.

- Wayleave areas : 502.19 acres
- Substation and its Maintenance road, the land will be perfectly acquired: 17.52 acres

Total 76 households and 492 people will be relocated.

Two cut-off dates were set for outside the SEZ area and within the area respectively. Outside the SEZ area, it was set as July 13, 2017 because the approval of the census survey was obtained in the Consultation

Meeting held on July 12, 2017. Meanwhile, for the inside of the SEZ area, coordination with the county government was completed in 2018 and census investigation began on the day following March 20, 2018 where the Meeting was held, it was set as March 21, 2018.

The cut-off date for each area is as listed in Table 11.2.35. The update of the census survey shall be made at the detailed design stage of the project.

Table 11.2.35 Cut-off Date

Cutoff date	Target area	Number of affected households
July 13, 2017	Mariakani Mwavumbo Mwatate Mtaa Kasemeni Gandini Mbunguni Ng'ombeni	531
March 21, 2018	Mtongwe (Dongo Kundu)	67
	Total	598

Source: JICA Study Team

In addition, in order to prevent the inflow of new residents after the cut-off date, the following measures shall be taken.

- The selected PAP Committee looks around the area and monitors for the influx voluntarily.
- The members of PAP Committee conduct patrols frequently and report to the local administration and KETRACO if there is any abnormality
- Since local administrations (including chiefs, village chiefs and elders) know who is living in the village, the inflowees are easily perceived. Then necessary actions are taken for each.
- The other general residents will also look around to defend the settlement and share information.
- Get support from religious leaders of the area, influential people and police support as necessary.

The results of the census survey are shown in Table 11.2.36 (Outline of Affected Households and Assets), Table 11.2.37 (Breakdown of Affected Households (Legal, Illegal)), Table 11.2.38 (Types of Affected Land), Table 11.2.39 (Structures), And Table 11.2.40 (tree, crop)..

Table 11.2.36 Summary of Affected Households and Assets

#	Breakdown	Outside Dongo Kundu			Inside Dongo Kundu			Total		
		A	B	Total	A	B	Total	A	B	Total
1.0	Asset holder									
1.1	Number of households (HH)	7	524	531	67		67	74	524	598
1.3	Other Institutions / Organizations		7	7		1	1	0	8	8
	Total asset holders	7	531	538	67	1	68	74	532	606
	<i>Households repeatedly counted (HH)</i>	<i>1</i>	<i>33</i>	<i>34</i>	<i>2</i>		<i>2</i>	<i>3</i>	<i>33</i>	<i>36</i>
	Record total	8	564	572	69	1	70	77	565	642
2.0	Affected residents									
2.1	Number of adults	33	1,690	1,723	234		234	267	1,690	1,957
2.2	Number of children	30	1,686	1,716	176		176	206	1,686	1,892
	Number of affected residents	63	3,376	3,439	410		410	473	3,376	3,849
3.0	Relocation of self out of the premises / within the premises									
3.1	Households to be displaced out from their land plots (HH)		12	12	4		4	4	12	16
3.2	-same but number of people-		65	65	24		24	24	65	89
3.3	Households to be relocated within their own land plots (HH)	4	52	56	4		4	8	52	60
3.4	-same but number of people-	31	346	377	26		26	57	346	403
	Total households to be displaced and relocated (HH)	4	64	68	8		8	12	64	76
	-same but number of people-	31	411	442	50		50	81	411	492
4.0	Affected land									
4.1	Number of land parcels	7	493	501	65		65	72	493	565
4.2	Land area requiring acquisition of usage rights and land (acres)	3.23	460.20	463.43	56.28		56.28	59.51	460.20	519.71

Source : Panafcon –RAP Survey,2017-2018

A: Household claiming ownership of land (no title deed)

B: Land owned household (with title deed)

Table 11.2.37 Breakdown of Affected Household (Legal, Illegal)

No	Asset Breakdown	Number of affected households (HH)			Affected number of people		
		Legal	Illegal	Total	Legal	Illegal	Ttala
	Households that need relocation						
1	Building within government owned land		7	7		45	45
2	Building in private property	63	4	67	410	31	441
3	Tenant	-	-	-	-	-	-
4	Shops / companies (in the land owned by the government)		1	1		5	5
5	Shops / companies (within private estate)	1		1	1		1
6	Tenant	-	-	-	-	-	-
7	Community-owned buildings including cultural and traditional facilities	2		2	-	-	-
8	Land owner	493	72	565	3,008	462	3,470
9	Wage worker	306	64	370	390	1,173	1,563
	Total I (1-9)	865	148	1,013	3,809	1,716	5,525

Source : Panafcon –RAP Survey,2017-2018

Table 11.2.38 Types of Affected Land

No	Region	Land type	Area	total
1	Gandini Location	Farmland	76.83	76.83
		Residential land		
		Commercial area		
2	Kasemeni	Farmland	43.33	43.97
		Residential land		
		Commercial area		
3	Mariakani	Farmland	36.03	36.03
		Residential land		
		Commercial area		
4	Mbunguni	Farmland	78.47	78.47
		Residential land		
		Commercial area		
5	Mtaa	Farmland	34.45	34.45
		Residential land		
		Commercial area		
6	Mtongwe	Farmland	53.51	55.00
		Residential land		
		Commercial area		
7	Mwatate	Farmland	42.44	44.32

		Residential land		
		Commercial area		
		Other (Trading center planned place)	1.88	
8	Mwavumbo	Farmland		
		Residential land	109.73	110.57
		Commercial area	0.84	
9	Ngombeni	Farmland		
		Residential land	37.54	40.07
		Commercial area		
		Other (Kiteje Sec Sch)	2.53	
	Total			519.71

Source : Panafcon –RAP Survey,2017-2018

Table 11.2.39 Buildings

NO	Region	Construction	Subtotal	Total
		Residence		
1	Gandini Location	Permanent	2	9
		Semi-permanent	7	
2	Kasemeni	Permanent	3	21
		Semi-permanent	17	
		Temporary	1	
3	Mariakani	Permanent	2	20
		Semi-permanent	18	
4	Mbunguni	Permanent	0	16
		Semi-permanent	13	
		Temporary	3	
5	Mtaa	Permanent	2	6
		Semi-permanent	4	
6	Mtongwe	Permanent	5	10
		Semi-permanent	3	
		Temporary	2	
7	Mwatate	Permanent	1	4
		Semi-permanent	3	
8	Mwavumbo	Permanent	3	13
		Semi-permanent	10	
9	Ngombeni	Permanent	0	7
		Semi-permanent	7	
		Permanent	18	106
	Total	Semi-permanent	82	
		Temporary	6	
	A shop			
1	Mwavumbo	Kiosk	1	2

2	Mtongwe	Posho Mill	1	
Public / Community / Private / Group				
1	Mariakani	Sagar Holdings Ltd	1	8
2	Mbunguni	Matuga Water Supply	1	
		Kenya Power & Lighting	1	
3	Mtongwe	Kenya Ports Authority	1	
4	Mwatate	Proposed Trading Centre	1	
5	Mwavumbo	Kenya Railways	1	
		Kenya Pipeline Co Ltd	1	
6	Ngombeni	Kiteje Sec School	1	

Source : Panafcon –RAP Survey,2017-2018

Table 11.2.40 Trees and Crops

NO	Region	Livestock hut	Plant type	Subtotal	total
1	Gandini Location	3	Mango (tree)	26	199
			Tamarindo (tree)	2	
			Coconut (tree)	83	
			Cashew nut (tree)	35	
			Neem tree (trees)	8	
			Banana (crops)	20	
			Sisal hemp (crops)	25	
			Aloe vera (crops)	0	
2	Kasemeni		Mango (tree)	12	591
			Tamarindo (tree)	1	
			Coconut (tree)	208	
			Cashew nut (tree)	37	
			Neem tree (trees)	333	
			Banana (crops)	0	
			Sisal hemp (crops)	0	
			Aloe vera (crops)	0	
3	Mariakani	1	Mango (tree)	0	14
			Tamarindo (tree)	14	
			Coconut (tree)	0	
			Cashew nut (tree)	0	
			Neem tree (trees)	0	
			Banana (crops)	0	
			Sisal hemp (crops)	0	
			Aloe vera (crops)	0	
4	Mbunguni	6	Mango (tree)	23	2,242
			Tamarindo (tree)	2	
			Coconut (tree)	682	
			Cashew nut (tree)	19	

			Neem tree (trees)	83	
			Banana (crops)	1,191	
			Sisal hemp (crops)	240	
			Aloe vera (crops)	2	
5	Mtaa		Mango (tree)	2	44
			Tamarindo (tree)	0	
			Coconut (tree)	28	
			Cashew nut (tree)	0	
			Neem tree (trees)	14	
			Banana (crops)	0	
			Sisal hemp (crops)	0	
			Aloe vera (crops)	0	
6	Mtongwe	11	Mango (tree)	46	925
			Tamarindo (tree)	22	
			Coconut (tree)	11	
			Cashew nut (tree)	18	
			Neem tree (trees)	254	
			Banana (crops)	358	
			Sisal hemp (crops)	210	
			Aloe vera (crops)	6	
7	Mwatate		Mango (tree)	9	20
			Tamarindo (tree)	1	
			Coconut (tree)		
			Cashew nut (tree)	7	
			Neem tree (trees)	3	
			Banana (crops)	0	
			Sisal hemp (crops)	0	
			Aloe vera (crops)	0	
8	Mwavumbo	6	Mango (tree)	4	1,003
			Tamarindo (tree)	15	
			Coconut (tree)	27	
			Cashew nut (tree)	0	
			Neem tree (trees)	26	
			Banana (crops)	50	
			Sisal hemp (crops)	881	
			Aloe vera (crops)	0	
9	Ngombeni	2	Mango (tree)	47	796
			Tamarindo (tree)	3	
			Coconut (tree)	56	
			Cashew nut (tree)	77	
			Neem tree (trees)	316	
			Banana (crops)	152	

			Sisal hemp (crops)	117	
			Aloe vera (crops)	28	
	Total	29			5,834

Source: JICA Study Team

Note: Only major trees and crops are listed

(5) Site survey**i) Current conditions of land ownership in the transmission line route**

In the census survey, 565 land parcels have been identified. As a result of examining the situation, there were 474 plots without conflict and 91 land parcels requiring solution. The 319 land parcels have no conflicts but are unregistered. Kenya is trying to promote the nationwide land registration. However, progress is not good. Current registration rate in Kilifi and Mombasa County is around 20-30%. The concerned land parcels have been confirmed through investigation which NLC involved. Therefore, registration of land is expected to proceed smoothly. The breakdown is shown in Table 11.2.41. Regarding the land that requires mediation, the related institutions such as KETRACO, NLC and the local government have begun procedures for solution.

Table 11.2.41 Land Ownership Status

No	Land ownership situation	Number of land parcels (number of households)	Remarks
1	Land is properly registered, there is no conflict.	6	-
2	Land owner is not currently registered. There is no conflict concerning land.	319	NLC, KETRACO and Local governments are proceeding for registration.
3	Registration of the landowner is not currently being done, so mediation is necessary.	1	The mediation is undergoing by KETRACO and NLC.
4	Owener of the part of Mwavumbo Ranch (community land) with no land-related dispute.	149	
5	Owener of the part of Mwavumbo Ranch (community land) without registration by household which is necessary to receive compensation payment	5	NLC is leading procedures to confirm ownership.
6	12 households are using land within the Mwanda health center (public land). The boundary of the land with the center is not clear.	12	NLC and KETRACO confirm the boundary of the land and start procedures to confirm ownership.
7	Sagar Holdings Land In the company land, residents living more than thirty years are claiming ownership.	7	NLC and Local governments start procedures to confirm ownership.
8	Dongo Kundu area leased under the name of KPA - Since 1997 KPA has leased the land of Dongo Kundu to manage it. On the other hand, residents living more than thirty years are claiming ownership there.	65	NLC and Local governments start procedures to confirm ownership.

9	Kiteje Secondary School The school's land is due to donation from residents of the community, and one household has resided in the premises of the school. So land ownership is not clear.	1	KETRACO is leading procedures to confirm ownership.
	Total	565	

Source: JICA Study Team

Among the 565 land parcels only 6 land parcels (households) are registered. In Kenya, especially in coastal areas, the affiliation of land is regarded as belonging to the community in a customary manner. The land registration status is low, about 30% in Mombasa County, about 34% in Kilifi County and 22.5% in Kwale County. However, in this study, since cooperating system with NLC has been established, mediation/confirmation of land ownership will be smoothly implemented.

There are sacred trees (Tree Shirine) that are protected by the residents for generations in two places in the transmission line route. Because tree height is more than 12 feet, KETRACO standards requires logging. With regard to the current route, it was difficult to avoid because of the influence of roads running parallel to the power transmission line, after discussions with each tree owner and the community, agreement on logging has been reached with them but in detailed design stage, avoidance of such areas will be studied. By doing the rituals prescribed by the tradition, it is possible to transfer the sacred power to another tree etc. The expenses necessary to implement this ceremony are included in the budget. Final solution shall be studied during detailed design stage.

(6) Household economy / Livelihood survey

In order to ensure that the assessment and compensation policy of the project's impact is based on a verifiable survey, the following socioeconomic surveys were conducted at the project site.

Interview surveys and household questionnaire surveys were conducted to grasp the affected households and their assets in detail.

In the survey, the education level of household head, income, employment situation, land holding situation, land area affected, the number and types of structure for each affected household, affected trees, kinds of crops etc. were surveyed. The survey was conducted by using map and GPS to identify the wayleave (40 m) of the transmission line from Mariacani to Dongo Kundu substation and the site of the substation and maintenance road. We also conducted questionnaires on stakeholders affected by the development of substation and maintenance road. All interviews and questionnaire surveys were made using the Swahili language which the residents fully understand. We also conducted focus group discussions (FGD) as necessary in each region. FGD was also implemented for women only in the Mariakani area which is the starting point of transmission line, etc. In the project area, there are a large number of tribes living as members of the Mijikenda subgroup and Kamba as their main members. The religion in affected communities was Muslims with about 73%, then Christians with about 27%. In addition, it was found that Swahili culture is dominant along the transmission line route.



Source: JICA Study Team

Figure 11.2.26 Consultation Meeting in Kiteje (Many Women Participated)

(7) Villages and population

Along the transmission line route is basically local rural area and village is scattered, and population density is low. In the area firm structures using the galvanized iron sheet for roof and wood or bricks for wall, and plain structures roofed with thatch and using mud for wall coexist..



Source: JICA Study Team

Figure 11.2.27 Structure affected by Transmission Line



Source: JICA Study Team

Figure 11.2.28 Affected Plain Livestock Fence

(8) Land use

On the transmission line route, small scale coconuts and cassava cultivation are main products. Small corn cultivation and breeding of small livestock are also carried out in the highland between Mariakani substation and DK 5. Some also engage in quarrying and selling business for building materials, although it is a small number. Meanwhile, coconut, cassava and cashew nuts cultivation are intensively carried out in lowlands, and maize and legumes are also cultivated abundantly.

(9) Livelihood

Composite cultivation such as corn, sorghum, millet, green gram, beans, peas, cassava, etc. is carried out in the area for maintaining livelihood. Breeding of livestock such as Zebu beef (cattle), goat, sheep and the like are also performed. Other livelihood activities include stone sampling and processing. Fishing is mainly done in the coastal area of the Dongo Kundu area. Work by regular / irregular employment, / retail industry, tourism industry is done in urban areas. Crops such as coconut and mango are grown many in the Matsuga area. The cash crops grown in this area are cashew nuts, coconut, sugar cane, cotton, and tobacco.



Source: JICA Study Team

Figure 11.2.29 Quarry located along the Line

(10) Socioeconomic in affected areas

The results of household survey and living survey are shown in Table 11.2.43. The total number differs for each survey item because the number of collected questionnaires is different.

Affected residents are distributed in the narrow belt-like range between Mariacani and Donggokdu Du. It is a rural area as a whole, it can be said that the social and economic characteristics of residents are uniform. In this area, there is a community shown in Table 11.2.42. Each region is dominated by a specific Miji Kenda subgroup. Residents are mainly engaged in self-sufficiency farming and small-scale livestock breeding.

Regional administration in Kenya, on 7th March 2013, by the new Constitution, the state has been dismantled and 47 counties are the primary administrative division. The composition of the local government is County, Sub-County, Ward and Village in order from the top. Decentralization is progressing, authority has been transferred to the local administration, and the authority of the local government is growing.

Table 11.2.42 Project Area Community

County	Sub-County	Ward	Community/Spoken Language
Kilifi	Kaloleni	Mariakani	Giriama, Duruma and Kamba
Kwale	Matuga	Mbunguni	Duruma

County	Sub-County	Ward	Community/Spoken Language
Kwale	Matuga	Ng'ombeni	Duruma
Kwale	Kinango	Kasemeni	Duruma
Kwale	Kinango	Gandini	Duruma
Kwale	Kinango	Mwavumbo & Mwatate	Digo & Duruma
Mombasa	Likoni	Mtongwe	Digo, Duruma, Swahilis, Kamba, Luhya, Luo, Somali, Taita, Kikuyu, Kisii, Pokomo, Meru

Source: JICA Study Team

Most of the communities in the project area belong to the Duruma community (speaking the Duruma language), but since almost all communities speak Swahili, the investigation was done in Swahili.

As a result of investigation, the number of land owned household has been confirmed as 565 in wayleave area. This includes 7 households outside the SEZ area and 65 households in the SEZ area. They do not have title deeds but claiming land ownership.

Under the Sagar Holdings, there are seven households are claiming for land compensation outside the SEZ area (Mariakani area). Since 1997, Kenya Ports Authority (KPA) has managed the SEZ area for 99 years lease. 65 households are claiming for compensation for land within the designated SEZ area. They have resided peacefully for more than 30 years and NLC has recognized this situation. Therefore, there will not be a major obstacle for compensation payment.

In order to grasp the living conditions of the affected residents and to study compensation policy, survey and interview were conducted.

As a result of the survey, it was grasped that about 38% of household heads had no experience of going to school. Therefore, there is a possibility that basic knowledge and experience of money management may be insufficient. Management of compensation money for these households, guidance concerning operation and careful support at the time of relocation is necessary.

Occupations of the surveyed persons are regularly employed workers such as civil servants, teachers, security guards, cooks and accounting personnel and self-employed workers as carpenters, painters, masons, mechanics, weavers, electric workers, etc., and as independent farmers. It includes a lot of people as motorcycle taxi drivers, kiosk salespersons, charcoal vendors, drivers of public transportation, winemaking and others. A part of the project area is close to the Mombasa beach, a marine resort. So it seems that some workers are employed in various sectors in the tourism. About 29% of household heads are unemployed. It was grasped that 198 households are socially vulnerable households affected by the project. Through these surveys, it was confirmed that there were no indigenous people and minority tribes in the target area.

In addition, the affected residents strongly support the project by understanding that the project should be realized and local development should be promoted in order to bridge the current social and economic disparity. Table 11.2.43 shows the results of household survey.

Table 11.2.43 Results of Household / Living Survey

No.	Item	Breakdown	Number of households	Percentage (%)
1	Age (Answer 598 households)	0 to 35 years old	108	18.1
		36 to 60 years old	317	53.0
		Over 60 years old	173	28.9
2	Gender (Answer 593 Households)	Male	457	77.1
		Female	136	22.9
3	Marital status (Answer 566 households)	Marriage	465	82.2
		Divorce	11	2.0
		Separately	3	0.5
		Single	16	2.8
		Widow	71	12.5
4	Educational level (Answer 563 households)	Graduate school	1	0.2
		University	15	2.8
		Post-secondary education	15	2.7
		Secondary education	54	9.6
		Primary Education	265	47.0
		No student experience	213	37.7
5	Profession (Answer 488 households)	Craftsman	38	7.8
		Agriculture	90	18.4
		Employment	78	15.9
		Management	3	0.6
		Small Business	120	24.6
		Unemployment	140	28.6
		Other	19	4.1
6	Income (Kenyan Shilling) (Answer 598 households)	0~3,000	309	51.7
		3,001~15,000	177	29.6
		15,001~30,000	65	10.9
		30,001~50,000	21	3.5
		50,000 以上	26	4.3
7	Cooking heat source (Answer 559 households)	Firewood	473	84.6
		Charcoal	54	9.7
		Gas	24	4.3
		Kerosene	8	1.4
8	Religion (Answer 476 households)	Islam	348	73.4
		Christianity	126	26.6
9	Toilet (hygiene) facility (Answer 558 households)	Flush toilet	34	6.1
		Pit toilet	362	64.9
		Gardenhead / bush	162	29.0
10	Drinking water (Answer 554 households)	Well · Borehole	210	37.9
		Water supply	163	29.4
		Fountain/ river water	151	27.2
		Other	30	5.5

Source : JICA Study Team

(11) Socially vulnerable household

As a result of the survey, a total of 198 households were grasped as a socially vulnerable household group affected by the project. In identifying the socially vulnerable households, the opinions of County Chief and local elders were considered.

The households include people with disabilities, terminally sick people, elderly people, female headed households and poor households. The breakdown of socially vulnerable is shown in Table 11.2.44.

Table 11.2.44 Breakdown of Socially Vulnerable People

No.	Breakdown	Household
1	Bedridden, terminal days, seriously ill and others	8
2	Disabled person	7
3	Elderly people	68
4	Female headed households, widow	114
5	Minors (young people)	1
	Total	198

Source : JICA Study Team

It was grasped that assets affected with socially vulnerable households are land, structures trees, crops and businesses. The breakdown is shown in Table 11.2.45.

Table 11.2.45 Breakdown of Assets of Affected Households

No.	Breakdown	Household
1	The central asset is land. Structures, trees, crops, shops are attached.	172
2	Land is not included. The central asset is a structure. Incidentally trees, crops	20
3	Trees, crops only	6
	Total	198

Source : JICA Study Team

Table 11.2.46 summarizes the regional distribution of socially vulnerable households, the form of relocation and the state of ownership of land.

Households requiring relocation are 29 households, with a breakdown of 5 households leaving their own land and moving to another land, and 24 households that need to move to locations within their own land area. It was grasped that there are 24 households without land and 174 households own land. From this data it is necessary to support households moving out from their own land and households without land.

Table 11.2.46 Breakdown by Region, Resettlement Type and Land Ownership Situation

No.	Region	Women headed households (HH)	Men headed household (HH)	Sub total (HH)	Displacement from One's own land (HH)	Relocation within one's own land (HH)	Sub total (HH)	Households without land	Households owing land
1	Gandini	12	1	13	0	3	3	4	9

2	Kasemeni	24	10	34	3	4	7	4	30
3	Mariakani	19	11	30	0	7	7	7	23
4	Mbunguni	20	6	26	0	4	4	6	20
5	Mtaa	4	2	6	1		3	1	5
6	Mtongwe	17	6	23	1	2	2	1	22
7	Mwatate	7	2	9	0	1	1	1	8
8	Mwavum bo	20	17	37	0	1	2	0	37
9	Ngombeni	13	7	20	0	2	0	0	20
	Total	136	62	198	5	24	29	24	174

Source : JICA Study Team

(12) Conflicts grasped along the transmission line route

As a result of the survey, it was grasped that there were lands with conflicts concerning ownership of lands and trees. Procedures for resolution have already been started for all cases, but continuous monitoring is necessary. In addition, if necessary, NLC will dispatch executives from the headquarters to solve the land problems in the local area and make an official hearing based on the request from the NLC's Local Coordinator located in the local and local governments will be carried out. In the hearing gathering, NLC hears allegations from disputed parties, respond to necessary procedures on the spot, and work on prompt resolution. Table 11.2.47 shows the contents of the disputes and the status of implementation of the procedure for resolving those cases.

Table 11.2.47 Land and Assets with Issues

No	Breakdown of disputes	Measures for conflicts solution	Number
1	Land use dispute between co-owner Whether to use it as a cultivated land between two co-owner or as pasture or pasture land is contested.	Regional administration, local elders, and families participated and mediation towards solution was started. Chief, which has jurisdiction, plans to issue a document indicating a ruling. The contents will be verified when NLC and KETRACO confirm the compensation amount at a later date.	1
2	Mwavumbo Ranch Regarding the land of Ranch, it is registered as one case, and it is shared by five members. Lands used by five members are affected by the transmission line project, the compensation will be determined according to the area size owned each. An adjustment meeting is required.	NLC implemented hearing surveys. The adjustment meeting was held for the survey result.	5
3	Mwanda Health Center Twelve households use the land within the Munda health center (public land). The boundary of the land with the center is not clear.	NLC and KETRACO are in the process of verifying land boundary and ownership. The compensation amount will be decided according to the confirmation result.	12
4	Sagar Holdings 40.79 acres of land are registered in the	NLC and Local government are mediating based on relevant laws and past cases and	7(Complainants)

No	Breakdown of disputes	Measures for conflicts solution	Number
	Mariakani district of Kilifi County under the private company Sagar Holdings. Seven households are claiming ownership of 18.51 acres of them. Total 7.23 acres of households are affected by wayleave of transmission lines and are subject to compensation. Seven households have resided in the same place for more than 30 years, claiming ownership.	others. The compensation amount will be decided as soon as arbitration is completed.	
5	Dongo Kundu area The land in Dongo Kundu area where SEZ would be developed was leased to KPA in 1997. Meanwhile, as a result of the census survey, there are 65 households living in the same place for more than 30 years, claiming ownership of the land. They are claiming ownership.	NLC and Local government are mediating based on relevant laws and past cases and others. The compensation amount will be decided as soon as arbitration is completed	65
6	Kiteje Secondary School The school's land is due to donation from residents of the community, and one household has resided in the premises of the school. So land ownership is not clear.	It is being adjusted that KETRACO secures the residential area for them, then they will be resettlement. After completion of relocation, decide how to compensate for school land.	1

Source : Panafcon - RAP Survey, 2017 and 2018

11.2.15 Specific Measures for Compensation and Support

(4) Loss compensation

In addition to land, structures, trees and crops, the affected residents who are engaged in a total of 3 small businesses shall be compensated and supported. Compensation for land, structures, trees and crops shall be by replacement cost.

Trees are evaluated based on the compensation schedule prepared by the Kenya Forest Services (KFS) according to age of tree, etc. Trees in the project area are used for various purposes such as fruit production, furniture, sculpture, medicinal effects, construction materials, firewood and the like. Each tree is classified as mature, medium, and young, and evaluated based on the KFS's guiding schedule.

i) Evaluation of land

All affected land owners are entitled for compensation, depending on the land area occupied by the project. Valuation of the land is carried out by Valuer who has an official certification of registration, and the compensation amount based on the replacement cost is calculated by a predetermined calculation method. In the case of Kenya, monetary compensation has been practiced rather than the provision of alternative land based on the strong intention of affected residents. The relocated residents will recover and maintain their livelihood by acquiring appropriate land with free will. In addition, KETRACO will not perform designation of the alternative land, but it will provide necessary information about the land in the vicinity

to the affected household to be resettled and plan to reduce the impact on livelihood by promoting smooth and prompt resettlement.

The amount of compensation for land affected by wayleave is calculated according to the criteria of KETRACO in the following way. Since the substation and its maintenance road are acquired completely, it corresponds to the following 100% case. Therefore, 100% will be applied.

Compensation amount is calculated by (Applicable rate:%) x (wayleave area) x (unit price of land)

- If the area of the target land is 4,000 m² (about 1 acre) or less and the area occupied by wayleave with respect to the total area is 50% or less, the applicable rate is 50% of the replacement cost.
- If the area of the target land is 4,000 m² (about 1 acre) or more and the area occupied by wayleave with respect to the total area is 50% or more, the applicable rate is 30% of the replacement cost.
- If the area occupied by wayleave with respect to the total area of the target land is 50% or more and the value as an asset decreases remarkably, 100% is applied.

ii) Evaluation of trees

It is conducted in accordance with the procedure written by Kenya Forest Services (KFS) based on The Forest Act 2005 and The Forest Regulations 2016. In particular, by the market price (KSH / kg), the growth period (year), the average life expectancy (year), the seedling price (KSH) are taken into consideration in the evaluation of trees, and in the case of fruit trees, the annual average harvest amount (kg / year) is added. Therefore, the asset evaluation of fruit trees can be obtained by the following formula.

Tree (fruit tree) = annual average harvest amount × market price × number of years + seedling price

In the case of ordinary trees, based on the KFS's procedure manual, cubic volume as lumber is calculated in addition to the price of seedling, species, and age of tree.

iii) Evaluation of crops

Evaluation criteria are established in 2018 by Ministry of Agriculture and Irrigation in the Resettlement Policy Framework (RPF). Based on market prices, crops are assessed in one of two ways:

1) Calculated from the compensation rate established by the Ministry of Agriculture:

The compensation rate is set for all crops, and it is calculated regardless of the maturity of the crop. The compensation rate also includes maintenance costs (logging, cultivation, sowing, weeding, crop harvesting labor costs) to start farming on new land.

At this time, the asset valuation of the crop is obtained by the following formula.

$$\text{Crop} = (\text{market price} + \text{maintenance cost}) \times \text{area}$$

2) Calculation from actual results:

Calculate from the field survey results such as crop yield at last year.

iv) Small business activities

Based on the survey results, prepare compensation and support measures for targeted companies. The businesses being confirmed are as follows.

- Quarrying for building materials and their sales

- Sales of daily necessities and miscellaneous goods
- Mill service business (getting income by grinding such as corn)

v) Compensation for structures

Compensation for structures shall be by the replacement cost. Includes all fees (construction permit and registration fee etc.) and construction cost. 15% of disturbance allowance in addition to compensation for the structure itself will be paid.

For small-scale business activities, monthly business income is calculated and as a support measure, compensation for 3 months of business revenue shall be compensated. Also pay expenses to move the movable assets such as necessary tools, fixtures and powder machines to the new location.

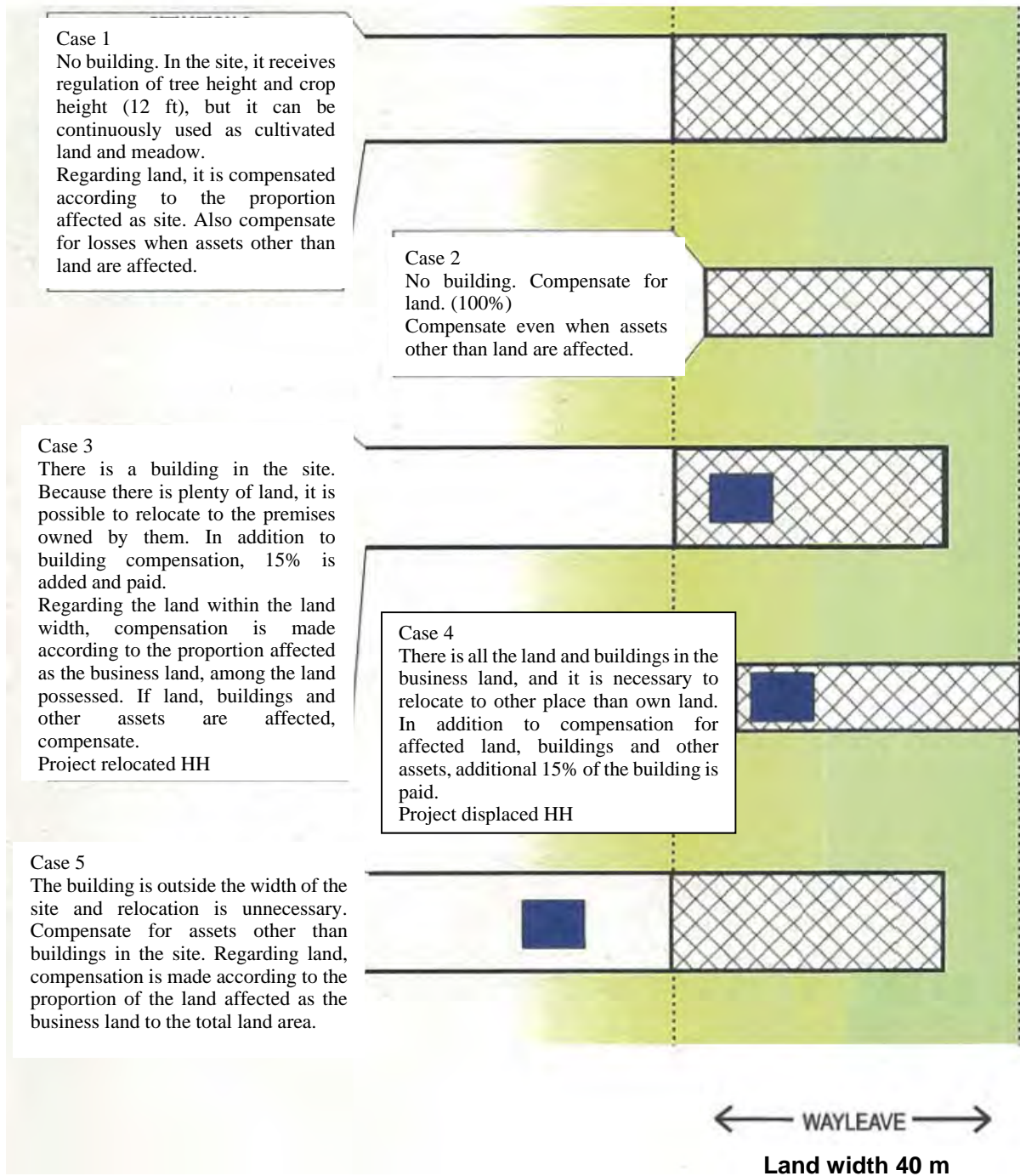
This support makes it possible for companies to mitigate impacts caused by business interruption due to relocation.

All affected land owners are entitled to compensation, depending on the land area occupied by the project. 30% is set as the minimum limit of the affected area, and even if 10% of the owned land is affected 30% will be calculated as being affected.

Lands for the substation and the maintenance road are completely logged and levelled. The total area is 70,920 m². This land is subject to compensation at a rate of 100%.

Compensation for structures shall include the complete replacement cost based on the current market rate excluding depreciation expenses, all fees (such as construction permit and registration fee) and labor costs. In addition to compensation for the structure, 15% of disturbance allowance fee will be paid.

Figure 11.2.30 shows the basic compensation policy for the land and structures in wayleave.



Source : Significantly modified IFC Handbook for preparing a Resttlement Action Plan

:
 : Restriction on land use (construction not permitted, height of tree restricted to 12 feet, available for cultivation / meadow)

Figure 11.2.30 Image of Basic Compensation Policy

(5) Livelihood restoration plan

i) Approach in preparing the livelihood restoration plan

Implementation of this project will affect households living in the project area. For this reason, the impact of the project area has been investigated and examined. And livelihood restoration measures to be implemented by the project proponent have been studied. Some of the support measures will be implemented in cooperation with NLC and the local governments.

This project is to construct a transmission line, and the impact on livelihood during the construction period is considered to be rather short and temporary. Each tower is constructed within wayleave area, and the construction period between each section is assumed to be about 2 months.

In the target area of this project, many households are engaged in agriculture, as well as households operating some stores and quarrying businesses. To these households, training and advice that will contribute to improving productivity shall be provided.

Also, as consideration for the socially vulnerable people among the affected residents, simple work such as logging, afforestation and watering of plants that can engage with women etc. shall be considered. KETRACO is to oversee actual performance in preference to socially vulnerable people, especially the contractor. The construction works shall contribute to the regional economy by using the existing stores in the project target area as much as possible for the living goods and foods required by the workers of this construction as much as possible.

In addition, guidance, training and orientation for improving livelihoods such as advice for receiving microfinance, orientation for receiving skills training, etc. are included in the support measures.

On the other hand, KETRACO is responsible for protecting the workers and the community from infectious diseases, the necessary countermeasures shall be included in the tender document so that the contractor can execute it reliably.

ii) Contents of the livelihood recovery program

Based on the above policy, the livelihood restoration plan has been prepared as shown in Table 11.2.48 below.

Based on the intention of the target households and the cases of other projects carried out by KETRACO, the compensation for the socially vulnerable shall be compensated for monetary rather than offering alternative lands.

Table 11.2.48 Livelihood Restoration Plan

No	Livelihood activities	Contents	Livelihood recovery support measures	Responsible body	budget
1.	Building stone quarry	Collection, processing, sales of stones	<ul style="list-style-type: none"> • Support such as providing necessary information for securing a suitable place close to the current site so that the target person can continue quarrying and selling activities and maintain their daily lives. • Support for movement of required equipment and tools. • Provide training and orientation on opportunities related to management improvement, operation strengthening methods and safety management. • To compensate for 3 months worth of monthly income to maintain livelihood during the relocation period 	<ul style="list-style-type: none"> • KETRACO • NLC 	<ul style="list-style-type: none"> • RAPbudget • KShs67,500
2.	Kiosk (store) business	Sales of groceries and daily goods	<ul style="list-style-type: none"> • Support such as providing necessary information for securing new places in suitable places where business can be continued, such as places close to customers. • Provide training and orientation on opportunities related to management improvement and strengthening methods. • To compensate for 3 months worth of monthly income to maintain livelihood during the relocation period. 	<ul style="list-style-type: none"> • KETRACO • NLC 	<ul style="list-style-type: none"> • RAPbudget • KShs27,000
3.	Posho Powder Industry	Collect corn, grind cereal from customer	<ul style="list-style-type: none"> • Support such as providing necessary information to secure new suitable land that can carry out dusting industry. • Provide training and orientation on opportunities related to management improvement and strengthening methods. • To compensate for 3 months worth of monthly income to maintain livelihood during the relocation period. 	<ul style="list-style-type: none"> • KETRACO • NLC 	<ul style="list-style-type: none"> • RAPbudget • KShs135,000
4.	Agriculture	Agricultural production activity in affected land	Farm guidance / training and advisory activities related to management improvement and strengthening methods.	<ul style="list-style-type: none"> • KETRACO • County Government of Kilifi, Kwale, Mombasa 	<ul style="list-style-type: none"> • County Government budget
5.	Regular and irregular employment	Staff of neighboring schools, drivers such as public transportation,	KETRACO, county government and municipalities prepare a letter of recommendation addressed to the relocation destination company and	<ul style="list-style-type: none"> • KETRACO • County Government of 	<ul style="list-style-type: none"> • County Government budget

No	Livelihood activities	Contents	Livelihood recovery support measures	Responsible body	budget
		carpenters, painters, welders, small stores in the market, motorcycle taxis and other simple labor	support the residents to promptly get new equivalent jobs. We will also make it easier for you to get a vacation for job hunting. Take thorough and thorough consideration such as chat, advice, consultation etc. in order not to obstruct the living of the target person, and for the purpose of smoothly changing jobs and re-employment. Regarding the school, take into consideration such as notifying the school road in advance, distributing a guide map to each facility.	Kilifi, Kwale, Mombasa	
6.	Public facility	Access to school, health center, water supply area	KETRACO considers citizens as well as the county government so that residents can easily access public facilities such as schools, public health centers and other medical facilities and water supply stations. Appropriate orientation for the purpose of guidance, instruction so that the affected people can access public facilities without trouble. In the case of implementation, notify the target person in advance so that there will be no omission. About school, guiding map shall be distributed which shows attending school road beforehand and confirm that there is no trouble in attending school.	<ul style="list-style-type: none"> • KETRACO • County Government of Kilifi, Kwale, Mombasa 	<ul style="list-style-type: none"> • County government budget
7.	Work	Acquisition of simple labor to residents of affected communities. Pay attention to the employment of women.	KETRACO and contractors work with the county government to arrange for all residents created by the project for local residents. Specifically, we refer to PAP Committee of each community and guide occupation type, site, period etc etc. Women - Special consideration to make it easier for work. As a type of occupation, employment opportunities are specified in the fields of records, materials management, contact personnel etc. Contractors act on their own initiative and record achievements. Provide an opportunity to receive vocational training so that the target people can become independent even after the project ends.	<ul style="list-style-type: none"> • KETRACO • Contractor 	<ul style="list-style-type: none"> • Construction budget

Source : JICA Study Team

(6) Socially Vulnerable Households

Special consideration shall be given to the affected socially vulnerable people, especially households to be relocated. Households who own land will be provided with twice the usual compensation. (For example, usually when the compensation amount is KShs 500,000, vulnerable HHs will be paid KShs 1,000,000) Also, for households without land, compensation for purchasing land equivalent to 0.5 acre in the new location will be paid. In addition, KETRACO will set up a consultation help desk by both male and female officials to provide information necessary for finding and confirming relocation areas, and providing support related to dismantling, transporting and reconstruction of the houses. In addition, as with households other than the socially vulnerable, a livelihood improvement orientation will be held to support livelihood restoration and maintenance of their livelihoods in accordance with means of livelihood such as farming guidance, etc. In the orientation, a guidance on the proper use of compensation money will be conducted.

(7) Entitlement Matrix

The types of assets affected by the project, types of losses, recipients of compensation and support, contents of compensation and support, responsible organizations are summarized and shown in Table 11.2.49 (A) and (B). The matrix is divided into land and other assets.

Table 11.2.49(A) Entitlement Matrix (Land)

No.	Type of Loss	Entitled Persons (Beneficiaries)	Entitlement (Compensation Package)	Implementation Issues and Plan of Action	Responsible Organization
1.	<p>RESIDENTIAL</p> <p>(1) Partial loss of residential land but remaining land is large enough where continuous dwelling is possible.</p> <p>(2) Partial loss of residential land where continuous dwelling is not possible.</p> <p>(3) Entire loss of residential land.</p>	<p>1) Those who have legal rights to land including customary and traditional rights recognized under the laws of Kenya</p>	<p>Transmission Line</p> <p>a) Cash compensation for reduced use of land is to be done at 30% upwards of the replacement cost of the affected land considering the current open market value of the land in the location of the affected land and magnitude of impact. This status shall be evaluated in detail as provided under Section 4.7.1 of the RAP Report.</p> <p>b) Relocation of homestead shall be done within the same land parcel if the remaining unaffected land is large enough to accommodate new homestead.</p> <p>c) Where the remaining unaffected land is not large enough to accommodate the new homestead, the compensation amount to be provided by KETRACO shall be 100% of the affected land parcel to allow the vulnerable HH to be able to purchase new land equivalent to the affected area for the establishment of a new homestead.</p> <p>d) The compensation shall cover administrative charges, title fees, or other legal transaction costs.</p> <p>e) There shall be compensation money management training and guidance services.</p> <p>f) Relocation shall be done after receiving compensation payment.</p> <p>g) Notify three months in advance to vacate.</p>	<p>i) PAPs' intention for dwelling place shall be assessed through all sorts of consultation meetings</p> <p>ii) Existing local land tenure system shall be assessed</p> <p>iii) Media and responsible NGO shall be invited to consultation meetings</p> <p>iv) Traditional, customary and historical background shall be assessed.</p>	<p>KETRACO</p> <p>NLC</p> <p>County Governments</p> <p>Local community NGOs</p>

No.	Type of Loss	Entitled Persons (Beneficiaries)	Entitlement (Compensation Package)	Implementation Issues and Plan of Action	Responsible Organization
1.	<p>RESIDENTIAL</p> <p>(1) Partial loss of residential land but remaining land is large enough where continuous dwelling is possible.</p> <p>(2) Partial loss of residential land where continuous dwelling is not possible.</p> <p>(3) Entire loss of residential land.</p>	<p>2) Community Land (Mwavumbo Ranch) – Land has been divided to individual members who are waiting for land titles.</p> <p>3) Those who do not have formal legal rights to land at the time the census begins but have a claim to such land assets provided that such claims are recognized under the laws of Kenya or become recognized through a process of identification. (Sagar Holdings and KPA Land)</p>	<p><i>Substation Land – Dongo Kundu</i></p> <p>a) Cash compensation for loss of land is to be done at 100% of the market value of the affected land.</p> <p>b) Assistance to find new land for relocation of homestead</p> <p>c) Administrative charges, title fees, or other legal transaction costs.</p> <p>d) Compensation money management training and guidance services.</p> <p>e) Relocation shall be done after receiving compensation payment.</p> <p>f) Notify three months in advance to vacate.</p> <p><i>Additional Assistance to Vulnerable Persons</i></p> <p>a) Vulnerable shall be paid by double amount of the affected land value.</p>	<p>Addition to above,</p> <p>v) The Land Act 2012 provides that written and unwritten official or customary land right are recognized as valid land right where it conforms to the Constitution of Kenya 2010,</p> <p>vi) A person occupying land to which they have no claim under any tenure but is eligible for compensation as he/she is present during the census and inventory of assets or in occupation of private land for over 12 years in accordance with the Limitations of Actions Act.</p> <p>vii) KETRACO will work together with County Government and other Local Authority Offices to identify land for resettlement of vulnerable persons in the project.</p> <p>Addition to above,</p> <p>viii) Resettlement land for the project displaced persons within SEZ area shall be studied within and outside of SEZ area. Two alternatives shall be considered.</p>	<p>KETRACO NLC County Governments Local community NGOs</p>

No.	Type of Loss	Entitled Persons (Beneficiaries)	Entitlement (Compensation Package)	Implementation Issues and Plan of Action	Responsible Organization
1.	RESIDENTIAL (1) Partial loss of residential land but remaining land is large enough where continuous dwelling is possible. (2) Partial loss of residential land where continuous dwelling is not possible. (3) Entire loss of residential land.	4) Vulnerable HH who have recognizable legal right or claim to the land they are occupying at the time of the census begin. 5) Vulnerable HH who have recognizable legal right or claim to the land they are occupying at the time of the census begin. 6) Those who do not have recognizable legal right or claim to the land they are occupying at the time of the census begins. 7) Vulnerable HH who do not have recognizable legal right or claim to the land they are occupying at the time of the census began	a) For affected persons occupying land that does not belong to them and therefore they do not have recognizable legal rights of claim to the land, no compensation for land will be paid to them. b) Notify three months in advance to vacate. a) For vulnerable HH who do not have recognizable legal right or claim to land, KETRACO shall provide assistance by cash to acquire 0.5acres of land where such vulnerable persons can be resettled. b) Notify three months in advance to vacate	Addition to above, viii) Resettlement land for the project displaced persons within SEZ area shall be studied within and outside of SEZ area. Two alternatives shall be considered.	KETRACO NLC County Governments Local community NGOs

No.	Type of Loss	Entitled Persons (Beneficiaries)	Entitlement (Compensation Package)	Implementation Issues and Plan of Action	Responsible Organization
2	LAND FOR AGRICULTURAL & BUSINESS (1) Loss of agricultural land (2) Loss of business land (small shop etc.) (3) Loss of livestock rearing land (4) Loss of grazing land	1) Those who have legal rights to land including customary and traditional rights recognized under the laws of Kenya 2) Community Land (Mwavumbo Ranch) – Land has been divided to individual members who are waiting for land titles. 3) Those who do not have formal legal rights to land at the time the census begins but have a claim to such land assets provided that such claims are recognized under the laws of Kenya or become recognized through a process of identification. 4) Vulnerable HH who have recognizable legal right or claim to the land they are occupying at the time of the census begin. 5) Vulnerable persons who do not have formal legal rights to land at the time the census began but have a claim to such land assets	In addition to compensation as same as for Residential, <u>Land Used for Agricultural Activities</u> (This includes land for grazing of domestic animals and carrying out farming of crops) a) Cash compensation for reduced use of land is to be done at 30% upwards of the current market value of the affected land considering the magnitude of impact. This status shall be evaluated in detail. b) Farming of crops and grazing of animals will continue along the wayleave land however land owners will not be allowed to grow crops or trees that exceed 12 feet in height. Land owners will also not be allowed to put up animal sheds or granaries for their crops. <u>Substation Land – Dongo Kundu</u> a) Relocation assistance (cost for shifting and livelihood restoration assistance). <u>Additional Assistance to Vulnerable Persons</u> a) There shall be compensation money management training and guidance services.	i) Existing local land tenure system shall be assessed ii) Media and responsible NGO shall be invited to consultation meetings iii) Traditional, customary and historical background shall be assessed. iv) The Land Act 2012 provides that written and unwritten official or customary land right are recognized as valid land right where it conforms to the Constitution of Kenya 2010, v) A person occupying land to which they have no claim under any tenure but is eligible for compensation as he/she is present during the census and inventory of assets or in occupation of private land for over 12 years in accordance with the Limitations of Actions Act.	KETRACO NLC County Governments Local community NGOs

No.	Type of Loss	Entitled Persons (Beneficiaries)	Entitlement (Compensation Package)	Implementation Issues and Plan of Action	Responsible Organization
2.	LAND FOR AGRICULTURAL & BUSINESS (1) Loss of agricultural land (2) Loss of business land (small shop etc.) (3) Loss of livestock rearing land (4) Loss of grazing land	provided that such claims are recognized under the laws of Kenya or become recognized through a process of identification.			KETRACO NLC County Governments Local community NGOs
		6) Those who do not have recognizable legal right or claim to the land they are occupying	a) For affected persons occupying land that does not belong to them and therefore they do not have recognizable legal rights of claim to the land, no compensation for land will be paid to them. b) Notify three months in advance to vacate.		
		7) Vulnerable HH who do not have recognizable legal right or claim to the land they are occupying at the time the census began and do not have a claim	a) For vulnerable HH who do not have recognizable legal right or claim to land, KETRACO and County Government shall provide assistance by cash to acquire 0.5 acres of land where such vulnerable persons can be resettled b) Project construction shall not commence until such vulnerable persons are appropriately resettled. c) Notify three months in advance to vacate		

Source : JICA Study Team

Table 11.2.49(B) Entitlement Matrix (Buildings and Others)

No	Affected Asset	Type of Loss	Category of PAP	Entitlements
1.	Any Residential and/or Commercial Structures	Partial or Entire loss of Structure	Private Owners, County Governments and Statutory bodies	<p>Replacement of Affected Residential or Commercial Structure</p> <ul style="list-style-type: none"> • Cash compensation at replacement cost for affected building structure based on the current replacement cost or equivalent reinstatement basis or probable cost of acquiring similar premises for same purpose. • Replacement cost to include cost of buying materials, transportation of materials to the site and cost of the artisan carrying out the construction. <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> • 15% cash top up in disturbance allowance for relocation assistance (cost for shifting and livelihood restoration assistance). • Relocation to be done after receiving compensation payment • Money Management training <p>Relocation Notice 3 months' notice to vacate</p>
			Vulnerable HH	<p>Replacement of Affected Residential or Commercial Structure</p> <ul style="list-style-type: none"> • Cash compensation at replacement cost for affected building structure based on the current replacement cost or equivalent reinstatement basis or probable cost of acquiring similar premises for same purpose. • Replacement cost to include cost of buying materials, transportation of materials to the site and cost of the artisan carrying out the construction. <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> • Over and above the 15% disturbance allowance, vulnerable persons shall be given assistance including sourcing host land, support with dismantling of structures, moving and building new structures at the new relocation site. • Relocation to be done after receiving compensation payment • Money Management training <p>Relocation Notice 3 months' notice to vacate</p>

2.	Movable Assets such as Dish Racks	Loss of working space	Private Owners	<p>Affected Movable Structures like Racks and Stands</p> <ul style="list-style-type: none"> • Since structures like racks, stands etc. can be relocated, there will be no compensation for them. However, there will be relocation assistance. • Relocation to be done after receiving compensation payment <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> • Relocation assistance (cost of shifting, and livelihood rehabilitation assistance) will be provided <p>Relocation Notice 1 month' notice to vacate</p>
4	Low lying structures	Water wells, water pans, fences that are not part of the homestead that is being relocated	Private Owners	<p>Low Lying Structures within the Project Corridor</p> <ul style="list-style-type: none"> • Low lying structures like water wells, water pans, non-homestead fences etc. will be avoided by the project and therefore will not be affected hence there will be no need to pay compensation for them. • Low lying structures belonging to HH who have been displaced and are moving away to a new parcel of land where they will need the same. <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> • Wells and other low-lying structures that belong to homesteads that will be displaced will be evaluated on a case by case basis for compensation • Fences that surround homesteads that will be relocated/displaced to a new parcel of land will be compensated <p>Relocation Notice 1 month' notice</p>
5.	Trees	Loss of Trees	Private Owners, County Governments and Statutory bodies	<p>Compensation Cash Compensation for each tree based on compensation schedules prepared by the Kenya Forest Service (KFS) for various species depending on age and its future potential</p> <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> • Tree owners will be allowed to benefit/make use of the wood products from their trees after they have been cut down. • Relocation to be done after receiving compensation payment

				<p>Relocation Notice 1 months' notice to vacate</p>
6.	Affected Annual Crops	Loss of Annual Crops outside transmission line corridor and within corridor during construction	Private Owners	<p>Compensation</p> <ul style="list-style-type: none"> • Annual crops will not be compensated since they can be harvested within the notice period of 3 months. • Where KETRACO and the Contractor are not able to wait for the 3 months, compensation for the affected annual crops shall be offered. • Cash Compensation will be paid for affected annual crops based on compensation schedules prepared by the Agricultural Department if the crops outside the transmission line are affected by activities of the contractor. • Similarly, any loss of opportunity for farmers to plant their annual crops in season due to interference or interruption by construction activities, KETRACO and the Contractor shall evaluate for appropriate income loss compensation. <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> • Valuation and Compensation of affected crops <p>Relocation Notice 3 months' notice to remove annual crops before construction commences</p>
7	Affected Perennial Crops	Loss of Perennial Crops	Private Owners	<p>Compensation</p> <ul style="list-style-type: none"> • Cash Compensation for affected perennial crops based on compensation schedules prepared by the Agricultural Department for various perennial crop types depending on age and its future potential <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> • Restoration assistance (livelihood rehabilitation assistance) • Relocation to be done after receiving compensation payment <p>Relocation Notice 3 months' notice to vacate</p>
8.	Business	Loss of Businesses conducted in structures	Private Owners Of Quarry, Poshu Mill and Kiosk businesses	<p>Compensation for Loss of Business</p> <ul style="list-style-type: none"> • Determination of the monthly net income from the businesses • As livelihood restoration, there will be compensation for disruption of business determined by considering the net monthly income for a period of three months during the relocation period. • Payment of disturbance allowance at 15% of the value of structure affected by the project (Quarry, Posho Mill and Kiosk).

				<p>Recommendation on Relocation Assistance</p> <ul style="list-style-type: none"> • Payment to be made immediately notice to vacate is issued. • Provision of relocation assistance <p>Relocation Notice 3 months' notice to vacate</p>
9.	Graves/Grave yard and culturally sensitive areas (Kayas and Shrines)	Loss of Burial Site and Buried Relatives	Next of Kin of Buried persons	<p>Compensation</p> <ul style="list-style-type: none"> • KETRACO will endeavour not to disturb, relocate or move any graves along the right of way by making appropriate adjustments to the proposed line/tower. • Therefore, there will be no compensation for graves since they will be avoided <p>Recommendation on Restoration Assistance N/A</p> <p>Relocation Notice N/A</p>
		Loss of Trees used as shrines <ul style="list-style-type: none"> • Chainage 17.2km • Chainage 23.5km 	Private individuals owning trees used as shrines	<p>Compensation</p> <ul style="list-style-type: none"> • Further consultations with owners of the shrine tree • Cash Compensation for affected shrine tree based on negotiations that will be held between Panafcon/JICA/KETRACO and shrine tree owner. Previous RAP study carried in the project area in 2016 (RAP Study for Dongo Kundu – KPA) have determined that each Shrine tree will be KShs 65,000. • Facilitate the carrying out of Shrine Transfer Ceremony as recommended by the Shrine Tree owners. <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> • Cost of ceremony required to complete the process of restoration for the Shrine Tree owner, family and community members • Pay compensation for the shrine tree <p>Relocation Notice 3 months' notice to vacate</p>
10	Vulnerable Persons	Loss of structures,	structure, Trees and Crop PAPs	Special assistance to Vulnerable PAPs losing land and structures has been included in the report following KETRACO's Resettlement Policy Framework Policy. Details of the special assistance on land and structures for each vulnerable PAP is provided in the Data Book Volume B Section 12

	(Special Assistance)	Trees and Crops	<p>Compensation of Affected Structures, Trees, Crops and Business Structures</p> <ul style="list-style-type: none"> • Full compensation of affected structures at current replacement cost. • Replacement cost to include cost of buying materials, transportation of materials to the site and cost of the artisan carrying out the construction. • Payment of disturbance allowance at 15% of the value of structures • In addition to the disturbance allowance, vulnerable people will be given assistance including sourcing host land, support with dismantling, moving and building new structures. This will be especially critical for the 6 highly vulnerable PAPs. <p>Business</p> <ul style="list-style-type: none"> • Compensation for the calculated monthly profit for a period of 3months for loss of business <p>Trees</p> <ul style="list-style-type: none"> • Cash Compensation for each tree based on compensation schedules prepared by the Kenya Forest Service for various species depending on age and its future potential <p>Crops</p> <ul style="list-style-type: none"> • Cash Compensation will be paid for affected annual crops based on compensation schedules prepared by the Agricultural Department if the crops outside the transmission line are affected by activities of the contractor.
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Source : JICA Study Team

11.2.16 Grievance Redress Mechanism

The grievance mechanism is a mechanism for smoothly promoting project by expressing concerns and complaints about relocation and compensation process by the affected people and by processing complaints promptly as necessary. Therefore, fairness and high transparency are required, the executing agency is the center, and related organizations must handle all complaints before construction starts, to ensure the stability of the affected residents and target communities.

At the Public Consultation Meetings for the affected residents, request was made to inform residents about compensation policy and future schedule. In response to the request, the residents (PAPs) were advised that separate meetings will be held and such information shall be shared according, and the affected residents understood and satisfied. Figure 11.2.31 shows the complaint handling mechanism created.

(4) Object of complaint

Affected residents may have various doubts and complaints about compensation for personal property, continuous securing of public services, and relocation. In cooperation with the PAP Committee composed of each community representative, the traditional problem solving method by mediation of the elder and others is also taken in as appropriate and shall be dealt with to solve the issues appropriately.

(5) Method of complaint allegation

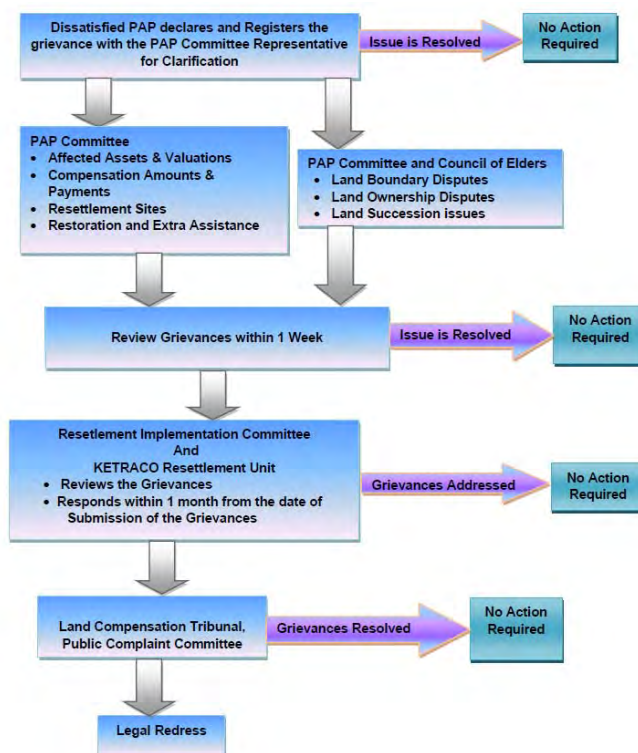
In the event of a conflict or complaint, KETRACO prepares a complaint application form through the PAP Committee and coordinates with the affected residents to reach a settlement within one month. Construction work shall not be started until all complaints are properly handled. KETRACO will make efforts to utilize all existing available mechanisms to resolve complaints in a short period of time and to prevent excessive stress and delays.

Sample of English and Swahili forms are attached at the end of the section. As necessary, the complainant application form shall be modified so as to make it easy to use.

(6) Procedure after complaint allegation

KETRACO as the project proponent, shall considers the stakeholders including the county government, NGO, Community Based Organization (CBO) and, if necessary, the central ministries and agencies, maintain transparency and fairness, and takes corrective measures to deal with complaints. KETRACO has been implementing environmental and social considerations for many projects so far, and it has more than 20 staff members in charge of environmental and social considerations. In addition, past and ongoing projects also use the grievance redress mechanism supported by the PAP Committee and are fully functioning. regional elders are respected by residents, traditional consultations involving elders and good environment of adjustment are making decisions conforming to the actual situation, which is effective for smooth implementation of the resettlement process of this project. In addition, there is a local NGO working in the environmental field in the target area, and it has a role to understand the intentions of residents and to discuss with the executing agency.

- a) All complaints are reported to the PAP Committee through representatives of the PAP Committee who received the complaint and was appointed to register. The registration form is prepared and prepared in advance in English and Swahili.
- b) The PAP Committee will immediately review and consult solutions and, if possible, share the solution with the concerned parties.
- c) If the problem is related to land boundary, ownership, the PAP committee shall call the council of elders for arbitration. Community elders are highly respected by residents, traditional consultations involving elders, or a place of coordination have been making decisions conforming to the actual situation, which is extremely effective. The council of elders is required to present a solution within a week.
- d) The deliberations of the council of elders will be accepted by the PAP Committee and shared with the Resettlement Implementation Committee (RIC) and the KETRACO Resettlement Unit (KRU).
- e) Other complaints related to assets, valuations, compensation amounts, payments, resettlement destinations, livelihood restoration and additional support will be discussed by the PAP Committee in cooperation with RIC and KRU. It is expected to be resolved within a month from the date of receiving the complaint.
- f) If the PAP Committee, the RIC and the KRU can not present a solution to the complaint, in particular the problem dealing with the land, the complaint will seek a ruling by the Land-compensation Court and the Public Complaint Committee.
- g) If it is not resolved by the above steps, it will be a ruling in court.



Source : JICA Study Team

Figure 11.2.31 Grievance Redress Mechanism

Figure 11.2.32 Application for Complaints Handling (Left: Swahili, Right: English)

<p style="text-align: right;">Tarehe:</p> <p>Fomu ya Umma ya Kuasilisha Malalamishi</p> <p>Utafiti Wa Maswala Ya Kijamii – Fomu ya Ualamishi</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Nambari Maalum Ya Utafiti:</td> </tr> <tr> <td colspan="2">Majina Kamili ya Muadhiriwa:</td> </tr> <tr> <td colspan="2">Kata:</td> </tr> <tr> <td style="width: 50%;"> Contact Information: Anwani Za Posta </td> <td>Anwani:</td> </tr> <tr> <td>Eleza jinsi ungependelea tuwasiliane nawe: (baruwa, simu, baruwa pepel)</td> <td>Nambari za Simu..... Baruwa Pepe.....</td> </tr> <tr> <td>Lugha Ungependelea tutumie Kuasiliana Nawe: (Chagua Jinsi ungependelea tuwasiliane nawe)</td> <td>Kiingereza..... Kiswahili:.....</td> </tr> <tr> <td colspan="2">Nambari ya Kitambulisho</td> </tr> <tr> <td colspan="2">Maelezo ya Malalamishi:</td> </tr> <tr> <td></td> <td>Shida Yenyewe?</td> </tr> <tr> <td></td> <td>Ilifanyika Lini?</td> </tr> <tr> <td></td> <td>Ilifanyika Wapi?</td> </tr> <tr> <td></td> <td>Tukio Limemeleta Shida Gani?</td> </tr> <tr> <td colspan="2">Tarehe ya Tukio:</td> </tr> <tr> <td></td> <td>Tukio imetokea mara moja (Tarehe:..... Tukio imetokea Zaidi ya mara moja (Mara ngapi)</td> </tr> <tr> <td></td> <td>Tukio inaendelea kwa sasa</td> </tr> <tr> <td colspan="2">Ungependelea nini itendeke ili shida itatuliwe?</td> </tr> </table> <p>Sahihi:</p> <p>Tafadhali wasilisha fomu hili kwa:</p>	Nambari Maalum Ya Utafiti:		Majina Kamili ya Muadhiriwa:		Kata:		Contact Information: Anwani Za Posta	Anwani:	Eleza jinsi ungependelea tuwasiliane nawe: (baruwa, simu, baruwa pepel)	Nambari za Simu..... Baruwa Pepe.....	Lugha Ungependelea tutumie Kuasiliana Nawe: (Chagua Jinsi ungependelea tuwasiliane nawe)	Kiingereza..... Kiswahili:.....	Nambari ya Kitambulisho		Maelezo ya Malalamishi:			Shida Yenyewe?		Ilifanyika Lini?		Ilifanyika Wapi?		Tukio Limemeleta Shida Gani?	Tarehe ya Tukio:			Tukio imetokea mara moja (Tarehe:..... Tukio imetokea Zaidi ya mara moja (Mara ngapi)		Tukio inaendelea kwa sasa	Ungependelea nini itendeke ili shida itatuliwe?		<p style="text-align: right;">Date:</p> <p>Public Grievance Form</p> <p>Resettlement Action Plan (RAP) Public Grievance Form</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">RAP Reference No.</td> </tr> <tr> <td colspan="2">Full Name of PAP:</td> </tr> <tr> <td colspan="2">Location:</td> </tr> <tr> <td style="width: 50%;"> Contact Information: Postal Address </td> <td>Address:</td> </tr> <tr> <td> Please indicate how you wish to be contacted (mail, telephone, email) </td> <td>Telephone:..... Email:.....</td> </tr> <tr> <td> Preferred Language of Communication: Please mark how you wish to be contacted) </td> <td>English:..... Kiswahili:.....</td> </tr> <tr> <td colspan="2">National Identity Card Number (ID)</td> </tr> <tr> <td colspan="2">Description of Incident or Grievance:</td> </tr> <tr> <td></td> <td>What is the Problem?</td> </tr> <tr> <td></td> <td>When did it happen to?</td> </tr> <tr> <td></td> <td>Where did it happen?</td> </tr> <tr> <td></td> <td>What is the result of the problem?</td> </tr> <tr> <td colspan="2">Date of Incident/Grievance</td> </tr> <tr> <td></td> <td>One time incident/grievance (Date:.....)</td> </tr> <tr> <td></td> <td>Happened more than once (How many times)</td> </tr> <tr> <td></td> <td>Ongoing (Happening Now)</td> </tr> <tr> <td colspan="2">What would you like see happen to solve the problem?</td> </tr> </table> <p>Signature:</p> <p>Please return this form to:</p>	RAP Reference No.		Full Name of PAP:		Location:		Contact Information: Postal Address	Address:	Please indicate how you wish to be contacted (mail, telephone, email)	Telephone:..... Email:.....	Preferred Language of Communication: Please mark how you wish to be contacted)	English:..... Kiswahili:.....	National Identity Card Number (ID)		Description of Incident or Grievance:			What is the Problem?		When did it happen to?		Where did it happen?		What is the result of the problem?	Date of Incident/Grievance			One time incident/grievance (Date:.....)		Happened more than once (How many times)		Ongoing (Happening Now)	What would you like see happen to solve the problem?	
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What would you like see happen to solve the problem?																																																																			

Source : JICA Study Team

11.2.17 Implementation System

An organization that is appropriately structured for the implementation management of the relocation is necessary. Figure 11.2.33 shows its configuration.

Overall responsibility for compensation and resettlement is borne by the Kenyan government through KETRACO. As an internal organization of KETRACO, a unit consisting of experts who can supervise and instruct the process of implementing resettlement relocation shall be formed. For the KETRACO Resettlement Unit (KRU), see the figure 11.2.34.

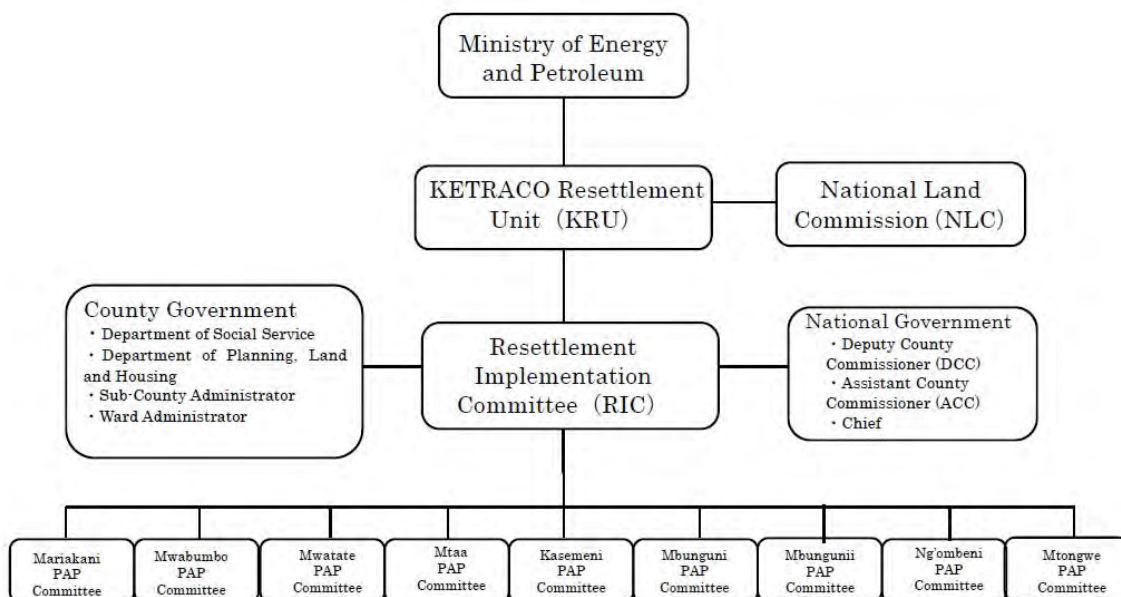
- KETRACO is responsible for working with NLC, concerned departments of the central and county governments to secure compensation funds and to pay compensation costs. KETRACO emphasizes maintaining a good relationship with the residents, and in cooperation with the NLC, prioritizes the quick solution for the conflict and the land where the ownership is not clear, and then the construction starts. If the solution of land ownership disputes is prolonged, review of the construction plan shall be considered in the implementation stage, KETRACO will be asked to take appropriate measures not to start construction before compensation is conducted.
- NLC is an agency of the Ministry of Land, which has been legally granted the role of acquiring land for public purpose on behalf of the government. The underlying law is the country's Constitution Chapter 5, Section 66 and Land Act 2012, Section 143. In addition, paragraph 127 of the Land Act 2012 requires NLC to take appropriate action after discussing with the target residents regarding issues concerning land.
- After completing the RAP survey, NLC conducts assessment for land acquisition and ownership confirmation. Then NLC will verify land ownership. In addition, the NLC sets clear procedures for land acquisition rule, taking into consideration the impact of business impact and the rights of residents involved in the land. In addition, before compensation money is paid and relocation is carried out, this processing is done as part of the confirmation of ownership. The land acquisition process requires 45 days (30 days announcement period, 15 days public hearing). After that, the NLC issues compensation confirmation notice to the target residents and acquires the land concerned. KETRACO will only pay compensation when compensation funds become available. NLC is particularly responsible for solving land issues, including land disputes arising from historical background. NLC is expected to play an important role in solving land problems within the SEZ region. The person in charge at the local office of NLC has the same understanding. Local NLC staff members participated in all the public consultation meetings held during the study, and when the NLC explained to the residents how land issues will be handled, the residents understood.
- County governments will participate in the resettlement implementation process through the Public Service Department, the Planning Department, the Land / Housing Department, and through Sub-County and Ward under it.
- The central government is also involved through chief of Deputy County Commissioner (equivalent to prefectural governor), Assistant County Commissioner who are dispatched to rural areas.

- At the community level, the PAP Committee has already been established. Nine PAP committees are formed along the transmission line route. Members are composed of young people, women, men, socially vulnerable groups, county governments, and central government officials.

(4) Organization structure

Cooperation by all stakeholders is indispensable for implementation of resettlement of the affected residents. For this reason, proper organizations and systems to oversee and manage are required.

Figure 11.2.33 shows the structure.

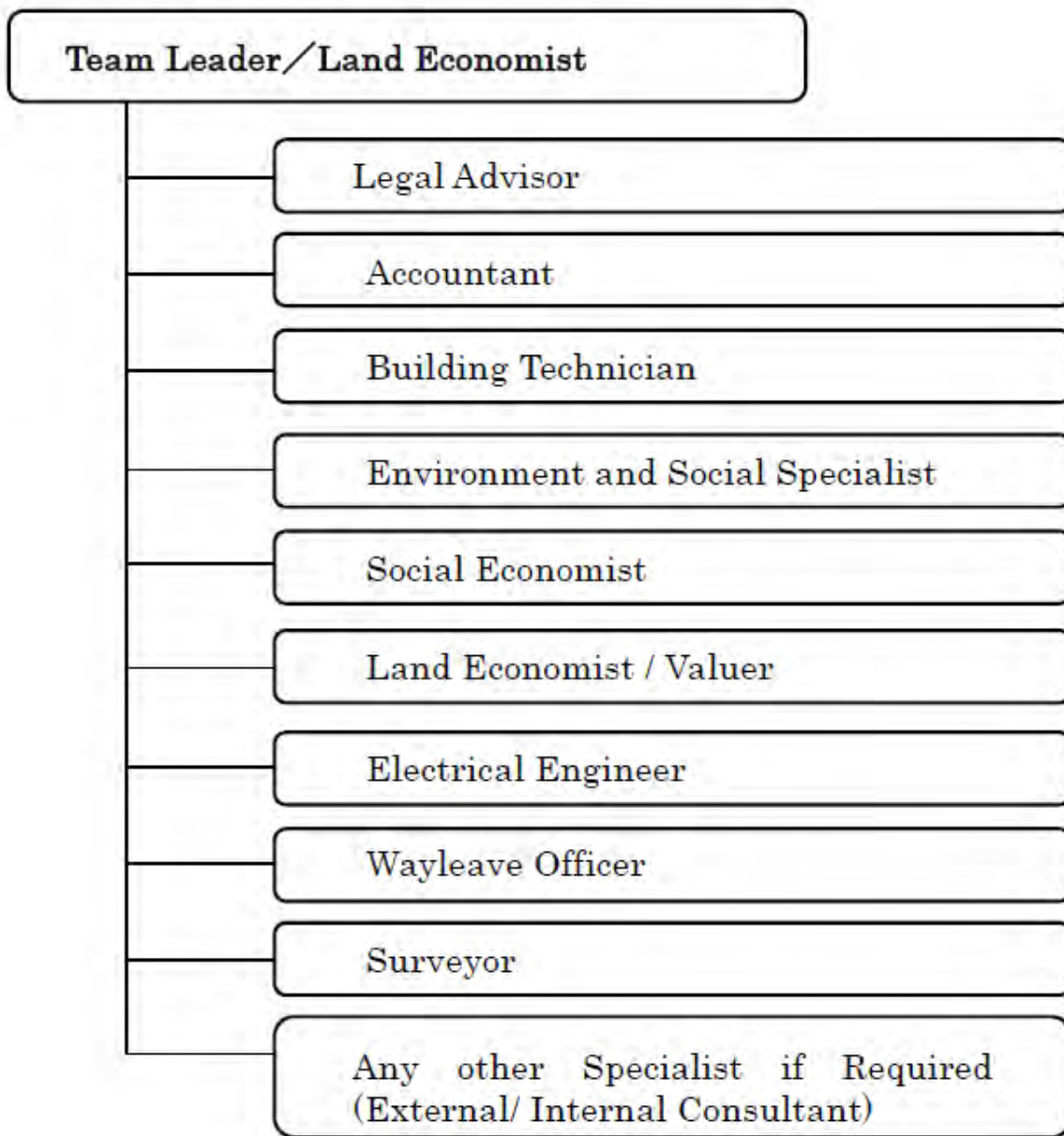


Source : JICA Study Team

Figure 11.2.33 Structure for Implementing Resettlement Process

(5) KETRACO Resettlement Unit (KRU)

The unit consists of experts of KETRACO including legal experts will oversee the process of resettlement. There are always experienced and qualified practitioners inside KETRACO, and if necessary KETRACO will employ qualified personnel from the outside as needed. KETRACO has good enough ability and experience to implement. The unit will be formed at the start of the project. The final configuration of the unit is determined by KETRACO. However, its composition shall include the experts shown in Figure 11.2.34 below.



Source : JICA Study Team

Figure 11.2.34 KETRACO Resettlement Unit (KRU)

The KRU is responsible for coordinating relocation work and showing the policy for that process. Make guidance and advice from specialist positions on various issues related to land, affected assets, valuation, compensation, and support. The unit will represent KETRACO in the entire process of resettlement.

(6) RAP Implementing Committee (RIC)

The RAP Implementation Committee has been established in KETRACO's past and ongoing projects. The committee, which will be established directly under the KRU established within KETRACO, will coordinate with the central government and relevant local governments other than the Ministry of Energy,

and support the promotion of KRU's efficient work. In addition, they are working to raise issues related to land from each PAP committee, promptly notify the KRU, and lead the discussion for solving the issue with the NLC by the KRU. RIC includes following parties:

- KETRACO
- PAP Committee
- County Government and head of Ward (Social Welfare, Land Residence Plan, County Government Building, County Administrator, etc.)
- Representatives of NGOs and CBO (Community Based Organization) in the project area
- Central government staff (Deputy County Commissioner, Assistant County Commissioner, Chief)

The RAP Implementation Committee will promote actual relocation of residents and resolve issues arising in the process. Work in cooperation with NLC to do the following:

- Confirm land ownership for compensation.
- Residents resettlement and compensate.
- Make connections between the affected residents and other stakeholders (do not isolate affected residents).
- Raise awareness about alternatives to land and resettlement, and take necessary measures. (Information on options and rights will be shared).
- For asset losses directly attributable to the project, confirm that there is prompt compensation at full replacement cost. Provide assistance during transition period considered necessary for maintaining livelihood.
- Confirm that appropriate compensation is applied according to the level of impact.
- Confirm the existence of social development assistance programs in addition to compensation measures.
- Support the resettlement process and monitor the the affected residents to confirm that the following has been achieved.
- - compensation has been paid in full.
 - The resettled residents have built houses and lived in.
 - Residents who moved have started their daily living activities.
 - Children of the relocated residents have started to attend the school.
 - Relocated residents can access to social facilities like church and social center.

Compensation and actual resettlement of the affected households must be done before construction starts. Resettlement will be carried out after approval at either KETRACO or the chief office of the local government.

Once all compensation and resettlement is completed, the site is handed over to KETRACO. The organizations involved in resettlement are shown in Table 11.2.51.

Table 11.2.50 Organizations involved in Resettlement

No	Organizatio/ Institute	Membership and qualification	Responsibility during RAP implementation
1	Resettlement Implementation Committee (RIC)	<ul style="list-style-type: none"> • KETRACO Resettlement Unit (KRU) • PAP Committee • County government representative • Government representative • NGO , CBO 	Promotion and implementation of RAP
2	KETRACO Resettlement Unit (KRU)	Any Specialist (Legal Advisor, Accountant, Building Technician, Environment and Social Specialist, Social Economist, Land Economist / Valuer, Electrical Engineer, Wayleave Officer, Surveyor etc.)	Provide necessary expert advice in various aspects of resettlement activities and support the progress of the process.
3	PAP Committee	Representatives of PAP including women, youth, socially vulnerable, men, Conty government, central government	It is a community-based organization selected from among PAPs and becomes an entry point of PAPs that register complaints. Clarify the nature and content of complaints.
4	Central government representative	Assistant County Director, District Bureau Director, Assistant County Director, District Governor	Representatives of the central government will provide administrative support. Cooperate with the county government to provide coordination services and monitor various activities and events in the resettlement process.
5	County Government Department	Planning, land and housing, social services	County government officials focus on the land and other resources and information available in the county and work to ensure smooth implementation of resettlement by providing guidance on county government requirements and relocation options .
NLC			
6	NLC	Experts on land assessment, possession, relocation, dispute mediation, registration	Respond to the concerned residents concerned about the land concerned, relieving doubts, smooth land acquisition and Resettlement for the project. In lieu of KETRACO, NLC confirms the land ownership of substations and maintenance roads and has the legal responsibility to acquire it. In addition, it will eventually be responsible for ensuring the wayleave usage right of the 40 m wide transmission line.

Source : JICA Study Team

11.2.18 Implementation Schedule

(4) Implementation Period

The process relating to Resettlement is scheduled to be about 6 months for preparatory activities and about 9 months for implementation activities, totaling about 15 months. Monitoring shall be carried out for the entire 15 months thereafter.

In addition, the transmission line construction period is expected to be 23 months. The implementation schedule is shown in Table 11.2.52.

Table 11.2.51 Implementation Schedule

Nr.	Task (activity)	Period (months)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Preparation																
1	Business promotion, exchange of opinions, activities of residents' consultation	[Bar from month 1 to 15]														
2	Detail of transmission line route RAP investigation, socioeconomic evaluation of PAPs, confirmation on business impact, assessment and compensation	[Bar from month 1 to 2]														
3	Identifying owners of land and assets and assessing asset value (NLC)	[Bar from month 2 to 4]														
4	Notice of Wayleave usage right setting (NLC)	[Bar from month 4 to 5]														
5	Acquisition of land use right in power line wayleave and acquisition of substation site (NLC)	[Bar from month 5 to 7]														
6	Mobilization of required equipment, mobilization of Resettlement responding personnel, sharing of related laws and education process, training for Resettlement responding personnel	[Bar from month 6 to 7]														
Implementation																
7	Compensation	[Bar from month 7 to 8]														
8	Resettlement (securing relocation destination by consultation with stakeholders: when necessary)	[Bar from month 8 to 10]														
9	Detailed transmission line route survey and marking of site boundary	[Bar from month 7 to 9]														
10	Preparation of power transmission line business land, leveling, construction of transmission line facilities	[Bar from month 10 to 15]														
11	Livelihood recovery activity	[Bar from month 7 to 15]														
12	Complaints handling	[Bar from month 1 to 15]														
Monitoring																
13	Internal monitoring	[Bar from month 1 to 15]														
14	External monitoring	[Bar from month 3 to 15]														

Source : JICA Study Team

11.2.19 Costs and Financial Resources

(4) Cost

As a result of evaluating all the impacts of the project, the cost required to implement the resettlement plan is KShs 409, 487, 758. The above figures do not include expenses the contractor places in the construction budget at the time of construction as a livelihood recovery assistance and the budget that the relevant local administrations will provide. Breakdown is shown in Table 11.2.53.

Table 11.2.52 Budget Breakdown for Resettlement

No.	Asset	Number of asset holders	Area (Acres)	Quantity	Total Amount (KShs)
1	Land	566	520.03	566	173,137,125
2	Structure	115		283	50,181,343
3	Trees	411		11,810	26,513,305
4	Crops	179		9,267	2,220,975
Total (KShs)					252,052,748
Livelihood recovery support (1) Support for small businesses					229,500
Support for livelihood recovery (2) Support for socially vulnerable people					64,649,350
Monitoring and evaluation					55,330,000
Total (KShs)					372,261,598
Contingency (10% of Gross Total)					37,226,160
Grand Total (KShs)					409,487,758

Source : JICA Study Team

The cost required for the land to be used as the temporary material storage yard during the construction period will be paid out from the reserve fund of KETRACO.

11.2.20 Monitoring System by the Executing Agency, Monitoring Form

Monitoring will be planned for internal and external monitoring. KETRACO conducts regular internal monitoring. The major role is conducted by the KRU, and matters related to social considerations are in charge of monitoring specialists and social care coordinating officials. Two important aspects of monitoring activity are the performance check and impacts evaluation. External monitoring is necessary for independent and fair monitoring. KETRACO procures appropriate experts from NGOs, universities, consultants, etc. to obtain constructive recommendations.

The monitoring plan is shown in Table 11.2.54. The monitoring forms are shown in Table 11.2.55.

Table 11.2.53 Monitoring Plan

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
1	Land	Acquire land or acquire usage rights	<ul style="list-style-type: none"> •Area of shared land to be acquired for KETRACO transmission line project • Area of private property acquired or to which usage rights are set • Where state ownership is acquired or where usage rights are set 	RAP in progress	<ul style="list-style-type: none"> •KETRACO Resettlement Unit (KRU) •PAP Committee 	Every quarter during the implementation period
2	Building Structure /	Number, size, type of buildings affected	<ul style="list-style-type: none"> •Number, type, size of private buildings affected •Number, type, size of buildings in the affected community •Number, type, size of government buildings 	RAP in progress	<ul style="list-style-type: none"> •KRU •PAP Committee 	Every month during implementation
		Other structures affected by the project	<ul style="list-style-type: none"> •Number, type, and size of other affected private facilities •Number, type, and size of other affected community structures 	RAP in progress	<ul style="list-style-type: none"> •KRU •PAP Committee 	Every month during implementation
3	Trees and crops	Affected trees and crops	<ul style="list-style-type: none"> •Number and type of trees •Area of affected crops 	RAP in progress	<ul style="list-style-type: none"> •KRU •PAP Committee 	Every month during implementation
4	Loss of income	Income affected by the project	<ul style="list-style-type: none"> •Daily wage, weekly wage, monthly income affected by the project 	RAP in progress	<ul style="list-style-type: none"> •KRU •PAP Committee 	Every month during implementation
5	Compensation for damages	Amount of compensation paid to PAP	<p>Land</p> <ul style="list-style-type: none"> •Compensation for land per acre • Amount of compensation for the acquired land or the land for which the right to use has been set •Compensation Payment Period <p>Building</p> <ul style="list-style-type: none"> •Compensation for each structure •Compensation for affected buildings •Compensation payment period for structures • Payment of annoyance allowance <p>Trees and crops</p> <ul style="list-style-type: none"> •Trees and crops compensation 	RAP in progress	<ul style="list-style-type: none"> •KRU •PAP Committee •Relocation expert •NLC 	Every week during the RAP implementation period

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
			<ul style="list-style-type: none"> • Compensation payment period • <u>Company / income source</u> • Loss compensation amount • Revenue compensation amount for 3 months 			
5	Relocation and restoration	Number of PAPs requiring relocation and restoration	<p><u>Transfer</u></p> <ul style="list-style-type: none"> • HH moved to your premises, number of people • Number of households that relocated and settled • Number of buildings rebuilt • Quantity and type of lost plants • Number of seedlings by type offered • Number of tree planted trees • Number of rebuilt business / income sources • Feedback from PAPs on satisfaction, emotions and reactions to implementation of immigration 	At the time of relocation and one year later	<ul style="list-style-type: none"> • KRU • PAP Committee • Relocation expert • NLC 	<ul style="list-style-type: none"> • Weekly on relocation • 1 month after resettlement for 1 year
7	Socially vulnerable who need special assistance	Type of vulnerability of each head of household	<ul style="list-style-type: none"> • <u>Number of vulnerable household heads affected by the project</u> • <u>Types and levels of vulnerability</u> • <u>Influences experienced by the weak</u> • <u>Assistance provided to the weak</u> 	At the time of relocation and one year later	<ul style="list-style-type: none"> • KRU • PAP Committee • Relocation expert • NLC 	<ul style="list-style-type: none"> • Weekly on relocation • 1 month after resettlement for 1 year
8	Community resources	Reconstructing community resources	<ul style="list-style-type: none"> • Number of redeployed community structures • Quantity and type of lost plants • Number of seedlings by type offered • Number of trees planted 	RAP in progress	<ul style="list-style-type: none"> • KRU • PAP Committee • Relocation expert • NLC 	Weekly at relocation
9	Disability and Disturbance	Junk factor	<ul style="list-style-type: none"> • Noise level at the nearest residence or facility under construction • Increased number of affected houses and noise level, dust, traffic volume etc. 	Under construction	<ul style="list-style-type: none"> • KRU • PAP Committee • Contractor • Construction Management Consultant 	Every week under construction
10	Society / Demographics	Change to household's demographics	<ul style="list-style-type: none"> • Household size (birth, death, access) • Age distribution • Gender distribution • Marital status 	At the time of relocation and one year later	<ul style="list-style-type: none"> • KRU • PAP Committee • Resettlement expert 	One month during the quarter at resettlement and

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
			<ul style="list-style-type: none"> •Relationship with head of household •Status of 'vulnerable' households 			one year after housing move
		Population movement	<ul style="list-style-type: none"> •Household residential areas •Move to and from household •(Household member's location and place of residence) 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	Every month when relocating
		Change of usage	Distance / travel time to nearest school, public health center, church, shop, village	Upon relocation	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	Every month when relocating
		Change in health condition of PAP	<ul style="list-style-type: none"> •Nutritional status of relocated household members •Number of patients by type (STD, diarrhea, malaria, immunologic diseases) •Mortality •Access to medical services (distance to the nearest facility, service cost, quality of service) •Use of medical services •Disease prevention strategies •Implementation of educational programs •Toilet penetration rate at school (number of children per VIP in site) 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
		Changes in the status of women	<ul style="list-style-type: none"> •Participate in the training program •Using credit facilities •Landholding status •Participation in related activities and corporate activities 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
		Household income ability	<ul style="list-style-type: none"> •Ownership status of capital assets •Land ownership status •Changes in ownership of livestock: confusion before and after relocation •Prices of livestock purchase and sale, status of exchange transactions •Employment situation of economically active members 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
			<ul style="list-style-type: none"> •Household members' skills I •Remunerated salary income excluded •Change in income - change before and after relocation •Income and expenditure balance conditions •Realization of restoration plan of household income (Degree of component implementation, achievement of net income) •Possession status of bank account •Access to natural resources (tree, grass, sand, stone) that generate income 			
		Changes in social organization	<ul style="list-style-type: none"> •Participation in external organization of household member, status of participation •Are household members in the leadership position of external organizations 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
		Population inflow	<ul style="list-style-type: none"> •Changes in the size and number of colleges due to formal and informal population movements •Market growth 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
11	Consultation	Diffusion of information	<ul style="list-style-type: none"> •Number of people in the information center, job title, personnel allocation •Staff dispatch, equipment, documentation at information center •Information Center Activities •Number of people accessing the information center •Information requests, problems encountered in the information center 	During relocation and 1 year after	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
		Handling complaints	<ul style="list-style-type: none"> •Number of complaints registered, by type •Number of complaints resolved •Number submitted to court 	During relocation and 1 year after	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
		Management of consultation program	<ul style="list-style-type: none"> •Number of regional committees established •Number of women and adolescents in the committee •Number of local committee meetings and dates •Types of problems raised at local committee meetings •Involvement of regional committees in project planning •Number of participating NGOs 	During relocation and 1 year after	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
12	Training	Operation of training program	<ul style="list-style-type: none"> •Number of Trained Regional Committees •Number of PAPs trained in project-related courses •Number of women participating in the training program 	During relocation and 1 year after	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
13	Management	Recruitment	<ul style="list-style-type: none"> •Number of executing agencies by function •Number of persons concerned with central government agencies that can correspond to each function •Number and role of specialists within KRU 	During relocation and 1 year after	<ul style="list-style-type: none"> •KRU •PAP Committee 	Every quarter from the beginning of resettlement and relocation
		Procedure in operation	<ul style="list-style-type: none"> •Assess / quantify census and assets •Specific procedures •Effectiveness of compensation allocation system •Number of land registration registrations implemented •PAP committee, coordination between KRU and central government officials 	After preparing RAP and starting resettlement	<ul style="list-style-type: none"> •KRU •PAP Committee •Resettlement expert •NLC 	Quarter after RAP preparation and settlement
Progress and Final Report						
14	Monitoring and evaluation report		<ul style="list-style-type: none"> •Periodical progress reports are prepared according to items weekly, monthly or quarterly. •Final report on monitoring 			

Source : JICA Study Team

Table 11.2.54 Internal Monitoring Form

Inhabitant consultation

No.	Date and time	Place	Main contents of consultation, main comments and responses from PAPs

Activity	expected number	Unit	Progress (number)			Progress (%)		Completion date	Responsible body	
			During the quarter	Until last quarter	Until the current quarter	Until last quarter	Until the current quarter			
									KETRACO	
Consultant procurement		M/M								
Implementation of census survey (including socioeconomic investigation)										
RAP authorization			Authorization date							
Finalization of PAPs list										
Acquisition of land use right		ha								
Land acquisition		ha								
Progress of Resettlement		NO.of HH								
Power transmission line part		NO.of HH								
Substation part		NO.of HH								
Progress of compensation		NO.of HH								
Power transmission line part		NO.of HH								
Substation part		NO.of HH								

Implementation status of livelihood recovery support

Action Item	Implementation content	Implementation result

Complaints from affected residents

Number of complaints	Complaint content	Correspondence situation and result

Other points of note (free description))

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Source : JICA Study Team

Table 11.2.55 External Monitoring Form

Inhabitant consultation

No.	Date and time	Place	Main contents of consultation, main comments and responses from PAPs

Activity	expected number	Unit	Progress (number)			Progress (%)		Completion date	Responsible body	
			During the quarter	Until last quarter	Until the current quarter	Until last quarter	Until the current quarter			
									KETRACO	
Consultant procurement		M/M								
Implementation of census survey (including socioeconomic investigation)										
RAP authorization			Authorization date							
Finalization of PAPs list										
Acquisition of land use right		ha								
Land acquisition		ha								
Progress of Resettlement		NO.of HH								
Power transmission line part		NO.of HH								
Substation part		NO.of HH								
Progress of compensation		NO.of HH								
Power transmission line part		NO.of HH								
Substation part		NO.of HH								

Implementation status of livelihood recovery support

Action Item	Implementation content	Implementation result

Complaints from affected residents

Number of complaints	Complaint content	Correspondence situation and result

Other points of note (free description))

--

Source : JICA Study Team

Describe the standard operational instructions (TOR) for external monitoring as follows.

Terms of Reference for RAP Implementation Monitoring by External Agency

During RAP implementation, it is important to have an external expert carry out monitoring to verify and assess the information that is relevant to the implementation of the Project.

The Monitoring Expert will:

- a) Verify entitlements provided to the affected people;
- b) Review records of compensation payments;
- c) Evaluate and verify the internal monitoring that is carried out by KETRACO Resettlement Unit (KRU);
- d) Advise KRU on safeguard compliance issues that arise in connection with the Project and agree on the activities and timelines of addressing them;
- e) Carry out visits to the project area;
- f) Convene meetings with relevant authorities involved in land acquisition so as to review status and take note of the challenges being experienced;
- g) Review progress on the implementation of resettlement activities 2 times a year;
- h) Assess the significance of identified measures in restoring/enhancing PAPs quality of life or livelihood;
- i) In case of noncompliance, a report shall be prepared and recommended corrective actions incorporated in the Corrective Action Plan (CAP).

Scope of Work

Monitoring Plan

- a) Prepare an Evaluation and Monitoring Plan, for review and approval by KETRACO.
- b) The plan should clearly define the activities and deliverables per reporting schedule and highlight the scope and strategy of the monitoring system, key indicators and methodology that will be used in the collection and analysis of data;

Evaluation of RAP Implementation Activities

- a) Validate the internal monitoring and reporting of KRU. The monitoring expert is expected to review the adequacy of KRU's internal monitoring and reporting procedure, including:
 - The number and qualification of the staff engaged in the implementation of the the RAP at different stages,
 - Determine the adequacy and integrity of the process,
 - Verify claims through sampling check at the field level to assess whether land acquisition/resettlement objectives have been generally met;
 - Recommend corrective actions and agree on the schedule of implementation of these corrective actions, if and where necessary;

- b) Validate the adequacy of public consultation and disclosure of information as designed and described in the RAP. Where necessary, the monitoring expert should advise KRU if additional public consultation and disclosure of information needs to be undertaken. The monitoring expert should validate on ground that appropriate consultations and information disclosure actually took place;
- c) Assess the extent to which the entitlement matrix, list of affected persons/households (authorized representative of affected households), and specific entitlements such as compensation amounts and procedures, are followed including timeliness of payment.
- d) Evaluate the veracity/correctness of available proof of compensation such as receipt or any other document stating acceptance of compensation by the representative of affected persons/households;
- e) Review the quality and suitability of the relocation sites from the perspective of both the affected and host communities;
- f) Involve the affected people and community groups in assessing the impact of land acquisition for monitoring and evaluation purposes;
- g) Assess the adequacy of income restoration strategy and evaluate the matching of specific livelihood development activities against the needs of the intended recipients/beneficiaries. The monitoring expert should document the implementation of each activity and determine effectiveness to affected people including women and vulnerable groups;
- h) Assess the adequacy of institutional arrangements, specifically the capacity of KRU, the local authorities involved in the land acquisition and resettlement process and other organizations expected to implement the RAP to ensure that the objectives of the RAP, JICA Guidelines for Environmental and Social Considerations and World Bank Safeguard Policy OP 4.12 are achieved, and suggest necessary enhancement measures, if and where this is found necessary;
- i) Evaluate and validate the adequacy of the Grievance Redress Mechanism (GRM) and suggest necessary enhancement measures, subject to further public consultations and disclosure. Carry out ground verification on the level of awareness of the community within the project impact area on the existence of GRM. Take note of:
 - Common issues/complaints raised,
 - The resolution of each registered case and
 - The level of satisfaction of community on the GRM;

To conduct an interim audit of land acquisition, compensation and resettlement activities for people affected by the Project, the following will be conducted:

Socio-economic Survey

Socio-economic survey will be undertaken to gather information on the affected land area, land use including farm and livelihood activities, yield and income derived from the affected land, and sources of incomes, etc. prior to the Project taking possession of the land;

The following assessment should be done:

- a) Audit the status of compensation payments, use of funds received by the affected people and current socio-economic living conditions;
- b) Audit the project impacts on women as well as their needs and concerns and identify any additional potential assistance for women in affected villages;
- c) Assess whether compensation at replacement cost has been paid, whether the livelihoods and standard of living of the affected persons have been restored and whether all activities implemented are in line with JICA Guidelines and World Bank Safeguard Policy requirements;

Corrective Actions

The monitoring expert should execute the following:

- a) Prepare a Corrective Action Plan with estimated budget, timeline and implementation arrangements;
- b) Where unanticipated involuntary resettlement impacts are found during RAP implementation, the monitoring expert should assess and advise KRU on the need to conduct additional social impact assessment and/or update the RAP, and ensure that all existing applicable requirements, entitlements and provisions are followed;
- c) Document and highlight major problems/issues encountered and lessons learned;
- d) The monitoring expert should conduct semi-annual site visits, interview affected people and conduct consultations;
- e) Undertake a RAP Completion Audit covering all affected persons immediately after completion of RAP implementation. The audit will also be supported by findings of the socio-economic survey which will include data on livelihoods and income levels of affected people that would help to determine whether affected households have been able to restore or improve their socio-economic status compared to the pre-Project level;
- f) Where the RAP Completion Audit finds that the objectives of the RAP and JICA Guidelines have not been met, the monitoring expert will continue with quarterly site visits during implementation of the Corrective Action Plan; and 2 years following the completion of RAP implementation. Where Audit findings show non-compliance), annual site visits should be carried out to monitor whether affected people have maintained or improved their socio-economic status.

Deliverables

The following reports will be delivered by the monitoring expert:

- a. A Monitoring and Evaluation Plan, within one month after being appointed;
- b. Interim Audit Report, within 3 months after completion of land acquisition compensation payments;
- c. Regular Monitoring Reports
- d. In the event that a Corrective Action Plan is prepared following the audit, prepare a close out report upon completion of CAP implementation.
- e. Preparation of Annual Monitoring Reports following completion of RAP/CAP implementation;

The monitoring reports and all other reports will be submitted to KRU. An evaluation report at the end of the project will be prepared with critical analysis of the achievements of the program and performance of the project as well as KRU.

Qualification and Experience of Consultant

The Consultant will have the following qualifications:

- Sufficient technical capacity to provide the above services.
- A Masters degree in social science or relevant field with a minimum of 10 years' experience in dealing with social/community development projects.
- Demonstrated experience in resettlement matters and RAP Audits.
- Familiarity with Land Act 2012, JICA Guidelines for Environmental and Social Consideration and World Bank Safeguard Policy, OP 4.12 - Involuntary Resettlement.

11.2.21 Public Consultation

Before implementing the consultation meetings, discussion with the Ministry of Land, NLC and KETRACO about how to proceed with the survey was conducted. In addition, to collect the specific information of each region and to share a description of the project, a description of the survey plan, and to know better approach the community people, to request safety arrangements, separate meetings were held at following 7 related local administration offices in July 2017.

- Mombasa County Commissioner's Office
- Office of the Governor, Mombasa
- Office of the Governor, Kilifi
- Matugu Sub-County Commissioner's Office
- Kaloleni Sub-County Deputy Commissioner's Office
- Likoni Sub-County Deputy Commissioner's Office
- Chief's Office, Mtongwe Location, Dongo Kundu

As a result of consultation, each regional administrative office gained the support for the implementation of the project and got an understanding about the implementation of the survey. It was confirmed the provision of support for ensuring safety from the community.

To the Consultation Meetings and PAP Consultation Meetings, Deputy County Commissioner, Assistant County Commissioner, Senior Chief, Chief, Assistant Chief, Ward Administrator, NLC, religious leaders, the socially disadvantaged and women were invited and participated.

The call for the community people was made in consultation with the local government officials, the following method was applied according region's local conditions.

- Local Swahili FM broadcasting station. Schedule and venue were broadcasted from one week before the opening day.
- Public information in the community with a speaker installed car one week before the meeting.

- Oral public relations to all residents who visited the office of the Chief of the local administration.
- Posted announcement at local markets, churches, schools, village meeting places (English and Swahili).

First consultation was held in July 2017 (Donogo Kundo in March, 2018), in the first meeting, project description and survey schedule were presented and the community accepted the survey objective and confirmed that the community will extend cooperation. The second meeting was held in April 2018, in the second meeting, the impact on assets and detailed compensation policy including livelihood restoration plan were presented. The third meeting held in June 2018 was mainly for EIA. In order to explain the final results of both EIA and RAP study, Final Stakeholders Consultation Meetings were held February 25 – 28, 2019.

During the study period, a focus group discussion (FGD) for women at Mariakani was held. In the FGD meeting, there was a question from the participant that (a) in what form can women share profits by compensating for assets owned by family, (b) will KETRACO make any safeguard measure to protect compensation money to be diverted from its original purpose to restore the affected households' livelihood. Those questions are very closely related to the affected households' livelihood. In response to these women's questions, NLC officials explained that compensation is given to the proper owner of the asset regardless of whether they are male or female, and as a result of carefully answering each question, KETRACO got consent from the participants. The all participated women highly appreciated that they had such an opportunity to raise questions.

(4) Consultation Meeting (July 2017, March, 2018)

The meeting was chaired mainly by Deputy County Commissioner, Assistant County Commissioner, Chief and KETRACO. This system was similar for the PAP Consultation Meetings conducted in April 2018.

i) Purpose of the meeting

- Explain the future transmission line project to the community people.
- Explain the project impacts (acquisition of land and wayleave, loss of structures, trees and crops, potential loss of income)
- Explain about the management of personal data acquired during the questionnaire survey, confidentiality preservation.
- Explain the wayleave (40 m in width) of the transmission line and the site of the substation and its maintenance road.
- Explain the extent of the impact, how to evaluate the affected assets
- Requesting support and cooperation from the community to conduct surveys of affected land plots and other assets.

ii) Date and venue of the meetings

All the proceedings, questions and answer sessions were held smoothly. At all meetings, support for the project was shown, as well as wishes for approval. There was no opinion opposed to the project. The date of the meeting, the venue, and the number of participants are summarized in Table 11.2.57. The main questions and answers are summarized in Table 11.2.58.

Table 11.2.56 Consultation Meetings

#	Venue of Meeting	Date	Time	County	Sub-County	Location	Number of participants
Region other than Dongo Kundu							
1.	Baraza Meeting Area, Near EMACO Hotel, Mitangoni	Wednesday, 12 July 2017	10.00am	Kilifi	Kaloleni	Mariakani	Total = 85 Male = 64 Female = 21
2.	Mbunguni Chief Camp's Grounds	Thursday, 13 July 2017	10.00am	Kwale	Matuga	Mbunguni	Total = 307 Male = 200 Female = 107
3.	Kiteje Assistant Chief's Office Grounds	Thursday, 13 July 2017	02.00pm	Kwale	Matuga	Ng'ombeni	Total = 236 Male = 77 Female = 159
4.	Mnyenzi Assistant Chief's Office Grounds	Friday, 14 July 2017	10.00am	Kwale	Kinango	Kasemeni	Total = 125 Male = 99 Female = 26
5.	Lutsangani AP Camp Grounds	Friday, 14 July 2017	02.00pm	Kwale	Kinango	Gandini	Total = 257 Male = 192 Female = 65
6.	Baraza Meeting Area Near Mwanda Dispensary	Tuesday, 18 July 2017	02.00pm	Kwale	Kinango	Mwavumbo & Mwatate	Total = 183 Male = 131 Female = 52
Dongo Kundu							
7.	Dongo Kundo AP Camp	Tuesday 20 March, 2018	10.00am	Monbasa	Likoni	Mutongue	Total = 367 Male = 258 Female = 109
Total participants							Total = 1,560 Male = 1021 Female = 539

Source : JICA Study Team



Source : JICA Study Team

Figure 11.2.35 A Community Member speaking at Mariakani Meeting – July 12, 2017



Source : JICA Study Team

Figure 11.2.36 Assistant Chief Speaking at the Mbunguni Meeting – July 13, 2017



Source : JICAStudy Team

Figure 11.2.37 Sensitization Meeting in Progress at Ng’ombeni Location – July13, 2017



Source : JICAStudy Team

Figure 11.2.38 Mwavumbo venue Description of RAP Survey July 18, 2017

Table 11.2.57 Main Questions and Answers at the Resident Council

No.	Questions	Answers
1.	In other KETRACO projects in the neighborhood, I think there are cases where there is a land with conflict, and there was a problem in payment of compensation. Does this project face similar challenges?	<i>If land ownership is contested, KETRACO will prepare compensation and wait until the case is resolved by the concerned parties. KETRACO will provide appropriate information in a timely manner so that there will be no inconvenience to the resettled residents. We have been dealing with transparency and honesty at all stages of the relocation process. We work hard to resolve conflict with NLC, local government, PAP Committee and village experienced elders.</i>
2.	It is possible that some unjustified persons were recorded as owners of assets in the old census survey. How will you ensure that only people who are really affected are properly recorded?	<i>In the current census survey, if the ownership of the target land is confirmed using the existing mechanism that is deemed appropriate by the local, all the subjects are recorded. Of course, it is necessary to engage NLC and local administrations as necessary. Elders of the village are sure to visit and confirm the affiliation of structures, trees and crops of each household.</i>
3.	My land for which usage rights are set is divided into two by the transmission line. What is the ownership of the land in such a case?	<i>KETRACO acquires only the right to use the land of the transmission line part. The ownership of land related to Wayleave remains with the owner of the original land. Whether residence and livelihood maintenance is possible on divided land will be judged by negotiating with the affected residents based on the extent and degree of the influence.</i>
4.	Oral land transactions were made among already deceased parties. There is no document which is the basis for the remaining dependents to prove the transaction and request compensation. In such a case, who will be paid compensation?	<i>Basically, compensation for land will be paid to registered persons on the verge of security. In such cases, it is desirable to mobilize and resolve existing dispute resolution mechanisms that rely on community experience and wisdom before appealing to legal procedures. NLC and the involvement of local administrations are required to determine ownership.</i>
5.	When the semi-permanent structure house is affected, how is compensation calculated?	<i>Compensation is calculated as the current market price, that is, the reacquisition cost necessary to obtain a house of the same structure as the house currently owned. An additional 15% of annoying fee will be paid in addition.</i>
6.	Does the big community benefit somewhat from the business activities of KETRACO, or will it be covered only by affected people affected by the project? Titanium Mining Company did well well digging, road maintenance, classroom maintenance, but what does KETRACO do for the community?	<i>The original duty of KETRACO is the design, construction and maintenance of the high voltage transmission line. KETRACO may also be able to fulfill social responsibility in sectors such as water supply, roads, education, etc., based on the judgment of the top management based on a humanitarian point of view. On the other hand, Titanium Mining Company is a private company, and it is possible to use part of the profit as a contribution measure to the community.</i>
7.	You may not have all the landlords of all the land you own. What will happen in this case?	<i>We will set up a site for interviews individually with the target person at a later date. Take enough time for this process.</i>
8.	What about houses and trees just outside the 40-m wide wayleave?	<i>Structures and trees on the outside of 40 m wide wayleave are out of scope and can be used as it is.</i>
9.	Many of the trees in the project area are endemic species with medicinal value. How does KETRACO determine the value of these unique trees?	<i>When calculating compensation amount, from KFS, price data of all trees growing in Kenya is obtained and carried out. Similarly, the data necessary for calculating the compensation amount of all the crops grown in Kenya will be obtained from the Ministry of Agriculture.</i>
10.	In this project, is it possible to hire local youth through the transmission line?	<i>This project is expected to create employment opportunities in areas where transmission lines will pass. In addition to direct</i>

No.	Questions	Answers
		<i>employment by the project, other revenue opportunities may arise, such as ripple effect including the formation of local markets that provide goods and services to stakeholders including workers during construction. KETRACO is a policy to recommend contractors to hire young people. With this in mind, Chief and its assistants need to work to ensure that their policies are implemented at the project construction stage.</i>
11.	While building a house during the previous census survey, they were asked not to continue construction. Although the construction was stopped, the unfinished building was then damaged by being exposed to the weather and rain, causing damage. I visited the KETRACO office in Nairobi at least twice and offered a complaint about the damage. How is this case handled, whether it is under the influence of wayleave this time?	<i>In such a case, it will be deliberated not to be disadvantaged by affected people. Complaints should be recorded properly. It is advised that the house will remain as it is until the evaluation is completed and compensation is paid, this case must be handled by the staff in charge.</i>
12.	Which trees will be affected / compensated by size, age, etc.?	<i>Trees are compensated after logging based on various tree species, size, age and price data provided by Kenya Forest Service (KFS). Meanwhile, the crops are compensated according to the guidelines provided by the Ministry of Agriculture, if damaged due to the influence of construction.</i>
13.	What will KETRACO do if wayleave passes through a family cemetery?	<i>KETRACO never interferes or compensates for the cemetery. The contractor is also in the position to receive instructions and supervision from KETRACO. Usually, we will follow KETRACO's strict policy of not building a tower in the graveyard and do not do excavation.</i>
14.	Procedures to receive the issue of the right tend to be delayed by resolving the conflict and registering the land. The reason is that it takes time to process, that the subject can not afford the expenses or is not interested in holding the entitlement. What happens in such cases?	<i>Conflicts relating to the land of some areas are awarded and there are cases where the warranty number itself is not yet issued although the warranty number is ready. In other areas, the land is not awarded or jointly owned. Chief, who is in charge of the relevant area, strongly advises the target residents to immediately begin the process of inheriting the rights in order to receive legitimate compensation if the registrant dies.</i>
15.	Will the transmission line pass exactly through a given place? How can the community know who is influenced by the population and who will not accept it?	<i>During the survey in the coming weeks the investigators will present to the affected people. It will be confirmed by consultants during census investigation and asset survey in the coming weeks and will be handled at a later council.</i>
16.	Why will KETRACO pay lease of land monthly after receiving land lease from affected residents? The target residents lose their lives for the rest of their lives and are subject to restrictions on their livelihood activities.	<i>That understanding is not accurate. Land Act 2012 does not allow the lease of the land necessary for the construction of the transmission line. Under this law, KETRACO will acquire the right to use the land of the transmission line route for public interest. The ownership of the land will remain at the affected residents and make appropriate compensation.</i>
17.	How long will it take for affected residents to receive the compensation after the construction of transmission lines starts? Also how long will it take to complete construction?	<i>Residents are notified three months in advance to relocate. KETRACO extends this period if residents are unable to leave within this period for justifiable reasons. Because this happens, I think it will take about 2 years to complete construction.</i>

No.	Questions	Answers
18.	Can the target residents recover the construction materials from the affected land after compensation?	<i>Affected residents are allowed to recover construction materials within the notice period. By the expiration of the notice period, buildings left in the site without reasonable and just reasons are demolished by contractors. The logged trees in the site can be sold or used by the original owner.</i>
19.	Can residents of the community get electricity to be consumed at home from the transmission line? Or just pass through this transmission line?	<i>The electricity transmitted is for the community and its people. However, electricity supply to each residence is a jurisdiction project of Kenya · Power. KETRACO carries out only high voltage transmission, which is the first step for people to access electric power at home, after which distribution is performed at an appropriate voltage by the Kenya power from the substation.◦</i>
20.	Will it be compensated for the collapsed house that was in Wayleave long ago?	<i>In the survey, evaluate and record all assets in the current situation. Past property is out of compensation.</i>
21.	Can the residents burial the deceased person in the wayleave?	<i>It is not a construction of a structure and it takes time to burial acts to be about several hours so it is not a big problem. Discuss the correspondence separately and solve it</i>
22.	Is there a difference in compensation for the land on which the tower in Wayleave is built and the land on which no tower is constructed?	<i>Regardless of the presence or absence of a steel tower, compensation calculation is uniform. In the same place, if it is the same area, it becomes the same compensation amount regardless of the presence or absence of a steel tower.</i>
23.	Are there any special additional payments for socially vulnerable people such as disabled people?	<i>Residents' relocation policy of this project calls for identifying socially vulnerable households and providing legitimate compensation and necessary assistance when relocating.</i>

Source : JICA Study Team

(5) PAP Consultation Meetings

The PAP Counsltation Meetings were held during the period from April 23 (Monday) to April 27 (Fri) of 2018. Through this project, the affected households were invited and a total of nine PAP Counsltation Meetings were held. At the start of each venue, Chief in charge read all names of household heads of affected households while checking the roster and confirmed their attendance. For the absentee, Chief, the elder of the village and the PAP Committee organized after the council corresponded to report to KETRACO. Officials of the local administrative officials participated in the same way as the inhabitants' council, but NLC officials joined the discussions at each venue as the matter concerning the ownership of the land and matters pertaining to compensation will be the focus. A detailed explanation of the project by the local administrative office, the necessity of the project by KETRACO, compensation for assets specifically affected, and the future process were explained. Residents positively asked questions. Most of the content was related to land and compensation, but as a result of explanation of the policy that NLC responds, and understanding the current situation while compensating based on the current law, the proceedings were peacefully progressed. All of the councils exceeded the scheduled time greatly, but never confused. Affected residents were cooperative in the project and no opinion opposed the project. Some residents suggested that they would provide a room for the workers during the construction stage. The details of the PAP Counsltation Meetings are presented.

1) Channel for attending PAP to attend the PAP council

PAP was invited to attend the PAP consultation Meetings through the following means.

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- During detailed census investigation, all contacts were recorded, so I called the household directly and asked for participation.
- Visit the village elder and the residence of affected households by Assistant Chief and invite participation.
- If you can not be contacted by absence etc, request a call to the neighbors of affected residents.

2) Purpose of the PAP Consultation Meeting

A total of nine PAP councils were held. The purpose of the PAP Association is as follows.

- Disclose affected assets (land, structures, trees, crops and business) to PAPs.
- Verify that each PAP recognizes the affected asset.
- Detail how PAP will compensate for affected assets
- Describe how immigration of people who move houses within the same land and people who must search for new land because the rest of the land is too small.
- Explain the details of the process from the present to the construction of the facility.
- Describe the method of acquiring the right of use of the land necessary for the project, the substation, and the acquisition process of the land necessary for maintenance road maintenance.
- Detailed payment method of remuneration
- Provide opportunities for PAP to question, propose and solve issues related to the migration process.
- Provide affected residents with the opportunity to explain the next steps and to elect PAP committee members.

All the proceedings, questions and answer sessions were held peacefully. At all councils, support for the project was shown, as well as wishes for approval. There was no opinion opposed to the project. In addition, the organization of PAP Committee was proposed at each council. Immediately after the council, residents voluntarily gathered and held meetings to select members. The attitude of participating in the resettlement process was aggressive.

The venue, schedule and number of participants of the PAP council are shown in Table 11.2.59, and the main questions and answers are shown in Table 11.2.60.

Table 11.2.58 PAP Consultation Meetings

#	Venue of Meeting	Date	Time	County	Sub-County	Location	Number of participants
1.	Baraza Field near Tiba Petrol Station	Monday, 23 April 2018	09.00am	Kilifi	Kaloleni	Mariakani	Total=81 Male=60 Female=21
2.	Redeemed Gospel Church near Mwanda Dispensary	Monday, 23 April 2018	02.00pm	Kwale	Kinang'o	Mwavumb'o	Total=154 Male= 134 Female =20
3.	Kolueni Primary School	Tuesday, 24 April	09.00am	Kwale	Kinang'o	Mwatate	Total=53 Male =43

#	Venue of Meeting	Date	Time	County	Sub-County	Location	Number of participants
		2018					<i>Female =10</i>
4.	Bofu Chief;s Camp	Tuesday, 24 April 2018	02.00pm	Kwale	Kinango	Mtaa	Total=45 <i>Male=37</i> <i>Female=8</i>
5.	Munyenzi Methodist Church	Wednesday, 25 April 2018	09.00am	Kwale	Kinango	Kasemeni	Total=120 <i>Male=106</i> <i>Female=14</i>
6.	AP Camp Lutsangani	Wednesday, 25 April 2018	02.00pm	Kwale	Kinango	Gandini	Total=108 <i>Male=87</i> <i>Female=21</i>
7.	Mbunguni Chiefs Camp Ground	Thursday, 26 April 2018	09.00am	Kwale	Matsangoni	Mbunguni	Total=95 <i>Male=78</i> <i>Female=17</i>
8.	Kiteje Assistant Chief's Camp	Thursday 26 April 2018	02.00pm	Kwale	Matsangoni	Ng'ombeni	Total=118 <i>Male=91</i> <i>Female=27</i>
9.	Dongo Kundu AP Camp	Friday 27 April 2018	09.00am	Mombasa	Likoni	Mtongwe	Total=93 <i>Male=67</i> <i>Female=26</i>
Total number of participants							Total=867 <i>Male =703</i> <i>Female =164</i>

Source : JICA Study Team

3) Questions and Answers at the PAP Consultation Meetings

Affected residents were given the opportunity to ask questions and propose any problems relating to the relocation process. Especially the local governments, especially each Chief, entered a microphone in the circle of residents and urged questions. Inhabitants responded to that, positively asked questions. Everything was done in Swahili, but by receiving explanations in English at key points from KETRACO staff in charge of resettlement, we were able to grasp the contents of the consultation. I summarized the main questions and answers to them in a table. Details are described on a separate sheet.

Table 11.2.59 Main Questions and Answers

No.	Questions	Answers
1.	If the land affected by the project is leased, how is compensation made?	<i>Compensation is made to the rightful owner of the asset. Those who lease are subject to compensation for land use, crops and trees that are cultivated on rental land, but land compensation is paid to landowners</i>
2.	Is the price different between the Nairobi-Mombasa highway and the remote inland land?	<i>Land in different areas may be of different price. In any case, it is certain that an appropriate assessment will be carried out to determine compensation for individual parcels.</i>
3.	The land on which the steel tower is installed is more influential than the land without tower, so there is a difference in compensation?	<i>There is no other compensation policy on the land where the steel tower is installed. It is uniform. It is compensated for the land with an appropriate amount.</i>
4.	Is it necessary for land obligation to be compensated for land? What happens if the right document can not be prepared or is not yet acquired? The NLC decides how to approach the	<i>The NLC decides how to approach the compensation issue of the landowner without a title. KETRACO recognizes that there is a solution although the majority of the landowners do not have a document that is the basis for compensation. The coordinator in charge of County of NLC is responsible for solving such problems.</i>

No.	Questions	Answers
	compensation issue of the landowner without a title.	
5.	Do I receive compensation via Chief, or are you being directly paid by residents?	<i>Compensation is paid directly to affected people through bank accounts. The target residents are notified of the timing of providing personal bank accounts, and certificates describing the compensation amount to be deposited are issued.</i>
6.	If Wayleave affects trees, who is responsible for cutting them? Is it KETRACO or a resident?	<i>It can not be evaluated that it will be harvested before compensation is fixed. Therefore, all the inhabitants should wait until the evaluation is confirmed by KETRACO.</i>
7.	Mwavumbo Ranch has one single entitlement. What is the approach to compensation for individual parts of affected land?	<i>A ruling by the NLC and the local administrative agencies has been initiated in order to issue respective rights documents to the affected residents so that compensation is paid to each household according to the compensation.</i>
8.	If crops and trees are affected by the project and the owner does not have a national ID card, can you get compensation?	<i>Procedures to identify beneficiaries are required before payment of compensation. People who are affected and compensated by the project need to have an ID. It is illegal that you do not have a National ID card.</i>
9.	How can I compensate for the deceased real estate owner?	<i>Families are required to identify representatives. The family reports it to Chief. Regional administrative agencies (Chief and Assistant County Chief) arbitrate using the community's traditional mechanism to solve problems.</i>
10.	How does KETRACO deal with people claiming land falsely?	<i>The problem should be reported to Chief / Assistant County Chief and resolved before compensation. The NLC will verify and solve the problem before compensation is paid by KETRACO.</i>
11.	If the affected structure deteriorates and the condition is bad, can you repair it?	<i>Do not modify the deteriorating structure as it is. Also new structures should not be built in wayleave.</i>
12.	Can parents without bank accounts use their son's account?	<i>The account name must be the same as the legal owner of the asset. Through Chief Office and KETRACO, if adjustment is necessary, it will be dealt with and solved.</i>
13.	The father of the owner of the land died. That father was registered. Can my son re-register as an owner and present a bank account as an account for payment of compensation instead of a family member?	<i>Changes to registered contents can be made by appropriate predetermined procedures by local administrative agencies.</i>
14.	Are you fighting land ownership with your son in your family?	<i>Family conflicts should basically be settled within the family, but it can be solved by the involvement of local government agencies.</i>
15.	House affected by the project was damaged by the flood. Will KETRACO pay compensation?	<i>Compensation is made according to the condition of the house. Relocation is done after compensation.</i>
16.	Land is a family property. In this case, can men and their spouse jointly register ownership of the land?	<i>There is no problem if family members agree.</i>
17.	If there is a land rights document, but the target land is subdivided, how is compensation made?	<i>In such a case, we will consult with NLC and obtain legal documents on subdivided land. In this case, there is no conflict between owners concerning subdivided land. Compensation is paid based on the entitlement to the segmented land. (Consultation with NLC is important.)</i>
18.	Will it be subject to compensation if we are obliged to interrupt the planning, for example land creation, expansion or renovation planned in the future?	<i>It is necessary to give fair support to the activities of residents toward recovery of livelihood. Any kind of consideration will be made if activities to increase personal assets have already been implemented and it is officially recognized.</i>
19.	Residents in the Dongo Kundu region do not have land rights documents, but can you explain clearly what will be	<i>NLC and KETRACO correspond to that case. NLC gives the right judgment and gives the owner of the legitimate the right to be compensated. The law stipulates that compensation will be made</i>

No.	Questions	Answers
	compensation for land?	<i>in good faith to those who do not have land rights documents.</i>
20	The value of asset changes with the passage of time, but when will the compensation unit price be revised, how is it done? What about Japan's case?	<i>Assets are valued using the data at the time of survey, while consulting the relevant ministries and agencies. Evaluation of land varies from region to region. Review is done according to case. In Japan, the background and conditions are different, so it is not a reference.</i>

Source : JICA Study Team

Table 11.2.60 Women elected as PAP Committee Members

No.	Name of female representative	place
1	Ms Priscilla Kiema Musya	Mariakani
2	Ms Nadzuwa J. Galuka	Mwavumbo
3	Ms Luvuno Mwanyoha	Mwatate
4	Ms Mbodze Ndumo Chiyonzo	Mtaa
5	Ms Fatuma Mangale	Kasemeni
6	Ms Kwaka Chindoro	Gandini
7	Ms Fatuma Omari	Mbunguni
8	Ms Bujuma Ali Nchigulu	Ng'ombeni
9	Ms Mkulu Nzau Mwithia	Mtongwe

Source : JICA Study Team



Source : JICA Study Team

Figure 11.2.39 Explanation of Compensation and Relocation in Mariakani April 23, 2018



Source : JICAStudy Team

Figure 11.2.40 Mbunguni venue LLC Compensation Policy by NLC officials - April 26, 2018



Source : JICAStudy Team

Figure 11.2.41 Explanation of Mwavumbo by Chief April 23, 2018



Source : JICA Study Team

Figure 11.2.42 Explanation of Ng'ombeni Venue Compensation Policy April 26, 2018

(6) Final Stakeholders Consultation Meetings (February 2019)

i) Purpose of the meetings

As a result of RAP study, details of the impact of the project, explanation of compensation and livelihood restoration plan

ii) Date and venue of the inhabitants' council

The date of the meeting, the venue, and the number of participants are summarized in Table 11.2.62. The main questions and answers are summarized in Table 11.2.63.

Table 11.2.61 Final Stakeholders Consultation Meeting

#	Venue of Meeting	Date	Time	County	Sub-County	Number of participants
1.	Baraza Field, near Tiba Petrol Station	Monday, 25 February 2019	09.00am	Kilifi	Mariakani	Total=51 Male=32 Female=19
2.	Mwanda Dispensary	Monday, 25 February 2019	11.00am	Kwale	Mwavumbo	Total=124 Male=107 Female=17
3.	Kalueni Primary School	Monday, 25 February 2019	02.00pm	Kwale	Mwatate	Total=34 Male=28 Female=6
4.	Bofu Chief's Camp	Tuesday, 26 February 2019	09.00am	Kwale	Mtaa	Total=48 Male=32

#	Venue of Meeting	Date	Time	County	Sub-County	Number of participants
						Female=16
5.	Mnyenzi Health Center	Tuesday, 26 February 2019	11.00am	Kwale	Kasemeni	Total=80 Male=67 Female=13
6.	AP Camp Lutsagani	Tuesday, 26 February 2019	02.00pm	Kwale	Gandini	Total=57 Male=45 Female=12
7.	Mbunguni Chief's Camp Gound	Wednesday, 27 February 2019	09.00am	Kwale	Mbunguni	Total=81 Male=63 Female=18
8.	Kiteje Assistant Chief's Camp	Wednesday 27 February 2019	02.00pm	Kwale	Ng'ombeni	Total=52 Male=39 Female=13
9.	Dongo Kundo AP Camp	Thursday, 28 February 2019	09.00am	Mombasa	Mtongwe	Total=59 Male=44 Female=15
Total number of participants						Total=586 Male=457 Female=129

Source : JICA Study Team

Table 11.2.62 Main Questions and Answers

No	Questions	Answers
Mwavumbo		
1	I have always been a victim of Development Projects. I was affected during SGR, Mwanda Hospital Construction and now the Transmission Line Project. Will KETRACO compensate me this time round since I was compensated previously during those projects?	<i>KETRACO has its own wayleave that is different from SGR and other infrastructure. If you are a PAP within the Transmission Line Corridor, then you are entitled for compensation (Mr Godana).</i>
Mwatate		
2	I was affected by Mwache Dam and the current Transmission Line. Will compensation be done to Mwache Dam PAPs only and leave the others affected by KETRACO? (Chrispus Tsuma Chinago)	<i>Compensation does not discriminate. ROW for KETRACO will be paid in accordance to what has been affected/acquired (Mr Godana)</i>
3	Can someone who was a PAP in the 60 m Corridor Line be a PAP in the 40 m Corridor Line?	<i>If you happen to fall again within the 40 m Transmission Corridor Line then you become a PAP and will be compensated</i>
Mtaa		
4	I do not know how much of my land is acquired and never saw the survey team taking measurements with tape measures on my land. I would wish to know the acquired size	<i>The current surveying methods have changed. The equipment used is sophisticated and taken using coordinates which are calculated to generate the acquired sizes of land within the corridor. The time for you to know your acquired size of land will come and it will be shown to you so that you sign against it.</i>
5	During compensation, will KETRACO purchase land for us or will I be given an opportunity to do it on my own?	<i>KETRACO does not purchase land for PAPS. It is your choice to choose your area of residence in case you are displaced. If you are to relocate then you shift on the same piece of land</i>

No	Questions	Answers
6	I have a land and structure, while compensating me will it be for structure only or both land and structure or will the cost be double?	<i>I have a land and structure, while compensating me will it be for structure only or both land and structure or will the cost be double?</i>
Kasemeni		
7	Land is owned by our family and it is only one of us whose name was recorded during the RAP survey. What happens to the others?	<i>Compensation money shall be paid after verifying the family members. It will be upon the family members to agree on how the money shall be shared equally among the family</i>
8	In a situation that am a PAP and have been affected in this area and then affected in another place, will I be counted twice?	<i>Yes. If you own more than one property within the corridor in different areas you will be counted and compensated</i>
Gandini		
9	I have coconut trees that I have been using from generation to generation, at what rate are they valued?	<i>Tree rates are controlled by Kenya Forestry Service (KFS). You are also free to visit their office and confirm the rates</i>
10	I own a shrine, at what cost will it be compensated?	<i>Provision has been made for Shrine transfer ceremony and also the value of the Tree. However, we will negotiate that on the day of compensation</i>
Mbunguni		
11	I have a house within the corridor which later fell down. Will I be compensated for that?	<i>During valuation process your house was captured by photos and measurements taken. If it fell down your compensation money is still intact. If you construct a new one it will not be compensated</i>
12	Will each tree have its own rate or you will use a flat rate for each?	<i>Rates vary according to tree type and tree size. This will be done by comparing rates with KFS</i>
Ng'ombeni		
13	I prefer that we are issued with title deed before we are compensated	<i>That's a positive intention and you really need to put an effort to acquire a title deed. Make arrangements with the Chief, Lands Office and County Government.</i>
14	Could you tell us about the Kayas that have been affected by the Transmission Line	<i>There was only one Kaya in Gandini Location called Kaya Gandini which was slightly affected by the Transmission Line. We made an adjustment and shifted the line away from it. As per now it is not within the corridor.</i>
Dongo Kundu		
15	I want to construct a house and never saw you erecting beacons so that I proceed with my plan. Will you carry out another survey to know the affected persons?	<i>No. All structures within the corridor were captured and valued. Any structure constructed out of the cut off date shall not be compensated (Mr. Munyzu)</i>
16	Rainy season is approaching and I have plans to start farming. Can I go on? (Stefano Lucas Sangula)	<i>You are at liberty to go on with your normal farming practices but when you harvest nothing shall be compensated (Mr. Godana)</i>

Source : JICA Study Team

11.3 Port and SEZ Main Road Components

11.3.1 Background

As part of the Mombasa SEZ infrastructure, a new port is planned to be developed for handling cargoes of the SEZ industries. The new port will also be capable of handling cargoes generated from the existing Mombasa ports, which will help to alleviate the congested situation. The port is designed to mainly handle containers and vehicles. A new road will also be developed to connect the port and SEZ industries to the Southern Bypass Road (the new road is termed “SEZ main road”). The proponent of the port and SEZ main road are Kenya Port Authority (KPA) and Kenya National Highways Authority (KeNHA) respectively. Since the port and road components are interlinked, the EIA report is prepared as a single document by including both port and road components. The EIA study was subcontracted to HEZTECH, a NEMA certified consultant.

(1) Project location and layout

The new port and road are located in the rural area of Likoni Sub-county of Mombasa County. The port is located inside a small bay in the south coast of Port Reitz. It faces the container terminals and general cargo berths of Mombasa port located along the opposite coastline. A dedicated navy berth is located in the east side of the port. The SEZ main road is located over a hilly terrain which is mostly agriculture land. Figure 11.3.1 shows the layout of the proposed port and road.

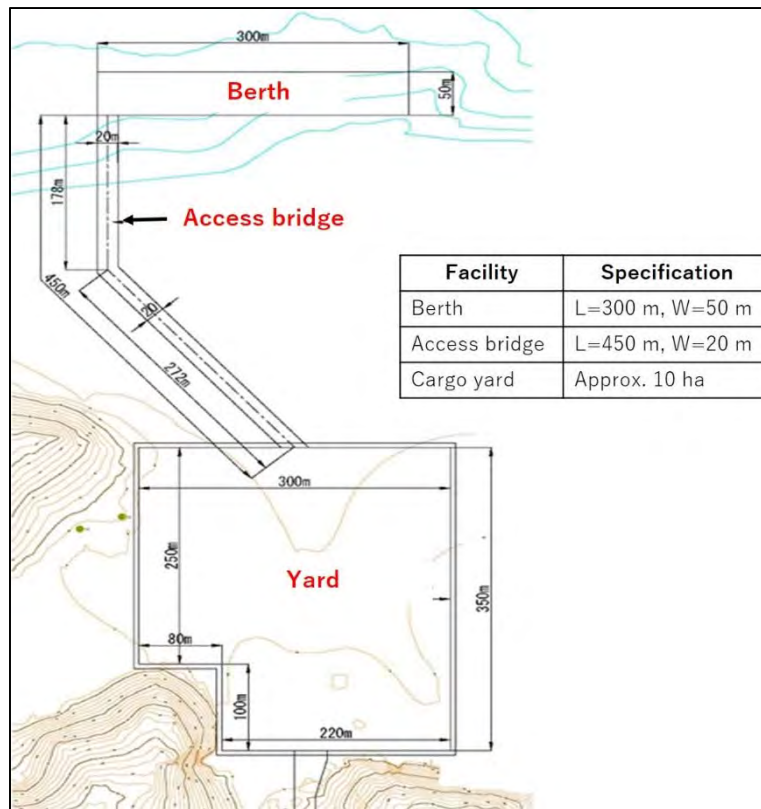


Source: JICA Design Team

Figure 11.3.1 Layout of Proposed Port and SEZ Main Road

(5) Outline of Port facilities

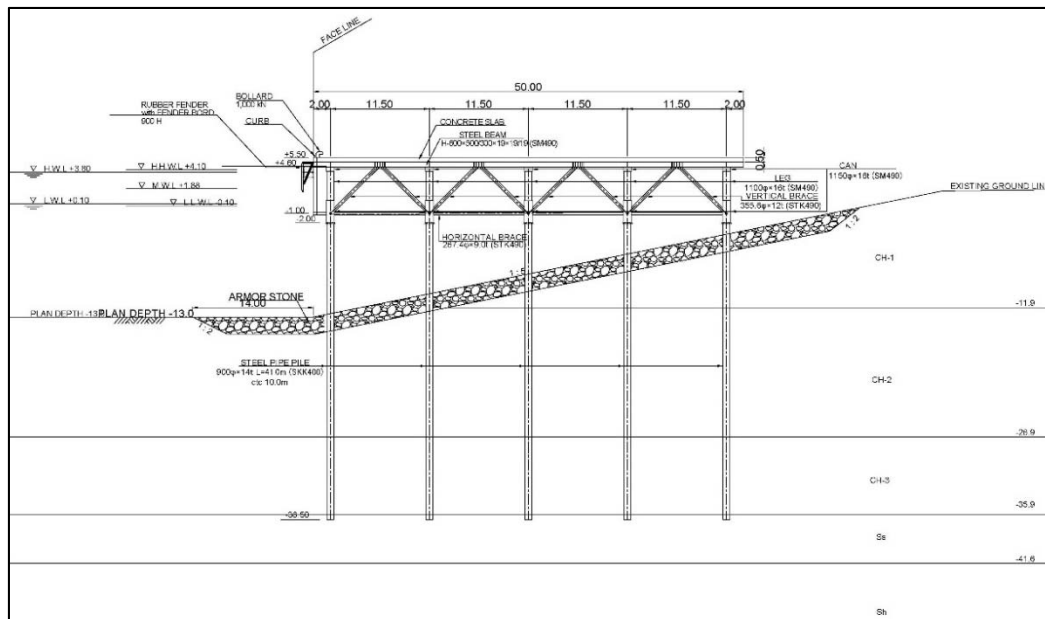
The port will consist mainly of a berth, a yard for cargo storage and handling, and an access bridge that connects the berth and yard. Figure 11.3.2 shows the layout if the main port facilities.



Source: JICA Design Team

Figure 11.3.2 Layout of Main Port Facilities

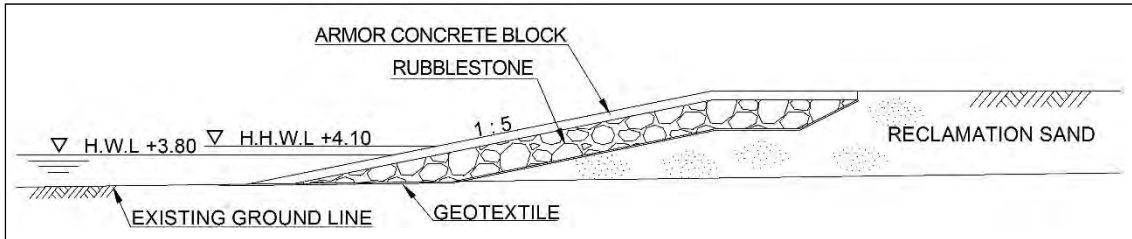
The berth will be of a pier structure supported with steel-pipe piles and a concrete deck. It will be constructed over a shallow water area of around 2-3 m depth. Figure 11.3.3 shows the cross-section design of the berth. Two mobile cranes will be used for loading/unloading of cargos from ships.



Source: JICA Design Team

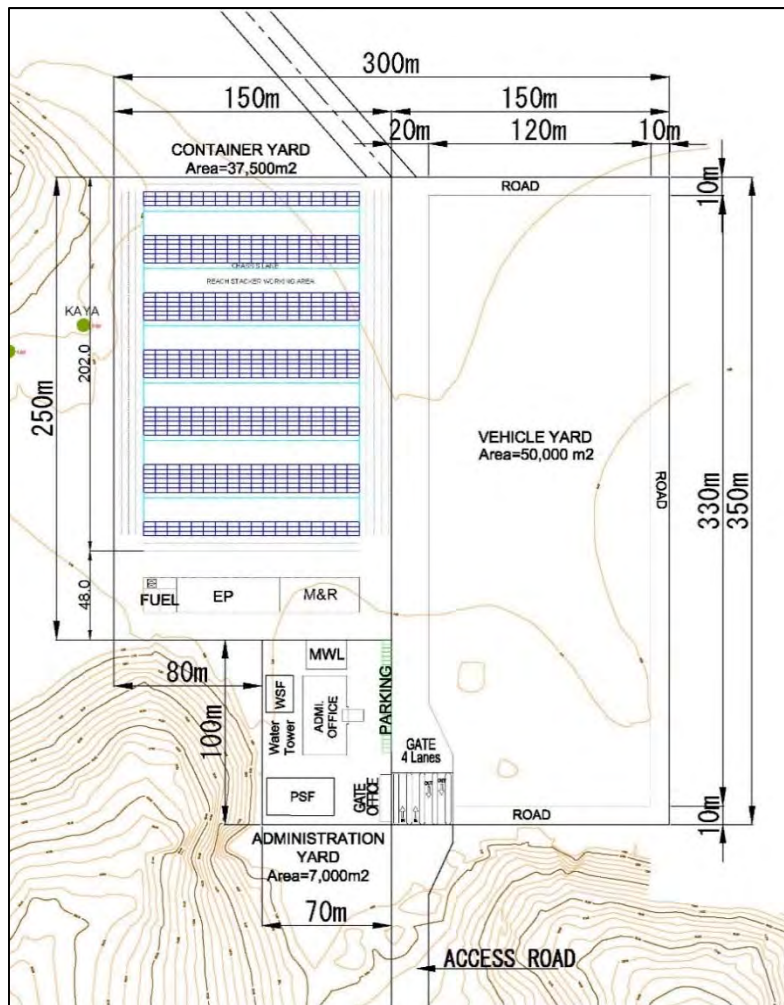
Figure 11.3.3 Cross-section Design of the Berth

The cargo yard will be constructed over a mangrove/mud flat area through land reclamation. A revetment will be constructed along the perimeter of the cargo yard, made from rubble stones and armor concrete blocks. Figure 11.3.4 shows cross-section design of the revetment. The cargo yard will consist of a cargo handling area, administration area, maintenance/repair area and so on. The surface will be paved by concrete for container yard and by asphalt for other areas. Reach stackers will be used for handling and stacking containers inside the yard. Figure 11.3.5 shows the layout of the cargo yard.



Source: JICA Design Team

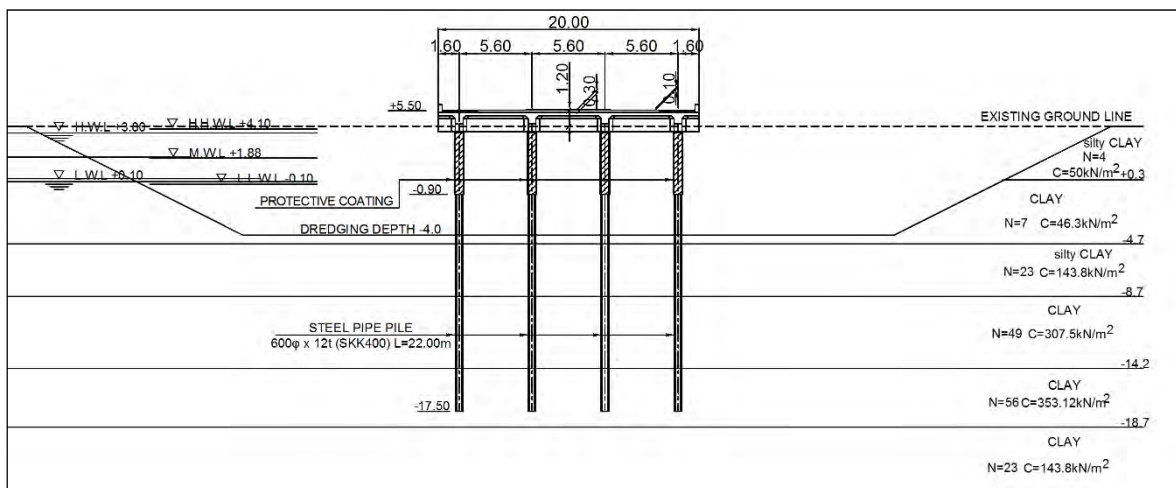
Figure 11.3.4 Cross-section Design of the Yard Revetment



Source: JICA Design Team

Figure 11.3.5 Layout of the Cargo Yard

The access bridge will be constructed to connect the berth and cargo yard. It will be a pier structure supported by steel pipe piles with asphalt pavement. Tractors will be the main means of transportation of cargo between the berth and cargo yard. Figure 11.3.6 shows cross-section design of the access bridge.



Source: JICA Design Team

Figure 11.3.6 Cross-section Design of the Access Bridge

A turning basin of 500 m diameter and -13 m depth will be developed in front the new berth through dredging. The turning basin will connect to the existing Port Reitz access channel. The total dredging volume will be approx. 2.5 million m³ (approx. 31 ha). Figure 11.3.7 shows the location of the turning basin. Around 470,000 m³ of maintenance dredging is expected to be required every 5 years.



Source: JICA Design Team

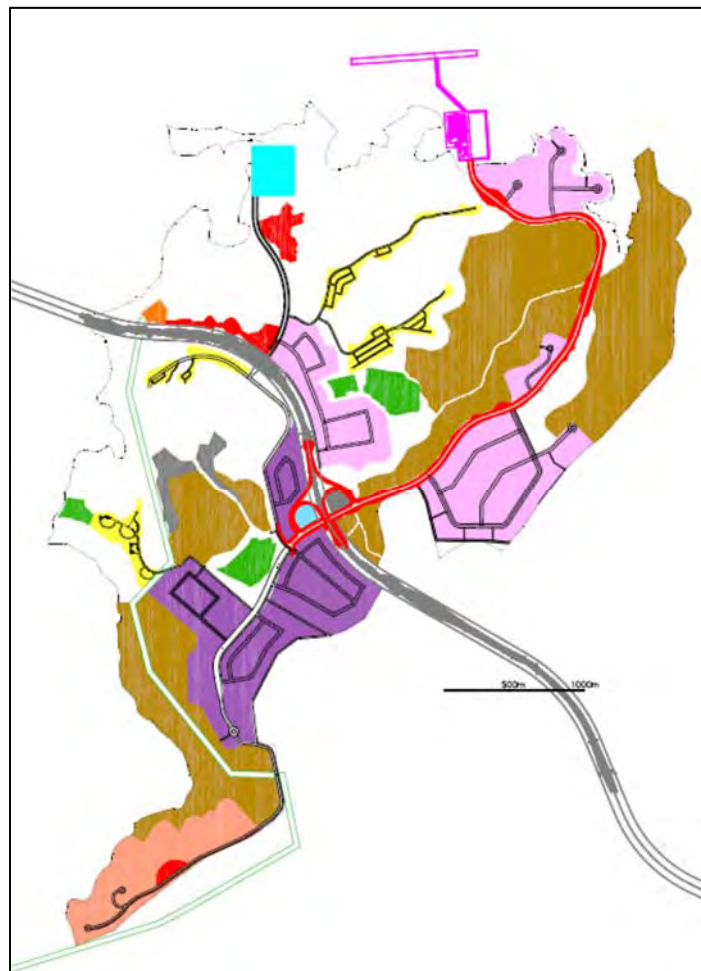
Figure 11.3.7 Layout of the Turning Basin (indicated in Red Line)

Cargo will be handled inside the port through the following machines:

- mobile cranes (2): unloading/loading of containers at the berth
- 6 reach stackers: handling of containers at the berth and yard
- 12 tractors: transportation of cargo between the berth and yard

(6) Outline of SEZ main road

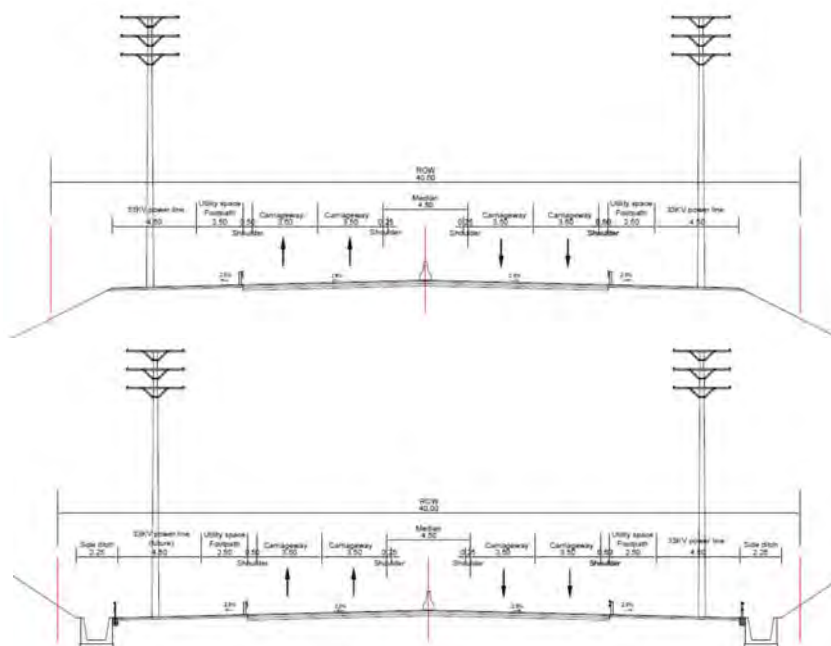
The SEZ main road will be a dual carriageway with two lanes in each direction. The length is approx. 4.6 km. The standard width of the road Right of Way (RoW) will be 40 m⁵, which will also include a footpath (W=2.5 m), drainage ditch (W=2.25 m) and space for power distribution line on each side. The carriageway will be asphalt paved and each lane will have a width of 3.5 m. The slope of cut and fill areas will be protected with shotcrete. Box culverts will also be installed where the road intersects natural drainage channels. Figure 11.3.8 shows the layout of the SEZ main road. Figure 11.3.9 shows a typical cross-section of the SEZ main road.



Source: JICA Design Team

Figure 11.3.8 Layout of the SEZ Main Road

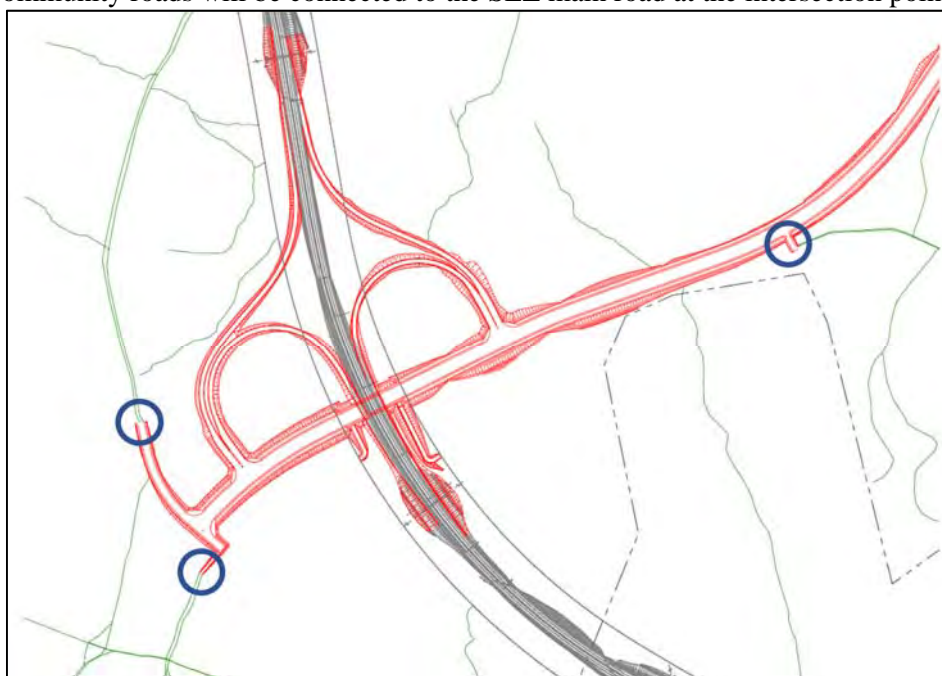
⁵ Note that the RoW will be wider where cut and fill works are required.



Source: JICA Design Team

Figure 11.3.9 Typical cross-section of the SEZ Main Road

The SEZ main road will connect to the Southern Bypass Road by constructing a half cloverleaf interchange as shown in Figure 11.3.10. Since the SEZ main road intersects with existing community roads, to maintain access, the community roads will be connected to the SEZ main road at the intersection points.



Source: JICA Design Team

Figure 11.3.10 Layout of the Half Cloverleaf Interchange (blue circle: connections point with existing community roads)

(7) Construction Plan

Port

i) Berth

The berth will be constructed mainly through the following steps:

- Dredging around the berth basin
- Installation of steel pipe piles with pile driver
- Placement of armor stone for foot protection
- Construction of berth superstructure
- Concrete pavement of berth apron

ii) Access bridge

The access bridge will be constructed mainly through the following steps:

- Dredging around the bridge basin
- Installation of steel pipe piles with pile driver
- Construction of bridge superstructure
- Asphalt pavement of bridge road

iii) Yard

The yard will be constructed mainly through the following steps:

- Reclamation of yard area with sandy material
- Soil improvement using prefabricated vertical drain
- Construction of revetment with rubble stone and concrete block
- Pavement of yard area with concrete/asphalt
- Construction of buildings (e.g. administration office)

iv) Turning basin

Two types of dredger are planned to be used namely: grab dredger and trailing suction hopper dredger (TSHD). Grab dredger will be used mainly for dredging of shallow areas (< -8 m) and TSHD for deeper areas (> -8m). Dredged material is currently planned to be disposed in offshore waters where it is previously used by other projects of Mombasa port. It is located approximately 6 km offshore from the Mombasa coastline at around 200 m depth. Figure 11.3.11 shows the proposed dumping site of dredged material.



Source: JICA Design Team

Figure 11.3.11 Location of Proposed Dredged Material Dumping Area

In case of grab dredger, the dredged material will be loaded onto a hopper barge for transportation to the dumping area. As for the TSHD, the dredged material is contained within its own hopper compartment. Once full, the dredger will move to the dumping area for disposal.

v) Construction material

Large volume of stone, rubble and sand will be required for constructing the port facilities, which are planned to be procured from a licensed quarry in Kilifi County (Jaribuni quarry) approximately 80 km from the construction site. These materials will be transported from the quarry to the construction site via land and sea as explained below:

- The materials will initially be transported from the quarry with dump trucks to an existing jetty in Kilifi creek located around 24 km from the quarry.
- The materials will be unloaded onto a barge at the jetty, then transported to the construction site via the sea.
- The materials will be unloaded onto a temporary jetty/yard that will be constructed at the construction site.

Figure 11.3.12 shows the approximate route of material transportation from quarry to construction site.



Source: JICA Design Team

Figure 11.3.12 Planned Route of Material Transportation from Quarry to Construction Site

Table 11.3.1 shows the volume of stone, rubble and sand required for construction of the port facilities.

Table 11.3.1 Volume of Stone, Rubble and Sand required for Construction of the Port Facilities

Type	Purpose	Approx. volume (m ³)	Total volume (m ³)
Stone / rubble	Foundation of berth	39,000	Approx. 50,000
	Revetment of yard	7,900	
	Foundation of temporary wharf	4,000	
Sand	Reclamation of cargo yard	125,000	Approx. 137,000
	Concrete for berth structures	7,000	
	Concrete for yard structures	5,000	

Source: JICA Design Team

vi) Construction machines

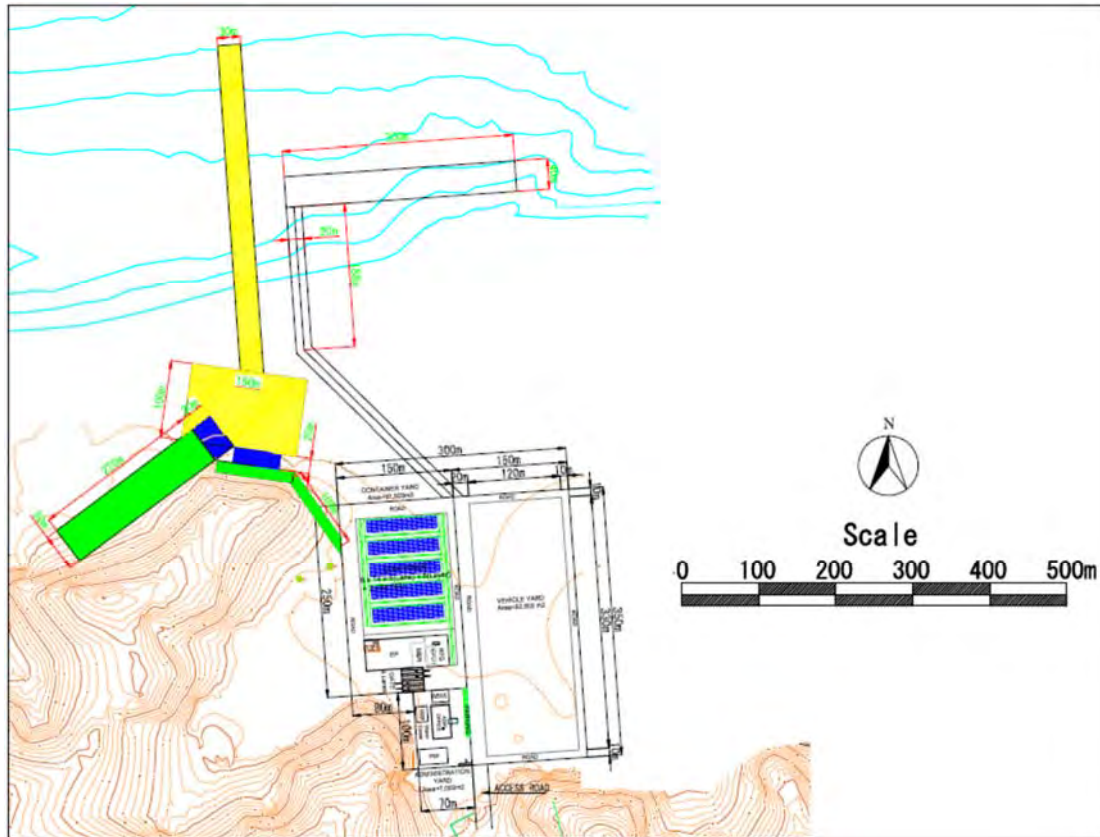
Following are some of the major construction machines that are planned to be employed:

- Grab dredger + hopper barge and TSHD
- Hydraulic and/or vibro pile drivers
- Concrete plant vessel
- Dump trucks
- Bull dozers

vii) Temporary construction facilities

A temporary jetty (pier type) and yard is planned to be constructed for unloading and storage of construction materials/equipment. The temporary jetty/yard is planned to be constructed at the headland adjacent to the access bridge. An access channel (approx. 460 m) and turning basin of approx. -4 m depth will be developed

in front of the jetty to allow entrance of construction vessels. A temporary construction road (approx. 100 m) will also be developed between the temporary jetty/yard and reclamation area for transportation of reclamation materials. Figure 11.3.13 shows the planned locations of the temporary construction facilities.



Yellow area: dredging area, Green area: temporary yard/road, Blue area: temporary jetty
Source: JICA Design Team

Figure 11.3.13 Planned Layout of the Temporary Construction Facilities

Other temporary construction facilities may include among others: concrete batching plant, asphalt plant and worker’s camp. The requirement and location of these facilities will be subject to the Construction contractor.

viii) Construction schedule

Port construction is expected to take around three and half years. Table 11.3.2 shows the approximate construction schedule for the major port components.

Table 11.3.2 Approximate Construction Schedule for the Major Port Components

	Month																																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40				
Preparation/mobilization	█	█	█	█																																								
Dredging					█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
Temporary jetty/yard						█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
Berth structure																																												
Access bridge																																												
Cargo yard																																												
Related buildings																																												
Demobilization																																												

Source: JICA Design Team

SEZ main road

Due to the hilly terrain, significant volume of cut and fill works will be required for construction of the road. In general, the cutting works will precede and the generated soil will be utilized for filling works. Figure 11.3.14 shows the cut and fill areas along the access road.



Source: JICA Design Team

Figure 11.3.14 Cut and Fill Areas along the SEZ Main Road (Yellow: Cutting Area, Red: Filling Area)

ix) Construction material

Main construction materials required will be reinforcing steel, concrete materials (aggregates, cement, stones etc.) and asphalt materials. All materials are planned to be procured locally from authorized suppliers.

x) Construction machines

Main construction equipment required will be excavator, bull dozer, tire roller, road roller, motor grader, asphalt finisher and so on.

xi) Temporary construction facilities

Temporary construction facilities will among others include, office, parking lot, yard for equipment and construction materials. Temporary concrete and asphalt plants may be required if not available in the vicinity. The requirement and location of these facilities will be subject to the Construction contractor.

xii) Construction schedule

Construction is expected to be take around 2 years as shown Table 11.3.3.

Table 11.3.3 Approximate Schedule Major Construction Works

	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Preparation	2	■	■																			
Culvert works	4		■	■	■	■																
Earthworks (cut & fill)	9				■	■	■	■	■	■	■	■	■									
Slope protection works	9							■	■	■	■	■	■	■	■	■						
Drainage works	7									■	■	■	■	■	■	■	■					
Pavement works	6													■	■	■	■	■	■	■		
Electricity and others	4																			■	■	■

Source: JICA Design Team

11.3.2 Baseline Environmental and Social Conditions

(1) Natural environment

i) Climate

Climate and weather systems in the Mombasa coast are strongly influenced by the two distinct monsoon periods. From November/December to early March, the weather is dominated by the Northeast Monsoon, which is comparatively dry. In the months of May to October, the South-easterly Monsoon influence sets in with cooler temperatures. Annual rainfall is around 1,000 mm, which is most abundant in April-May then October-November.

ii) Oceanography

The offshore area of Mombasa is strongly influenced by the East African Coastal Current (EACC), where northward flow predominates. In the coastal area, currents are mainly influenced by the direction of monsoon winds. Waves are highest in the south-east monsoon season, when winds are generally strongest.

Tides are semidiurnal. Tidal range inside Port Reitz is relatively large with an average of around 3 m, which can create strong currents along the channels.

iii) Ecosystem

a. Marine area (Port)

The proposed port area is located along the south coast of Port Reitz Creek, a relatively narrow inlet of approximately 2 km width with muddy/sandy substrate. The bay connects to the Indian Ocean via Kilindi channel. While the area has been heavily disturbed through port and other human activities, there still remain important habitats such as mud flats, river mouth, creeks and mangroves especially in the western part of Port Reitz. Three perennial rivers (Mwache, Mambone, and Chasimba) flow into Port Reitz, supplying freshwater and sediment into the area. Although relatively small in size, mangroves are also distributed in the proposed port area. As part of the EIA baseline study, the flora/fauna in the proposed port and dredging areas were studied at the end of June 2017. Following is a summary of the survey.

Port area survey

The proposed port area is located over a mangrove/mudflat habitat. This area was studied by establishing a total of six (6) belt transects, each 40 to 100 m in length and 10 m width, running roughly perpendicular to the shore line. Along each belt transect line, quadrats of 10 x 10 m² were set out at around 50 m intervals, recording the (i) number of trees, (ii) species identity, (iii) diameter at breast height (DBH) and (iv) tree height. Benthic species were also recorded.

Five species of mangrove were identified namely: *Rhizophora mucronata*, *Sonneratia alba*, *Avicennia marina*, *Ceriops tagal* and *Lumnitzera racemose*. *Rhizophora mucronata* was most common followed by *Sonneratia alba* and *Avicennia marina*. In general, tree height was relatively low (around 2-4 m) with sparse distribution (9 trees/100 m²). While none of these species are classified as threatened under IUCN Red List, mangroves are stipulated as public forest under the Forest Conservation and Management Act 2016, and will require permission from Kenya Forest Service (KFS) in case of cutting and removal. The only notable benthic species were fiddler crabs, which were abundant throughout the study area. According to the EIA study of Mombasa container port, Sesarmidae crabs were abundant in the mangrove area in addition to fiddler crabs. However, Sesarmidae crabs were not observed in this study.

Dredging area survey

The proposed dredging area is located over a sandy/muddy area of depth around 5-6 m. This area was studied by analyzing the benthic macrofauna composition, which were collected using sediment core samples. The collected samples were brought to the laboratory and sieved through a 0.5 mm mesh tray. The retained macrofauna were carefully washed into a clear glass dish to allow further sorting and taxonomic analysis. Table 11.3.4 shows the results of the analysis. A total of 104 individuals were identified, consisting mainly of annelids, crustaceans and nematodes. These are commonly found inside sandy/muddy substrate.

Table 11.3.4 Benthic Macrofauna Composition in the Dredging Area

	Class	No present	% represent
1	Annelida	35	33.65385
2	Crusteea	25	24.03846
3	Nematoda	15	14.42308
4	Arthropoda	6	5.769231
5	Sipuncula	5	4.807692
6	Bryozoa	4	3.846154
7	Echinodermata	4	3.846154
8	Porifera	4	3.846154
9	Turbellaria	4	3.846154
10	Cnidaria	1	0.961538
11	Mollusca	1	0.961538
		104	100

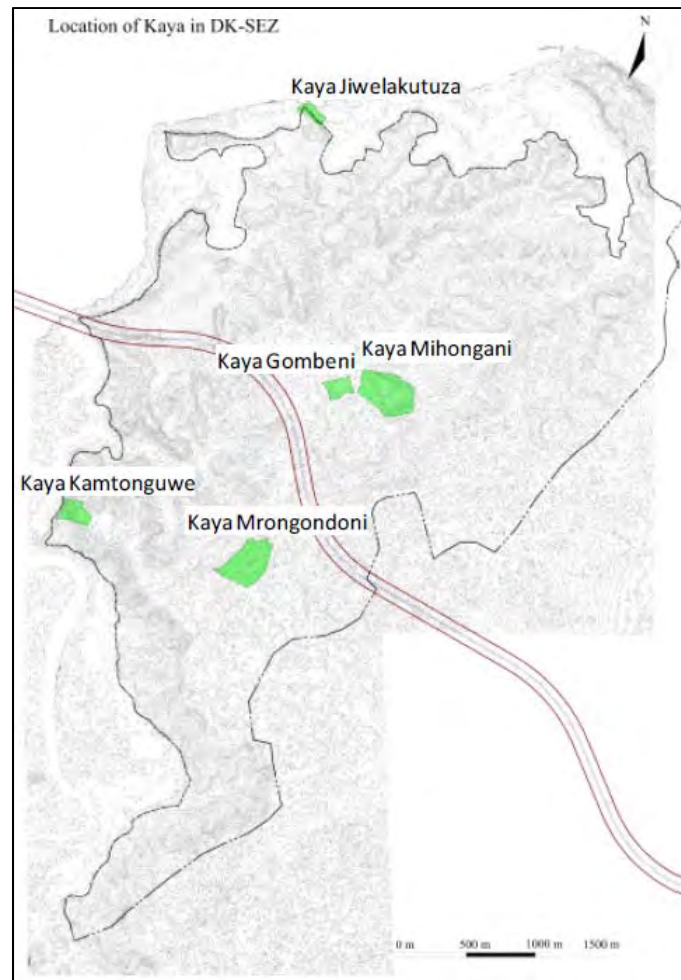
Source: JICA Design Team

b. Marine area (Mombasa coast)

The Mombasa coastline is characterized by a wide fringing reef that runs parallel to the coast. Seagrasses are densely distributed in the shallow lagoon area and corals along the outer reef slope up to a depth of around 20–25 m. Common coral species include *Porites* spp., and a broad diversity of species in the genera *Acropora*, *Pocillopora*, *Favia*, *Favites* and others. The most dominant seagrass species is *Thalassodendron ciliatum*. Other common species are in the genera *Halophila*, *Halodule*, *Cymodocea*, *Thalassia* and others (Government of Kenya ,2009).

c. Terrestrial area

The Mombasa SEZ area is a hilly terrain with an intermix of barren and farmed land. According to the SEA of Mombasa SEZ, important ecosystem in the Mombasa SEZ area is now limited to several small kayas where some natural forest still remains. Figure 11.3.15 shows the distribution of kayas inside Mombasa SEZ.

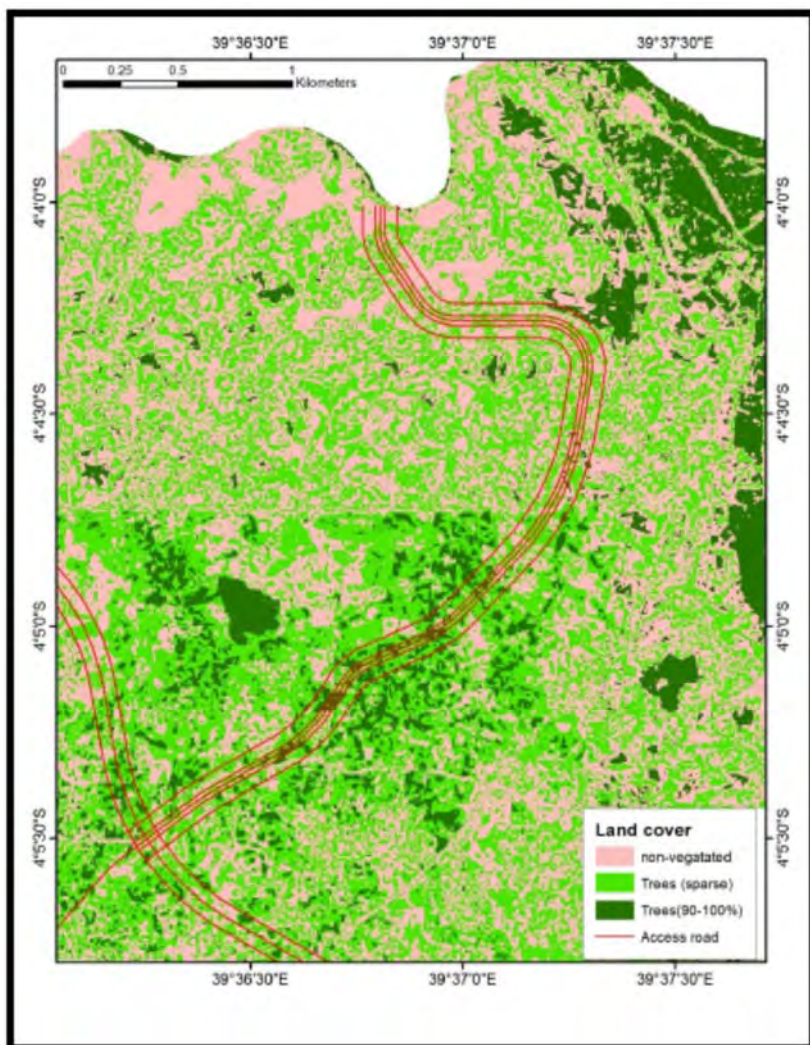


Note: The official name of Kaya Kamtonguwe is Kaya Kiteje, which is designated as National Monument under the Antiquities and Monuments Act. Other kayas are not designated.

Source: Mombasa SEZ Master Plan (2015)

Figure 11.3.15 Location of Kayas inside Mombasa SEZ

Distribution of natural vegetation around the SEZ road is limited as most land is either farmland or barren. Figure 11.3.16 shows the vegetation cover around the SEZ road.



Source: JICA Design Team

Figure 11.3.16 Vegetation Cover around the SEZ Road

Flora and fauna survey were conducted along the SEZ main road during April 2018. Survey was conducted by setting up 10 m x 10 m quadrats at 50 representative locations and species within the quadrat were recorded. A total of around 140 flora species were recorded. Most common species belonged to the Anacardiaceae family which included mangoes and cashew trees. There was one IUCN threatened shrub species *Vitellariopsis kirkii* which is classified as vulnerable (VU). This species was found at two locations one each at each location (site 1: GPS 4.07225; 39.616998, site 2 GPS 4.08907; 39.60789). They were around 1 m in height with stem diameter of around 5 cm. Figure 11.3.17 shows the *Vitellariopsis kirkii* found at the Project site. There was no species protected under the national law. List of identified species are shown in Appendix 8.

Fauna in general was poor. Observed species were chameleon and insects (e.g. grasshopper, millipedes). There was no threatened fauna species.

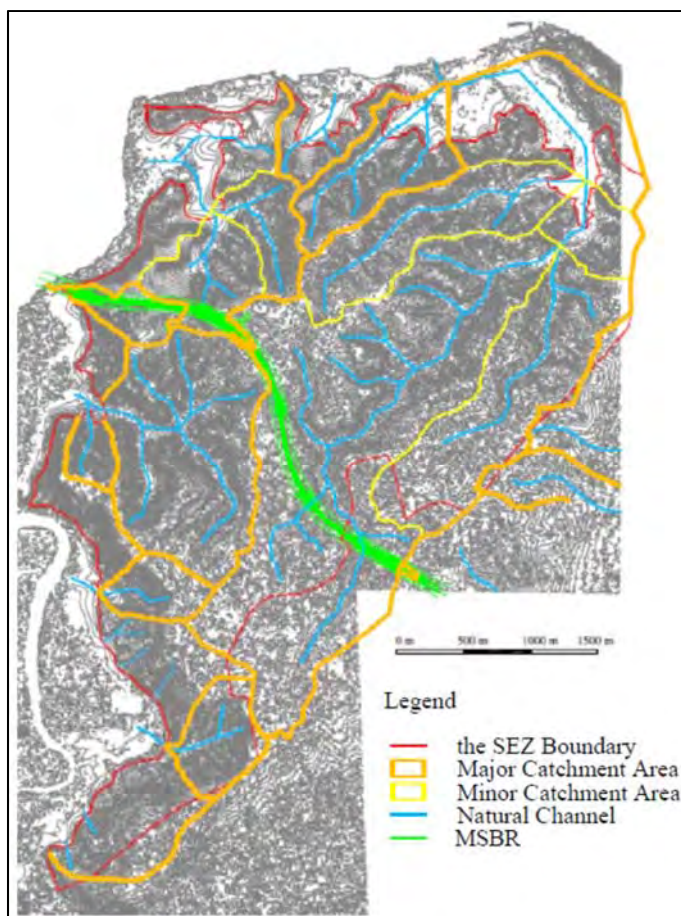


Source: JICA Design Team

Figure 11.3.17 *Vitellariopsis kirkii* found at the Project Site

iv) Hydrology

There are two main rivers that drain into Port Reitz namely Mwache River and Pembe River. These river supply large volume of sediments into Port Reitz during the rainy season. While there are no perennial rivers/streams in the Mombasa SEZ area, during heavy rain, rainwater will flow along existing valleys or natural channels and eventually into the downstream sea area. Figure 11.3.18 shows the catchment area and drainage pattern within the Mombasa SEZ area.



Source: JICA Design Team

Figure 11.3.18 Catchment Area and Drainage Pattern within the Mombasa SEZ Area

v) Conservation area

While there are no conservation areas around the Project area, there are three marine protected areas (MPAs) along the Mombasa coastline managed by Kenya Wildlife Service (KWS) which are: Mombasa Marine National Park, Mombasa Marine National Reserve and Diani/Chale Marine National Reserve. The MPAs were established under the Wildlife Conservation and Management Act to protect the corals and marine life, and are managed in accordance to IUCN protected area management category. National Reserve falls under Category IV, which allows certain extractive activities (e.g. hook and line fishing). National Park falls under Category II and are completely protected from all extractive activities. Environmentally friendly activities are permitted for both MPAs and currently various marine recreational activities (e.g. diving, wind surfing, cruise trips) are been enjoyed inside the calm lagoon areas. The MPAs support important ecosystems such as coral reefs and seagrass beds. Sharks/rays and green sea turtles were observed during field reconnaissance of Mombasa Marine National Park. Figure 11.3.19 shows the location and outline of the MPAs.



MPA	Designated reason (year)	Surface area (km ²)	IUCN management category	Approx. distance to dumping site (km)	Approx. distance to port site (km)
Mombasa Marine National Park	Protection of coral reef and marine life (1986)	26	II	13	16
Mombasa Marine National Reserve	Protection of coral reef and marine life (1986)	200	VI	3	3
Diani/Chale Marine National Reserve	Protection of coral reef and marine life (1995)	165	VI	17	20

Source: JICA Design Team

Figure 11.3.19 Location and Outline of MPAs in Mombasa

(5) Social environment

i) Demography

According to the Kenya National Bureau of Statistics data of 2009, population of Mombasa County has increased to over 900,000 with a population density of around 4,200 person/km². According to the SEA of Mombasa SEZ, population in the Mombasa SEZ area is around 2,500 with a population density of around 190 person/km².

ii) Livelihood

Initial socioeconomic survey was carried out through interview to the residents of expected area for SEZ main road construction (no residents available at the expected area for port construction) in September 2007. (RAP survey will be carried out for details.) The survey was carried out to the 23 households, of which the results are shown as follows;

- Most of the residents engage in small agriculture, pasturing or fishing for their livelihoods. Majority of the agricultural products are corns, beans, cassava, mangoes, coconuts, bananas, cashew nuts, and so on. Pasturing is generally done for cows, goats and sheeps. Most of the residents live under the poverty line with monthly earning below 2,610KES.
- There are 34 houses in the expected area of SEZ main road. Most of the houses are built in a simple structure with cray wall and corrugated or thatched roof. Average number of household members are 4.
- About 70% of the residents are Muslim and the 30% are Christian.
- There are no electricity and running water at all the houses.
- About 40% of the residents did not receive schooling. About 50% received primary-school level education, and the rest 10% graduated from universities.

iii) Fisheries

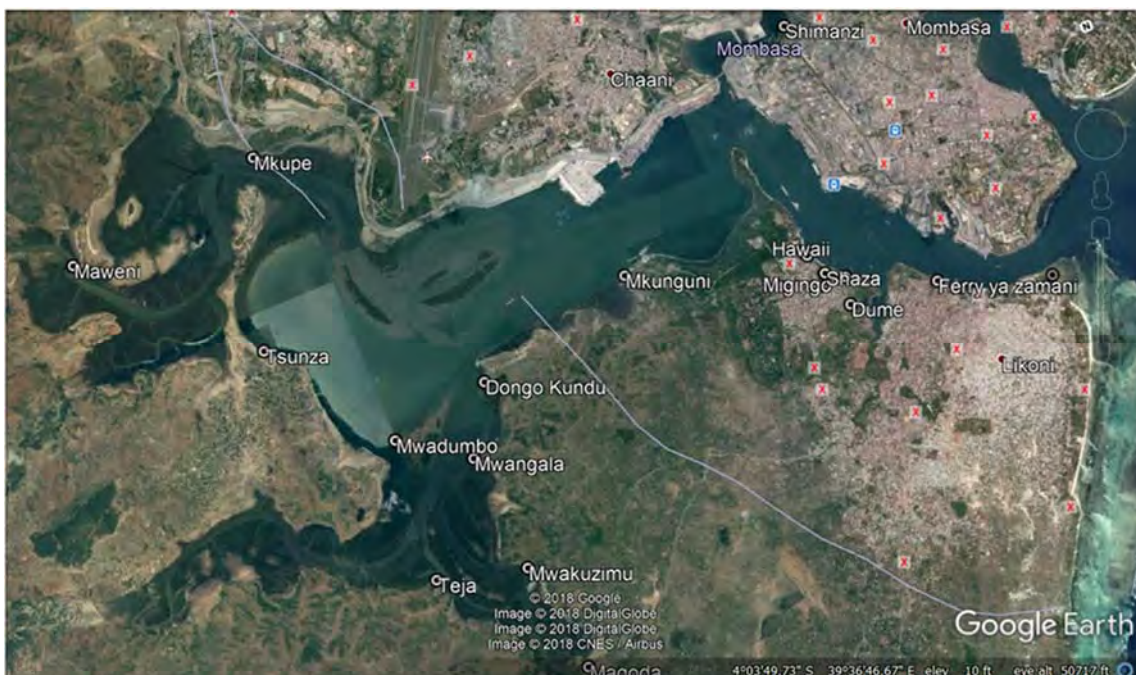
In the past, fisheries in Kenya were managed through a top-down approach. However, after the enactment of the Fisheries (Beach Management Units) Regulations, 2007, artisanal fisheries are now managed through a co-management approach between the fishermen and local fisheries authority by establishing Beach Management Unit (BMU) at fish landing stations. BMU consists of fishermen and fish traders and is responsible for managing local fish resources and fishing activities.

In the Port Reitz area there is currently 8 BMUs and registered members totals to 2,340 (fishermen; 1,519, fish traders: 821). Table 11.3.5 shows the breakdown of registered members as per BMU's data. Figure 11.3.20 shows the main fish landing stations in Port Reitz.

Table 11.3.5 Breakdown of Registered BMU members

BMU	Fishermen	Fish traders	Total
Tudor	84	46	130
Kitanga juu	58	14	72
Ngare	97	99	196
Mkupe	227	106	333
Tzunza	655	281	936
Mwangala	183	136	319
Mtongwe	175	139	314
Likoni	40	-	40
Total	1,519	821	2,340

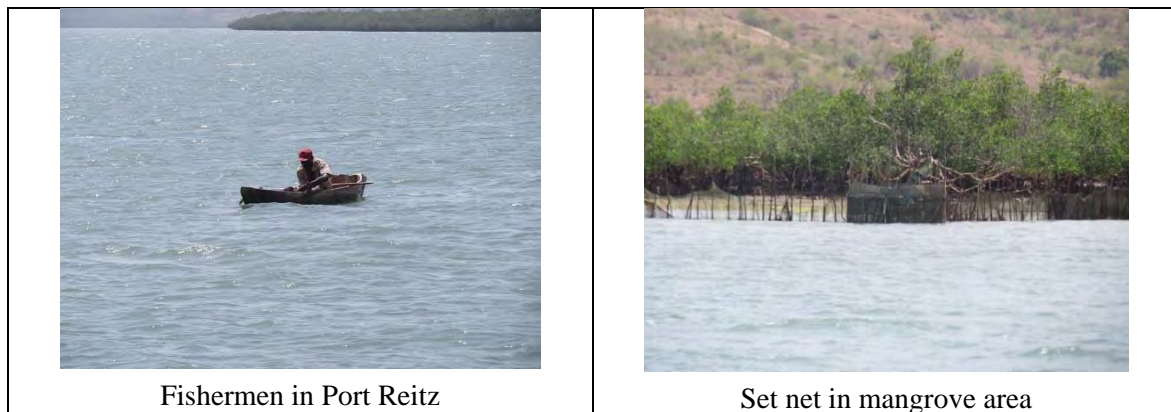
Source: BMU



Source: JICA Design Team

Figure 11.3.20 Main Fish Landing Stations in Port Reitz

Fishing in Port Reitz is mainly conducted in western inner bay area where port activities do not interfere. Most fishermen use dugout canoe and mostly fish with either gill net, cast net or handline. In the mangrove area, some use set net and also collect shell and crabs. Figure 11.3.21 shows some fishing activities identified around the Project area.



Fishermen in Port Reitz

Set net in mangrove area

Source: JICA Design Team

Figure 11.3.21 Fishing Activities Identified around the Project Area

iv) Social infrastructure

The SEZ main road intersects with two community roads as shown in Figure 11.3.22. The Community road 1 indicated in the figure is mainly used by the community living in the east-side of the SEZ main road. Community road 2 is mainly used by the community as an access road to Lukoni area. No other notable social infrastructure exists along the SEZ main road.



Source: JICA Design Team

Figure 11.3.22 Community Roads Intersecting with SEZ Main Road (Light Blue Indicates the Community roads)

v) Cultural heritage

A small kaya (*Kaya Mikadi*) was identified near the proposed port area mainly covered by *Pandanus* trees. According to the locals, this type of *Pandanus* tree is only found in this *kaya* among the region, and the flowers of the *Pandanus* trees are used for ceremonies and fragrance and they requested to keep the *kaya* intact. Figure 11.3.23 shows some features of *Kaya Mikadi*.



Source: JICA Design Team

Figure 11.3.23 Features of Kaya Mikadi

(6) Pollution

i) Water quality

As part of the EIA baseline study, water quality survey was conducted in the Port Reitz Creek area and along the Mombasa coastline covering a total of 7 sites. The survey was done twice: May 2017 (wet season) and February 2018 (dry season). Surveyed parameters included temperature, salinity, pH, turbidity, suspended solids (SS), dissolved oxygen (DO), chemical oxygen demand (COD), biological oxygen demand (BOD), total nitrogen (T-N), total phosphorus (T-P) total petroleum hydrocarbon (TPH) and coliforms. Temperature and pH were measured in situ with a handheld multi-parameter meter (YSI Professional Plus) and other parameters were analyzed at a NEMA accredited laboratory (SGS Laboratories). Samples were collected from surface and bottom layers using Niskin water sampler. Figure 11.3.24 shows the location of the water sampling sites. Note that sampling at W6 and W7 were done inside the lagoon in wet season and outside of the lagoon in dry season (labelled as W6D and W7D). This was due to adverse sea conditions during the wet season, where sampling outside of the lagoon was too dangerous. Table 11.3.6 shows the results of the survey.



Source: JICA Design Team

Figure 11.3.24 Locations of Water Quality Survey

Table 11.3.6 Results of Water Quality Survey

	Season		Unit	DL	W1	W2	W3	W4	W5	W6	W7	Analysis method	Reference Standard*
Depth	Wet	-	m	-	16.3	5.6	21.1	18.1	32.2	2.7	2.5	-	-
	Dry				16.8	5.9	23.8	18.3	28.0	20.1	13.3		
Temp.	Wet	S	°C	-	27.6	27.5	27.2	27.0	27.0	27.5	27.5	<i>In situ</i> measurement (YSI Professional Plus)	-
		B			27.4	27.6	27.5	27.2	27.0	28.2	27.7		
	Dry	S			27.5	27.4	27.3	27.2	27.4	27.4	27.5		
		B			27.4	27.6	27.3	27.3	27.2	28.3	27.4		
pH	Wet	S	-	-	8.13	8.21	8.31	8.38	8.37	8.37	8.31	<i>In situ</i> measurement (YSI Professional Plus)	7.8-8.3
		B			8.28	8.19	8.25	8.36	8.36	8.38	8.31		
	Dry	S			8.06	8.09	8.23	8.31	8.16	8.27	8.25		
		B			8.06	8.09	8.23	8.31	8.16	8.27	8.25		
Salinity	Wet	S	‰	0.01	28.49	25.55	26.98	39.31	39.16	38.49	38.35	APHA 2510B	-
		B			37.82	33.47	38.95	38.79	39.47	38.49	38.77		
	Dry	S			36.10	36.12	35.75	35.39	35.27	35.42	34.74	APHA 2520B	
		B			36.42	36.44	35.94	35.40	35.11	35.28	35.30		
DO	Wet	S	mg/l	-	0.2	0.2	0.2	<0.2	<0.2	<0.2	<0.2	APHA EXT	> 2 mg/l
		B			0.9	0.2	0.2	<0.2	<0.2	<0.2	<0.2		
	Dry	S			5.6	5.0	5.9	5.8	5.8	5.5	5.7	<i>In situ</i> measurement (YSI Professional Plus)	
		B			4.0	4.1	4.2	4.5	4.05	3.9	4.0		
Turbidity	Wet	S	NTU	0.048	7.10	3.44	3.71	2.41	2.28	5.57	2.68	APHA 2130B	-
		B			6.78	3.50	2.76	3.10	2.73	2.82	2.99		
	Dry	S			7.18	4.38	2.92	1.04	1.49	1.79	1.20		
		B			11.60	9.80	2.50	1.05	1.00	0.88	1.04		
TSS	Wet	S	mg/l	-	1	2	2	1	2	2	1	APHA 2540C	-
		B			2	2	2	2	1	4	2		
	Dry	S			<5	<5	<5	<5	<5	<5	<5	APHA 2540D	
		B			<5	<5	<5	<5	<5	<5	<5		
T-P	Wet	S	mg/l	0.01	3.90	3.10	0.80	0.99	1.96	0.84	0.74	APHA 3120	<0.09
		B			0.6	0.2	0.6	1.12	0.77	0.7	1.4		

	Season		Unit	DL	W1	W2	W3	W4	W5	W6	W7	Analysis method	Reference Standard*
	Dry	S			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	APHA 3120 B	
		B			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
T-N	Wet	S	mg/l	0.02	1.26	2.38	1.68	0.50	0.70	0.07	1.10	APHA 4500-Norg	<1.0
		B			1.96	1.4	2.17	6.8	0	0.7	0.4		
	Dry	S			1.18	2.13	1.51	0.84	1.12	0.90	1.29	APHA 4500-N B	
		B			1.57	1.23	1.96	3.75	0.62	1.01	0.56		
BOD	Wet	S	mg/l	1	27.0	18.6	24.1	51.3	129.6	43.1	29.0	APHA 5210B	-
		B			21.6	35.1	23.49	40.5	67.5	33.75	32.4		
	Dry	S			43.2	54.0	37.8	64.8	59.4	59.4	70.2		
		B			48.6	32.4	59.4	37.8	43.2	43.2	37.8		
COD	Wet	S	mg/l	7	444.96	477.92	494.4	703.84	717.12	690.96	671.97	APHA 5220B	-
		B			510.88	560.32	527.36	730.4	677.28	697.2	710.48		
	Dry	S			542.92	650.72	376.32	854.56	2587.20	854.56	533.12		
		B			125.44	2108.96	1160.32	2203.04	638.96	35.28	1160.32		
TPH	Wet	S	mg/l	0.05	1.66	1.58	1.51	1.21	1.58	2.47	1.18	SGS TW56	-
		B			2.18	1.67	1.55	1.31	1.14	1.02	1.21		
	Dry	S			0.41	0.49	0.74	0.63	0.66	0.83	0.57	EPA 8015C	
		B			0.73	1.72	0.59	0.82	0.54	0.55	0.65		
Coliforms	Wet	S	MPN/100 ml	0	>1,800	>1,800	>1,800	>1,800	1,600	240	130	ISO 9308-2	<1,000
		B			>1,800	>1,800	>1,800	1,600	920	>1,800	33		
	Dry	S			920	1600	140	27	540	110	110		
		B			>1,800	>1,800	33	8	11	>1,800	920		

*: Japanese Environmental quality standards for conservation of living environment (coastal waters)

DL: Detection limit, S: surface, B: bottom

Source: JICA Design Team

Main findings of the survey are as follows:

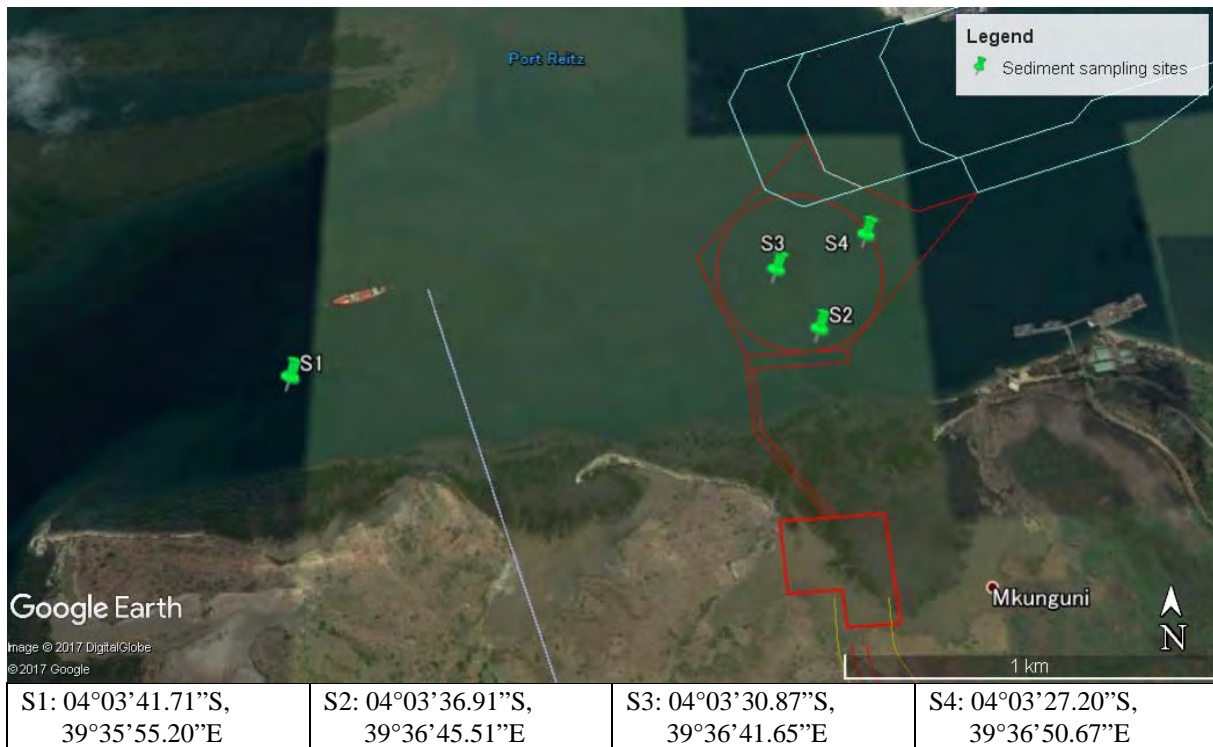
- Turbidity, T-P, TPH and Coliforms values tended to be higher in the wet season than dry season. This is most likely due to increased river outflow in wet season.
- Turbidity, T-N, T-P and Coliforms values tended to be higher inside Port Reitz than the coastal area. This is most likely due to the semi-enclosed topography of Port Reitz.
- TPH was measured as an indicator of port-source oil pollution. Since there was no significant difference in the TPH values between Port Reitz and the coastal area for both seasons, it seems that the port activities are not generating any notable oil pollution.

The survey results are also compared with Japanese water quality standard of coastal area:

- pH: All sites were more or less within standard.
- DO: Wet season values (<0.2-0.9 mg/l) were significantly below standard, which may be due to some error in the sampling or analysis process. Dry season values at all the sites satisfies the standard.
- TP: Wet season values exceeded standard at all the sites, which may be due to influences from river outflow. Dry season values at all the sites satisfies the standard.
- TN: All sites in Port Reitz (W1-W3) exceeded standard for both wet and dry seasons. This is most likely due to the semi-enclosed topography of Port Reitz. Coastal sites (W4-7) were more or less within standard but bottom layer of W4 was high for both wet and dry seasons.
- Coliforms: Except of few sites in the dry season, all sites in Port Reitz (W1-W3) exceeded the standard. Coastal sites such as W4, W5 and W6 also exceeded the standard. The results imply that sewage water are affecting not only Port Reitz but also extending to the coastal waters.

ii) Sediment quality

As part of the EIA baseline study, sediment quality survey was conducted in the Port Reitz Creek area at the proposed dredging area on May 19th, 2017. Surveyed parameters were grain size, sediment organic matter, water content, heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni, Ag and Zn) and organics (PAHs, TPH, and PCBs). Samples were collected from the surface layer by divers using core sampler. All parameters were analyzed at a NEMA accredited laboratory (SGS Laboratories). Figure 11.3.25 shows the location of the sediment sampling sites. Table 11.3.7 shows the survey results.



Source: JICA Design Team

Figure 11.3.25 Location of Sediment Sampling Sites

Table 11.3.7 Results of Sediment Quality Survey

	Unit	DL	S1	S2	S3	S4	Australia*1	Canada*2	Analysis method
Depth	m	-	4.1	5	7.8	7.5	-	-	-
Moisture	%	-	51.2	67.96	44.92	45.1	-	-	ICARDA
TOC	%	-	1.3	0.52	1.78	1.17	-	-	ICARDA 5.5
As	mg/kg	0.01	2.99	<0.01	2.13	0.05	ISQGL: 20 ISQGH: 70	ISQG: 7.24 PEL: 41.6	EPA 3050B
Cd	mg/kg	0.02	0.06	<0.02	0.11	<0.02	ISQGL: 1.5 ISQGH: 10	ISQG: 0.7 PEL: 4.2	EPA 3050B
Cr	mg/kg	0.08	20.36	17.21	11.53	24.43	ISQGL: 80 ISQGH: 370	ISQG: 52.3 PEL: 160.0	EPA 3050B
Cu	mg/kg	0.04	15.3	15.3	9.82	15.21	ISQGL: 65 ISQGH: 270	ISQG: 18.7 PEL: 10.8	EPA 3050B
Hg	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	ISQGL: 0.15 ISQGH: 1	-	D/SGS TW-12
Pb	mg/kg	0.06	7.44	11.46	2.75	9.66	ISQGL: 50 ISQGH: 220	ISQG: 30.2 PEL: 112	EPA 3050B
Ni	mg/kg	0.04	14.59	8.87	8.47	16.22	ISQGL: 21 ISQGH: 52	-	EPA 3050B
Ag	mg/kg	0.03	0.23	2.85	0.06	0.47	ISQGL: 1 ISQGH: 3.7	-	EPA 3050B
Zn	mg/kg	0.09	37.44	51.15	23.36	38.45	ISQGL: 200 ISQGH: 410	ISQG: 124 PEL: 271	EPA 3050B
PAHs	mg/kg	0.05	<0.05	1.05	<0.05	<0.05	ISQGL: 4 ISQGH: 45	ISQG: 124 PEL: 271	SGS TW65

PCBs	mg/kg	0.01	<0.01	ND	<0.01	<0.01	ISQ _{GL} : 0.023 ISQ _{GH} : NA	ISQ: 0.0215 PEL: 0.189	SGS TW64
TPH (C6-C30)	mg/kg	0.05	1.51	4.46	1.51	1.55	-	-	SGS TW65

*1: Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ISQ_{GL}: Interim Sediment Quality Guideline-Low, ISQ_{GH}: Interim Sediment Quality Guideline-High

*2: Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, ISGG: Interim sediment quality guidelines, PEL: Probable effect level

DL: Detection limit, S: surface, B: bottom

Source: JICA Design Team

Since Kenya has no sediment quality standard, the results were compared with Australian and Canadian sediment quality standards. All the parameters except silver (Ag) were under both the lower threshold of Australian and Canadian sediment quality standards. Silver was above the lower threshold of Australian standard at station S2 but did not exceed the upper threshold. Since the other sites had low values of silver, it can be considered that silver pollution is not significant in the area. Overall, the dredging area can be considered as not contaminated.

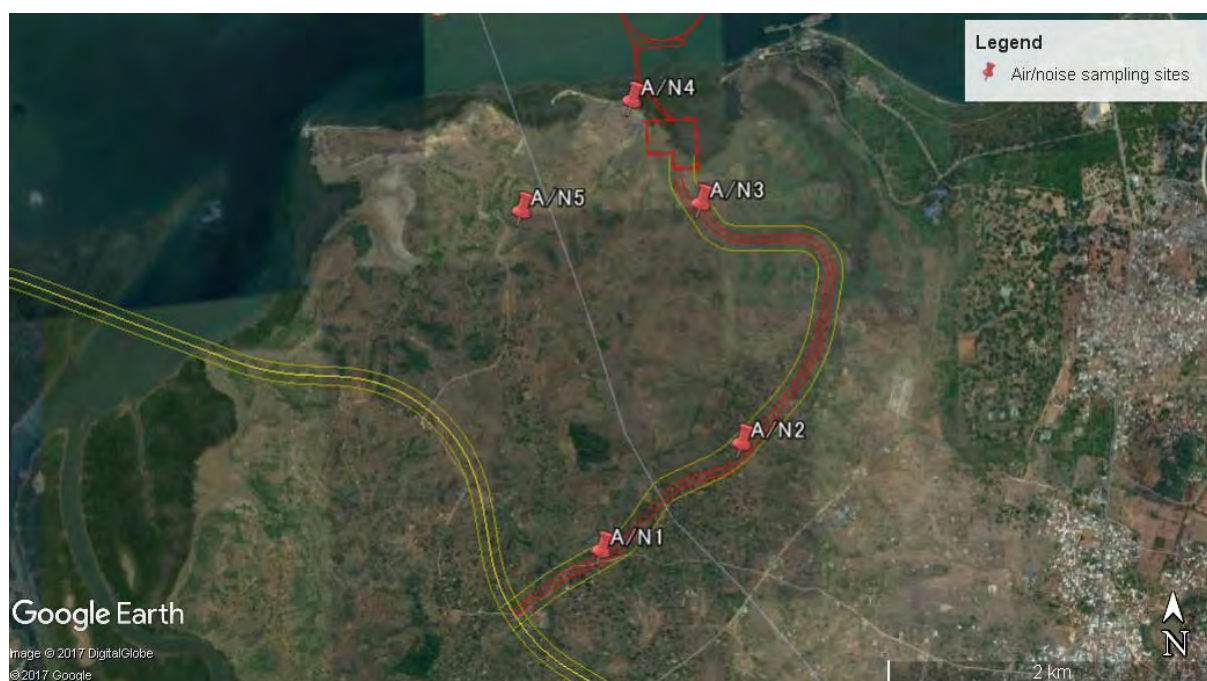
iii) Air quality

As part of the EIA baseline study, air quality survey was conducted at 5 sites along the Project area at the end of June 2017. Surveyed parameters were PM₁₀, NO₂ and SO₂. Collected samples were analyzed at a NEMA certified laboratory (SGS Mombasa). Table 11.3.8 shows the method of air quality survey. Figure 11.3.26 shows the location of the air sampling sites and brief description of each site. Table 11.3.9 shows the results of the air quality survey.

Table 11.3.8 Method of Air Quality Survey

	Sampling method	Sampling period	Sampling height
PM ₁₀	Portable air sampler (MiniVol™ TAS)	24 hours	1.5-2 m above ground level
NO ₂	Passive Nox sampler	6 days	1.5-2 m above ground level
SO ₂	Passive Sox sampler	6 days	1.5-2 m above ground level

Source: JICA Design Team



	Coordinates	Description
A1	4° 5'20.73"S, 39°36'31.58"E	Adjacent to feeder road off from Mombasa-Lunga road
A2	4° 4'59.86"S, 39°36'59.05"E	Inside rural residential property
A3	4° 4'12.98"S, 39°36'51.15"E	Inside rural residential property
A4	4° 3'52.78"S, 39°36'37.58"E	Farm land adjacent to the Indian Ocean
A5	4° 4'14.53"S, 39°36'15.92"E	Inside rural residential property. Control point away from the Project area

Source: JICA Design Team

Figure 11.3.26 Location of Air Sampling Sites

Table 11.3.9 Results of Air Quality Survey

	DL	Results (µg/m ³)					Kenya standard* ¹	WHO guideline* ²
		A1	A2	A3	A4	A5		
NO ₂	-	0.0020	0.0004	0.0005	0.0005	0.0003	80 µg/m ³	40 µg/m ³
SO ₂	0.001 µg/m ³	BDL	BDL	BDL	BDL	BDL	80 µg/m ³	20 µg/m ³
PM10	-	74	7	10	29	10	100 µg/m ³	50 µg/m ³

*1: Environmental Management & Co-ordination Act (Air Quality) Regulations, 2014 (residential, rural and other areas) 24-hours average

*2: WHO Ambient Air Quality Guideline values, NO₂: annual average, SO₂ and PM10: 24-hours average

Source: JICA Design Team

NO₂ and SO₂ were significantly lower than the Kenyan and WHO standards at all the survey sites. PM10 was lower than the Kenyan standard at all the sites. Only station A1 exceeded the stricter WHO guideline value, which may have been due to the proximity of the station to an unpaved road where dust is easily

suspended by vehicles and bikes. Overall, air quality around the Project site can be considered to be in relatively good condition.

iv) Noise

As part of the EIA baseline study, noise survey was conducted along the Project area at the end of June 2017. Noise measurements were conducted for 24-hour period using sound level meter (Larson and Davis Model 824 SLM). The survey locations were the same as the air sampling sites. Table 11.3.10 shows the results of the noise survey.

Table 11.3.10 Results of Noise Survey

		Leq (dBA)					Kenya standard for residential area (dBA)*	WHO guideline for residential area (dBA)
		N1	N2	N3	N4	N5		
Day	06:00-12:00	45.6	50.4	44.8	44.2	42.8	50	55
	12:00-16:00	49.9	52.8	44.3	40.3	38.9		
Night	20:00-06:00	34.2	34.8	34.5	45.8	34.1	35	45

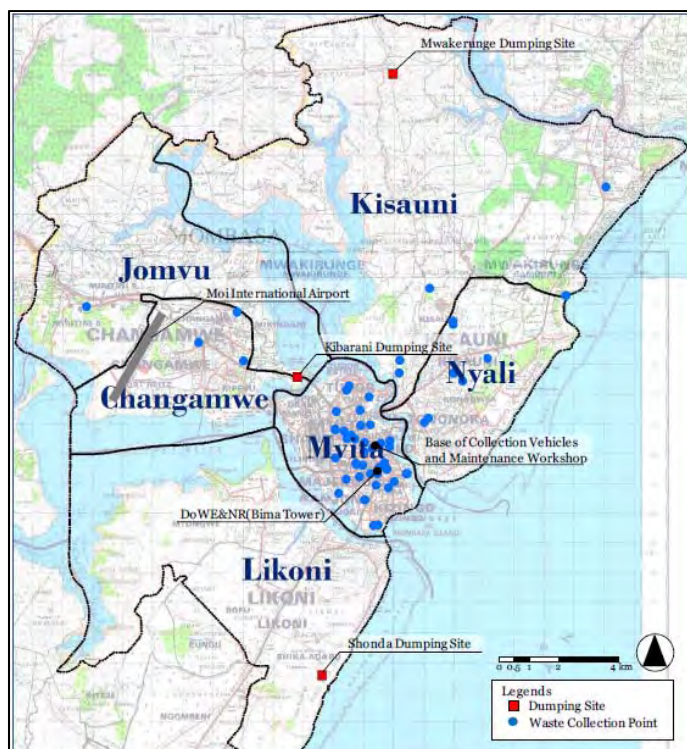
*: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

Source: JICA Design Team

During daytime, except station N2, noise levels at all the sites were below Kenyan standard. Station N2 exceeded the Kenyan standard slightly by 0.4-2.8 dB but are within WHO guideline value. During night time, except station N4, noise levels at all the sites were below Kenyan standard. Although N4 exceeds Kenyan standard it is more or less within WHO guideline value. Overall, noise levels at the Project site can be considered to be relatively low as currently there are no major noise sources nearby.

v) Waste

According to the National Solid Waste Management Strategy (2015), Mombasa generates around 2,200 tons of waste per day. According to the Mombasa Gate City Master Plan (prepared by JICA in 2018), there are three waste disposal sites in Mombasa namely: Kibarani, Mwakirunge and Shonda. All are open dumping type. Figure 11.3.27 shows the location of these waste disposal sites. Brief description of the status of these sites are shown Table 11.3.11.



Source: Project for Formulation of Comprehensive Development Master Plan in the Mombasa Gate City in the Republic of Kenya (2018)

Figure 11.3.27 Location of Waste Disposal Sites in Mombasa County

Table 11.3.11 Status of the Waste Disposal Sites in Mombasa County

Site	Management	Operational status	Area	Estimated remaining capacity
Kibarani	Mombasa County	Closed	Approx. 10 ha	None
Mwakirunge	Mombasa County	Operational since 2006	Approx. 20 ha	Approx. 10 ha
Shonda	Mombasa County	Operational since 1990	Approx. 10 ha	Approx. 5 ha

Source: Prepared based on Project for Formulation of Comprehensive Development Master Plan in the Mombasa Gate City in the Republic of Kenya (2018) and Project on Master Plan for Development of Mombasa Special Economic Zone (2015)

Since Mwakirunge and Shonda waste disposal sites are open-dumping type and hence not environmentally friendly, Mombasa Gate City M/P proposes to construct a new sanitary landfill.

According to Mombasa Gate City M/P, hazardous wastes are treated through incineration, but due to lack of capacity some are inappropriately disposed at Mwakirunge and Shonda waste disposal sites. Waste oil is recycled as fuel for incineration or recycled at a dedicated recycling facility.

11.3.3 Legal Framework

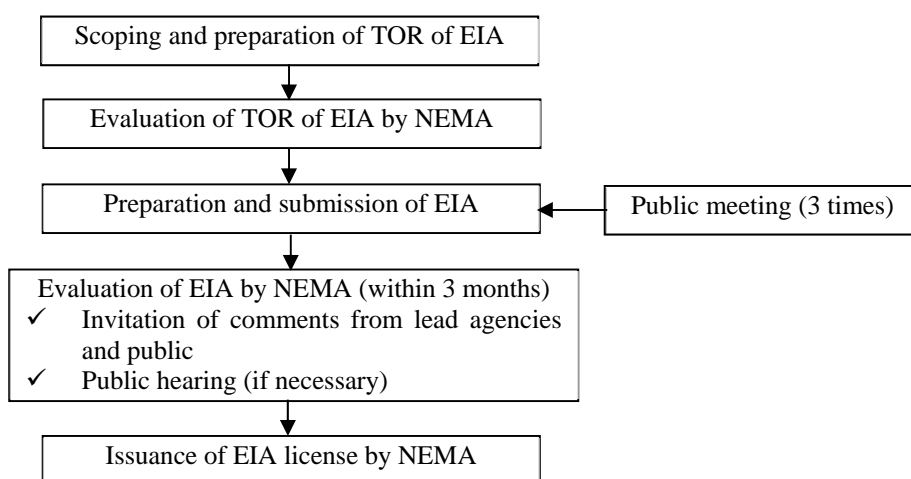
(4) Environmental policy

Refer to Section 11.2.3(1).

(5) EIA system

As per Section 58 of the Environmental Management and Coordination Act 1999, projects prescribed under the Second Schedule⁶ of the Act are required to obtain environmental approval from NEMA. The Second Schedule classifies projects into “Low Risk”, “Medium Risk”, and “High Risk”, and projects classified under “High Risk” must undergo an EIA study and other lesser risk projects will be subject to the decision of NEMA whether an EIA study is required or not. Since the port sector is classified as “High Risk” projects, the port component of this Project will automatically require an EIA study. The procedures of the EIA study are stipulated in the Environmental (Impact Assessment and Audit) Regulations 2003.

The National Environment Management Authority (NEMA) is the EIA authority, which is responsible for evaluation, publication, issuing of license and so on. Figure 11.3.28 shows the main procedures of EIA. The TOR of this project has been approved by NEMA on June 9th, 2018, and subsequently the EIA report is planned to be submitted in May 2019 and obtain EIA license around August 2019.



Source: Prepared based on Environmental (Impact Assessment and Audit) Regulations 2003

Figure 11.3.28 Main Procedures of EIA (in case of High Risk Projects)

Table 11.3.12 analyzes the gaps between Kenyan law and JICA Guidelines for Environment and Social Consideration (2010).

Table 11.3.12 Results of Gap Analysis

	JICA Environmental Guideline	Kenyan law	Gaps and Project’s gap filling policy
General	Environmental impacts that may be caused by projects must be assessed and examined in the earliest possible planning stage. Alternatives or mitigation measures to avoid or minimize adverse impacts must be examined and incorporated into the project plan.	Projects that require EIA is listed in Second Schedule of EMCA. High-voltage transmission line project is categorized as “High risk” hence it is necessary to conduct EIA in the planning stage. As per Article 16 of the	There is no notable gap. The Project will consider alternatives and mitigation measures during the planning process.

⁶ The Second Schedule was amended in May 2016 through Legal Notice No. 150.

	JICA Environmental Guideline	Kenyan law	Gaps and Project's gap filling policy
		EIA regulation, it is necessary to consider alternatives and mitigation measures.	
Information disclosure	EIA reports must be written in the official language or in a language widely used in the country in which the project is to be implemented. When explaining projects to local residents, written materials must be provided in a language and form understandable to them.	There is no specific regulation on EIA report language but English is the norm as it is the official language. There is no regulation on language use for when explaining projects to local residents.	The EIA report will be prepared in English. Explanation and written materials for local residents will be provided in Kiswahili, which is the locally common language.
	EIA reports are required to be made available to the local residents of the country in which the project is to be implemented. The EIA reports are required to be available at all times for perusal by project stakeholders such as local residents and copying must be permitted.	As per Article 21 of the EIA regulation, the public have the opportunity to submit oral or written comments on the EIA during the EIA evaluation period, which will be announced through gazette and newspaper with nationwide circulation. The announcement will include the time and place where the EIA can be reviewed. There is no specific regulation on the availability period of EIA and permission for copy.	While there is no specific regulation on the availability period of EIA and permission for copy, the EIA report will be disclosed continuously through KPA/KeNHA website.
Consultation	For projects with a potentially large environmental impact, sufficient consultations with local stakeholders, such as local residents, must be conducted via disclosure of information at an early stage, at which time alternatives for project plans may be examined. The outcome of such consultations must be incorporated into the contents of project plans.	As per Article 17 of the EIA regulation, it is necessary to hold at least 3 public meetings during the EIA preparation stage. However, there is no specific regulations on information disclosure and when to hold the meetings.	While there are no specific regulations on information disclosure and when to hold the meetings, the Project will start to hold meetings with relevant stakeholders from the early planning stage to explain and discuss the Project plans.
	In preparing EIA reports, consultations with stakeholders, such as local residents, must take place after sufficient information has been disclosed. Records of such consultations must be prepared.	As per Article 17 of the EIA regulation, it is necessary to hold at least 3 public meetings during the EIA preparation stage. Minutes of the meeting is required to be submitted to NEMA.	No notable gap.
	Holding consultations is highly desirable, especially when the items to be considered in the EIA are being selected, and when the draft report is being prepared.	It is required to consult stakeholders during the EIA preparation and also hold public hearing during EIA evaluation as necessary.	While there are no specific regulations on when to hold the consultations, public meetings will be held at the scoping and draft report stages.
Assessment items	The impacts to be assessed with regard to environmental and social considerations include impacts on human health and safety, as well as on the natural environment, that are transmitted through air, water, soil, waste, accidents, water usage, climate change, ecosystems, fauna and flora, including trans-boundary or global scale impacts. These also include social impacts, including migration of population and involuntary resettlement, local economy such as employment and livelihood, utilization of land and local resources, social institutions such as	Second Schedule of the EIA regulation describes the items to be considered such as: Natural environment (e.g. biodiversity, wildlife, wetland, water resource, hydrology, vulnerable ecosystem) Social environment (e.g. economy, social, health, migration/immigration, social infrastructure, culture, landscape, amenity, land use)	There is no notable gap. The Project will nevertheless cover the JICA environmental items.

	JICA Environmental Guideline	Kenyan law	Gaps and Project's gap filling policy
	social capital and local decision-making institutions, existing social infrastructures and services, vulnerable social groups such as poor and indigenous peoples, equality of benefits and losses and equality in the development process, gender, children's rights, cultural heritage, local conflicts of interest, infectious diseases such as HIV/AIDS, and working conditions including occupational safety.		
	In addition to the direct and immediate impacts of projects, their derivative, secondary, and cumulative impacts as well as the impacts of projects that are indivisible from the project are also to be examined and assessed to a reasonable extent. It is also desirable that the impacts that can occur at any time throughout the project cycle should be considered throughout the life cycle of the project.	As per Article 18 of the EIA regulation, it is necessary to consider secondary, and cumulative impacts but does not mention impacts of projects that are indivisible from the project and to consider impacts throughout the life cycle of the project.	Impacts of Projects that are indivisible from the project will be considered as necessary. Impact will also be considered throughout the life cycle of the Project including pre-construction, construction and operation stages.
Monitoring, grievance	Project proponents etc. should make efforts to make the results of the monitoring process available to local project stakeholders.	There is no regulation on disclosure of monitoring results.	Monitoring results are planned to be disclosed through KPA/KeNHA website.
	When third parties point out, in concrete terms, that environmental and social considerations are not being fully undertaken, forums for discussion and examination of countermeasures are established based on sufficient information disclosure, including stakeholders' participation in relevant projects. Project proponents etc. should make efforts to reach an agreement on procedures to be adopted with a view to resolving problems.	As per Article 39 of the EIA regulation, the public may, after showing reasonable cause in writing, petition the Authority to cause an audit to be carried out on any project.	KPA/KeNHA will establish Project Implementation Team, which will include environment and social officers. The team will have the role of responding against any grievances.
Ecosystem and biota	Projects must not involve significant conversion or significant degradation of critical natural habitats and critical forests.	As per Second Schedule of the EIA regulation, it is necessary to assess impacts on vulnerable ecosystem.	While there are no specific regulations on ecosystem and biota, the Project will confirm the presence and status of critical natural habitats and critical forests through field surveys and expert consultations. In case any are identified, the Project will consider to the extent possible to avoid any impacts.
Indigenous Peoples	Any adverse impacts that a project may have on indigenous peoples are to be avoided when feasible by exploring all viable alternatives. When, after such an examination, avoidance is proved unfeasible, effective measures must be taken to minimize impacts and to compensate indigenous peoples for their losses.	The 2010 Kenya Constitution protects the rights of minority or marginalized communities such land rights and political participation.	While there are no specific regulations on indigenous peoples, the Project will confirm the presence and status of indigenous peoples through field reconnaissance and interviews. In case any are identified, the Project will consider to the extent possible to avoid any impacts.

Source: JICA Design Team

(6) Other environmental related laws and regulations

Table 11.3.13 shows environmental related laws and regulations relevant to the Project.

Table 11.3.13 Environmental related Laws and Regulations Relevant to the Project

	Law/regulation	Relevance to the Project
Natural environment	Environmental Management and Coordination (Wetlands, Riverbanks, Lake Shores and Sea Shore Management) Regulation 2009	Regulates wetland conservation and management. Requires permission in case of extraction of resources from wetlands.
	Wildlife Conservation and Management Act 2013	Prescribes protected areas and wildlife flora/fauna.
	Forest Conservation and Management Act 2016	Regulates forest conservation and management. Requires permission in case of cutting of forests.
	Water Act 2002	Regulates water resource conservation and usages. Requires permission in case of water extraction of from water resources.
	National Museums and Heritage Act 2006	Regulates protection of Kaya.
Social environment	Land Act 2012	Regulates land acquisition process and compensation.
	Fisheries (Beach Management Units) Regulations, 2007	Prescribes the roles and mandates of BMU.
	Occupational Safety and Health Act 2007	Regulates occupational safety and registration for construction premises.
	Employment Act 2007	Regulates child labor. Prohibits employment of child under the age of 13.
	HIV and AIDS Prevention and Control Act 2006	Regulates HIV/AIDS education and testing.
Pollution	Environmental Management and Coordination Act (Air Quality) Regulations 2014	Prescribes standards for ambient air, industrial emissions, vehicle emission and requirement for emission license.
	Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009	Prescribes standards for ambient noise, construction site boundary noise/vibration, night-time construction, vehicle noise and requirement for noise/vibration license.
	Environmental Management and Coordination (Water Quality) Regulations 2006	Prescribes standards for effluent water, domestic water use and requirement for effluent license.
	Environmental Management and Coordination (Waste Management) Regulations 2006	Regulates waste transportation, treatment/disposal.
	Environmental (Prevention of Pollution in Coastal Zone and other Segments of the Environment) Regulations 2003	Regulates wastewater and ballast water discharge from ships.

Source: JICA Design Team

(7) Referred national/international standards**i) Air quality**

The Environmental Management and Coordination (Air Quality) Regulations 2014 prescribes ambient air quality standards for 12 substances. Table 11.3.14 shows the Kenyan standards applicable to the Project and corresponding WHO guideline values.

Table 11.3.14 Kenyan Air Quality Standards (SO_x, NO_x, PM₁₀) and WHO Guideline Values

Unit	Kenya standard ^{*1}	WHO Guideline Value ^{*2}
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		Time weighted ave.	Industrial	Residential, rural, other area	Controlled areas	Interim target 1	Interim target 2	Guideline
SOx	µg/m ³	Annual	80	60	15	-	-	-
		24 hours	125	80	30	125 (SO ₂)	50 (SO ₂)	20 (SO ₂)
NOx	µg/m ³	Annual	80	60	15	-	-	-
		24 hours	150	80	30	-	-	-
NO ₂	µg/m ³	Annual	150	0.05 ppm	-	-	-	40
		24 hours	100	0.1 ppm	-	-	-	-
PM10	µg/m ³	Annual	70	50	50	70	50	20
		24 hours	150	100	75	150	100	50

*1: Environmental Management & Co-ordination Act (Air Quality) Regulations, 2014

*2: World Health Organization (WHO). Air Quality Guidelines Global Update, 2005

Source: JICA Design Team

ii) Noise/vibration

The Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009 prescribes various noise standards. Table 11.3.15 shows the Kenyan ambient noise standard and corresponding WHO guideline values. Table 11.3.16 shows the maximum permissible noise levels for construction sites.

Table 11.3.15 Kenyan Ambient Noise Standard and Corresponding WHO Guideline Values (LAeq)

	Kenya standard ^{*1}		WHO guideline value ^{*2}	
	Day (6:01-20:00)	Night (20:01-6:00)	Day (7:00-22:00)	Night (22:00-7:00)
Silent zone	40	35	-	-
Places of worship	40	35	-	-
Residential: indoor	45	35	-	-
Residential: outdoor	50	35	55	45
Mixed residential	55	35	-	-
Commercial	60	35	70	70

*1: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

*2: Guidelines for Community Noise, World Health Organization (WHO), 1999

Source: JICA Design Team

Table 11.3.16 Kenyan Maximum Permissible Noise Levels for Construction Sites

	Kenya standard ^{*1}	
	Day (6:01-20:00)	Night (20:01-6:00)
Health facilities, educational institutions, homes for disabled	60	35
Residential	60	35
Others	75	65

*1: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

Source: JICA Design Team

For vibration, the Kenyan regulation sets maximum permissible levels of f0.5 cm/sec for construction sites. Under Japanese regulation (Vibration Regulation Act), vibration standards are set for certain prescribed construction activities such as pile driving, where the maximum permissible level is 75 dB at construction

site boundary. The Vibration Regulation Act also prescribes road-side vibration standards as shown in Table 11.3.17.

Table 11.3.17 Japanese Road-side Vibration Standard

	Daytime (dB)	Nighttime (dB)
Type 1 area	65	60
Type 2 area	70	65

Source: Vibration Regulation Act

iii) Water quality

The Environmental Management and Coordination (Water Quality) Regulations 2016 prescribes standards for domestic water source and effluent discharge to the environment as shown in Tables 11.3.18 and 11.3.19 respectively.

Table 11.3.18 Kenyan Water Quality Standard for Domestic Water Source

Parameter	Guide Value (max allowable)
pH	6.5 – 8.5
Suspended solids	30 (mg/L)
Nitrate-NO ₃	10 (mg/L)
Ammonia –NH ₃	0.5 (mg/L)
Nitrite –NO ₂	3 (mg/L)
Total Dissolved Solids	1200 (mg/L)
Scientific name (<i>E.coli</i>)	Nil/100 ml
Fluoride	1.5 (mg/L)
Phenols	Nil (mg/L)
Arsenic	0.01 (mg/L)
Cadmium	0.01 (mg/L)
Lead	0.05 (mg/L)
Selenium	0.01 (mg/L)
Copper	0.05 (mg/L)
Zinc	1.5 (mg/L)
Alkyl benzyl sulphonates	0.5 (mg/L)
Permanganate value (PV)	1.0 (mg/L)

Source: Environmental Management & Co-ordination Act (Water Quality) Regulations, 2016

Table 11.3.19 Kenyan Effluent Discharge Standard

Parameter	Max Allowable(Limits)
1,1,1-trichloroethane (mg/l)	3
1,1,2-trichloroethane (mg/l)	0.06
1,1-dichloroethylene	0.2
1,2-dichloroethane	0.04
1,3-dichloropropene (mg/l)	0.02
Alkyl Mercury compounds	Nd
Ammonia, ammonium compounds, NO ₃ compounds and NO ₂ compounds (Sum total of ammonia-N times 4 plus nitrate-N and Nitrite-N) (mg/l)	100
Arsenic (mg/l)	0.02
Arsenic and its compounds (mg/l)	0.1
Benzene (mg/l)	0.1
Biochemical Oxygen Demand (BOD 5days at 20 °C) (mg/l)	30
Boron (mg/l)	1.0
Boron and its compounds – non marine (mg/l)	10
Boron and its compounds –marine (mg/l)	30
Cadmium (mg/l)	0.01
Cadmium and its compounds (mg/l)	0.1
Carbon tetrachloride	0.02
Chemical Oxygen Demand (COD) (mg/l)	50
Chromium VI (mg/l)	0.05
Chloride (mg/l)	250
Chlorine free residue	0.10
Chromium total	2
cis -1,2- dichloro ethylene	0.4
Copper (mg/l)	1.0
Dichloromethane (mg/l)	0.2
Dissolved iron (mg/l)	10
Dissolved Manganese(mg/l)	10
E.coli (Counts / 100 ml)	Nd
Fluoride (mg/l)	1.5
Fluoride and its compounds (marine and non-marine) (mg/l)	8
Lead (mg/l)	0.01
Lead and its compounds (mg/l)	0.1
n-Hexane extracts (animal and vegetable fats) (mg/l)	30
n-Hexane extracts (mineral oil) (mg/l)	5
Oil and grease	Nd
Organo-Phosphorus compounds (parathion,methyl parathion,methyl demeton and Ethyl parantropheny phenylphosphorothroate, EPN only) (mg/l)	1.0
Polychlorinated biphenyls, PCBs (mg/l)	0.003
pH (Hydrogen ion activity---marine)	5.0-9.0
pH (Hydrogen ion activity--non marine)	6.5-8.5
Phenols (mg/l)	0.001
Selenium (mg/l)	0.01
Selenium and its compounds (mg/l)	0.1
Hexavalent Chromaum VI compounds (mg/l)	0.5
Sulphide (mg/l)	0.1
Simazine (mg/l)	0.03
Total Suspended Solids, (mg/l)	30
Tetrachloroethylene (mg/l)	0.1
Thiobencarb (mg/l)	0.1
Temperature (in degrees celcius) based on ambient temperature	± 3
Thiram (mg/l)	0.06
Total coliforms (counts /100 ml)	30
Total Cyanogen (mg/l)	Nd
Total Nickel (mg/l)	0.3
Total Dissolved solids (mg/l)	1200
Colour in Hazen Units (H.U)	15
Detergents (mg/l)	Nd
Total mercury (mg/l)	0.005
Trichloroethylene (mg/l)	0.3
Zinc (mg/l)	0.5
Whole effluent toxicity	
Total Phosphorus (mg/l)	2 Guideline value
Total Nitrogen	2 Guideline value

Source: Environmental Management & Co-ordination Act (Water Quality) Regulations, 2016

(8) Environmental-related permits required in the Project

Table 11.3.20 shows the environmental-related permits required in the Project.

Table 11.3.20 Environmental-related Permits Required in the Project

	Activity	Statute	Type of permission	Competent Authority	Responsible organization	Period	Duration
1	Construction and operation	EMCA	EIA License	NEMA	KPA/KeNHA	Upon approval of ESIA report	90 days from date of submission of ESIA Report
2	Cutting of mangrove trees	Forest Management and Conservation Act, 2016	Permission to cut mangrove trees	KFS	KPA	Before mangrove clearance works	Indefinite
3	Construction activities	Occupational Safety and Health (OSHA) Act, 2007	Registration of premises	Directorate of Occupational Safety and Health Services (DOSHS)	Contractor	Before commencement of construction	1-4 weeks
4	Setting up of construction camp sites	EMCA	EIA License	NEMA	Contractor	Before commencement of construction	1-1.5 months
5	Water abstraction from water resource (if required)	Water Act, 2012	Permission to abstract water	Water Resources Authority (WRA)	Contractor	Before commencement of construction	1-1.5 months
6	Drilling of boreholes (if required)	EMCA	EIA License	NEMA	Contractor	Before commencement of construction	1-1.5 months
7	Storage, transport and disposal of waste including hazardous waste	EMCA	Waste License	NEMA	Contractor	Before commencement of construction	1-1.5 months
8	Emission of excessive noise/vibration (if required)	Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009	Permit to emit excess noise/vibration	NEMA	Contractor	Before excessive noise/vibration works	2 days
9	Effluent from temporary construction facilities	Environmental Management and Coordination (Water Quality) Regulations 2006	Discharge permit	NEMA	Contractor	Before commencement of construction	Indefinite
10	Emission gas from asphalt plant	Environmental Management & Coordination Act (Air Quality) Regulations, 2014	Emission permit	NEMA	Contractor	Before commencement of construction	Indefinite

Source: JICA Design Team

(9) International conventions

Following are international conventions ratified by Kenya that are relevant to the Project.

- Convention on Biological Diversity
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
- United Nations Framework Convention on Climate Change
- Convention concerning Minimum Age for Admission to Employment
- Stockholm Convention on Persistent Organic Pollutants
- The Convention on the Conservation of Migratory Species of Wild Animals
- London Convention Protocol 96
- Marpol 73/78 (Annex I-VI)
- International Convention on the Control of Harmful Anti-fouling Systems in Ships
- International Convention for the Control and Management of Ships' Ballast Water and Sediments

11.3.4 Alternative Analysis

(4) No Project option

If the Project is not implemented, there will be no resettlement and construction-related impacts but operation of the Mombasa SEZ will be greatly hindered as import/export cargo will be required to be transported to and out from the SEZ via the existing Mombasa port and Southern Bypass Road. This will result in extra travel distance of around 20 km (one-way) for cargo transportation and subsequent loss in time and cost. In addition, it will likely affect the operation of the existing Mombasa port as it is already congested.

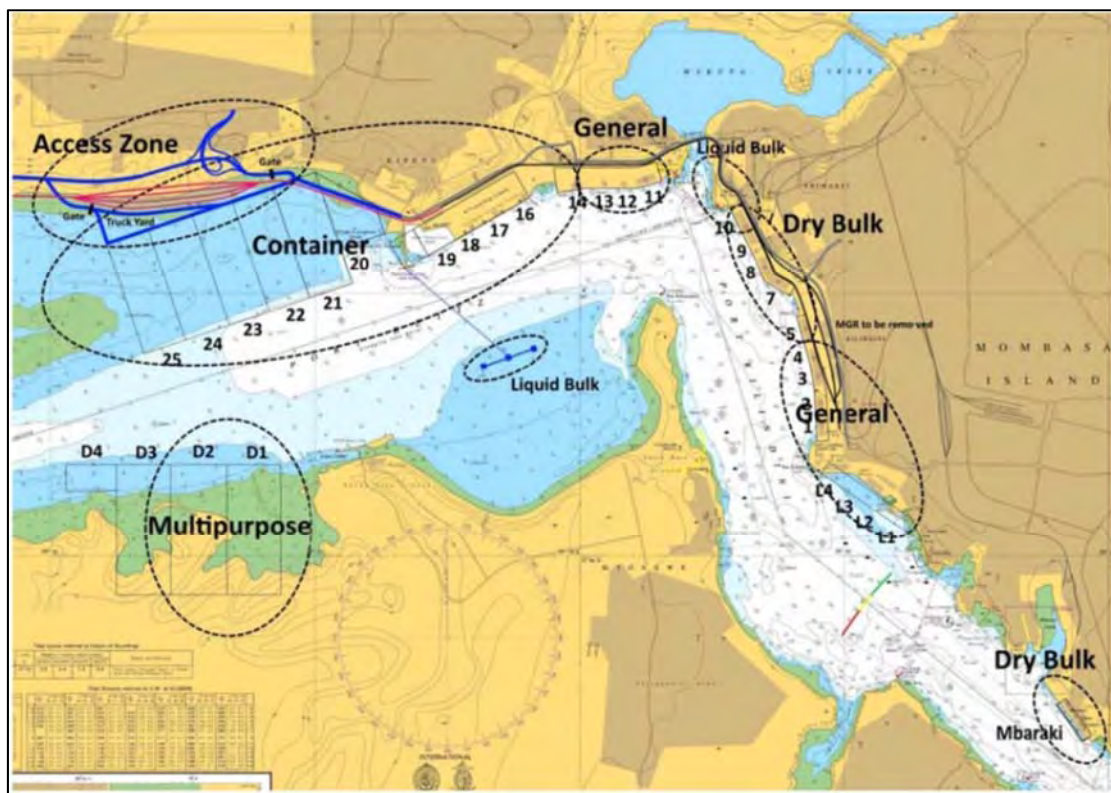
(5) Analysis of Alternatives

The following alternative analysis were conducted through the Project planning process:

- Port layout
- Procurement site of reclamation material
- Disposal site of dredged material
- Route of SEZ main road

i) Port layout

A master plan for the Mombasa Port was developed by JICA in 2015. The master plan allocates part of the north coast of Dongo Kundu as a new multipurpose area for handling cargo such as vehicles, wheat and container and for utilization by the Mombasa SEZ. The Mombasa SEZ Master Plan follows this plan as well. Figure 11.3.29 shows the spatial utilization plan developed under the Mombasa Port Master Plan. The multipurpose area consists of 4 multipurpose terminals (D1-D4), in which the D1 area is selected for this Project mainly due to the proximity to the existing access channel.



Source: Mombasa Port Master Plan (2015)

Figure 11.3.29 Spatial Utilization Plan proposed under the Mombasa Port Master Plan (the Project Port is located at D1 of the Multipurpose Area)

Three port layout options were compared taking into account factors such as cost, environmental impacts and port operation. Note that the berth location was fixed offshore of the shallow mangrove area. Table 11.3.21 shows the compared options and results of alternative analysis. In conclusion, Option 3 was selected as the most suitable port layout.

Table 11.3.21 Alternative Analysis of Port Layout

	Option 1	Option 2	Option 3
Layout	<p>Berth length: 300 m Yard area: Approx. 20 ha</p>	<p>Berth length: 300 m Yard area: Approx. 10 ha Access bridge: Approx. 400 m</p>	<p>Berth length: 300 m Yard area: Approx. 10 ha Access bridge: Approx. 460 m</p>
Construction cost	Most costly as it will require large-scale reclamation and soil improvement works	Less than Option 1	Less than Option 1

	Option 1	Option 2	Option 3
Environmental impact	Around 13 ha of mangrove area will need to be cleared for yard construction.	Around 6 ha of mangrove area will need to be cleared for yard construction.	Around 6 ha of mangrove area will need to be cleared for yard construction.
Port operation	Due to uncertainties of SEZ cargo demand, there is a risk that some yard space will remain unused.	Due to uncertainties of SEZ cargo demand, the yard area is kept at minimum size. However, connectivity to the D2 berth which is planned for future development is not good.	Due to uncertainties of SEZ cargo demand, the yard area is kept at minimum size. Connectivity to the D2 berth planned for future development is good.
Recommended option	Not recommended as some yard space may remain unused despite the high construction cost. Mangrove clearance is also largest within the three options.	Area of mangrove clearance and operational risks are less than Option 1. However, connectivity to the D2 berth is not good. Therefore, not recommended.	Area of mangrove clearance and operational risks are less than Option 1. Connectivity to the D2 berth is also good. Therefore recommended.

Source: JICA Design Team

ii) Procurement site of reclamation material

Reclamation works for the cargo yard will require around 125,000 m³ of landfill material. Initially two cost effective options were considered for the source of reclamation material: one is to use the dredged material generated from this Project and the other excessive cut material generated from construction works inside SEZ. However, both options were excluded as their soil properties were found to be unsuitable for reclamation after soil investigation. So as an alternative, the suitability of the following options were considered and compared taking into account environmental impacts, cost and so on:

- Option A: Collection from offshore seabed of Mombasa coast
- Option B: Procurement from land-based quarry (quarry in Kilifi County)

Table 11.3.22 shows the results of comparison of options A and B. In conclusion, while Option A was slightly less in cost, Option B was considered as the more suitable options due to lower potential environmental and social impacts.

Table 11.3.22 Alternative Analysis of Procurement Site of Reclamation Material

	Option A	Option B
Procurement site	Offshore bottom sand of Mombasa coast - Distance: Approx. 30 km from Project site - Transport method: sea transport	Existing quarry - Distance: Approx. 80 km from Project site - Transport method: land and sea transport
Environmental impacts	Possible impacts on marine ecosystem due to sand dredging	Possible noise and air pollution associated with land transportation by dump trucks
Social impacts	Possible impacts on coastal fisheries and tourism	None
Cost	Approx. 3,000 KES/m ³	Approx. 3,500 KES/m ³
Other issues	None	None
Recommended option	Not recommended due to possible environmental and social impacts	Despite the higher cost, recommended as environmental and social impacts are less than Option A

Source: JICA Design Team

iii) Disposal site of dredged material

Around 3,000,000 m³ of dredged material will be generated through dredging works. The ideal option will be to utilize this dredged material for the Project's reclamation works but unfortunately it is unsuitable due to its silty/muddy characteristics. Hence, the following two disposal options were instead considered:

- Option A: Disposal at offshore area located approximately 6 km offshore from the Mombasa coastline at around 200 m depth (used by previous projects)
- Option B: Disposal on land by developing a new land-based disposal facility

Table 11.3.23 shows results of the alternative analysis. In conclusion, Option A was considered the better option due to the significant high cost involved in developing a new land-based disposal facility and potential for significant land-based impacts.

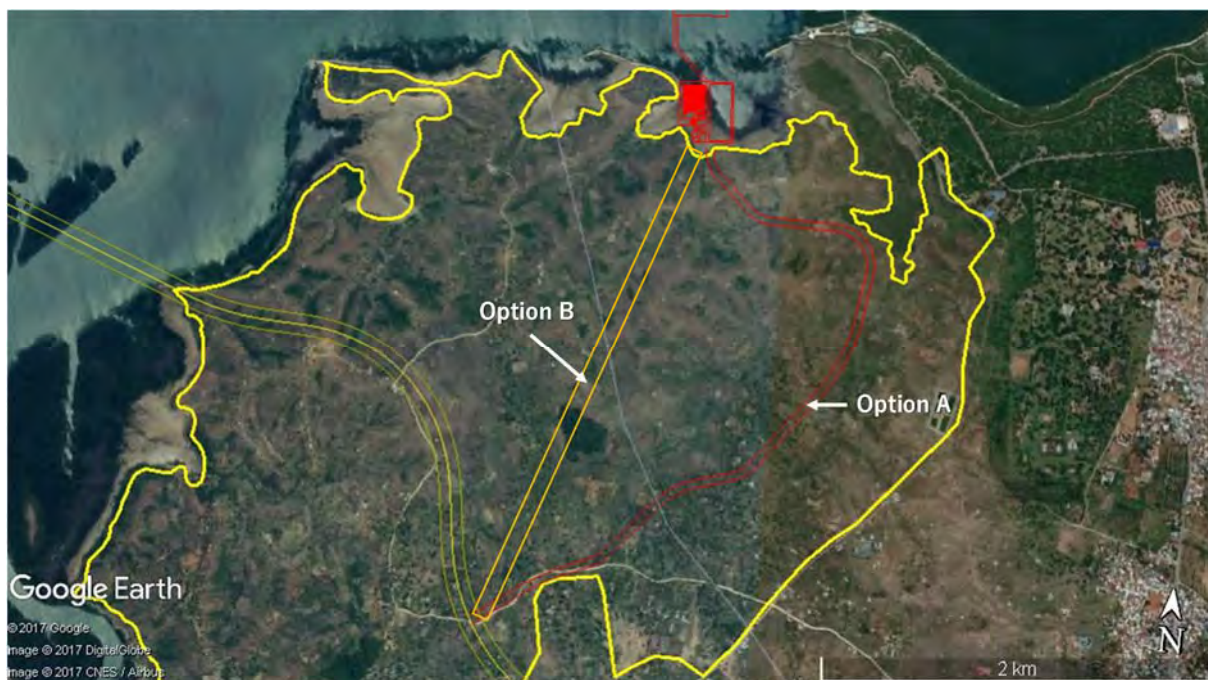
Table 11.3.23 Alternative Analysis for Disposal of Dredged Material

	Option A	Option B
Environmental impacts	Although there is potential for adverse impacts on marine ecosystem, no major impacts have been reported from past disposal activities conducted at the same location. According to the EIA sediment quality survey, sediment at the dredging site was found to be uncontaminated so risk of contamination at the disposal site is low.	There is potential for adverse impacts through development of a new disposal facility (e.g. groundwater contamination). On-land material transportation may to some extent cause air/noise impacts.
Social impacts	May have adverse impacts on local fisheries and will likely require some form of compensation.	May require land acquisition and resettlement.
Technical issues	No notable issues	Will need to develop a disposal facility that will not cause groundwater contamination.
Approx. cost	Significantly less than Option B	Significantly higher than Option A
Overall conclusion	Option A is considered as the better option due to the following reasons: <ul style="list-style-type: none"> • Although Option A will likely have some environmental impacts, it is considered to be controllable through strict environmental monitoring and management. • No significant impacts have been reported from past disposal activities conducted at the same location. Cost is significantly less than Option B.	Option B is considered the less favourable option due to the following reasons: <ul style="list-style-type: none"> • Significant investment will be required for developing a new land-based disposal facility. • May require land acquisition and resettlement. There is potential for groundwater contamination.

Source: JICA Design Team

iv) Route of SEZ main road

As part of the planning process, two basic route options were considered. The first option was the route proposed in the Master Plan of Mombasa SEZ (Option 1) and the other option was direct route from the port to Southern Bypass Road (Option 2). Figure 11.3.30 shows the layout of the considered route options. Table 11.3.24 shows the results of alternative analysis. In conclusion, Option 1 was considered as the better route option due to lower environmental and social impacts as well as lower Project cost.



Source: JICA Design Team

Figure 11.3.30 Layout of the Road Route Options

Table 11.3.24 Alternative Analysis of Road Route

	Option A	Option B
Route	M/P route <ul style="list-style-type: none"> Distance: Approx. 4.6 km Land use: mainly agriculture 	Direct route <ul style="list-style-type: none"> Distance: Approx. 2.5 km Land use: mainly agriculture
Environmental impacts	Impact is less than Option 2 as the route only crosses one hill ridge, which consequently will require less cutting works than Option 2.	Impact is greater than Option 1 as the route crosses two hill ridges which will require significant cutting works.
Social impacts	Impact is less than Option 2 as the route avoids major residential areas and does not pass through kaya.	Impact is greater than Option 1 as the route will pass through 2 major residential areas and kaya.
Construction cost	Construction cost is likely to be less than Option 2 due to lower volume of cutting works. Compensation cost is also likely to be less due to smaller social impacts.	Construction cost is likely to be higher than Option 1 due to significant stabilization works of cut slope. Compensation cost is also likely to be higher due to greater social impacts.
Technical issues	None	None

Source: JICA Design Team

11.3.5 Scoping and TOR of Environmental and Social Consideration Study

The TOR of the environmental and social consideration study was determined through scoping exercise. Table 11.3.25 shows the scoping results and TOR of environmental and social consideration study.

Table 11.3.25 Results of Scoping and TOR

	Item	Phase	Rating	Rationale	TOR
1	Air pollution	PC	D	[Port/road] There are no activities that may cause air pollution.	—
		C	B-	[Port/road] Construction works may cause air pollution such as through exhaust and fugitive dust emissions from construction vehicles/machines, concrete/asphalt plant and heavy construction works.	<ul style="list-style-type: none"> •Review of applicable laws/regulations. •Implement baseline air quality survey. •Identify air pollution sources and sensitive receptors. •Prediction of roadside air quality (operation phase)
		O	B-	[Port] Exhaust emissions from ships and cargo handling machines may cause air pollution.	
		O	B-	[Road] Exhaust emissions from vehicles may cause air pollution.	
2	Water pollution	PC	D	[Port/road] There are no activities that may cause water pollution.	—
		C	A-	[Port] Dredging and dumping activities may cause water pollution.	<ul style="list-style-type: none"> •Review of applicable laws/regulations. •Review past reports of similar projects. •Implement baseline water quality survey. •Collect hydrological information around project area.
		C	B-	[Road] Rainwater runoff from construction site may cause water pollution of downstream water bodies.	
		O	B-	[Port] Maintenance dredging, ship wastewater, rainwater runoff may cause water pollution.	
		O	D	[Road] There are no activities that may cause water pollution.	—
3	Soil pollution	PC	D	[Port/road] There are no activities that may cause soil pollution.	—
		C	B-	[Port/road] Oil leaks from construction vehicles and equipment may cause soil pollution.	<ul style="list-style-type: none"> •Review applicable laws/regulations. •Identify construction soil pollution sources.
		O	D	[Port/road] There are no activities that may cause soil pollution.	—
4	Waste	PC	B-	[Port] Vegetation waste will be generated from mangrove clearance.	<ul style="list-style-type: none"> •Review applicable laws/regulations.

	Item	Phase	Rating	Rationale	TOR
		PC	B-	[Road] Vegetation waste will be generated from tree clearance.	<ul style="list-style-type: none"> • Review waste management practices of vegetation wastes. • Identify type and volume of construction wastes. • Implement sediment quality survey. • Review waste management facilities.
		C	B-	[Port] Construction waste such as dredged material will be generated.	
		C	B-	[Road] Construction waste such as excavated soil will be generated.	
		O	B-	[Port] Operation waste will be generated.	
		O	B-	[Road] Road maintenance waste will be generated.	
5	Noise / vibration	PC	D	[Port/road] There are no activities that may cause excessive noise/vibration.	—
		C	B-	[Port] Construction works such as pile-driving may cause excessive noise/vibration.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Implement baseline noise survey. • Identify construction noise/vibration sources. • Identify sensitive receptors. • Predict roadside noise/vibration
		C	B-	[Road] Construction works may cause excessive noise/vibration.	
		O	B-	[Port] Port operation may cause excessive noise/vibration.	
		O	B-	[Road] Road vehicles may cause excessive noise/vibration.	
6	Ground subsidence	PC, C, O	D	[Port/road] There are no activities that may cause ground subsidence.	—
7	Offensive odor	C	B-	[Port/road] Asphalt plant may emit offensive odor.	• Identify odor type
		PC, O	D	[Port/road] There are no activities that may generate offensive odor.	—
8	Bottom sediment	PC	D	[Port/road] There are no activities that may cause sediment pollution.	—
		C	B-	[Port] Dredging may pollute surrounding sediment.	• Implement sediment quality survey.
		C, O	D	[Road] There are no activities that may cause sediment pollution.	—
		O	B-	[Port] Ship anti-fouling paint may cause sediment pollution.	• Review applicable laws/regulations.
9	Conservation area	PC	D	[Port/road] There are no activities that may have adverse impact on conservation areas.	—

	Item	Phase	Rating	Rationale	TOR
		C	A-	[Port] Dumping of dredged material may affect MPAs.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Collect information on conservation areas. • Review past reports of similar projects.
		C, O	D	[Road] There are no conservation areas in the vicinity.	—
		O	B-	[Port] Dumping of maintenance dredged material may affect MPAs.	• Same as construction TOR
10	Ecosystem	PC	B-	[Port] Mangroves in the port area will need to be cut.	• Implement mangrove survey
		PC	B-	[Road] Trees in the road area will need to be cut.	• Implement flora survey
		C	A-	[Port] Dredging and dumping of dredged material may affect marine ecosystem such as corals.	<ul style="list-style-type: none"> • Implement marine benthos survey • Review past reports of similar projects.
		C	B-	[Road] Construction works may affect wildlife.	• Implement fauna survey
		O	B-	[Port] Maintenance dredging and dumping of dredged material may affect marine ecosystem such as corals.	• Same as construction TOR
		O	D	[Road] There are no activities that may have adverse impact on ecosystem.	—
11	Hydrology	PC, C, O	D	[Port/road] There are no activities that may affect hydrology.	—
12	Topography	PC	D	[Port/road] There are no activities that may affect topography.	—
		C	D	[Port] There will be some change in topography but impacts are negligible.	—
		C	D	[Road] There will be some change in topography but impacts are negligible.	—
		O	D	[Port/road] There are no activities that may affect topography.	—
13	Resettlement	PC	D	[Port] There will be no resettlement.	—
		PC	B-	[Road] There will be some resettlement due to land acquisition.	• Implement RAP study.
		C, O	D	[Port/road] There will be no resettlement.	—
14	Vulnerable social groups	PC	D	[Port] There are no activities that may affect vulnerable social groups.	—

	Item	Phase	Rating	Rationale	TOR
		PC	B-	[Road] There could be vulnerable people within the PAPs.	• Confirm vulnerable people through RAP study.
		C, O	D	[Port/road] There are no activities that may affect vulnerable social groups.	—
15	Indigenous/ minority people	PC, C, O	C-	[Port/road] Uncertain whether there are any indigenous/minority people.	• Confirm through RAP study.
16	Livelihood, living environment	PC	D	[Port] There are no activities that may affect livelihood.	—
		PC	B-	[Road] PAPs may lose income if not appropriately compensated and assisted.	• Confirm through RAP study.
		C	B-	[Port] Construction works may restrict livelihood activities such as fishing.	• Identify factors that may result in income reduction.
		C	B-	[Road] Construction works may restrict some livelihood activities such as farming.	• Prepare fishermen livelihood recovery plan
		O	D	[Port/road] There are no activities that may affect livelihood.	—
17	Land use and local resource	PC	D	[Port] There are no activities that may affect land use and local resources.	—
		PC	B-	[Road] Land use at the road site will change due to land acquisition.	• Confirm land use around Project site
		C	B-	[Port] Procurement of large quantity of reclamation material may affect local resources.	• Analyze alternative for reclamation material
		C	B-	[Road] There will be temporary restriction in land use at the construction site.	
		O	D	[Port/road] There are no activities that may affect land use and local resources.	—
18	Water use	PC	D	[Port/road] There are no activities that may affect water use.	—
		C	B-	[Port] Construction works may affect fishing activities.	• Implement fishermen survey
		C, O	D	[Road] There are no activities that may affect water use.	—
		O	B-	[Port] Port operation may affect fishing activities.	• Same as construction TOR

	Item	Phase	Rating	Rationale	TOR
19	Social infrastructures and services	PC, C, O	D	[Port] There are no activities that may have adverse impacts on social infrastructures and services.	—
		PC, O	D	[Road] There are no activities that may affect social infrastructures and services.	—
		C	B-	[Road] Two community roads may no longer be usable.	•Field reconnaissance.
20	Social institutions	PC, C, O	D	[Port/road] There are no activities that may affect social institution.	—
21	Misdistribution of benefit and losses	PC, C, O	D	[Port/road] There are no activities that may cause misdistribution of benefit and losses.	—
22	Local conflicts of interest	PC, C, O	D	[Port/road] There are no activities that may trigger local conflicts of interests.	—
23	Cultural heritage	PC, O	D	[Port/road] There are no activities that may affect cultural heritage.	—
		C	B-	[Port] A kaya is located near the port site.	•Confirm legal status of kaya
		C	D	[Road] There are no activities that may affect cultural heritage.	—
24	Landscape	PC, C, O	D	[Port/road] The Project will somewhat change the surrounding landscape but such change will not be of any significance because the area will become an industrial area under the SEZ.	—
25	Gender	PC	D	[Port] There are no activities that may trigger gender issues.	—
		PC	B-	[Road] Women are likely to be more susceptible to resettlement impacts.	•Confirm through RAP study
		C, O	D	[Port/road] There are no activities that may trigger gender issues.	—
26	Children's rights	PC, O	D	[Port/road] There are no activities that may affect children.	—
		C	B-	[Port/road] Construction contractor may exploit children for cheap labor.	•Review applicable laws/regulations. •Review child labour status in Kenya.
27	Infectious diseases	PC, O	D	[Port/road] There are no activities that may cause HIV.	—

	Item	Phase	Rating	Rationale	TOR
	(HIV/AIDS etc.)	C	B-	[Port/road] There is a certain risk of infectious diseases spreading through influx of construction workers.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Assess risk of infectious diseases.
28	Occupational safety	PC	D	[Port/road] No notable risk of occupational accidents.	—
		C	B-	[Port/road] There is a certain risk of occupational accidents.	<ul style="list-style-type: none"> • Review applicable laws/regulations. • Identify high risk works
		O	B-	[Port] There is a certain risk of occupational accidents.	
		O	D	[Road] No notable risk of occupational accidents.	—
29	Accidents	PC	D	[Port/road] The risk of accidents is low.	—
		C	B-	[Port] There is a certain risk of accidents (e.g. maritime accidents).	<ul style="list-style-type: none"> • Identify high risk works
		C	B-	[Road] There is a certain risk of accidents (e.g. traffic accidents).	
		O	D	[Port] There is a certain risk of maritime accidents	
		O	D	[Road] There is a certain risk of traffic accidents	
30	Climate change	PC, C, O	B-	[Port] Mangrove clearance may to some extent enhance global warming through loss of CO ₂ storage sources.	Asses impact on climate change by estimating area of forest clearance and consequent loss in carbon storage capacity.

A+/-: Significant positive/negative impact is expected, B+/-: Positive/negative impact is expected to some extent., C+/-: Extent of positive/negative impact is unknown., D: No impact is expected

PC: Pre-construction, C: Construction, O: Operation

Source: JICA Design Team

11.3.6 Results of Environmental and Social Consideration Study

(1) Air pollution

i) Port

【Construction】

The main source of air pollution will be exhaust gas from construction vehicles/machines and fugitive dust emission from heavy construction works (e.g. reclamation works). However, since construction activities will be temporary and intermittent, and the fact that there are no sensitive receptors in the vicinity (nearest sensitive receptor is 300 m away), impacts are likely to remain within moderate levels. Other sources of air pollution will be fugitive dust from temporary concrete plant and stack emission of asphalt plant. In general, impacts from these facilities will be limited as they will only operate temporary and are relatively small-scale facilities, but may become an issue if they are to be located near sensitive areas.

【Operation】

The main source of air pollution will be exhaust gas of ships and cargo handling machines. However, impacts will be insignificant as emissions from ships and cargo handling machines will be limited to activities of one berth, and also the fact that there are no sensitive receptors in the vicinity.

ii) Road

【Construction】

The main source of air pollution will be exhaust gas from construction vehicles/machines and fugitive dust emission from heavy construction works (e.g. cut and fill works). In general, impacts of construction activities are likely to remain within moderate levels due to its temporary and intermittent nature. However, there could be certain localized impacts where residential houses are located in the vicinity of the construction sites. Strict air pollution control will therefore be required especially when conducting activities near residential houses.

Other sources of air pollution will be fugitive dust from temporary concrete plant and stack emission of asphalt plant. In general, impacts from these facilities will be limited as they will only operate temporary and are relatively small-scale facilities, but may become an issue if they are to be located near sensitive areas.

【Operation】

During operation, exhaust emissions from cargo and commuting vehicles may deteriorate the air quality along the SEZ main road. Road side air quality (PM10 and NO₂) was therefore predicted using the technical manual (Technical Method of Road Environmental Impact Assessment) published by Research Institute for Road and Street of Japan. The prediction was conducted under the following conditions:

- Traffic volume: Estimated traffic at SEZ phase 3 stage (cargo vehicle: 238 vehicles/hour, commuting vehicles: 155 vehicles/hour)
- Wind direction: Easterly wind which is the dominant wind during dry season
- Wind speed: 5 m/s⁷
- PM10 emission factor⁸: Cargo vehicle (4.05 g/km), Commuting vehicles (0.05 g/km)
- NO_x emission factor⁹: Cargo vehicle (2.08 g/km), Commuting vehicles (0.118 g/km)
- Prediction site: 0 m from roadside

Table 11.3.26 shows the results of prediction.

⁷ Based on meteorological data of Mombasa Port Master Plan (2015)

⁸ Hirata et al (2000), An Analysis of Roadside Air Pollution in Metro Manila

⁹ Research Institute for Road and Street (2007), Technical Method of Road Environmental Impact Assessment

Table 11.3.26 Prediction Results of Road-side Air Quality

	Concentration contributed from vehicles	Baseline concentration* ¹	Predicted roadside air quality	National standard (annual mean)* ²	WHO guideline value (annual mean)
PM10 ($\mu\text{g}/\text{m}^3$)	1.9	30.3	32.2	50	20
NO ₂ ($\mu\text{g}/\text{m}^3$)	0.85	0.00097	0.85097	95* ³ (0.05 ppm)	40

*1: Average of air quality baseline survey conducted at proposed road location

*2: Environmental Management & Co-ordination Act (Air Quality) Regulations, 2014 (residential, rural and other areas)

*3: The standard value of 0.05 ppm was converted to $\mu\text{g}/\text{m}^3$

Source: JICA Design Team

According to the prediction, vehicles will have minor contribution to ambient PM10 and NO₂ concentration, and hence roadside air quality was predicted to satisfy the national air quality standard. Impact of vehicles on air quality will therefore be negligible.

(5) Water pollution

i) Port

【Construction】

Around 3 million m³ of initial dredging will be required, in which around 0.5 million m³ will be by grab dredger and the remaining 2.5 million m³ by TSHD. All the dredged material is planned to be disposed at the offshore disposal site used by other Mombasa port projects. Dredging and offshore dumping of dredged material will deteriorate the surrounding water quality as such activities will result in suspension and dispersion of sediments.

To assess the potential impacts of dredging/dumping activities, the water quality (i.e. turbidity) monitoring report of Container Port Modernization Project was analyzed, which is a similar port development project implemented in Port Reitz during 2012-2015 involving channel dredging and dumping of around 6 million cm³ of dredged material at the same location as this Project. Water quality monitoring was conducted inside Port Reitz around the dredging area and at the coral reefs along the Mombasa coastline nearest to the offshore dumping area. According to the water quality monitoring results, turbidity levels inside Port Reitz expectedly increased significantly but at the coral reef sites turbidity in general remained at low levels (around 0-2 NTU). There was also no notable decrease in coral coverage as per the coral monitoring conducted at that time. Also no issues were raised during interviews with experts from Kenya Marine and Fisheries Research Institute (KMFRI) and diving operators. Based on the above information, it is likely that offshore dumping activities will not have any significant impacts on water quality.

There are however uncertainties in how turbidity will actually disperse as it will be influenced by weather and oceanographic conditions at the time of dumping. The Project will therefore proactively and continuously monitor water quality and corals and dumping methods will be revised in case any signs of impacts are identified in the process. Also if the timing of dredging and dumping overlaps with other dredging projects in Mombasa port, it will require coordination between both projects and further strengthen the ESMP and ESMoP as necessary.

Other sources of pollution will be wastewater from construction facilities such as concrete plant and construction camps. Such wastewater may cause localized pollution if not treated appropriately.

【Operation】

Around 470,000 m³ of maintenance dredging is expected to be required every 5 years, which is planned to be dumped offshore at the same location as the initial dredging. However, impacts will be less as dumping volume is only around 15% of the initial dredging.

Other potential pollution sources will be rainwater runoff from port facilities and ship wastewater. Rainwater runoff may become contaminated with oil by collecting the oil that were spilled and leaked from cargo handling machines/vehicles and subsequently pollute Port Reitz. However, significant impacts are not expected as volume of rainwater runoff will be limited due to the relatively small scale of the port and the fact that oil will be rapidly decomposed naturally in seawater.

Ship wastewater mainly consists of bilge water and sewage water. Discharge of these wastewater in territorial waters are prohibited in Kenya under the Environmental (Prevention of Pollution in Coastal Zone and other Segments of the Environment) Regulations 2003. The Marine Operation Department, Pollution Control Section of KPA is charged with the responsibility of implementing and ensuring compliance of ships with MARPOL 73/78 and national regulations. The Pollution Control Section has 33 staff conducting 24/7 sea patrols with Anti-pollution vessel and inspect all incoming vessels onboard for checking compliance with MARPOL 73/78. The port also provides competent licensed contractors for collecting wastewater from ships such as bilge and grey-water. With a dedicated pollution management and inspection system in place, the risk of pollution from ship wastewater is considered low.

ii) Road

【Construction】

Water pollution may occur when large volume of soil from exposed construction areas (e.g. cut and fill sites) are eroded and discharged to downstream surface water body via rainwater runoff. According to the catchment map of Mombasa SEZ area, there are no perennial streams in the downstream area. Rainwater runoff will flow through valleys and natural channels and eventually drain towards a shrubby area and eventually to an extensive mud flat area in Port Reitz as shown in Figure 11.3.31.



Source: JICA Design Team

Figure 11.3.31 Drainage Route of Rainwater Runoff around SEZ Main Road

Significant impacts are not expected as most of the sediment contained in rainwater runoff will likely settle in the shrub/mud flat area as runoff velocity reduces.

Other sources of pollution will be wastewater from construction facilities such as concrete plant and construction camps. Such wastewater may cause localized pollution if not treated appropriately.

(6) Soil pollution

i) Road

【Construction】

Oil spill/leaks from construction vehicles/machines and fuel tanks may cause soil pollution. Risk of pollution will be high in case of using old and poorly-maintained vehicles/machines, using maintenance facilities with inadequate pollution control and on-site fueling activities. However, considering that the source of potential oil pollution is limited to construction vehicles/machines and fuel tanks, the extent of soil pollution will be limited to a relatively small area in case of oil spill/leaks events. Therefore, significant impacts are not expected.

(7) Waste

i) Port

【Pre-construction】

The main waste during pre-construction will be vegetation remains from mangrove clearance. However, disposal will not be required as they can be reused locally such as for fuel.

【Construction】

During construction, around 3 million m³ of dredged material will be generated. Since the dredging area sediment was identified to be uncontaminated, these will be disposed at an offshore disposal site previously used by other Mombasa port projects.

Other construction wastes will typically consist of packaging material, metal scrap, waste oil and so on. Non-hazardous wastes that cannot be reused/recycled will be disposed at the county's waste disposal sites. This will be either at Mwakirunge or Shonda landfill but should be decided at the time after consulting the county government waste authority. Either way it should not be a major issue as waste volume will be limited. Hazardous wastes such as waste oil will be recycled through local NEMA authorized recycling firms. The construction contractor will be required to prepare Construction Waste Management Plan (CWMP) outlining how wastes will be stored, reused/recycled, treated and disposed.

【Operation】

Main wastes during port operation will be ship garbage, waste oil from cargo handling machines and general office waste. Non-hazardous wastes that cannot be reused/recycled will be disposed at the county's waste disposal sites which will either be at Mwakirunge or Shonda landfill. Either way it should not be a major issue as waste volume will be limited.

Hazardous wastes such as waste oil will be recycled through local NEMA authorized recycling firms. Around 470,000 m³ of dredged material is expected to be generated every 5 years from maintenance dredging, which are planned to be disposed at the same offshore site as the initial dredging.

ii) Road

【Pre-construction】

The main waste during pre-construction will be vegetation remains from tree clearance. However, disposal will not be required as they will be reused locally such as for fuel wood and building material.

【Construction】

During construction, around 340,000 m³ of excessive excavated soil will be generated. Around 150,000 m³ will be top soil which can be reused for other usages such for agriculture. The remaining soil of around 190,000 m³ will be stored temporary in the empty ramp space of the interchange for later use by other SEZ projects. Hence disposal of excavated soil will not be required.

Other construction wastes may consist of domestic waste, packaging material, metal scrap, medical waste, waste oil and so on. Non-hazardous wastes that cannot be reused/recycled will be disposed at the county's waste disposal sites. In case of Mombasa, this will be either at Mwakirunge or Shonda landfill but should be decided at the time after consulting the county government waste authority. Either way it should not be a major issue as waste volume will be limited. Hazardous wastes such as waste oil will be recycled through local NEMA authorized recycling firms. The construction contractor will be required to prepare Construction Waste Management Plan outlining how wastes will be stored, reused/recycled, treated and disposed.

【Operation】

During operation, wastes from road maintenance is expected such as cleared vegetation, asphalt debris and sediment/sludge from drainage system. Most of these wastes can be reused/recycled (e.g. composting, road resurface). Non-hazardous wastes that cannot be reused/recycled is expected to be disposed at the Mwakirunge or Shonda landfill. Due to the limited waste volume, this is not expected to be an issue.

(8) Noise/vibration

i) Port

【Construction】

The main noise sources will be from construction vehicles/machines and pile-driving works. Since pile driving will be the most dominant noise source, impacts of pile driving works was predicted by assuming the use of hydraulic pile-driver. Noise attenuation from the pile driver was calculated using the following standard noise attenuation formula:

$$L_{aeq} = L_{aw} - 8 - 20 \times \log_{10} r$$

L_{aeq} : Equivalent continuous A-weighted sound pressure Level

L_{aw} : Source power level (set as 108 dB as per Sarsby R.W, 2000)

r: Distance from source

Table 11.3.27 shows the prediction results. According to the prediction, noise from pile driving works will attenuate to around the same level as the Kenyan noise standard of 50 dB (residential daytime) at a distance of around 300 m. Since there are no sensitive receptors within the 300 m radius impacts are not expected (see Figure 11.3.32).

Table 11.3.27 Predicted Noise Attenuation from Hydraulic Pile-driver

	Distance from noise source (m)								
	10	20	50	100	150	200	250	300	350
Noise level (dB)	80	74	66	60	57	54	52	51	49

Source: JICA Design Team



Source: JICA Design Team

Figure 11.3.32 Predicted Noise Attenuation from Pile-Driving Works

The main source of vibration will be from pile driving works. According to the manual of “Japanese Technical Association for Steel Pipe Piles and Sheet Piles”, vibration levels of hydraulic pile-driver will in general attenuate to below 75 dB (construction site-boundary vibration standard of Japan) after 25 m. No impacts are expected as there are no structures within such distance.

【Operation】

During operation, there will noise generated from cargo handling activities. However, impacts are not expected as noise influence will be spatially limited and the fact that there are no sensitive receptors in the vicinity.

ii) SEZ main road

【Construction】

The main noise sources will be from construction vehicles/machines. Significant impacts are not expected as there will be no excessive noisy works such as pile driving. However, some of the residential houses near the road may be affected temporary hence strict noise control measures are required when working near these areas.

【Operation】

a. Noise

During operation, noise from travelling cargo and commuting vehicles may raise noise level along the SEZ road. Roadside noise level was therefore predicted using the noise prediction model “ASJ RTN-Model 2008”. The prediction was conducted for two scenarios described in Table 11.3.28.

Table 11.3.28 Scenarios of Road-side Noise Prediction

	Prediction period	Assessment target	Predicted daily traffic volume*	Vehicle speed
Scenario 1	During operation of Phase 1 (2028)	Roadside residential area	Cargo vehicle: 2,274 Commuting vehicles: 1,258	60 km/h
Scenario 2	During operation of Phase 1, 2, 3 (2040)	SEZ facilities (all roadside residents are assumed to have relocated by 2040)	Cargo vehicle: 5,706 Commuting vehicles: 3,724	60 km/h

*: All vehicles assumed to travel during day-time

Source: JICA Design Team

Tables 11.3.29 and 11.3.30 show the prediction results of Scenario 1 and 2 respectively.

Table 11.3.29 Predicted Noise Attenuation from SEZ Main Road (Scenario 1)

Distance from roadside (m)	0	10	20	30	40	50	60	70	80	90	100
Laeq (dB)	66.2	63.8	62.3	61.2	60.3	59.6	59.0	58.4	57.9	57.5	57.1
Distance from roadside (m)	110	120	130	140	150	160	170	180	190	200	-
Laeq (dB)	56.7	56.4	56.1	55.8	55.5	55.2	55.0	54.8	54.6	54.3	-

Source: JICA Design Team

Table 11.3.30 Predicted Noise Attenuation from SEZ Main Road (Scenario 2)

Distance from roadside (m)	0	10	20	30	40	50	60	70	80	90	100
Laeq (dB)	70.2	67.9	66.4	65.3	64.4	63.7	63.0	62.5	62.0	61.6	61.2
Distance from roadside (m)	110	120	130	140	150	160	170	180	190	200	-
Laeq (dB)	60.8	60.5	60.1	59.9	59.6	59.3	59.1	58.9	58.6	58.4	-

Source: JICA Design Team

According to the prediction of Scenario 1, noise level will exceed the Kenyan noise standard (residential) of 50 dB even at a distance of 200 m from the roadside. However, if compared with the WHO standard (55 dB), noise level will attenuate to satisfactory level at 170 m from the roadside. In conclusion, it can be said that residents living within the 200 m area will be affected by vehicle noise, which is counted as around 10-20 households. It is therefore necessary to reduce the roadside noise levels through employing certain mitigation measures. However, since most of these residents will be relocated by Phase 2 (year 2029), it is unrealistic to install expensive noise barriers. It is therefore proposed to establish green belt along the areas facing the residential houses, which has a noise attenuation effect of around 2-3 dB¹⁰.

In regards to Scenario 2, roadside noise level will inevitably be further elevated due to greater traffic volume. However, since all residents will be relocated by then, it is more reasonable to compare the predicted noise

¹⁰ Annual report of Tokyo Metropolitan Government Civil Engineering Technical Center (2008)

level with industrial area noise standards of Kenya and WHO, which is 60 dB and 70 dB respectively. In such case, roadside noise level will satisfy Kenyan standard after 130 m and WHO standard after 10 m. Since SEZ facilities are not particularly sensitive to noise, the predicted noise levels are considered to be within acceptable range.

b. Vibration

During operation, vibration from travelling cargo and commuting vehicles may affect nearby structures along the SEZ main road. Roadside vibration level was therefore predicted using the technical manual (Technical Method of Road Environmental Impact Assessment) published by Research Institute for Road and Street of Japan. The prediction was conducted under the following conditions:

- Traffic volume: Predicted traffic volume during operation of Phase 1, 2, 3 (Cargo vehicles: 238 vehicles/hour, Commuting vehicles: 155 vehicles/hour)
- Travelling speed: 60 km/h

Table 11.3.31 shows the prediction results.

Table 11.3.31 Predicted Vibration Attenuation from SEZ road

Distance from roadside (m)	0	10	20	30	40	50	60	70	80	90	100
Vibration level (dB)	55.6	54.6	53.9	52.9	52.1	51.5	51.	50.6	50.2	49.9	49.6

Source: JICA Design Team

According to the prediction, vibration levels will be under 60 dB at the roadside, which is below the roadside vibration standard of Japan (daytime: 65 dB, nighttime: 60 dB). Therefore, no vibration impacts are expected.

(9) Odor

i) Port/road

【Construction】

Asphalt plant will generate some “asphalt” smell during its production process. Sewage from construction camps may also become source of odor. Odor from these facilities may become a nuisance in case they are established near sensitive areas such as residential areas.

(10) Sediment

i) Port

【Construction】

Dredging activities may cause sediment pollution of surrounding areas by dispersing contaminated sediments. However, since no sediment contamination was identified in the dredging area through the sediment quality survey, sediment pollution is not expected.

【Operation】

Ships using harmful anti-fouling paints may cause sediment pollution around the port area as harmful substances contained in anti-fouling paints can potentially accumulate in the underlying sediment. However, such risks can be considered low as Kenya is a signatory of the “International Convention on the Control of Harmful Anti-fouling Systems on Ships”, which prohibits ships entering Kenyan port of using anti-fouling paints.

(11) Conservation area**i) Port****【Construction】**

Sediment dispersion from offshore dumping of dredged material may affect the MPAs along the coastal area namely Mombasa Marine National Park, Mombasa Marine National Reserve and Diani/Chale Marine National Reserve. Impacts on Mombasa Marine National Park and Diani/Chale Marine National Reserve are unlikely as they are located around 13 km and 16 km from the dumping site respectively. On the other hand, Mombasa Marine National Reserve will be more likely to be affected as it is relatively close to the dumping site (around 3 km separation).

To assess the potential impacts of offshore dumping activities on Mombasa Marine National Reserve, the water quality (i.e. turbidity) monitoring report of Container Port Modernization Project was analyzed, which is a similar port development project implemented in Port Reitz during 2012-2015 involving channel dredging and dumping of dredged material at the same location as this Project. Water quality monitoring was conducted inside Port Reitz around the dredging area and at the coral reefs along the Mombasa coastline nearest to the offshore dumping area. According to the water quality monitoring results, turbidity levels in general remained at low levels (around 0-2 NTU) near Mombasa Marine National Reserve. There was also no notable decrease in coral coverage as per the coral monitoring conducted at that time. Also no issues were raised during interviews with experts from Kenya Marine and Fisheries Research Institute (KMFRI) and diving operators. In conclusion, dumping activities are unlikely to have any significant impacts on Mombasa Marine National Reserve.

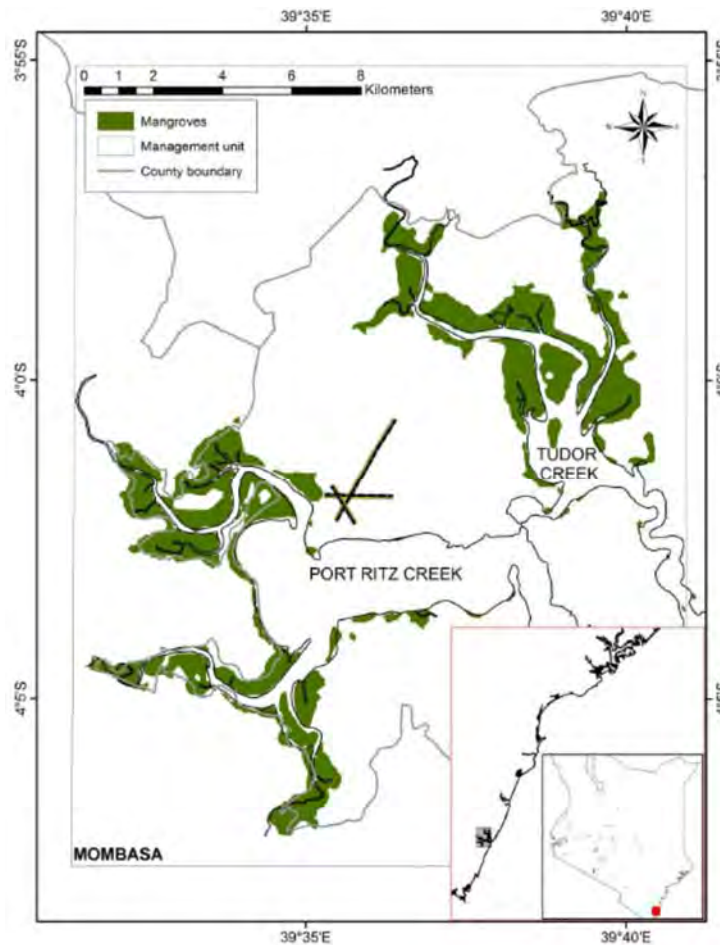
【Operation】

Around 470,000 m³ of maintenance dredging is expected to be required every 5 years, which is planned to be dumped offshore at the same location as initial dredging. Significant impacts on MPAs are not expected as dredging volume will only be around 15% of the initial dredging and period will be short-term.

(12) Ecosystem**i) Port****【Pre-construction】**

According to the National Mangrove Ecosystem Management Plan (2017-2027), mangroves in Mombasa County are mainly distributed in Port Reitz and Tudor Creek having a total area of 3,771 ha. Main mangrove species are *Rhizophora*, *Ceriops*, *Avicennia* and *Sonneratia* species. The average mangrove stem density is 1,636 stems/ha. Figure 11.3.33 shows the mangrove distribution in Mombasa County. Nearly 1,850 ha of

mangroves in Mombasa County are degraded due to illegal harvesting, development, pollution and are in urgent need of rehabilitation.



Source: National Mangrove Ecosystem Management Plan (2017-2027)

Figure 11.3.33 Mangrove Distribution in Mombasa County

Around 15 ha of mangrove forest will need to be cleared for construction of port and temporary construction facilities as shown Figure 11.3.34. Note however that mangrove distribution within the 15 ha area is not uniform and around half of the area is mudflat, so the actual mangrove area will be around 7.5 ha and the number of mangrove trees that require felling is estimated to be around 6,750 trees.



Source: JICA Design Team

Figure 11.3.34 Area of Mangrove Forest to be affected by Port Development (Inside Yellow Area)

Mangrove clearance is not expected to have any significant impacts on ecosystem for the following reasons:

- The affected area is not designated as a protected area.
- The affected area (7.5 ha) is only around 0.2% of the mangrove area (3,771 ha) in Mombasa County, hence reduction of mangrove resource will be minimal. Mangroves are extensively distributed in Port Reitz, hence it is considered that there are still sufficient alternative habitats for mangrove dependent species.

Nevertheless, to mitigate the impacts of mangrove clearance, mangrove plantation is planned to be conducted under the following policy:

- Mangrove seedlings to be planted in degraded mangrove forest area as per the National Mangrove Ecosystem Management Plan (2017-2027) and Mombasa Participatory Forest Management Plan (2015-2019).
- Target species: 5 species found in the affected area
- Planting quantity: 1.5 times the number of cleared mangroves
- Location: Areas with no plans for future development and degraded mangrove forest area
- Implementation structure: KPA (planning, financing), KFS (technical assistance), local community (plantation, monitoring)

Detailed mangrove plantation plan is planned to be developed through consultation with KFS and local community, and finalized in the D/D stage when the port design and construction plans are further refined.

【Construction】

Marine construction works in Port Reitz such as dredging and reclamation works will directly or indirectly affect marine species such as fish and benthos. These activities however are not expected to have significant ecosystem impacts for the following reasons:

- Although around 10 ha of mangrove and mud flat area will be directly lost through reclamation works, there are still sufficient area of mangrove/mudflat habitats for dependent species in Port Reitz (approx. 2,000 ha) and even within the vicinity (approx. 30 ha within 2 km radius).
- Although benthic species in and around the dredging area will be affected by dredging works, most of the species in the area are opportunistic species (i.e. macrobenthos of annelids, crustaceans, nematodes) which in general have relatively high recovery potential. Hence it is likely that these species will gradually recover to its former level after dredging.
- Most fish species are mobile enough to avoid areas affected by dredging.

On the other hand, corals and seagrass in the coastal area are sensitive to stresses such as turbidity and therefore may be affected by offshore dumping works. To assess the potential impacts of offshore dumping activities on corals and seagrass, the ecology monitoring report of Container Port Modernization Project was analyzed, which is a similar port development project implemented in Port Reitz during 2012-2015 involving channel dredging and dumping of dredged material at the same location as this Project. Monitoring was conducted every 3 months at five locations along the coral reefs of Mombasa coastline nearest to the offshore dumping area. According to the monitoring results, there was no notable decrease in coral and seagrass coverage. Turbidity also remained at low levels (around 0-2 NTU). Also no issues were raised during interviews with experts from Kenya Marine and Fisheries Research Institute (KMFRI) and diving operators. In conclusion, dumping activities are unlikely to have any significant impacts on ecosystem such as coral reefs.

There are however uncertainties in how turbidity will actually disperse as it will be influenced by weather and oceanographic conditions at the time of dumping. The Project will therefore proactively and continuously monitor water quality and corals, and dumping methods will be revised in case any signs of impacts are identified in the process. Also if the timing of dredging and dumping overlaps with other dredging projects in Mombasa port, it will require coordination between both projects and further strengthen the ESMP and ESMoP as necessary.

【Operation】

Around 470,000 m³ of maintenance dredging is expected to be required every 5 years, which will likely be dumped offshore at the same location as in construction. Significant impacts on MPAs are not expected as dredging volume will only be around 15% of the initial dredging and period will be short-term.

There is certain risk that ship ballast water will introduce invasive marine species into the Mombasa marine environment. The KPA Pollution Control Section inspects all incoming vessels onboard for checking compliance with Ballast Water Management Convention and through means of checking ships ballast water record book. While the risk of ballast water impacts will somewhat remain, it is expected that such risks

will lower in the future in line with further development of ship ballast water exchange and treatment technologies.

ii) Road

【Pre-construction】

Prior to construction works, vegetation in the road RoW (approx.. 40 ha) will need to be cut and removed. According to the flora survey, the road area has low vegetation cover and mostly cultivated for farming. This implies that the road area has low ecological value. However, an IUCN threatened species *Vitellariopsis kirkii* was identified at two sites during flora survey (after revisiting the site, one of the *Vitellariopsis kirkii* no longer existed due to burning and farming). This species is endemic to Kenya and Tanzania but is not protected under Kenyan law. Regionally it is probably relatively wide-spread as its presence has been confirmed in kayas through the study of SEA of Mombasa SEZ and EIA of SBR. Therefore, removal of one *Vitellariopsis kirkii* is considered to be not of any significant consequence.

At the moment, it is planned to transplant *Vitellariopsis kirkii* to a nearby kaya but detailed method and location will be decided through consultation with KFS and NMK.

【Construction】

The road area is mostly cultivated for farming and there are no important ecosystem or habitats in the area. Hence, construction works are unlikely to have any ecological impacts.

(13) Resettlement

i) Road

【Pre-construction】

As per the RAP study, around 39 ha of land acquisition will be required for acquiring the road RoW. This will result in resettlement of 50 households (191 PAPs). No resettlement will be required for the port area.

(14) Vulnerable social groups

i) Road

【Pre-construction】

As per the RAP study, all affected 50 households are classified as vulnerable due to low income level. These PAPs will be vulnerable to resettlement related impacts especially as they often have limited financial resources to cope during the transition period.

(15) Indigenous/minority people

The majority of people living around the Project area belong to the Mijikenda tribe. Others belong to Luo or Kikuyu which are one of the most common tribes in Kenya. As per the screening criteria of World Bank OP4.10 (Article 4), the people in the Project area do not classify as indigenous/minority people. Table 11.3.32 shows the World Bank OP4.10 (Article 4) and screening results.

1. Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others.

<Screening Results>

The Project affected people do self-identify as a member of a distinct indigenous cultural group nor are recognized by others as such.

2. Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories.

<Screening Results>

The kaya in the Project area has been customarily used by the locals but there are no groups that are physically present and have economic ties.

3. Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture.

<Screening Results>

The Mijikenda are the dominant ethnic community in coastal region of Kenya.

4. An indigenous language, often different from the official language of the country or region.

<Screening Results>

There are two predominant languages spoken by Mijikenda i.e. Mijikenda (widely spoken local language at the coast) and Kiswahili (The National Language).

(16)Livelihood and regional economy**i) Port****【Construction】**

Artisanal fishermen fish in the Port Reitz area mainly by use of dugout canoe. These fishermen may experience reduced catch and subsequent income reduction associated with the disturbance caused through marine construction works such as dredging. Fish traders may also be affected as they rely on fish caught by the fishermen. There are 8 BMUs operating in Port Reitz and as per their registration data, there are around 1,600 fishermen and 800 fish traders. Impacts will be significant if all these fishermen and fish traders experience income reduction and no measures are implemented to assist them.

In past Mombasa port projects, fishermen were financially compensated, and the same is planned for this project as well. Compensation amount is calculated as shown in Table 11.3.32.

Table 11.3.32 Calculation Method of Fishermen Compensation

	Fishermen	Fish traders
Compensation period	Construction period + 2 years post-construction (assumption is that fish resources will fully recover in 2 years after construction)	
Compensation for construction period	Daily catch volume x fish price x construction period	Daily trade volume x sale per kg x construction period
Compensation for post-construction period (1 st year)	Daily catch volume x fish price x construction period x 50%	Daily trade volume x sale per kg x construction period x 50%

Compensation for post-construction period (2 nd year)	Daily catch volume x fish price x construction period x 25%	Daily trade volume x sale per kg x construction period x 25%
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Source: JICA Design Team

As per discussion with BMU, the following assistance measures are also planned:

- Provision of one motor boat per BMU
- Provision of cooler box for each BMU
- Capacity building training for fishermen (e.g. management of compensation money, offshore fishing methods)
- Establishment of new landing station (see 11.3.6(15) for details)

The planned compensation and assistance measures will require further refinement through discussions with BMU and other relevant organizations. In the process it is necessary to consider the construction plan and schedule of the Project based on the D/D study as well as consider future plans of other port projects as they may overlap with this Project.

Offshore dumping activities may also affect fisheries operating in the coastal/offshore areas. In regards to the coastal area, some artisanal fishermen fish along the coral reef area but these fishermen are unlikely to be affected as the dumping area is 6 km offshore, where impacts from dumping (e.g. turbidity dispersion) is unlikely to reach in accordance to past monitoring results of Container Port Modernization Project. In regards to the offshore area, industrial fisheries operate with longline to catch mainly tuna. Since the fishing ground of industrial fisheries extend over a wide area including EEZ, offshore dumping is unlikely to have any impacts on industrial fisheries.

ii) Road

【Pre-construction】

Most of the residents along the SEZ main road rely on land for their livelihood such as farming. The livelihood of these people if not adequately compensated will be greatly affected. However, since farming is conducted on a subsistence/small-scale level, impacts on regional economy will be limited.

【Construction】

Residents in and around the road area will experience income reduction in case temporary construction facilities are built in farmland.

(17) Land use and local resources

i) Port

【Construction】

Large volume of reclamation material will be required for cargo yard construction. Since these materials will be procured from local quarry with sufficient capacity, impacts on local resources are not expected.

ii) Road

【Pre-construction】

The current land use in the road area will no longer be possible after land acquisition. Due to the limited area, impact is considered not significant.

【Construction】

There may be some restrictions in current land use, in case temporary construction facilities are built for example over farmland. Due to the limited area, impact is considered not significant.

(18) Water use

i) Port

【Construction】

There is one fish landing site near the port namely Mkunguni landing site which is under Mtongwe BMU jurisdiction (see Figure 11.3.35). Access to this site will likely become difficult due to presence of marine construction works. Fishermen and associated traders using this site will therefore likely be required to use an alternative site.



Source: JICA Design Team

Figure 11.3.35 Location of Mkunguni Landing Site

The nearest landing site is Dongo Kundu located around 2.5 km west. However, since Dongo Kundu is under the jurisdiction of Mwangala BMU, it will be necessary to reach an agreement with Mwangala BMU for using their landing site. Another potential landing site will be Hawaii landing site located around 5 km east (see Figure 11.3.36).



Source: JICA Design Team

Figure 11.3.36 Location of Dongo Kundu and Hawaii Landing Sites

Since these alternative sites are relatively far from Mkunguni landing site, some fishermen and traders will need to expend extra time and effort to access to the landing site. Hence establishment of a more convenient site will need to be considered.

【Operation】

Fishing in the proposed port area will no longer be possible once port operation starts. However, impacts are limited as the area is not a major fishing ground and the fact that there are other fishing grounds.

(19) Social infrastructure and services

i) SEZ Main Road

【Construction】

The SEZ main road intersects with two community roads as shown in Figure 11.3.37.



Source: JICA Design Team

Figure 11.3.37 Community Roads Intersecting with SEZ Main Road (Light Blue)

The road shown on the left figure is used by some residents living in the east side of the SEZ main road (around 10 household). However, these people are expected to relocate during FTZ development, hence the road will no longer be required then onwards.

The road shown on the right figure is used by the community to access Likoni area. While this road is planned to be connected to SEZ main road, the road will be segmented temporary during construction. This will hinder access within the SEZ area.

(20) Cultural heritage

i) Port

【Construction】

A small kaya of around 0.1 ha in size (Kaya Mikadi) is located approximately 80 m west of the port as shown in Figure 11.3.38. Construction workers may affect the kaya and users.



Source: JICA Design Team

Figure 11.3.38 Location of Kaya Mikadi

(21) Gender

i) SEZ Main Road

【Pre-construction】

Due to the patriarchal nature of the society, women will likely be more vulnerable to resettlement related impacts.

(22) Children’s right

i) Port/SEZ main road

【Construction】

Since child labour is relatively common in Kenya, there is a possibility that underage children can be exploited for construction works. Also the majority of the households in the project area have low income levels hence there will be tendency for underage children to look for jobs to help their families.

Kenya is a signatory of ILO Minimum Age Convention 1973 and regulates child labour under the Employment Act as follows:

- Definition of child is a person who has not attained the age of eighteen years (Article 2)
- No person shall employ children under 13 years of age (Article 56).
- Light work is permitted for children between 13 to 16 years of age under certain conditions (Article 56)
- Children between 13 to 16 years of age are restricted to attend machinery (Article 58)
- No person shall employ a child in any opencast workings or sub-surface workings (Article 58)

The Act is consistent with the Minimum Age Convention for light work but does not set any age limits for potentially hazardous works (except machinery and mining), which is set as above 18 years under the Minimum Age Convention. Therefore, there is a certain possibility that children under 18 years can be employed for hazardous construction works. Furthermore, underage children may also be unintentionally employed as children may not have official documents to prove their age. It is therefore important to confirm the candidate's age through local government offices or other means.

(23) Infectious diseases

i) Port/SEZ Main Road

【Construction】

According to Mombasa County AIDS Strategic Plan 2016-2020, the HIV prevalence rate in Mombasa County is 7.4% (year 2014), which is higher than the national average of 5.6%. HIV prevalence rate is higher with women (10.5%) than men (4.5%). HIV patients are relatively high with sex workers, drug users and so on. Considering such situation, there are certain risks that incoming construction workers can become infected by HIV as well as spreading HIV.

(24) Occupational safety

i) Port

【Construction】

There is a moderate risk of occupational accidents associated with marine construction works such as falling into sea, diving incidents, boat sinking and so on.

【Operation】

There is a moderate risk of occupational accidents associated with cargo handling.

ii) SEZ Main Road

【Construction】

There is a moderate risk of occupational accidents associated with use of heavy construction vehicles and machines.

(25) Accidents

i) Port

【Construction】

There is a moderate risk of maritime accidents such as by movement of marine construction vessels.

ii) SEZ Main Road

【Construction】

There is a moderate risk of road accidents such as by movement of construction vehicles along public access roads. Risks will be high along commuting roads used by children and intersection with busy roads.

(26) Climate change

Port construction will result in loss of around 7.5 ha of mangrove cover. Impacts on climate change is considered negligible for the following reasons:

- Carbon stock in Kenya forest is estimated at 137 ton per hectare (FAO 2010). Therefore, loss of 7.5 ha of mangrove can be roughly estimated to result in reduction of 1,027 tonnes of carbon stock. This is equivalent to only around 0.00021% of the total forest carbon stock of Kenya, which is 476 million tonnes (FAO 2010).
- Kenya's Nationally Determined Contribution (NDC) under the Paris Agreement aims to abate its GHG emissions by 30% by 2030 relative to the BAU scenario. One of the proposed measures to achieve this target is to increase tree cover to at least 10% of the total land area. According to FAO (2010), the total forest area in Kenya is approximately 3.5 million hectares. Since the total land area of Kenya is approximately 57 million hectare, to achieve the 10% target (i.e. 5.7 million hectare) it is necessary to increase the forest area an additional 2.2 million hectare. While the loss of 7.5 ha of mangrove from this Project will somewhat hinder in achieving this target, overall it is not a major setback to Kenya's NDC.
- The mangrove plantation that are planned in this Project, is expected to significantly minimize the Project's impacts on climate change.

11.3.7 Impact Assessment

Table 11.3.33 shows the results of the impact assessment, based on the environmental and social consideration study.

Table 11.3.33 Results of Impact Assessment

	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
1	Air pollution	D	B-	B-	D	B-	D	<p>【Port/construction】 Significant impacts are not expected as construction activities are temporary and intermittent in character.</p> <p>【Port/operation】 Significant impacts are not expected as emissions from ships and cargo handling machines will be limited from operation of one berth.</p>
		D	B-	B-	D	B-	D	<p>【Road/construction】 Significant impacts are not expected as construction activities are temporary and intermittent in character.</p> <p>【Road/operation】 According to roadside air quality prediction study, impact of vehicle emissions on air quality will be negligible.</p>
2	Water pollution	D	A-	B-	D	B-	B-	<p>【Port/construction】 Around 3 million m3 of initial dredging will be required. According to the water quality monitoring results of other similar dredging project in Mombasa port, no significant water pollution was recorded most importantly along the coastal coral reef area. Significant water pollution is therefore not expected to occur with this Project as well.</p> <p>【Port/operation】 Around 470,000 m3 of maintenance dredging is expected to be required every 5 years. Water pollution risk will be less as dredging/dumping volume is only around 15% of the initial dredging.</p>
		D	B-	D	D	B-	D	<p>【Road/construction】 Water pollution may occur through sediment-laden rainwater runoff. Significant impacts are not expected as most of the sediment contained in rainwater runoff will likely settle in the shrub/mud flat area as runoff velocity reduces.</p>
3	Soil pollution	D	B-	D	D	B-	D	<p>【Road/construction】 Significant impacts are not expected as source of potential oil pollution is limited.</p>

	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
4	Waste	B-	B-	B-	D	B-	B-	<p>【Port/pre-construction】 The main waste will be vegetation remains from mangrove clearance. No impacts are expected as they can be reused locally such as for fuel.</p> <p>【Port/construction】 Significant impacts are not expected as all wastes are considered to be manageable through recycle or disposal at county waste disposal sites.</p> <p>【Port/operation】 Significant impacts are not expected as all wastes are considered to be manageable through recycle or disposal at county waste disposal sites.</p>
		B-	B-	B-	D	B-	B-	<p>【Road/pre-construction】 The main waste during pre-construction will be vegetation remains from tree clearance. No impacts are expected as they can be reused locally such as for fuel wood, furniture and building material.</p> <p>【Road/construction】 Significant impacts are not expected as all wastes are considered to be manageable through recycle or disposal at county waste disposal sites.</p> <p>【Road/operation】 Significant impacts are not expected as all wastes are considered to be manageable through recycle or disposal at county waste disposal sites.</p>
5	Noise/ vibration	D	B-	B-	D	B-	D	<p>【Port/construction】 Significant impacts are not expected as there are no sensitive receptors in the vicinity.</p> <p>【Port/operation】 No impacts are expected due to limited noise source and there are no sensitive receptors in the vicinity.</p>
		D	B-	B-	D	B-	B-	<p>【Road/construction】 Significant impacts are not expected as there will be no excessive noisy works such as pile driving.</p> <p>【Road/operation】 According to noise prediction study, roadside noise levels was predicted to exceed the Kenyan noise standard, which will affect few households in the vicinity of the road. No vibration impacts are expected as per vibration prediction study.</p>

	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
6	Offensive odor	D	B-	D	D	B-	D	【Port and road/construction】 Odor from asphalt plant may become a nuisance if established near sensitive areas.
7	Bottom sediment	D	B-	B-	D	D	D	【Port/construction】 Since no sediment contamination was identified in the dredging area through the sediment quality survey, sediment pollution is not expected. 【Port/operation】 Risk of sediment pollution will be low as Kenya is a signatory of the “International Convention on the Control of Harmful Anti-fouling Systems on Ships”, which prohibits ships entering Kenyan port of using anti-fouling paints.
8	Conservation area	D	A-	B-	D	B-	B-	【Port/construction】 Offshore dumping during initial dredging may affect MPAs. According to the water quality monitoring results of other similar dredging project in Mombasa port, no significant water pollution (i.e. turbidity elevation) was recorded most importantly along the coastal coral reef area. Significant impacts on MPAs are therefore not expected to occur with this Project as well. 【Port/operation】 Offshore dumping during initial dredging may affect MPAs. However risk will be less as dredging/dumping volume is only around 15% of the initial dredging.
9	Ecosystem	B-	A-	B-	B-	B-	B-	【Port/pre-construction】 Mangrove clearance will be required by it is not expected to have any significant impacts on the ecosystem as the area is not a protected area and there is other mangrove habitat in the surrounding areas. 【Port/construction】 Dredging and reclamation activities may affect marine life such as benthos, fish and corals. Significant impacts are not expected mainly as there is still other alternative habitats in the surrounding areas. Corals are unlikely to be affected as per past monitoring results of similar project. 【Port/operation】 Offshore dumping during initial dredging may affect corals but significant impacts are not expected as per past monitoring results of similar project.

	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
		B-	B-	D	B-	D	D	<p>【Road/pre-construction】 IUCN threatened species <i>Vitellariopsis kirkii</i> was identified at two sites</p> <p>【Road/construction】 The road area is mostly cultivated for farming and there are no important ecosystem or habitats in the area. Hence, construction works will have no ecological impacts.</p>
10	Resettlement	B-	D	D	B-	D	D	<p>【Road/pre-construction】 50 households (191 PAPs) will be required to resettle.</p>
11	Vulnerable social groups	B-	D	D	B-	D	D	<p>【Road/pre-construction】 All affected 50 households are classified as vulnerable due to low income level.</p>
12	Indigenous/ minority people	C	C	C	D	D	D	<p>There are no indigenous/minority people in the Project area.</p>
13	Livelihood	D	B-	D	D	A-	D	<p>【Port/construction】 Income of fishermen/traders are likely to be affected through reduction of fishery resources during construction works. Currently the affected numbers are 1,600 fishermen and 800 fish traders.</p>
		B-	B-	D	B-	B-	D	<p>【Road/pre-construction】 Residents in and around the road area may experience income reduction for example from loss of farmland.</p> <p>【Road/construction】 Residents in and around the road area may experience income reduction in case temporary construction facilities are built in for example farmland.</p>
14	Land use and local resources	D	B-	D	D	D	D	<p>【Port/construction】 Construction materials are planned to be procured from local quarry with sufficient capacity hence impacts on local resources are not expected.</p>
		B-	B-	D	B-	B-	D	<p>【Road/pre-construction】 The current land use in the road area will no longer be possible after land acquisition.</p> <p>【Road/construction】 There may be some restrictions in current land use in case temporary construction facilities are built in farmland.</p>

	Item	Rating of scoping			Rating after impact assessment			Rationale
		PC	C	O	PC	C	O	
15	Water use	D	B-	B-	D	B-	B-	<p>【Port/construction】 One fish landing site near the port may become difficult to access due to presence of marine construction works.</p> <p>【Port/operation】 One fish landing site near the port may become difficult to access due to port operation.</p>
16	Social 11-257 nfrast ructure and services	D	B-	D	D	B-	D	<p>【Road/construction】 A community road will be segmented temporary during construction, which will hinder access of the community.</p>
17	Cultural heritage	D	B-	D	D	B-	D	<p>【Port/construction】 Construction workers may affect kaya near the port.</p>
18	Gender	B-	D	D	B-	D	D	<p>【Road/pre-construction】 Due to the patriarchal nature of the society, women will be vulnerable to resettlement related impacts</p>
19	Children's right	D	B-	D	D	B-	D	<p>【Port and road/construction】 There is a possibility that underage children are exploited for construction works.</p>
20	Infectious diseases (HIV/AIDS etc.)	D	B-	D	D	B-	D	<p>【Port and road/construction】 There are risks that incoming construction workers can become infected by HIV as well as spreading HIV.</p>
21	Occupationa l safety	D	B-	B-	D	B-	B-	<p>【Port/construction】 There is a moderate risk of occupational accidents associated with marine construction works.</p> <p>【Port/operation】 There is a moderate risk of occupational accidents associated with cargo handling.</p>
		D	B-	D	D	B-	D	<p>【Road/construction】 There is a moderate risk of occupational accidents associated with use of heavy construction vehicles and machines.</p>
22	Accidents	D	B-	D	D	B-	D	<p>【Port/construction】 There is a moderate risk of maritime accidents.</p>
		D	B-	D	D	B-	D	<p>【Road/construction】 There is a moderate risk of road accidents.</p>
23	Climate change	B-	D	D	D	D	D	<p>【Port/pre-construction】 Impacts on climate change is considered negligible as affected area is limited.</p>

A+/-: Significant positive/negative impact is expected, B+/-: Positive/negative impact is expected to some extent., C+/-: Extent of positive/negative impact is unknown., D: No impact is expected

PC: Pre-construction, C: Construction, O: Operation

Source: JICA Design Team

11.3.8 Environmental and Social Management Plan

Tables 11.3.34 and 11.3.35 show the environmental and social management plan (ESMP) for the port and SEZ main road respectively.

Table 11.3.34 Environmental and Social Management Plan (Port)

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
Pre-construction					
Ecosystem	Cutting of mangrove trees (approx. 7.5 ha)	<ul style="list-style-type: none"> Mangroves to be planted in degraded mangrove forest area as per the National Mangrove Ecosystem Management Plan (2017-2027) and Mombasa Participatory Forest Management Plan (2015-2019). Detailed mangrove plantation plan will be prepared through consultation with KFS and local community. 	KPA Construction contractor	KFS	6,200,000 (to be included construction cost)
Construction					
Air pollution	Fugitive dust and exhaust emissions from construction vehicles	<ul style="list-style-type: none"> Implement regular maintenance and vehicles emitting visible pollutants (e.g. black soot) to be removed from operation until repaired as per Environmental Management and Co-ordination (Air Quality) Regulations 2014. Construction vehicles without inspection certificate will not be allowed to operate. Avoid to the extent possible passing through sensitive areas (e.g. residential area, schools). Slow driving on dusty roads within the community area. Cover truck loading bed when transporting loose materials (e.g. soil). 	Construction contractor	Supervising consultant KPA	Included in construction base cost
	Fugitive dust emission from heavy civil works	<ul style="list-style-type: none"> Regular water spraying of exposed surfaces. Covering of stockpiles. 	Construction contractor	Supervising consultant KPA	Included in construction base cost
	Dust and exhaust emissions from concrete/asphalt plant	<ul style="list-style-type: none"> Asphalt plant to acquire emission license from NEMA and comply with emission standard set under Environmental Management and Co-ordination (Air Quality) Regulations 2014. Concrete/asphalt plant to be located as far as possible from sensitive areas (e.g. residential area). Covering of stockpiles. 	Construction contractor	Supervising consultant KPA	Included in construction base cost
Water pollution	Sediment dispersion through dredging and offshore dumping of dredged material	<p>[Grab dredger]</p> <ul style="list-style-type: none"> Installation of silt curtain where dredging works are conducted. Ensure there are no leakage from equipment such as barge hopper seal. Prohibition of overflow from barge during transportation of dredged 	Construction contractor	Supervising consultant KPA	Included in construction base cost

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
		<p>material from the dredging site and dumping site.</p> <ul style="list-style-type: none"> • Tracking of barge movement during offshore dumping to ensure dumping is conducted at the designated site. <p>[TSHD]</p> <ul style="list-style-type: none"> • Prohibition of overflow during transportation of dredged material from the dredging site and dumping site. • Ensure there are no leakage from equipment such as hopper seal. • Use TSHD with keel-level overflow. • Maximize under-keel clearance to minimize propeller wash effect on seabed. • Tracking of dredger movement during offshore dumping to ensure dumping is conducted at the designated site. <p>[Common]</p> <ul style="list-style-type: none"> • Implement water quality and coral monitoring and reconsider dredging and dumping methods in case turbidity levels exceeds set threshold level or coral health degradation is observed (see monitoring plan for more details). • In case dredging works overlap with other Mombasa port dredging projects, coordinate with those projects and revise and strengthen the ESMP and ESMoP as necessary. 			
	<p>Uncontrolled discharge of concrete wash water</p>	<ul style="list-style-type: none"> • Discharge of untreated concrete wash water to the environment to be strictly prohibited. • Concrete wash water to be treated at designated facilities (e.g. facilities with wash water treatment system). • Treated wash water to be reused as far as possible. • Acquire effluent discharge license from NEMA in case discharge to environment is planned. Effluent quality (e.g. pH) to comply with discharge standard set under Environmental Management and Coordination, (Water Quality) Regulations 2006. 	<p>Construction contractor</p>	<p>Supervising consultant KPA</p>	<p>Included in construction base cost</p>

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
	Wastewater discharge from temporary construction facilities.	<ul style="list-style-type: none"> Wastewater (e.g. grey/blackwater) from temporary construction facilities to be treated with sewage treatment facility (e.g. septic tank) as per Kenyan regulations or norms. 	Construction contractor	Supervising consultant KPA	Included in construction base cost
Soil pollution	Oil leak/spill from construction vehicles/machines and fueling area	<ul style="list-style-type: none"> Regular inspection of vehicles and machines for oil and fuel leaks. Leaking vehicles and machines to be immediately moved to a designated workshop and not used until repaired. Maintenance/repair activities to be conducted only at designated workshop with appropriate pollution control facility (e.g. oil/water separator). Spill response kit (e.g. absorbents) to be readily available at the construction site. Spills to be removed with absorbents and contained and disposed as hazardous waste. Fuel tank to be installed on an impermeable base with bunds. Install oil/water separator at fueling area. 	Construction contractor	Supervising consultant KPA	Included in construction base cost
Waste	Generation of construction solid waste (e.g. domestic waste, packaging material, metal scrap, medical waste)	<ul style="list-style-type: none"> Minimize waste generation through reuse and recycling. Wastes to be stored in designated areas and with containers specialized for each waste type. Wastes to be collected and disposed only by NEMA-authorized firms. Medical waste to be segregated from other wastes and disposed at NEMA-authorized facilities. Construction contractor to prepare a Construction Waste Management Plan (CWMP) through consultation with the county government, which identifies the different wastes that will be generated and their proposed storage and disposal procedures. Tracking and keeping records of waste movement and disposal. 	Construction contractor	Supervising consultant KPA NEMA County government	Included in construction base cost
	Generation of hazardous waste (e.g. waste oil)	<ul style="list-style-type: none"> Hazardous wastes to be stored in designated areas and with containers specialized for each waste type. Storage area to be have an impermeable base with bunds. Hazardous wastes to be collected and disposed only by NEMA-authorized firms. 			

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
Noise/vibration	Noise from construction vehicles/machine and pile driving works	<ul style="list-style-type: none"> Equip vehicles and machines with exhaust mufflers and carry out regular maintenance/inspection. Prohibit using vehicles that exceed 84 dBA when accelerating as per Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. Avoid to the extent possible using roads that pass through sensitive areas. If unavoidable, implement speed control measures (e.g. installation of speed bumps) near sensitive areas and avoid raving of engines and unnecessary idling. Use to the extent possible low-noise pile driver. Conduct pile-driving works in a manner so that noise levels do not exceed the construction site noise standard set under Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. Obtain permit from NEMA in case there are works involving excessive noise/vibration as per Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. Install warning signs and use PPE (e.g. earmuff) where excessive noisy works are conducted. 	Construction contractor	Supervising consultant KPA	Included in construction base cost
Odor	Odor from asphalt plant and construction camps	<ul style="list-style-type: none"> Asphalt plant to be located as far as possible from sensitive areas. Operate asphalt plant at minimum temperature. Cover truck loading bed when transporting asphalt. Food waste from construction camp to be segregated from other wastes and stored in manner to prevent odor. Toilets to be cleaned daily and sludge to be removed regularly. 	Construction contractor	Supervising consultant KPA	Included in construction base cost
Conservation area	Sediment dispersion through offshore dumping of dredged material	<ul style="list-style-type: none"> Prohibition of overflow during transportation of dredged material from the dredging site and dumping site. Tracking of dredger/barge movement during offshore dumping to ensure dumping is conducted at the designated site. Implement water quality and coral monitoring and reconsider dredging and dumping methods in case turbidity levels exceeds set threshold level or coral health degradation is observed (see monitoring plan for more details). 	Construction contractor	Supervising consultant KPA	Included in construction base cost

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
		<ul style="list-style-type: none"> In case dredging works overlap with other Mombasa port dredging projects, coordinate with those projects and revise and strengthen the ESMP and ESMoP as necessary. 			
Ecosystem	Sediment dispersion through dredging and offshore dumping of dredged material	<ul style="list-style-type: none"> Implement measures stated under “Water Pollution”. 	Construction contractor	Supervising consultant KPA	Included in construction base cost
Livelihood	Impact of marine construction works on fishing activities	<ul style="list-style-type: none"> Provision of compensation and assistance to affected fishermen/traders. If requested, preferentially employ affected fishermen for casual labor. 	KPA Construction contractor	BMU KeFS	To be estimated in D/D stage
Water use	Restriction in use of fish landing site	<ul style="list-style-type: none"> Establish alternative landing site. 	KPA	BMU KeFS	1,000,000
Cultural heritage	Impact on Kaya Mikadi	<ul style="list-style-type: none"> Prohibit entrance of construction workers inside kaya. Demarcation of kaya boundary and erection of sign post, to ensure that workers do not enter the kaya. 	Construction contractor	Supervising consultant KPA	—
Children’s right	Employment of underaged children	<ul style="list-style-type: none"> As per Employment Act 2007, children under 13 years of age will not be employed. As per Employment Act 2007, children between 13 and 16 years of age will not be employed for works that are potentially harmful and prejudice the child’s attendance at school. Prohibit employment of children under 18 years of age for potentially harmful works. 	Construction contractor	Supervising consultant KPA	—
	Exploitation of underaged children	<ul style="list-style-type: none"> Contractor to prepare Code of Conduct for construction workers. 	Construction contractor	Supervising consultant KPA	—
Infectious diseases	Proliferation of infectious diseases due to influx of construction workers	<ul style="list-style-type: none"> Contractor to prepare and implement HIV/AIDS Prevention/Awareness Plan in accordance to HIV and AIDS Prevention and Control Act 2006. The plan shall among others include the following: <ul style="list-style-type: none"> Awareness programs for construction workers Code of Conduct to be complied by the construction workers 	Construction contractor	Supervising consultant KPA NACC	Included in construction base cost

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
		<ul style="list-style-type: none"> - Other measures (e.g. counselling and testing) • Contractor to subcontract implementation of the HIV/AIDS Prevention/Awareness Plan to qualified organizations in this field. 			
Occupational safety	Risk of occupational accidents	<ul style="list-style-type: none"> • Contractor to prepare Occupational Health and Safety Plan in accordance to Occupational Safety and Health Act 2007. The plan shall among others include the following: <ul style="list-style-type: none"> - Risk assessment and planned safety measures - Training plan for construction workers - Organizational structure - Emergency response plan 	Construction contractor	Supervising consultant KPA DOSHS	Included in construction base cost
Accidents	Risk of maritime accidents	<ul style="list-style-type: none"> • Inform in advance marine users the construction plan. • Installation of buoys along construction boundary. 	Construction contractor	Supervising consultant KPA	Included in construction base cost

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
Operation					
Water pollution	Sediment dispersion through dredging and offshore dumping of dredged material	<p>[Grab dredger]</p> <ul style="list-style-type: none"> • Installation of silt curtain where dredging works are conducted. • Ensure there are no leakage from equipment such as barge hopper seal. • Prohibition of overflow from barge during transportation of dredged material from the dredging site and dumping site. • Tracking of barge movement during offshore dumping to ensure dumping is conducted at the designated site. <p>[TSHD]</p> <ul style="list-style-type: none"> • Prohibition of overflow during transportation of dredged material from the dredging site and dumping site. • Ensure there are no leakage from equipment such as hopper seal. • Use TSHD with keel-level overflow. • Maximize under-keel clearance to minimize propeller wash effect on seabed. • Tracking of dredger movement during offshore dumping to ensure dumping is conducted at the designated site. <p>[Common]</p> <ul style="list-style-type: none"> • Implement water quality and coral monitoring and reconsider dredging and dumping methods in case turbidity levels exceeds set threshold level or coral health degradation is observed (see monitoring plan for more details). • In case dredging works overlap with other Mombasa port dredging projects, coordinate with those projects and revise and strengthen the ESMP and ESMoP as necessary. 	Dredging contractor	KPA	Included in operation base cost
	Rainwater runoff from port facilities	<ul style="list-style-type: none"> • Minimize oil leak/spill through regular maintenance of cargo handling machines • Installation of oil/water separator (during construction) along the drainage and regularly collect residual oil. 	<p>Port operator</p> <p>Construction contractor</p>	KPA	Oil/water separator: Included in construction base cost

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
	Wastewater discharge from ships	<ul style="list-style-type: none"> Regulate ship wastewater as per Environmental (Prevention of Pollution in Coastal Zone and other Segments of the Environment) Regulations 2003 and Marpol regulations. 	Port operator KPA	KMA	Included in operation base cost
Waste	Generation of operation waste	<ul style="list-style-type: none"> Wastes to be handled and disposed only by NEMA-authorized firms. Waste disposal containers to be provided onsite for each waste category. Preparation of Waste Management Plan (WMP) that identifies the different wastes that will be generated and their proposed disposal procedure 	Port operator	KPA NEMA County government	Included in operation base cost
Conservation area	Sediment dispersion through offshore dumping of dredged material	<ul style="list-style-type: none"> Prohibition of overflow during transportation of dredged material from the dredging site and dumping site. Tracking of dredger/barge movement during offshore dumping to ensure dumping is conducted at the designated site. Implement water quality and coral monitoring and reconsider dredging and dumping methods in case turbidity levels exceeds set threshold level or coral health degradation is observed (see monitoring plan for more details). 	Dredging contractor	KPA	Included in operation base cost
Ecosystem	Sediment dispersion through offshore dumping of dredged material	<ul style="list-style-type: none"> Implement measures stated under "Water pollution". 	Dredging contractor	KPA	Included in operation base cost
Occupational safety	Risk of occupational accidents	<ul style="list-style-type: none"> Preparation of Occupational Health and Safety Plan in accordance with Occupational Safety and Health Act 2007. The plan shall include the following: <ul style="list-style-type: none"> Risk assessment and planned safety measures Training plan for operation workers Organizational structure Emergency response plan 	Port operator	KPA	Included in operation base cost

Source: JICA Design Team

Table 11.3.35 Environmental and Social Management Plan (SEZ Main Road)

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
Pre-construction					
Ecosystem	Cutting of threatened tree species (one <i>Vitellariopsis kirkii</i>)	<ul style="list-style-type: none"> Transplantation of <i>Vitellariopsis kirkii</i>. Detailed transplantation plan to be prepared through consultation with KFS. 	KeNHA	KFS NMK	300,000
Resettlement	Resettlement due to land acquisition	<ul style="list-style-type: none"> Carry out fair and adequate compensation as per RAP and provide livelihood restoration assistance until their livelihoods are restored to pre-project levels or better. Implement internal and external monitoring to ensure the RAP is implemented appropriately. A grievance redress mechanism (e.g. establishment of PAP Committee) will be put in place to address all emerging complaints and grievances from the PAPs and project area community. 	KeNHA NLC	RAP implementation committee	Included in RAP budget
Vulnerable persons	Resettlement of vulnerable persons due to land acquisition	<ul style="list-style-type: none"> Vulnerable households to be provided with extra assistance as per RAP. 	KeNHA NLC	RAP implementation committee	Included in RAP budget
Livelihood	Loss of income due to land acquisition	<ul style="list-style-type: none"> Provision of compensation and assistance as per RAP until income are restored to pre-project levels or better. 	KeNHA NLC	RAP implementation committee	Included in RAP budget
Land use	Alteration of land use due to land acquisition	<ul style="list-style-type: none"> Provision of compensation and assistance as per RAP until income are restored to pre-project levels or better. 	KeNHA NLC	RAP implementation committee	Included in RAP budget
Gender	Resettlement of women HHs due to land acquisition	<ul style="list-style-type: none"> Women HHs to be provided with extra assistance as per RAP. Hold women focused group meetings as necessary. Allocate women representative in the PAP committee. 	KeNHA NLC	RAP implementation committee	Included in RAP budget
Construction					

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
Air pollution	Fugitive dust and exhaust emissions from construction vehicles	<ul style="list-style-type: none"> Implement regular maintenance and vehicles emitting visible pollutants (e.g. black soot) to be removed from operation until repaired as per Environmental Management and Co-ordination (Air Quality) Regulations 2014. Construction vehicles without inspection certificate will not be allowed to operate. Avoid to the extent possible passing through sensitive areas (e.g. residential area, schools). Slow driving on dusty roads within the community area. Cover truck loading bed when transporting loose materials (e.g. soil). 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
	Fugitive dust emission from heavy civil works	<ul style="list-style-type: none"> Regular water spraying of exposed surfaces. Covering of stockpiles. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
	Dust and exhaust emissions from concrete/asphalt plant	<ul style="list-style-type: none"> Asphalt plant to acquire emission license from NEMA and comply with emission standard set under Environmental Management and Co-ordination (Air Quality) Regulations 2014. Concrete/asphalt plant to be located as far as possible from sensitive areas. Covering of stockpiles. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
Water pollution	Sediment-laden rainwater runoff from construction site	<ul style="list-style-type: none"> Exposed cut and fill slopes to be protected (e.g. by shotcrete) as soon as cut and fill works are completed. Install temporary erosion control measures (e.g. sheet cover, sedimentation pond) as necessary. Stockpiles (e.g. topsoil) to be covered by sheet. Temporary construction yard to be located as far as possible from surface water bodies. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
	Uncontrolled discharge of concrete wash water	<ul style="list-style-type: none"> Discharge of untreated concrete wash water to the environment to be strictly prohibited. Concrete wash water to be treated at designated facilities (e.g. facilities with wash water treatment system). Treated wash water to be reused as far as possible. Acquire effluent discharge license from NEMA in case discharge to environment is expected. Effluent quality (e.g. pH) to comply with discharge standard set under Environmental Management and Coordination, (Water Quality) Regulations 2006. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
	Wastewater discharge from temporary construction facilities.	<ul style="list-style-type: none"> Wastewater (e.g. grey/blackwater) from temporary construction facilities to be treated with sewage treatment facility (e.g. septic tank) as per Kenyan regulations or norms. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
Soil pollution	Oil leak/spill from construction vehicles/machines and fueling area	<ul style="list-style-type: none"> Regular inspection of vehicles and machines for oil and fuel leaks. Leaking vehicles and machines to be immediately moved to a designated workshop and not used until repaired. Maintenance/repair activities to be conducted only at designated workshop with appropriate pollution control facility (e.g. oil/water separator). Spill response kit (e.g. absorbents) to be readily available at the construction site. Spills to be removed with absorbents and contained and disposed as hazardous waste. Fuel tank to be installed on an impermeable base with bunds. Install oil/water separator at fueling area. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
Waste	Generation of construction solid waste (e.g. domestic waste, packaging material, metal scrap, medical waste)	<ul style="list-style-type: none"> Minimize waste generation through reuse and recycling. Wastes to be stored in designated areas and with containers specialized for each waste type. Wastes to be collected and disposed only by NEMA-authorized firms. Medical waste to be segregated from other wastes and disposed at NEMA-authorized facilities. Construction contractor to prepare a Construction Waste Management Plan (CWMP) through consultation with the county government, which identifies the different wastes that will be generated and their proposed storage and disposal procedures. Tracking and keeping records of waste movement and disposal. 	Construction contractor	Supervising consultant KeNHA NEMA County government	Included in construction base cost
	Generation of hazardous waste (e.g. waste oil)	<ul style="list-style-type: none"> Hazardous wastes to be stored in designated areas and with containers specialized for each waste type. Storage area to be have an impermeable base with bunds. Hazardous wastes to be collected and disposed only by NEMA-authorized firms. 			
Noise/vibration	Noise from construction	<ul style="list-style-type: none"> Equip vehicles and machines with exhaust mufflers and carry out regular maintenance/inspection. Prohibit using vehicles that exceed 84 dBA when accelerating as per 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
	vehicles/machine and sites	<p>Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009.</p> <ul style="list-style-type: none"> • Avoid to the extent possible using roads that pass through sensitive areas. If unavoidable, implement speed control measures (e.g. installation of speed bumps) near sensitive areas and avoid raving of engines and unnecessary idling. • Obtain permit from NEMA in case there are works involving excessive noise/vibration as per Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. • Install warning signs and use PPE (e.g. earmuff) where excessive noisy works are conducted. 			
Odor	Odor from asphalt plant and construction camps	<ul style="list-style-type: none"> • Asphalt plant to be located as far as possible from sensitive areas. • Operate asphalt plant at minimum temperature. • Cover truck loading bed when transporting asphalt. • Food waste from construction camp to be segregated from other wastes and stored in manner to prevent odor. • Toilets to be cleaned daily and sludge to be removed regularly. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
Livelihood	Temporary loss of income due to construction-related disturbances	<ul style="list-style-type: none"> • In case temporary construction facilities will affect livelihood of the locals such as farming, the affected persons to be compensated depending on the degree of impact. • Inform well in advance the affected persons about the construction plan so that they can harvest their crops and their request can be incorporated into the plan. • Casual labor to be resourced from the local community. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
Land use and local resource	Procurement of construction raw materials (e.g. aggregates)	<ul style="list-style-type: none"> • Construction raw materials to be procured only from NEMA authorized quarries. • Contractor to obtain EIA license in case the Contractor will develop new quarries. The quarry to be rehabilitated once it is decommissioned. • Quarry to be operated in accordance to Integrated National Land use Guidelines 2011. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
Social infrastructure	Division of community road	<ul style="list-style-type: none"> • Construct detour road in case construction works will hinder the use of existing community road. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
				KeRRA	
Children's right	Employment of underaged children	<ul style="list-style-type: none"> As per Employment Act 2007, children under 13 years of age will not be employed. As per Employment Act 2007, children between 13 and 16 years of age will not be employed for works that are potentially harmful and prejudice the child's attendance at school. Prohibit employment of children under 18 years of age for potentially harmful works. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
	Exploitation of underaged children	<ul style="list-style-type: none"> Contractor to prepare Code of Conduct for construction workers. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
Infectious diseases	Proliferation of infectious diseases due to influx of construction workers	<ul style="list-style-type: none"> Contractor to prepare and implement HIV/AIDS Prevention/Awareness Plan in accordance to HIV and AIDS Prevention and Control Act 2006. The plan shall among others include the following: <ul style="list-style-type: none"> Awareness programs for construction workers Code of Conduct to be complied by the construction workers Other measures (e.g. counselling and testing) Contractor to subcontract implementation of the HIV/AIDS Prevention/Awareness Plan to qualified organizations in this field. 	Construction contractor	Supervising consultant KeNHA NACC	Included in construction base cost
Occupational safety	Risk of occupational accidents	<ul style="list-style-type: none"> Contractor to prepare Occupational Health and Safety Plan in accordance to Occupational Safety and Health Act 2007. The plan shall among others include the following: <ul style="list-style-type: none"> Risk assessment and planned safety measures Training plan for construction workers Organizational structure Emergency response plan 	Construction contractor	Supervising consultant KeNHA DOSHS	Included in construction base cost
Accidents	Risk of traffic accidents	<ul style="list-style-type: none"> Strict compliance to speed limits. Avoid to the extent possible using roads with high risk of accidents. If unavoidable, implement measures to minimize risks such as installing speed bumps, warning signs and placing traffic control officers at high risk areas. Vehicle motion alarm to be installed on all construction vehicles. 	Construction contractor	Supervising consultant KeNHA	Included in construction base cost
Operation					

Item	Potential impact	Mitigation measure	Implementation responsibility	Supervision responsibility	Approx. cost (KES)
Waste	Generation of maintenance waste	<ul style="list-style-type: none"> Wastes to be handled and disposed only by NEMA-authorized firms. Waste disposal containers to be provided onsite for each waste category. Preparation of Waste Management Plan (WMP) that identifies the different wastes that will be generated and their proposed disposal procedure 	Maintenance contractor	KeNHA NEMA County government	Included in operation base cost
Noise/vibration	Noise from vehicles	<ul style="list-style-type: none"> Establishment of green belt along sensitive areas. Regular maintenance of green belt and road. 	Construction contractor Maintenance contractor	KeNHA	Construction cost: 5,000,000 Maintenance cost: Included in operation base cost

Source: JICA Design Team

11.3.9 Environmental and Social Monitoring Plan

Tables 11.3.36 and 11.3.37 show the environmental and social monitoring plan (ESMoP) for the port and SEZ main road respectively. Tables 11.3.38 and 11.3.39 show the environmental monitoring form for the port and SEZ main road respectively.

Table 11.3.36 Environmental and Social Monitoring Plan (Port)

Item	Aim	Method	Frequency	Implementation responsibility	Approx. cost (KES)
Pre-construction					
Ecosystem	To check the progress and effectiveness of mangrove plantation plan	➤ Check growth status (e.g. height, survival, health) of planted mangrove seedling.	2/year until 5 years after plantation	KPA	1,900,000
Construction					
Air pollution	To check whether excessive dust and exhaust gas are not emitted from the construction sites	➤ Visual inspection of: <ul style="list-style-type: none"> - Fugitive dust emissions from construction sites - Exhaust gas emissions (e.g. black soot) from construction vehicles and machines 	Daily	Construction contractor	Part of construction base cost
	To check stack emission concentration from asphalt plant	➤ Measurement of stack emission concentration ➤ Parameters: PM10, Sox, Nox, HC ➤ Assessment criteria: Emission standard set under Environmental Management and Co-ordination (Air Quality) Regulations 2014	4/year	Construction contractor	500,000
Water pollution	To check turbidity dispersion from dredging and dumping activities	[Turbidity monitoring]	Pre-construction: 7 days (baseline study) Construction: Daily during dredging	Construction contractor	13,000,000
		➤ Method: <i>In situ</i> measurement of surface and bottom turbidity (NTU) around dredging area (4 sites), MPA/coral reef area (6 sites) and between dredging area and dumping site (6 sites)			
		➤ Assessment criteria (coral reef area): Baseline + 2 NTU. Dredging/dumping method to be reconsidered in case turbidity exceeds the set criteria for 2 weeks continuously. ➤ Assessment criteria (dredging area): Baseline + 15 NTU. Dredging method to be reconsidered in case turbidity exceeds the set criteria for 2 weeks continuously.			
	[Other water quality monitoring]	Pre-construction: 7 days (baseline study) Construction: Weekly	Construction: Weekly		
	➤ Method: Measurement of DO, SS, T-N, T-P, Coliforms at dredging area (4 sites) and MPA/coral reef area (6 sites) ➤ Analysis to be done at NEMA certified lab. ➤ Assessment criteria: comparison with baseline values				
	[Aerial monitoring]	➤ Method: Taking of aerial photographs along the MPA/coral reef area and dredger/barge transport route such as by drone.	Construction: Weekly		

Item	Aim	Method	Frequency	Implementation responsibility	Approx. cost (KES)
		➤ Assessment criteria: Check presence of turbid plumes at MPA/coral reef area and if any are generated from travelling dredger/barge.			
	To check the water quality of treated concrete washwater	<ul style="list-style-type: none"> ➤ Method: Measurement of water quality of treated concrete washwater ➤ Parameters: pH ➤ Assessment criteria: Effluent standard (6.5-8.5) set under Environmental Management and Coordination (Water Quality) Regulations 2006 	Prior to discharge	Construction contractor	500,000
Soil pollution	To check of any oil leaks from construction vehicles/machines and fuel tank	➤ Visual inspection of oil leaks from construction vehicle/machines and fuel tanks.	Daily	Construction contractor	Part of construction base cost
Waste	To check whether wastes are stored and handled in accordance to the contractor's Waste Management Plan	<ul style="list-style-type: none"> ➤ Method: Site inspection and checking of waste treatment/disposal records. ➤ Assessment criteria: Waste storage method, site littering, waste treatment/disposal records. 	Daily 4/year	Construction contractor Supervising consultant	Part of construction / supervision base cost
Noise / vibration	To check whether excessive noise is not emitted from the construction sites	<ul style="list-style-type: none"> ➤ Method: Field measurement of noise level (LAeq) ➤ Location: Construction site boundary (2 sites), sensitive receptors (3 sites) ➤ Assessment criteria (construction site boundary): Noise standard set under Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. Daytime: 60 dB, Nighttime: 35 dB ➤ Assessment criteria (sensitive receptors): Noise standard set under Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. Daytime: 50 dB, Nighttime: 35 dB 	Pre-construction: Once Construction: 1/week	Construction contractor	500,000
Odor	To check whether excessive odor is not emitted from the asphalt plant	➤ Check odor at sensitive receptors near the asphalt plant.	1/week	Construction contractor	Part of construction base cost

Item	Aim	Method	Frequency	Implementation responsibility	Approx. cost (KES)
Conservation area	To check impacts on MPA due to offshore dumping of dredged materials	➤ Check impacts on MPA by interviewing managers of MPA.	1/month during dredging	Supervising consultant KPA	Part of supervision base cost
Ecosystem	To check impacts on coastal ecosystem due to offshore dumping of dredged materials	<ul style="list-style-type: none"> ➤ Method: Transect survey along the coral/seagrass habitats in the coastal/MPA areas ➤ Item: Coral and seagrass ➤ No. of transect: 8 transects each for coral and seagrass ➤ Assessment criteria: Coral/seagrass cover, health status (e.g. sedimentation, bleaching, mucus secretion). Dredging/dumping method to be reconsidered in case degradation of coral/seagrass health is observed. ➤ Survey to be conducted by marine ecology expert. 	2/month during dredging	Construction contractor	2,600,000
Livelihood	To check the progress and effectiveness of fishermen Livelihood Restoration Plan	➤ Interview BMU members and confirm status of fish landing, motor boat usage, training effectiveness and so on.	1/month during construction and until 2 years post-construction	KPA	480,000
Water use	To check status of how alternative landing site is used	➤ Interview BMU members and confirm if there are any issues with fish landing usage	1/month during construction and until 2 years post-construction	KPA	Included in above cost
Cultural heritage	To check impacts on Kaya Mikadi	➤ Check of any presence of workers inside or around kaya through patrol.	Daily	Construction contractor	Part of construction base cost
Children's right	To check whether there are any child labour	➤ Check employment registration of the Contractor (confirm its accuracy with local administration office).	4/year	Supervising consultant	Part of supervision base cost
Infectious diseases	To check the progress and effectiveness of HIV/AIDS Prevention Plan	<ul style="list-style-type: none"> ➤ Method: Checking through meetings and reports. ➤ Assessment criteria: Records of awareness programs, counselling, number of participants 	4/year	Supervising consultant	Part of supervision base cost
Occupational safety	To check whether safety procedures are implemented in accordance to Occupational Health and Safety Plan	➤ Visual inspection of work safety procedures and equipment.	Daily	Construction contractor Supervising consultant	Part of construction / supervision base cost
Accident	To check status of maritime accidents	➤ Method: Checking through meetings and reports.	1/week	Supervising consultant	Part of supervision base cost

Item	Aim	Method	Frequency	Implementation responsibility	Approx. cost (KES)
		➤ Assessment criteria: Number and types of accidents, risk minimization measures			
Operation					
Water pollution	To check impacts from rainwater runoff	➤ Check of any presence of oil film at rainwater runoff discharge site	During rain	KPA	Part of operation base cost
	To check turbidity dispersion from dredging and dumping activities	[Turbidity monitoring]	Pre-construction: 7 days (baseline study) Construction: Daily during dredging, Weekly for between MPA/coral reef area and dumping site	Dredging contractor	2,200,000
		➤ Method: <i>In situ</i> measurement of surface and bottom turbidity (NTU) around dredging area (4 sites), MPA/coral reef area (6 sites) and between dredging area and dumping site (6 sites)	Construction: Daily during dredging, Weekly for between MPA/coral reef area and dumping site		
		➤ Assessment criteria (coral reef area): Baseline + 2 NTU. Dredging/dumping method to be reconsidered in case turbidity exceeds the set criteria for 2 weeks continuously. ➤ Assessment criteria (dredging area): Baseline + 15 NTU. Dredging method to be reconsidered in case turbidity exceeds the set criteria for 2 weeks continuously.			
[Other water quality monitoring]	Pre-construction: 7 days (baseline study) Construction: Weekly				
		[Aerial monitoring]	Construction: Weekly		
		➤ Method: Taking of aerial photographs along the MPA/coral reef area and dredger/barge transport route such as by drone. ➤ Assessment criteria: Check presence of turbid plumes at MPA/coral reef area and if any are generated from travelling dredger/barge.			
Waste	To check whether wastes are stored and handled in accordance to the Waste Management Plan	➤ Visual inspection of waste storage sites. ➤ Check records of waste treatment/disposal.	4/year	KPA	Part of operation base cost
Conservation area	To check impacts on MPA due to offshore dumping of dredged materials	➤ Check impacts on MPA by interviewing managers of MPA.	1/month during dredging	KPA	Part of operation base cost

Item	Aim	Method	Frequency	Implementation responsibility	Approx. cost (KES)
Ecosystem	To check impacts on corals due to offshore dumping of dredged materials	<ul style="list-style-type: none"> ➤ Method: Transect survey along the coral/seagrass habitats in the coastal/MPA areas ➤ Item: Coral and seagrass ➤ No. of transect: 8 transects each for coral and seagrass ➤ Assessment criteria: Coral/seagrass cover, health status (e.g. sedimentation, bleaching, mucus secretion). Dredging/dumping method to be reconsidered in case degradation of coral/seagrass health is observed. ➤ Survey to be conducted by marine ecology expert. 	2/month during dredging	Dredging contractor	430,000
Occupational safety	To check whether safety procedures are implemented in accordance to Occupational Health and Safety Plan	<ul style="list-style-type: none"> ➤ Visual inspection of work safety procedures and equipment. 	1/week	KPA	Part of operation base cost

Source: JICA Design Team

Table 11.3.37 Environmental Monitoring Plan (SEZ Main Road)

Item	Aim	Method	Frequency	Implementation responsibility	Approx. cost (KES)
Pre-construction					
Ecosystem	To check the progress and effectiveness of plantation of threatened species	➤ Check growth status (e.g. height, survival, health) of planted trees.	2/year until 5 years after plantation	KeNHA	1,900,000
Resettlement	To check the progress and effectiveness of RAP	Internal monitoring ➤ Check status of compensation disbursement, land purchase, structures, livelihood, standards of living etc.	• 1/month during RAP implementation • Quarterly after RAP implementation for 1 year	KeNHA	Included in RAP monitoring budget
		External monitoring ➤ Check status of compensation disbursement, land purchase, structures, livelihood, standards of living, grievance issues etc.	• 2/year during RAP implementation • 2/year after RAP implementation for 1 year	KeNHA contract third party	Included in RAP monitoring budget
Vulnerable social groups	To check the effectiveness of assistance measures for vulnerable PAPs	➤ As part of RAP monitoring, check status of livelihood and standards of living of vulnerable PAPs.	• 1/month during RAP implementation • Quarterly after RAP implementation for 1 year	KeNHA	Included in RAP monitoring budget
Livelihood	To check the effectiveness of livelihood recovery measures	➤ As part of RAP monitoring, check status of livelihood and standards of living of PAPs.	• 1/month during RAP implementation • Quarterly after RAP implementation for 1 year	KeNHA	Included in RAP monitoring budget
Land use	To check the effectiveness of livelihood recovery measures	➤ As part of RAP monitoring, check status of livelihood and standards of living of PAPs that were dependent on land for livelihood.	• 1/month during RAP implementation • Quarterly after RAP implementation for 1 year	KeNHA	Included in RAP monitoring budget
Gender	To check the effectiveness of assistance measures for women HH	➤ As part of RAP monitoring, check status of livelihood and standards of living of women HH.	• 1/month during RAP implementation • Quarterly after RAP implementation for 1 year	KeNHA	Included in RAP monitoring budget
Construction					
Air pollution	To check whether excessive dust and exhaust gas are not	➤ Visual observation of: - Fugitive dust emissions from construction sites	Daily	Construction contractor	Part of construction base cost

Item	Aim	Method	Frequency	Implementation responsibility	Approx. cost (KES)
	emitted from the construction sites	- Exhaust gas emissions (e.g. black soot) from construction vehicles and machines			
		<ul style="list-style-type: none"> ➤ Method: Measurement of PM10 ➤ Location: Sensitive receptors (3 sites) ➤ Assessment criteria: PM10 standard (100 µg/m³) set under Environmental Management and Co-ordination (Air Quality) Regulations 2014 	Pre-construction: Once Construction: 1/week	Construction contractor	3,000,000
	To check stack emission concentration from asphalt plant	<ul style="list-style-type: none"> ➤ Method: Measurement of stack emission concentration ➤ Parameters: PM10, Sox, Nox, HC ➤ Assessment criteria: Emission standard set under Environmental Management and Co-ordination (Air Quality) Regulations 2014 	4/year	Construction contractor	500,000
Water pollution	To check whether rainwater runoff from construction site is not causing water pollution	<ul style="list-style-type: none"> ➤ Visual observation of rainwater runoff flow pattern (e.g. check whether there is any inflow of sediment-laden runoff from construction site). ➤ In case there is significant inflow of sediment-laden rainwater runoff, measure water quality (turbidity and TPH) of the receiving water body before and after mitigation. 	Before and after mitigation	Construction contractor	500,000
	To check the water quality of treated concrete washwater	<ul style="list-style-type: none"> ➤ Method: Measurement of water quality of treated concrete washwater ➤ Parameters: pH ➤ Assessment criteria: Effluent standard (6.5-8.5) set under Environmental Management and Coordination (Water Quality) Regulations 2006 	Prior to discharge	Construction contractor	500,000
Soil pollution	To check of any oil leaks from construction vehicles/machines and fuel tank	<ul style="list-style-type: none"> ➤ Visual observation of oil leaks from construction vehicle/machines and fuel tanks. 	Daily	Construction contractor	Part of construction base cost
	To check the soil quality of top soil at the excavation site	<ul style="list-style-type: none"> ➤ Method: Sampling and analysis of top soil ➤ Parameters: PAHs, heavy metals (As, Cd, Cr⁺⁶, Hg, Pb, Ni, Zn) ➤ Location: 5 sites 	Once before construction	Construction contractor	700,000

Item	Aim	Method	Frequency	Implementation responsibility	Approx. cost (KES)
		➤ Assessment criteria: Soil quality standard set under Dutch Soil Remediation Circular 2013			
Waste	To check whether wastes are stored and handled in accordance to the contractor's Waste Management Plan	<ul style="list-style-type: none"> ➤ Method: Site inspection and checking of waste treatment/disposal records. ➤ Assessment criteria: Waste storage method, site littering, waste treatment/disposal records. 	1/month	Supervising consultant	Part of supervision base cost
Noise vibration /	To check whether excessive noise is not emitted from the construction sites	<ul style="list-style-type: none"> ➤ Method: Field measurement of noise level (L_{aeq}) ➤ Location: Construction site boundary (2 sites), sensitive receptors (3 sites) ➤ Assessment criteria (construction site boundary): Noise standard set under Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. Daytime: 60 dB, Nighttime: 35 dB ➤ Assessment criteria (sensitive receptors): Noise standard set under Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. Daytime: 50 dB, Nighttime: 35 dB 	Pre-construction: Once Construction: 1/week	Construction contractor	500,000
Odor	To check whether excessive odor is not emitted from the asphalt plant	➤ Check odor at sensitive receptors near the asphalt plant.	1/week	Construction contractor	Part of construction base cost
Livelihood	To check impacts on livelihood due to acquisition of land for construction works	➤ As part of RAP monitoring, check status of livelihood and standards of living of PAPs affected by acquisition of land for construction works.	1/month	KeNHA	Included in RAP monitoring budget
Land use	To check impacts on land use due to acquisition of land for construction works	<ul style="list-style-type: none"> ➤ Method: Check contractors construction plan ➤ Assessment criteria: type/location of construction facilities, distance to sensitive receptors 	Once before construction	Supervising consultant	Part of supervision base cost
Social infrastructure and services	To check the status of detour road	➤ Visual observation of road conditions.	1/month	Supervising consultant	Part of supervision base cost
Children's right	To check whether there are any child labour	➤ Check employment registration of the Contractor (confirm its accuracy with local administration office).	4/year	Supervising consultant	Part of supervision base cost

Item	Aim	Method	Frequency	Implementation responsibility	Approx. cost (KES)
Infectious diseases	To check the progress and effectiveness of HIV/AIDS Prevention Plan	<ul style="list-style-type: none"> ➤ Method: Checking through meetings and reports. ➤ Assessment criteria: Records of awareness programs, counselling, number of participants 	4/year	Supervising consultant	Part of supervision base cost
Occupational safety	To check whether safety procedures are implemented in accordance to Occupational Health and Safety Plan	<ul style="list-style-type: none"> ➤ Visual inspection of work safety procedures and equipment. 	Daily	Construction contractor Supervising consultant	Part of construction / supervision base cost
Accidents	To check status of traffic accidents	<ul style="list-style-type: none"> ➤ Method: Checking through meetings and reports. ➤ Assessment criteria: Number and types of accidents, risk minimization measures 	1/week	Supervising consultant	Part of supervision base cost
Operation					
Waste	To check whether wastes are stored and handled in accordance to the Waste Management Plan	<ul style="list-style-type: none"> ➤ Visual inspection of waste storage sites. ➤ Check records of waste treatment/disposal. 	During maintenance	KeNHA	Part of operation base cost
Noise / vibration	To check noise impacts from vehicles	<ul style="list-style-type: none"> ➤ Method: Field measurement of noise level (L_{aeq}) ➤ Location: Sensitive receptors (3 sites) ➤ Assessment criteria: Noise standard set under Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009. Daytime: 50 dB, Nighttime: 35 dB 	4/year	KeNHA	Part of operation base cost

Source: JICA Design Team

Table 11.3.38 Environmental Monitoring Form (Port)**1. Pre-construction phase**

(1) Permits

Type of permit	Date acquired	Note
Mangrove clearance permit		
Others		

(2) Mangrove plantation

Planted species	Quantity	Planted date/location	Survival rate
			1 st year: 2 nd year: 3 rd year: 4 th year: 5 th year:

2. Construction phase

(1) Permits

Type of permit	Date acquired	Note
EIA license for temporary construction facilities		
Emission license (Asphalt plant)		
License to emit noise/vibrations in excess of permissible levels		
Effluent discharge license (Concrete plant)		
Others		

(2) Stack emission quality (Asphalt plant)

Parameter	Date of measurement	Results	Kenya standard*	Note
PM10			< 100 t: g/kg 100 to 300 t: 22g/kg 300 to 500 t: 31g/kg > 500 t: 33 g/kg	Method: Location: Actions taken in case of non-compliance:
SOx			2,000 mg/Nm ³	
NOx			460 mg/Nm ³	
HC			20 mg/Nm ³	

*: Environmental Management and Coordination (Air Quality) Regulations 2014

(3) Seawater quality (during dredging)

	Date of measurement	Parameter	Results	Baseline	Reference standard	Note
Coral reef area		Turbidity			Baseline + 2 NTU	Method: Location:

						Actions taken in case of non-compliance:
Port Reitz area		Turbidity			Baseline + 15 NTU	Method: Location: Actions taken in case of non-compliance:

(4) Water quality of concrete washwater effluent

Parameter	Date of measurement	Results	Kenya standard*	Note
pH			6.5-8.5	Date: Method: Discharge location:

*: Environmental Management and Coordination (Water Quality) Regulations 2016

(5) Waste

	Waste type	Approx. volume	Method and location of reuse/recycle or treatment/disposal
	Non-hazardous waste		
	Hazardous waste		

(6) Ambient noise

Parameter	Date of measurement	Results	Baseline	Kenya standard* ¹	Reference standard* ²	Note
LAeq				50 dB (day) 35 dB (night)	55 dB (day) 45 dB (night)	Date: Method: Location: Actions taken in case of non-compliance:

*1: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

*2: Guidelines for Community Noise, World Health Organization (WHO), 1999

(7) Ecosystem (during dredging)

Date of survey	% live coral coverage	Coral health	Note
			Method: Location: Actions taken in case of non-compliance:

(8) Grievances

Number of complaints	Content of complaint	Actions taken and results

3. Operation phase

(1) Seawater quality (during dredging)

	Date of measurement	Parameter	Results	Baseline	Reference standard	Note
Coral reef area		Turbidity			Baseline + 2 NTU	Method: Location: Actions taken in case of non-compliance:
Port Reitz area		Turbidity			Baseline + 15 NTU	Method: Location: Actions taken in case of non-compliance:

(2) Ecosystem (during dredging)

Date of measurement	% live coral coverage	Coral health	Note
			Date: Method: Location: Actions taken in case of non-compliance:

Source: JICA Design Team

Table 11.3.39 Environmental Monitoring Form (SEZ Main Road)**1. Pre-construction phase**

(1) Permits

Type of permit	Date acquired	Note

(2) *Vitellariopsis kirkii* plantation

Type of planted tree	Quantity	Planted date/location	Survival rate
			1 st year: 2 nd year: 3 rd year: 4 th year: 5 th year:

2. Construction phase

(1) Permits

Type of permit	Date acquired	Note
EIA license for temporary construction facilities		
Emission license (Asphalt plant)		
Effluent discharge license (Concrete plant)		
Others		

(2) Ambient air quality

Parameter	Date of measurement	Results (24 hr)	Baseline value	Kenya standard*1	Reference standard*2	Note
PM10				100 µg/m ³ (24 hr)	100 µg/m ³ (24 hr)	Method: Location: Actions taken in case of non-compliance:

*1: Environmental Management and Coordination (Air Quality) Regulations 2014

*2: World Health Organization (WHO). Air Quality Guidelines Global Update, 2005 Interim target 2

(3) Stack emission quality (Asphalt plant)

Parameter	Date of measurement	Results	Kenya standard*	Note
PM10			< 100 t: g/kg 100 to 300 t: 22g/kg 300 to 500 t: 31g/kg > 500 t: 33 g/kg	Method: Location: Actions taken in case of non-compliance:

SOx			2,000 mg/Nm ³	
NOx			460 mg/Nm ³	
HC			20 mg/Nm ³	

*: Environmental Management and Coordination (Air Quality) Regulations 2014

(4) Water quality of concrete washwater effluent

Parameter	Date of measurement	Results	Kenya standard*	Note
pH			6.5-8.5	Method: Discharge location:

*: Environmental Management and Coordination (Water Quality) Regulations 2016

(5) Soil quality

Parameter	Date of measurement	Results	Reference standard* (mg/kg)	Note
PAHs			40	Date: Method: Location: Actions taken in case of non-compliance:
As			76	
Cd			13	
Cr ⁺⁶			78	
Hg			36	
Pb			530	
Ni			100	
Zn			720	

*: Dutch Soil Remediation Circular 2013

(6) Waste

	Waste type	Approx. volume	Method and location of reuse/recycle or treatment/disposal
	Non-hazardous waste		
	Hazardous waste		

(7) Ambient noise

Parameter	Date of measurement	Results	Baseline	Kenya standard* ¹	Reference standard* ²	Note
LAeq				50 dB (day) 35 dB (night)	55 dB (day) 45 dB (night)	Date: Method: Location: Actions taken in case of non-compliance:

*1: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

*2: Guidelines for Community Noise, World Health Organization (WHO), 1999

(8) Grievances

Number of complaints	Content of complaint	Actions taken and results

3. Operation phase

(1) Ambient noise

Parameter	Date of measurement	Results	Baseline	Kenya standard*1	Reference standard*2	Note
L _{Aeq}				50 dB (day) 35 dB (night)	55 dB (day) 45 dB (night)	Date: Method: Location: Actions taken in case of non-compliance:

*1: Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations 2009

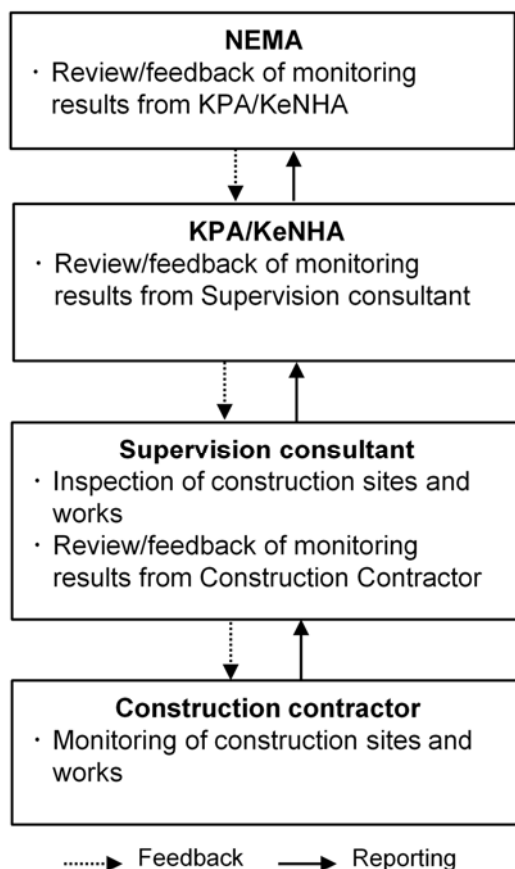
*2: Guidelines for Community Noise, World Health Organization (WHO), 1999

Source: JICA Design Team

11.3.10 Implementation Structure of ESMP and ESMoP

KPA/KeNHA will establish Project Implementation Team (PIT) consisting of environmental specialists and social safeguards specialists. They will supervise and coordinate implementation of the ESMaP, conduct additional studies where necessary and addressing any grievances. PIT will also be responsible for taking procedures for obtaining necessary licenses (e.g. ESIA License) and reporting monitoring results to NEMA during construction and operation phases.

During the construction stage, the construction contractor will be mainly responsible for implementing the ESMP/ESMoP under the supervision of the supervising consultant. The construction contractor shall allocate at least one Health, Safety and Environment (HSE) officer. The HSE officer will be responsible among others for preparing construction specific environmental related plans (e.g. environmental management plan, waste management plan, health and safety plan), obtaining necessary permits, education of workers, supervision, review of monitoring results, reporting and so on. The supervising consultant will also need to allocate Health, Safety and Environment (HSE) officer, who will be responsible for inspection and supervision of the construction contractor’s environmental performances, review/feedback of monitoring results and assist KPA/KeNHA as necessary. Figure 11.3.39 shows the implementation and reporting/feedback structure of the EMoP for the construction stage.



Source: JICA Design Team

Figure 11.3.39 Implementation and Reporting/Feedback Structure of ESMoP

During the operation stage, KPA/KeNHA will be responsible for implementing ESMP and ESMoP and reporting to NEMA.

11.3.11 Stakeholder Consultation

Table 11.3.40 shows the stakeholder consultations that were held in the EIA process.

Table 11.3.40 Stakeholder Consultations held in the EIA Process

	Aim	Date
1 st public meeting	Sensitization of the Project and scoping	September 13 th , 2018
1 st fishermen meeting	Sensitization of the Project and sharing of fisheries status	October 17 th , 2018
2 nd fishermen meeting	Discussion on Project's impact and livelihood recovery measures	December 10 th , 2018 December 14 th , 2018
2 nd public meeting	Explanation of draft EIA and RAP study	January 31 st , 2019

Source: JICA Design Team

Details of these meetings are described in the ensuing sections.

(1) Public meetings

The 1st public meeting was held on September 13th, 2018 at Likoni DC Compound (AP Camp). To ensure good attendance the meeting was advertised through: advertisement placed in the Nation newspaper, radio announcements in English and Kiswahili over 3 days, sending letters to key stakeholders, pinning posters at key locations such as local administration offices, schools and health centres. The meeting was attended by over 300 people, including the general public, NGOs, local administration and government officials. Slightly over 50% were women. Presentations were done by way of posters and banners over the public address system. During presentation both Kiswahili and English were used to ensure meaningful engagement across the board. After the presentation a Q&A session was held and are summarized in Table 11.3.41.

Table 11.3.41 Summary of Q&A Session of the 1st Public Meeting

	Question	Answer
RAP	<p>Why can't the residents of Dongo Kundu, majority of whom are senior citizens well advanced in years while the others have spent over the 12 years stipulated in the legislation on the disputed land, be recognized as rightful owners of the land? At the very least, the community needs to be resettled elsewhere. (Dume Jira, Community leader)</p> <p>Land is a key issue in determining peace in an area and ownership issues should be addressed promptly. Compensation should be finalised before the project starts to avoid hatred and contempt. (Nicholas, Human Rights Activist)</p>	<p><i>The parliament has passed Land Value Index Law Amendment bill 2017 which looks at issues of compulsory acquisition of land by the government and addresses all the concerns that were raised by the community members. Among the provisions is the requirement for full compensation before project inception as well as compensation for economic damages for what is on the land required and for all profits and losses; movable and immovable assets including land itself; reduction of profits if proposed activities are likely to affect one's profits; occupants of good faith-applying to default ownership of land in cases where people have lived in an area uninterrupted for 12 years. The mechanism for</i></p>

	Question	Answer
		<i>compensation will vary and can include cash, resettlement in alternative areas, being shareholders in the project and grants. The bill is currently at the Senate and will be addressed after the recess before being submitted to the President for ascent.</i>
	From the time inventory of property (RAP) was done to date there are significant changes including construction of houses. How will these changes be taken into account during compensation? (Saidi Ali Ching'onda)	<i>The Resettlement Action Plan was developed 2 years ago. Due to the delays experienced, the plan will require review and updating to incorporate the changes over the past two years.</i>
	Since the community is not represented in the higher planning and decision making processes, planners should have the local community at the forefront in terms of how and where they will be relocated. (Bakari Hassan Mwamtoa)	<i>We will ensure that the community will have sufficient participation opportunities.</i>
	People have long term projects intended to cover several generations, does the plan consider these long-term plans in compensation? The community will require livelihoods and employment wherever they will be resettled, but in some instances they will lack the capacity needed to get meaningful employment and jobs in these new areas. How will this be addressed? (Abdrahaman Swaleh)	<i>Appropriate assistance measures will be considered through the RAP study.</i>
	The community needs resettlement first before the project starts. The community also needs support from their representatives such as Member of Parliament to enable them acquire title deeds. (Female participant)	
	The level of compensation being considered should be comprehensive/substantial and should cover relocation, livelihood restoration and security. (Male Youth Representative)	<i>All affected assets will be enumerated through RAP and adequately compensated.</i>
Employment	Given the statistics of high unemployment in the area, the project should educate the community members in advance and build the required capacity to make them eligible for jobs that will be created from the proposed developments. (Rajab Bilembe)	<i>A project of this magnitude considers the locals first and local capacity as this is also an advantage to the developer in terms of cost. External capacity is considered if the capacity required is not available locally.</i>
	Given the high rate of unemployment one of the project's objective should be to reduce this. What is the assurance to the community that the children and youth will be employed and by how much?	
Pollution	Besides the dust that will be an impact of the proposed constructions, residents are currently affected by dust already from the existing road. (Rajab Bilembe)	<i>Road construction is a mandate of other government agencies such as KeNHA, KURA and KeRRA. Concerns raised on the status of the roads will be communicated to these agencies.</i>
Mangrove	If the mangroves are cleared, how will fishermen with other livelihood activities that are linked to the mangroves benefit?	<i>This will be confirmed through upcoming studies and consider appropriate measures.</i>

Source: JICA Design Team

The 2nd public meeting was held on January 31st, 2019 at Likoni DC Compound (AP Camp), to explain the results of the EIA study and inform about the commencement of RAP study. The same procedures were followed as the 1st meeting including announcements, language and so on. The meeting was attended by over 400 people, including the general public, NGOs, local administration and government officials. Presentations were done by way of posters and banners and then Q&A session was held. Table 11.3.42 shows the Q&A results related to EIA (RAP related Q&A are provided in Chapter 11.3.21).

Table 11.3.42 Summary of Q&A Session of the 2nd Public Meeting

	Question	Answer
Benefit	Everyone in the community would be affected environmentally; How does the community stand to benefit? <i>Pastor Eleazar Mati (Religious Leader)</i>	<i>The key benefit to the community is development, job creation, improved infrastructure and better services for the community, such as water and electricity.</i>
Pollution	There will be a lot of dust and noise pollution during the construction stage, how will such be mitigated to protect the community? <i>Ramah Kibwana (Health Officer)</i>	<i>The contractor will be required to strictly comply with air quality and noise regulations.</i>
Fisheries	It is clear that KPA will not allow fishermen to access the area near the port once built. KPA should consider sponsoring education of local youths to help them get employment within the port. <i>BMU Leader</i>	<i>KPA has been involved in youth development in the past. KPA will engage the Ministry of Industrialisation with the proposal of absorbing trained youths.</i>

Source: JICA Design Team

(5) Fishermen meetings

Meetings were held with BMU leaders on October 17, 2018 and December 10/14, 2018. The results of the meetings are summarized below:

i) Fishermen meeting on October 17, 2018

- Aim: Sensitization of the Project and sharing of fisheries status operating in Port Reitz
- Venue: Mombasa County Fisheries Boardroom
- Participants: KeFS, Mombasa County, 8 BMUs, consultant (total 12 persons)
- Meeting summary:
 - Nine BMUs operate in the Port Reitz area namely: Likoni, Mtongwe, Mwangala, Mwadumbo, Guya, Ngare, Kitanga-juu, Mkupe and Tudor
 - Information/aata on target species, fishing methods, landing sites, boat and fishermen numbers were provided by each BMU.

ii) Fishermen meeting on December 10, 2018

- Aim: Discussion on Project impacts and fishermen assistance measures
- Venue: Mtongwe BMU
- Participants: Mombasa County, 5 BMUs, consultant (total 20 persons)
- Meeting summary:

- BMU expressed support for this Project but will require adequate compensation and assistance. Establishment of a committee consisting of KPA, Fisheries Department and BMU where proposed to consider and oversee compensation and assistance measures
- It was suggested that two landing sites will be affected (Mkunguni and Kibuyuni) from the project. To support the users of these landing sites it was suggested to improve the existing landing sites so the affected can be accommodated.
- It was suggested that sediment dispersion and noise from construction works will make fishing in the area difficult.
- Offshore dumping activities may affect some BMUs such as Shika Adabu, Old port and Timbwani, hence should also be considered for compensation and assistance.

iii) Fishermen meeting on December 14, 2018

- Aim: Discussion on Project impacts and fishermen assistance measures
- Venue: Mombasa County Fisheries Boardroom
- Participants: KeFS, Mombasa County, 3 BMUs, consultant (total 18 persons)
- Meeting summary:
 - It was suggested that impacts will not only be on fishermen but will extend to all people relying of fishing such as boat owners and traders.
 - It was suggested that compensation should be paid to all affected people and the amount determined depending the degree of how individuals will be affected.
 - It was suggested that compensation should consider the recovery period of fish resources required after dredging works ceases. Accumulative impacts with other projects should also be considered.
 - The fishermen assistance measures will be finalized through further consultation and agreement with BMU.

11.3.12 Land Acquisition / Necessity of Resettlement

(1) Project impact

In order to develop the SEZ main road in the SEZ Project, it is necessary to acquire the project land. The project will affect on the assets such as the land, structures, trees, crops, the shop and the public facilities within the road and the road side slope area. As a result, it is assumed that resettlement of residents and structures, logging of trees, cutting of crops may occur. In addition to these direct effects, as indirect effects, it is also probable to affect residents' livelihood activities and residents' movement.

(2) Project components requiring resettlement or impact areas

As a result of RAP survey, it was confirmed that no relocation occurs in the port facility area.

Within the SEZ main road development area, resettlement will be required. The total length of the road is about 4.6 km between the port and the Mombasa Southern Bypass Road. The width of the road is 40 m but it is not uniform depending on the topography of the construction site.

(3) Initial Design Alternative Proposal to Avoid and Minimize Resettlement

Details are described in 11.3.4, in the early stage of design, several alternatives of the port and road facilities were evaluated and most appropriate options were selected which will minimize the number of households to be resettled.

(4) Method for minimizing relocation as much as possible during project implementation

The topography on the SEZ main road route will determine the required width of the road slope range. Measures to minimize land acquisition and minimize the number of resettlements are required during the detailed design and the project implementation stages.

11.3.13 Land Acquisition / Resettlement Legal Framework

(4) Land Acquisition-Outline of Kenyan Law System concerning Relocation of Residents

The principal laws concerning land ownership, use, transfer and compensation in Kenya are Constitution of Kenya and Land Act 2012. Details are shown in 11.2.13, (1).

(5) Land tenure system in Kenya

The land ownership system of Kenya is shown in (2) of 11.2.13.

(6) Kind of land ownership in the project area

Land in the whole area of SEZ has been leased to Kenya Ports Authority (KPA) for 99 years from 1997, and currently managed by KPA. On the other hand, there are residents living in the target area for many years long before 1997 and claiming ownership of the land. In Kenya, in particular the affiliation of the land in the coastal area has been conventionally considered to belong to the community, and the registration procedure of the land based on each household is not common and registration is way behind the plan. As a government policy, a measure to promote the registration process by proceeding with an effective procedure to verify the rightful attribution of ownership. As NLC and Mombasa County also recognize, there are residents living in the area who have lived there for more than 30 years, and already procedures for issuing land title deed documents have progressed for some residents. In this context, the Constitution and the Limitation of Actions Act state that those who do not have proving legal documents but have resided over 12 years, may be admitted for land ownership. According to this stipulation, the eligibility of land ownership will be examined for affected people in this project. This role will be focused on NLC, hearings will be held against local elders under the Chief witness to grasp status of individual case, joint consultation and housing situation by KPA, KeNHA and Mombasa County shall be held to solve the issues. Since the NLC staff in charge is aware of the situation related to ownership of the land in the target area, the importance and urgency of the SEZ project, appropriate response can be anticipated.

From the above background, the ownerships of lands are categorized as below.

- Land managed by KPA but residents' land ownership may be recognized based on Kenyan law
- Public land: leased to KPA and managed by KPA

(7) Land acquisition procedure by KeNHA

The acquisition procedure of land by KeNHA is assumed to be the same as the procedure for acquiring the site of the substation in the power component.

(8) JICA's policy on relocation of residents

Refer to Table 11.2.33 in chapter 11.2.13 (5).

(9) Comparison between JICA guidelines and Kenyan legal system

A comparison between the JICA guidelines and the legal system in Kenya is shown in (8) of 11.2.13.

(10) Land acquisition / Resettlement policy in this project

JICA guidelines and the World Bank's Safeguard Policy OP 4.12, and taking the cases in Kenya, acquire the site necessary for the project in a proper procedure.

Provide adequate compensation and support in the case where avoidance of the adverse project impacts and minimization can not be achieved.

Also, identify socially vulnerable people affected, and formulate support measures that can maintain and restore livelihoods.

With the support of Mombasa County Government, community's understanding and support through public consultation is required.

11.3.14 Land Acquisition / Scale and Scope of Resettlement

(4) Population Census

After the Public Consultation Meetings, cut-off date (February 14, 2019) was set and census investigation was carried out. As a result, the number of households requiring resettlement is 50 and 191 persons of the affected are grasped.

Following will be taken as measures to prevent the inflow of new residents after the cut-off date

- The selected PAP committee voluntarily looks around the area and monitors for influx.
- Committee members frequently conduct patrols and report to local administrative representatives and KeNHA if there is abnormality
- Local administrative representatives (including Chiefs, village chiefs, community elders) know who is living in the village where they are living, so that the inflowees are easily perceived and necessary action is taken.
- Residents other than the PAP committee also look around to defend the settlement and try to share information.
- Receive religious leaders, influential people, police support as necessary.

(5) Assets and land survey

As a result of the survey, it was grasped that the land area required for maintenance of the SEZ main road is 39.0 hectares, the number of land parcels was 116, the number of affected structures was 50, and the

number of small shops is 4. In addition, 50 households that need resettlement are all belong to socially vulnerable group. In the planned interchange area, 5 small burial places have been identified. Also they are highly likely to have actual conditions of living substantially for many years, as described above, although they do not possess the land title deed document at the time of the census survey. There is a possibility that the land title may be approved.

(6) Households / Life study

The majority of the inhabitants living in 116 areas in the surveyed area are mainly small-scale agriculture, livestock raising or fishery fishing. Major crops are corn, beans, cassava, mango, coconut, banana, cashew nuts etc, the domestic animals kept are cattle, goats, sheep and poultry.

Most of these residents are at poverty level, and houses have a simple structure such as a tin roof on the soil wall, and nearly half of the population has no experience of enrolling.

Also, as mentioned above, most of the residents who do not possess land rights documents, but live on the basis of the land currently living for a long time are mainly residents, and ownership of land by NLC and local governments The examination procedure is being advanced.

The results of household survey and living survey are shown in Table 11.3.43.

Table 11.3.43 Result of Household Survey / Livelihood Survey

No.	Item	Breakdown	Number of households	Percentage (%)
1	Age (Answer 100 households)	0 to 35 years old	30	30.0
		36 to 60 years old	58	58.0
		Over 60 years old	12	12.0
2	Gender (Answer 110 households)	Male	72	65.5
		Female	38	34.5
3	Marital status (Answer 109 households)	Marriage	88	80.7
		Divorce	2	2
		Separated	4	3.6
		Widow	15	13.7
4	Educational level (Answer 100 households)	Graduate school	1	1.0
		University	1	1.0
		Post-secondary education	1	1.0
		Secondary education	23	23.0
		Primary Education	40	40.0
		No student experience	34	34.0
5	Profession (Answer 100 households)	Craftsman	5	5.0
		Agriculture	38	38.0
		Employment	3	3.0
		Management	1	1.0
		Small Business	30	30.0
		Unemployment	2	2.0
		Other	21	21.0
6	Income (Kenyan Shilling) (Answer 100 households)	0~3,000	15	15.0
		3,001~15,000	134	34.0
		15,001~30,000	36	36.0
		30,001~50,000	10	10.0
		50,000 以上	5	5.0
7	Cooking heat source (Answer 100 households)	Firewood	71	71.0
		Charcoal	25	25.0
		Gas	1	1.0
		Kerosene	3	3.0

8	Religion (Answer 90 households)	Islam	85	94.4
		Christianity	5	5.6
9	Toilet (hygiene) facility (Answer 100 households)	Flush toilet	0	0.0
		Pit toile	22	22.0
		Gardenhead / bush	78	78.0
10	Drinking water (Answer 100 households)	Well · Borehole	50	50.0
		Water supply	10	10.0
		Fountain/ river water	0	0.0
		Other	40	40.0

Source : JICA Study Team

(7) Socially vulnerable households

Questionnaires and interviews were conducted with households including socially vulnerable households in affected areas, accompanied by staff of local administrative agencies responsible for the target community.

In the survey, we confirmed the education level of household head, income, employment situation, land holding situation, land area affected, number and type of structure for each affected household, affected trees, kind of crops etc. Survey was conducted using map and GPS, throughout the affected land, all interviews and questionnaire surveys were made using the Swahili language which the residents can fully understand.

As a result, out of 50 households requiring resettlement, 50 households were found to be poor households classified as socially vulnerable group. The vulnerable group is consisted of female headed, poor, disabled, bedridden and minor-only households.

(8) Survey Results on Land Acquisition and Resident Relocation

Table 11.3.44 shows the survey results on land acquisition and resident relocation ascertained at the present time.

Table 11.3.44 Survey Result Table (1)

	Breakdown	Total
1	Asset holder	
1.1	Asset holder	116
1.2	Other Insttutes / Organizations	0
	Total asset holders	116
2	Affected persons	
2.1	Number of adults	74
2.2	Number of children	117
	Number of affected residents	191
3	Relocated households / number of people	
3.1	Number of households	50
3.2	Number of persons	191
4	Affected land	
4.1	Number of land divisions	116
4.2	Land use area and land area requiring land acquisition	39 ha

Source : JICA Study Team

Table 11.3.45 Survey Result Table (2)

No	Asset Breakdown	Number of affected households	Affected number of persons
		Total	Total
	Households that need relocation		
1	Building within government owned land	50	191
2	Building in private property	0	0
3	Tenants	0	0
4	Shops / companies (in the land owned by the government)	4	4
5	Shops / companies (within private estate)	0	0
6	Tenants	0	0
7	Community-owned buildings including cultural and traditional facilities	0	0
8	Land owner	50	191
9	Wage worker	20	60

Source : JICA Study Team

Table 11.3.46 Survey Result Table (3)

No	Region	Type of land use	Area	Total
1	Dongo Kundu	Farmland	39 ha	39 ha
		Residential land		
		Commercial area	0	

Source : JICA Study Team

Table 11.3.47 Survey Result Table (4)

NO	Region	Livestock hut	Plant type	Subtotal	Total
1	Dongo Kundu	3	Mango (tree)	880	7,405
			Tamarindo (tree)	550	
			Coconut (tree)	2,200	
			Cashew nut (tree)	1,980	
			Neem tree (trees)	440	
			Banana (crops)	1,320	
			Sisal hemp (crops)	20	
			Aloe vera (crops)	15	

Source : JICA Study Team

Note: Only major trees and crops are listed

11.3.15 Specific Measures for Compensation and Support

(4) Loss compensation

In accordance with the JICA guidelines, the compensation and support policy will compensate and support not only land within the site but also structures, trees, crops, and small businesses within the affected area. Land, structures, crops and trees are valued and calculated based on the replacement cost.

The valuation of the asset is carried out by Valuer who has an official registration qualification and the compensation amount is calculated by a predetermined calculation method. In the case of Kenya, monetary compensation is practiced not for providing alternative land based on the strong intention of the affected residents.

i) Evaluation of land

As already stated, the arrangement of land ownership by NLC and local governments is being promoted. If the ownership right is recognized, the compensation amount based on the replacement cost is calculated by the following calculation method.

- Land = land area affected x unit price of land (market price) + maintenance cost + expenses for registration (fee, relocation tax etc.)

ii) Evaluation of trees

It is conducted in accordance with the procedure written by Kenya Forest Services (KFS) based on The Forest Act 2005 and The Forest Regulations 2016. In particular, by the market price (KSH / kg), the growth period (year), the average life expectancy (year), the seedling price (KSH) are taken into consideration in the evaluation of trees, and in the case of fruit trees, the annual average harvest amount (kg / year) is added. Therefore, the asset evaluation of fruit trees can be obtained by the following formula.

- Tree (fruit tree) = annual average harvest amount × market price × number of years + seedling price

In the case of ordinary trees, based on the KFS's procedure manual, cubic volume as lumber is calculated in addition to the price of seedling, species, and age of tree.

iii) Evaluation of crops

Evaluation criteria are established in 2018 by Ministry of Agriculture and Irrigation in the Resettlement Policy Framework (RPF). Based on market prices, crops are assessed in one of two ways:

- 1) Calculated from the compensation rate established by the Ministry of Agriculture:

The compensation rate is set for all crops, and it is calculated regardless of the maturity of the crop.

The compensation rate also includes maintenance costs (logging, cultivation, sowing, weeding, crop harvesting labor costs) to start farming on new land.

At this time, the asset valuation of the crop is obtained by the following formula.

$$\text{Crop} = (\text{market price} + \text{maintenance cost}) \times \text{area}$$

2) Calculation from actual results:

Calculate from the field survey results such as crop yield at last year.

iv) Small business activities

Calculate the monthly business income for shops subject to compensation under the influence, and make compensation equivalent to three months.

v) Compensation for structures

Compensation of the structure is taken as replacement cost, material cost, transportation cost, construction cost (including payment to the contractor, labor cost, etc.), various expenses required for transactions, and expenses including taxes to build with same structure, function, quality equivalent to the previous structure after relocation. However, depreciation cost is excluded. In addition to compensation for structures, 15% of disturbance allowance will be paid.

vi) Compensation for graves

5 small burial mounds were identified in the planned interchange area. Each affected household wants cash compensation and agrees to remove the grave.

(5) Livelihood restoration plan

Since all the affected households are assumed to be vulnerable group shall be supported sufficiently not to hinder the recovery and maintain livelihoods after relocation. All 50 households to be relocated do not have legal land title documents but they may be admitted as land ownerships. Then they may become eligible for land compensation. Other assets such as structures, trees and crops shall be compensated. For structures, additionally 15% of disturbance allowance will be paid. And the grasped 4 small shops, cash provision equivalent to 3 months of income will be paid. As a main livelihood restoration assistance, KShs100,000 shall be paid to 50 households. KeNHA has been implementing livelihood restoration support planned for each RAP in nationwide highway projects. Furthermore, in addition to the Japanese ODA loan “Mombasa Port Road Development Project”, KeNHA has implemented projects supported by many donors such as the World Bank and the African Development Bank. For this reason, they are familiar with the environmental and social considerations of international standards including livelihood restoration program, and it can be said that there is no problem in the implementation capability. The contents of the livelihood recovery measures are shown in Table 11.3.48.

Table 11.3.48 Livelihood Restoration Measures

No	Livelihood activities	Contents	Livelihood recovery support measures	Responsible body	Budget
1.	Regular and irregular employment	Staff of neighboring schools, drivers such as public transportation, carpenters, painters, welders, small stores in the market, motorcycle taxis and other simple labor	KeNHA, county government and municipalities will prepare a letter of recommendation for companies that are relocated to assist residents to quickly get to a new equivalent job. We will also make it easier for you to get a vacation for job hunting. Pay careful attention so that there will be no hindrance to the living of the Target.	<ul style="list-style-type: none"> KeNHA County Government of Mombasa 	-
2.	Public facility	Access to school, health center, water supply area	With the county government, KeNHA takes care to ensure that residents can easily access public facilities such as schools, public health centers and other medical facilities and water supply stations. Regarding the school, take into consideration such as notifying the school road in advance, distributing a guide map to each facility in advance without omitted households. Necessary guidance or orientation shall be provided.	<ul style="list-style-type: none"> KeNHA County Government of Mombasa 	<ul style="list-style-type: none"> County government budget
3.	Agriculture	Agricultural production activity in affected land	Farm guidance / training and advisory activities related to management improvement and strengthening methods.	<ul style="list-style-type: none"> KeNHA County Government of Mombasa 	<ul style="list-style-type: none"> RAP budget County government budget
4.	Work	Acquisition of simple labor to residents of affected communities. Pay attention to the employment of women.	KeNHA and the contractor work with the county government to arrange for all the work created by the project for local residents. Women - For women, make special consideration to make it easier for work. As a type of occupation, employment opportunities are specified in the fields of records, materials management, contact personnel etc. Contractors act on their own initiative and record achievements. Provide an opportunity to receive vocational training so that the target people can become independent even after the project ends.	<ul style="list-style-type: none"> KeNHA Contractor 	<ul style="list-style-type: none"> Construction budget

Source : JICA Study Team

(6) Socially Vulnerable People

Special attention should be given to affected socially vulnerable people, especially those households which resettlement occurs. All 50 households to be resettled is in socially vulnerable group. KShs100,000 as a livelihood restoration assistance will be paid to each household. The amount has been decided based on similar past nature projects. Furthermore, since there are many households where women are headed by households, KeNHA has established a consultation help desk that provides information necessary for finding and deciding a resettlement site, and dismantling / moving existing housing. In addition, as same support for other than the socially vulnerable, a livelihood improvement orientation will be held to support livelihood restoration and maintenance of their livelihoods in accordance with means of livelihood such as farming guidance, etc. In the orientation, a guidance on the proper use of compensation money shall be provided.

(7) Entitlement Matrix

Table 11.3.49 (A) and (B) show the breakdown of compensation and support for owners of affected assets.

Table 11.3.49(A) Entitlement Matrix (Land)

No.	Type of Loss	Entitled Persons (Beneficiaries)	Entitlement (Compensation Package)	Responsible Organization
	Partial loss of residential land but remaining land is large enough where continuous dwelling is possible.	Those who have legal rights to land including customary and traditional rights recognized under the laws of Kenya	Not applicable since there are no PAPs with legal right	N/A
	Partial loss of residential land where continuous dwelling is not possible.	Those who do not have formal legal rights to land at the time the census begins but have a claim to such land assets provided that such claims are recognized under the laws of Kenya or become recognized through a process of identification.	Consideration may be made for payment of compensation in good faith in accordance with Article 40 of the Constitution of Kenya, 2010 If good faith compensation accepted by NLC then land compensation is done at market rate for land without title in area.	NLC KeNHA RAPIC
	Entire loss of residential land.	Vulnerable HH who have recognizable legal right or claim to the land they are occupying at the time of the census begin.	Not applicable since there are no vulnerable PAPs with legal rights	N/A
		Those who do not have recognizable legal right or claim to the land they are occupying at the time of the census begins.	Consideration may be made for payment of compensation in good faith in accordance with Article 40 of the Constitution of Kenya, 2010 If good faith compensation accepted by NLC then land compensation is done at market rate for land without title in area.	NLC KeNHA RAPIC
		Vulnerable HH who do not have recognizable legal right or claim to the land they are occupying at the time of the census began	Consideration may be made for payment of compensation to such Vulnerable PAP in good faith in accordance with Article 40 of the Constitution of Kenya, 2010 If good faith compensation accepted by NLC then land compensation is done at market rate for land without title in area	NLC KeNHA RAPIC

(2)	LAND FOR & BUSINESS Loss of agricultural land Loss of business land (small shop etc.) Loss of livestock rearing land Loss of grazing land	Those who have legal rights to land including customary and traditional rights recognized under the laws of Kenya	Not applicable since there are no PAPs with legal rights	N/A
		Those who do not have formal legal rights to land at the time the census begins but have a claim to such land assets provided that such claims are recognized under the laws of Kenya or become recognized through a process of identification.	Affected persons occupying land that does not belong to them and therefore they do not have recognizable legal rights of claim may be considered for payment in good faith. Agricultural losses to be compensated in line with guidelines provided by the Ministry of Agriculture Compensation for trees to be done at rates provided by Kenya Forestry Service	NLC KeNHA RAPIC
		Vulnerable HH who have recognizable legal right or claim to the land they are occupying at the time of the census begin.	There are no vulnerable PAPs with legal rights	N/A
		Vulnerable persons who do not have formal legal rights to land at the time the census began but have a claim to such land assets provided that such claims are recognized under the laws of Kenya or become recognized through a process of identification	Consideration may be made for payment of compensation in good faith	NLC KeNHA RAPIC
		Those who do not have recognizable legal right or claim to the land they are occupying	Consideration may be made for payment in good faith Notify three months in advance to vacate.	NLC KeNHA RAPIC
		Vulnerable HH who do not have recognizable legal right or claim to the land they are occupying at the time the census began and do not have a claim.	Vulnerable persons occupying land that does not belong to them and therefore they do not have recognizable legal rights of claim to the land, consideration may be made for payment of compensation in good faith Livelihood restoration support of Ksh. 100,000/- Notify three months in advance to vacate.	NLC KeNHA RAPIC

Source : JICA Study Team

Table 11.3.49(B) Entitlement Matrix (Structures and related Assets)

No.	Affected Asset	Type of Loss	Category of PAP	Entitlements	Responsible
1.	Any Residential and/or Commercial Structures	Partial or Entire loss of Structure	Private Owners, County Governments and Statutory bodies	<p>Replacement of Affected Residential or Commercial Structure</p> <ul style="list-style-type: none"> Cash compensation at replacement cost for affected building structure based on the current market rates <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> 15% cash top up in disturbance allowance for relocation assistance Right to salvage material from demolished structures Movable assets such as racks and furniture would not be compensated since these can be relocated; Money management training to educate on responsible use of compensation cash <p>Relocation Notice</p> <p>3 months' notice to vacate</p>	NLC KeNHA RAPIC
			Vulnerable HH	<p>Replacement of Affected Residential or Commercial Structure</p> <p>Cash compensation at replacement cost for affected building structure based on the current market rates</p> <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> 15% cash top up in disturbance allowance for relocation assistance Ksh. 100,000/- for livelihood restoration assistance. Money management training to educate on responsible use of compensation cash Priority in access of compensation cash <p>Relocation Notice</p> <p>3 months' notice to vacate</p>	
2	Movable Assets such as Dish Rack	Loss of working space	Private Owners	<p>Affected Movable Structures like Racks and Stands</p> <ul style="list-style-type: none"> Since structures like racks, stands etc. can be relocated, there will be no compensation for them. 	N/A
3.	Low lying structures	Water wells, water pans, fences	Private Owners	<p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> Wells and other structures that belong to homesteads that will be displaced are evaluated as part of compensation for improvements <p>Relocation Notice</p> <p>3 months' notice</p>	NLC KeNHA RAPIC
4.	Trees	Loss of Trees	Private Owners, County Governme	<p>Compensation</p> <p>Cash Compensation for each tree based on compensation schedules prepared by the Kenya Forest Service (KFS) for various species depending on age and its future potential</p>	NLC KeNHA RAPIC

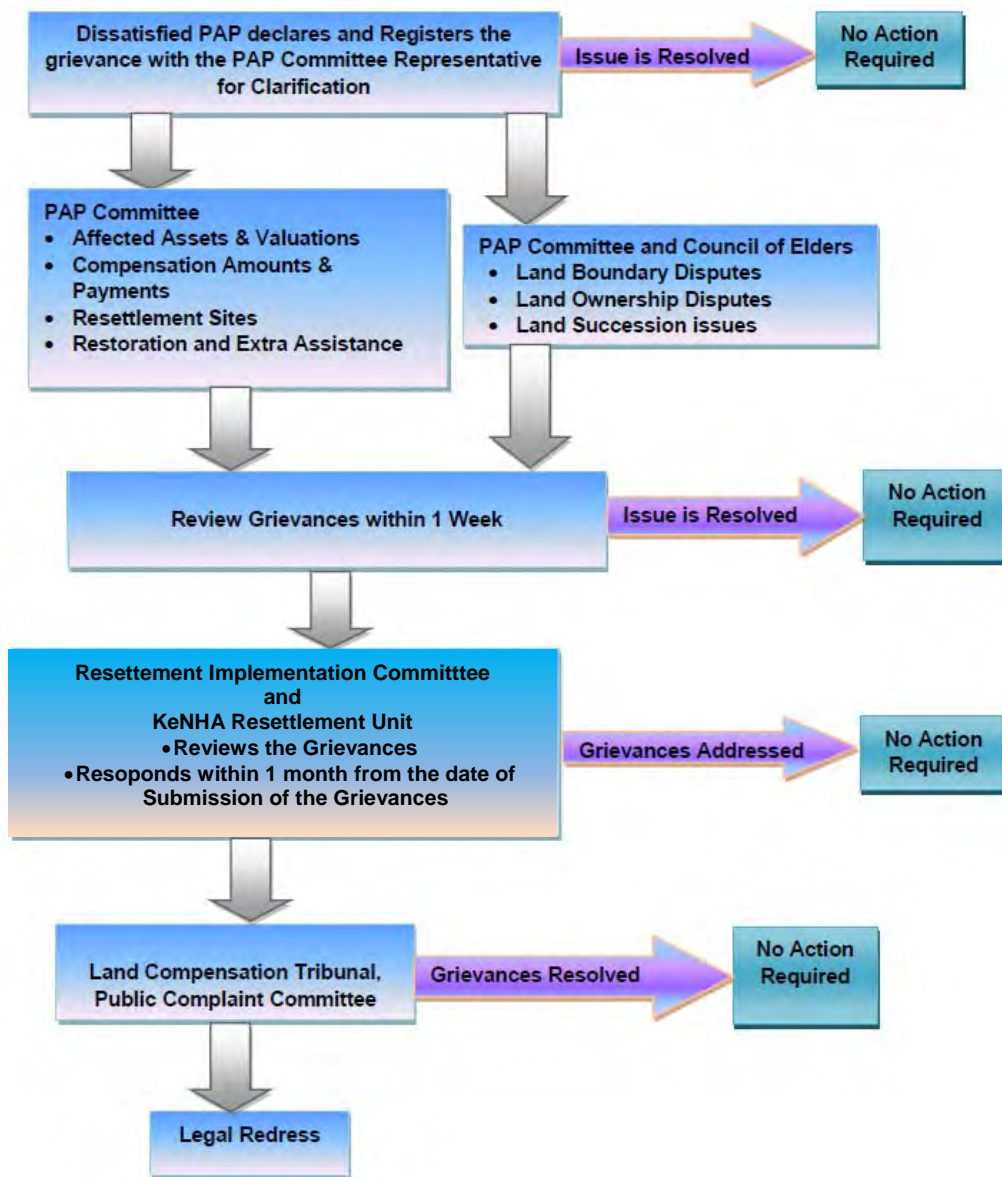
No.	Affected Asset	Type of Loss	Category of PAP	Entitlements	Responsible
			nts and Statutory bodies	<p>Recommendation on Restoration Assistance Tree owners will be allowed to benefit/make use of the wood products from their trees after they have been cut down.</p> <p>Relocation Notice 3 months' notice to vacate</p>	
5.	Affected Annual Crops	Loss of Annual Crops and within corridor during construction	Private Owners	<p>Compensation</p> <ul style="list-style-type: none"> Annual crops will not be compensated since they can be harvested within the notice period of 3 months. Where KeNHA and the Contractor are not able to wait for the 3 months, compensation for the affected annual crops shall be offered. Cash Compensation will be paid for affected annual crops based on compensation schedules prepared by the Agricultural Department. <p>Recommendation on Restoration Assistance</p> <ul style="list-style-type: none"> Valuation and Compensation of affected crops <p>Relocation Notice 3 months' notice to remove annual crops before construction commences</p>	NLC eNHA RAPIC
6.	Affected Perennial Crops	Loss of Perennial Crops	Private Owners	<p>Compensation</p> <ul style="list-style-type: none"> Cash Compensation for affected perennial crops based on compensation schedules of the Ministry of Agriculture for various perennial crop types depending on age and its future potential <p>Relocation Notice 3 months' notice to vacat</p>	NLC KeNHA APIC
7.	Business	Loss of Businesses conducted in structures	Private Owners/Operators of businesses	<p>Compensation for Loss of Business</p> <ul style="list-style-type: none"> Determination of the monthly net income from the businesses As livelihood restoration, there will be compensation for disruption of business calculated from net monthly income for a period of three months during the relocation period. 15% Disturbance allowance as relocation assistance Assistance by Financial Advisor Compensation for costs of training of new staff if required <p>Relocation Notice 3 months' notice to vacate</p>	NLC KeNHA APIC
8.	Graves/Graveyard and	Loss of Burial Site	Next of Kin of Buried persons	<p>Compensation A token cash compensation to cater for traditional ceremonies related to relocation of graves.</p>	NLC KeNHA RAPIC

No.	Affected Asset	Type of Loss	Category of PAP	Entitlements	Responsible
	culturally sensitive areas (Kayas and Shrines)	and Buried Relatives		Recommendation on Restoration Assistance Ksh. 60,000/- for each grave Relocation Notice N/A	
		Loss of Trees used as shrines	Private individuals owning trees used as shrines	Compensation <ul style="list-style-type: none"> Not applicable since there are no shrines in the project area 	N/A

Source : JICA Study Team

11.3.16 Grievance Redress Mechanism

It shall incorporate the existing traditional, customary and flexible problem-solving mechanism of the region. Details are shown in Figure 11.3.40.

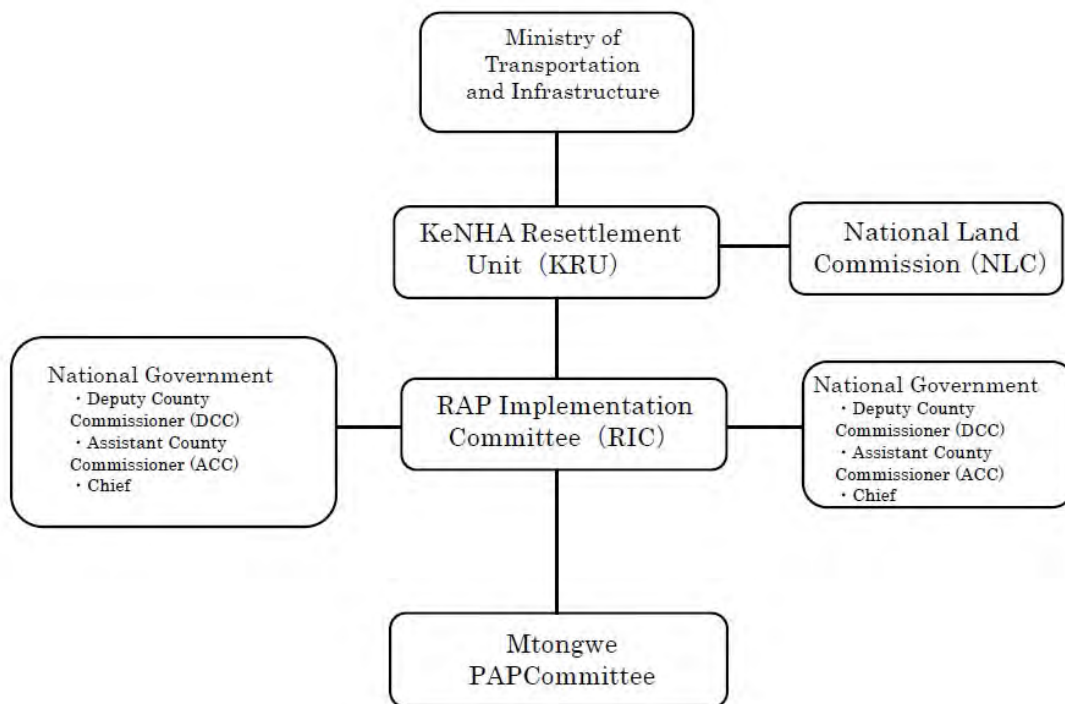


Source : JICA Study Team

Figure 11.3.40 Grievance Redress Mechanism

11.3.17 Implementation System

In order to carry out RAP implementation process appropriately and smoothly, RAP Implementation Committee (RIC) shall be established as a coordinating body. The members shall be keNHA, County Government of Mombasa, Local Administration, NLC, KPA andf PAP Committee. Main responsible organizations shall be KeNHA’s Safeguards Department and Resettlement Unit. The structure is shown in Figure 11.3.41.

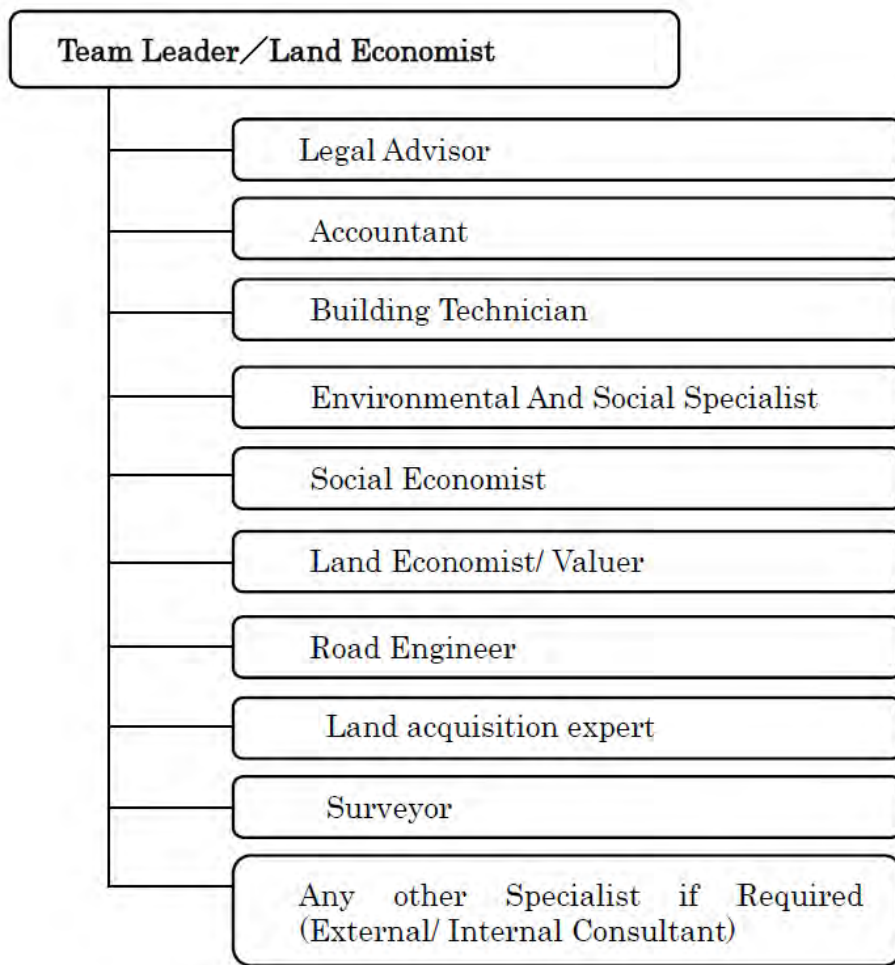


Source : JICA Study Team

Figure 11.3.41 Structure for Implementation of Relocation of Residents

(1) KeNHA Resettlement Unit (KRU)

The KeNHA Resettlement Unit (KRU) is responsible for coordinating resettlement process and showing the policy for implementing the process. Provide guidance and advice from professional positions on affected assets including land and matters related to evaluation, compensation and support. The unit shall represent keNHA in the entire process of resettlement. KRU shall include experts of land related laws. KeNHA has been implementing environmental and social considerations, including resettlement, in highway projects nationwide. In addition, KeNHA has carried out many projects assisted by donors, including JICA. KeNHA is familiar with the environmental and social considerations of international standards, and have sufficient experience and ability to properly implement the resettlement process.



Source : JICA Study Team

Figure 11.3.42 KeNHA Resettlement Unit (KRU)

11.3.18 Implementation Schedule

(4) Implementation Period

The Resettlement process is expected to take approximately 15 months. Table 11.3.50 shows the implementation schedule.

Table 11.3.50 Implementation Schedule (Draft)

No.	Activities	Period (months)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Preparation																
1	Business Public Relations, Exchange of Opinion, Activities of Resident Consultation	[Activity bar from month 1 to 15]														
2	Detailed RAP survey of the main road route, confirmation on socioeconomic evaluation of PAPs, business impact, assessment and compensation	[Activity bar from month 1 to 2]														
3	Identifying owners of land and assets and assessing asset value (NLC)	[Activity bar from month 2 to 4]														
4	Notification of land acquisition (NLC)	[Activity bar from month 4 to 5]														
5	Acquisition of business land (NLC)	[Activity bar from month 5 to 7]														
6	Materials required, mobilization of Resettlement response personnel, sharing of relevant laws and educational processes, training for Resettlement responding personnel	[Activity bar from month 6 to 7]														
Implementation																
7	Compensation Payment	[Activity bar from month 7 to 8]														
8	Resettlement (securing relocation destination by consultation with stakeholders: when necessary)	[Activity bar from month 8 to 10]														
9	Detailed route survey and marking of site boundary	[Activity bar from month 7 to 9]														
10	Preparation of the site for construction, leveling, construction of transmission line facilities	[Activity bar from month 10 to 15]														
11	Livelihood recovery activity	[Activity bar from month 7 to 15]														
12	Complaints handling	[Activity bar from month 1 to 15]														
Monitoring																
13	Internal monitoring	[Activity bar from month 1 to 15]														
14	External monitoring	[Activity bar from month 3 to 15]														

Source : JICA Study Team

11.3.19 Costs and Financial Resources

(4) Cost

As a result of the investigation, it is grasped that the expenses required for resettlement of the affected residents is KShs 97,817,170.

Table 11.3.51 Budget Breakdown for Implementation of Resettlement

No.	Contents	Quantity	Amount (KSh)
1	Land	39.0 ha	43,348,500
2	Structures	66	12,588,000
3	Disturbance allowance (15% on item 2)	1 lot	1,888,200
4	Trees	1lot	12,000,000
5	Crops	1lot	2,000,000
6	Small shops	4 shops	400,000
7	Graves (small burial mounds)	5 mounds	300,000
5	Livelihood restoration assistance	1lot	11,600,000
6	Monitoring	1lot	4,800,000
Sub-total			88,924,700
7	Contingency (10%)		8,892,470
Total			97,817,170

Source: JICA Study Team

11.3.20 Monitoring by the Executing Agency and Monitoring Form

KeNHA organizes units responsible for internal monitoring implementation within the organization. This unit regularly monitors and shares it with Mombasa County and the project affected people. In addition, KeNHA procures experts from independent external consultants, NGOs, universities and other civic organizations and conducts external monitoring to ensure fair and transparent monitoring.

Table 11.3.52 shows the provisional monitoring plan and Table 11.3.53 shows the monitoring form (draft). The monitoring items and form shall be revised if necessary.

Table 11.3.52 Monitoring Plan (Draft)

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
1	Land	Acquire land or acquire usage rights	<ul style="list-style-type: none"> •Area of shared land to be acquired for KenHA transmission line project • Area of private property acquired or to which usage rights are set • Where state ownership is acquired or where usage rights are set 	RAP in progress	<ul style="list-style-type: none"> •KeNHA Resettlement Unit (KRU) •PAP Committee 	Every quarter during the implementation period
2	Building Structure /	Number, size, type of buildings affected	<ul style="list-style-type: none"> •Number, type, size of private buildings affected •Number, type, size of buildings in the affected community •Number, type, size of government buildings 	RAP in progress	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee 	Every month during implementation
		Other structures affected by the project	<ul style="list-style-type: none"> •Number, type, and size of other affected private facilities •Number, type, and size of other affected community structures 	RAP in progress	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee 	Every month during implementation
3	Trees and crops	Affected trees and crops	<ul style="list-style-type: none"> •Number and type of trees •Area of affected crops 	RAP in progress	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee 	Every month during implementation
4	Loss of income	Income affected by the project	<ul style="list-style-type: none"> •Daily wage, weekly wage, monthly income affected by the project 	RAP in progress	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee 	Every month during implementation
5	Compensation for damages	Amount of compensation paid to PAP	<p>Land</p> <ul style="list-style-type: none"> •Compensation for land per acre • Amount of compensation for the acquired land or the land for which the right to use has been set •Compensation Payment Period <p>Building</p> <ul style="list-style-type: none"> •Compensation for each structure •Compensation for affected buildings •Compensation payment period for structures • Payment of annoyance allowance <p>Trees and crops</p> <ul style="list-style-type: none"> •Trees and crops compensation •Compensation payment period <p>Company / income source</p>	RAP in progress	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Relocation expert •NLC 	Every week during the RAP implementation period

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
			<ul style="list-style-type: none"> •Loss compensation amount •Revenue compensation amount for 3 months 			
5	Relocation and restoration	Number of PAPs requiring relocation and restoration	<p>Transfer</p> <ul style="list-style-type: none"> •HH moved to your premises, number of people •Number of households that relocated and settled •Number of buildings rebuilt •Quantity and type of lost plants •Number of seedlings by type offered •Number of tree planted trees •Number of rebuilt business / income sources •Feedback from PAPs on satisfaction, emotions and reactions to implementation of immigration 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Relocation expert •NLC 	<ul style="list-style-type: none"> • Weekly on relocation • 1 month after resettlement for 1 year
7	Socially vulnerable who need special assistance	Type of vulnerability of each head of household	<ul style="list-style-type: none"> •Number of vulnerable household heads affected by the project •Types and levels of vulnerability •Influences experienced by the weak •Assistance provided to the weak 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Relocation expert •NLC 	<ul style="list-style-type: none"> • Weekly on relocation • 1 month after resettlement for 1 year
8	Community resources	Reconstructing community resources	<ul style="list-style-type: none"> •Number of redeployed community structures •Quantity and type of lost plants •Number of seedlings by type offered •Number of trees planted 	RAP in progress	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Relocation expert •NLC 	Weekly at relocation
9	Disability and Disturbance	Junk factor	<ul style="list-style-type: none"> •Noise level at the nearest residence or facility under construction •Increased number of affected houses and noise level, dust, traffic volume etc. 	Under construction	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Contractor •Construction Management Consultant 	Every week under construction
10	Society / Demographics	Change to household's demographics	<ul style="list-style-type: none"> •Household size (birth, death, access) •Age distribution •Gender distribution •Marital status •Relationship with head of household 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Relsettlementn eper 	One month during the quarter at resettlement and one year after housing move

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
			<ul style="list-style-type: none"> •Status of 'vulnerable' households 			
		Population movement	<ul style="list-style-type: none"> •Household residential areas •Move to and from household •(Household member's location and place of residence) 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	Every month when relocating
		Change of usage	Distance / travel time to nearest school, public health center, church, shop, village	Upon relocation	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	Every month when relocating
		Change in health condition of PAP	<ul style="list-style-type: none"> •Nutritional status of relocated household members •Number of patients by type (STD, diarrhea, malaria, immunologic diseases) •Mortality •Access to medical services (distance to the nearest facility, service cost, quality of service) •Use of medical services •Disease prevention strategies •Implementation of educational programs •Toilet penetration rate at school (number of children per VIP in site) 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
		Changes in the status of women	<ul style="list-style-type: none"> •Participate in the training program •Using credit facilities •Landholding status •Participation in related activities and corporate activities 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
		Household income ability	<ul style="list-style-type: none"> •Ownership status of capital assets •Land ownership status •Changes in ownership of livestock: confusion before and after relocation •Prices of livestock purchase and sale, status of exchange transactions •Employment situation of economically active members •Household members' skills I 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
			<ul style="list-style-type: none"> •Remunerated salary income excluded •Change in income - change before and after relocation •Income and expenditure balance conditions •Realization of restoration plan of household income (Degree of component implementation, achievement of net income) •Possession status of bank account •Access to natural resources (tree, grass, sand, stone) that generate income 			
		Changes in social organization	<ul style="list-style-type: none"> •Participation in external organization of household member, status of participation •Are household members in the leadership position of external organizations 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
		Population inflow	<ul style="list-style-type: none"> •Changes in the size and number of colleges due to formal and informal population movements •Market growth 	At the time of relocation and one year later	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
11	Consultation	Diffusion of information	<ul style="list-style-type: none"> •Number of people in the information center, job title, personnel allocation •Staff dispatch, equipment, documentation at information center •Information Center Activities •Number of people accessing the information center •Information requests, problems encountered in the information center 	During relocation and 1 year after	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
		Handling complaints	<ul style="list-style-type: none"> •Number of complaints registered, by type •Number of complaints resolved •Number submitted to court 	During relocation and 1 year after	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
		Management of consultation program	<ul style="list-style-type: none"> •Number of regional committees established •Number of women and adolescents in the committee •Number of local committee meetings and dates 	During relocation and 1 year after	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee 	A fixed period of time every month at relocation and

No	Monitoring items	Indicator	Monitoring index	Monitoring period	Responsible body	Monitoring frequency
			<ul style="list-style-type: none"> •Types of problems raised at local committee meetings •Involvement of regional committees in project planning •Number of participating NGOs 		•Resettlement expert	one year after relocation
12	Training	Operation of training program	<ul style="list-style-type: none"> •Number of Trained Regional Committees •Number of PAPs trained in project-related courses •Number of women participating in the training program 	During relocation and 1 year after	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert 	A fixed period of time every month at relocation and one year after relocation
13	Management	Recruitment	<ul style="list-style-type: none"> •Number of executing agencies by function •Number of persons concerned with central government agencies that can correspond to each function •Number and role of specialists within KRU 	During relocation and 1 year after	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee 	Every quarter from the beginning of resettlement and relocation
		Procedure in operation	<ul style="list-style-type: none"> •Assess / quantify census and assets •Specific procedures •Effectiveness of compensation allocation system •Number of land registration registrations implemented •PAP committee, coordination between KRU and central government officials 	After preparing RAP and starting resettlement	<ul style="list-style-type: none"> •KeNHA Resettlement Unit •PAP Committee •Resettlement expert •NLC 	Quarter after RAP preparation and settlement
Progress and Final Report						
14	Monitoring and evaluation report		<ul style="list-style-type: none"> •Periodical progress reports are prepared according to items weekly, monthly or quarterly. •Final report on monitoring 			

Source: JICA Study Team

Table 11.3.53 Intenal Monitoring Form (Draft)

Inhabitant consultation

No.	Date and time	place	Main contents of consultation, main comments and responses from PAPs

Activity	expected number	Unit	Progress (number)			Progress (%)		Completion date	Responsible body	
			During the quarter	Until last quarter	Until the current quarter	Until last quarter	Until the current quarter			
									KeNHA	
Consultant procurement		M/M								
Implementation of census survey (including socioeconomic investigation)										
RAP authorization			Authorization date							
Finalization of PAPs list										
Acquisition of land use right		ha								
Land acquisition		ha								
Progress of Resettlement		NO.of HH								
Power transmission line part		NO.of HH								
Substation part		NO.of HH								
Progress of compensation		NO.of HH								
Power transmission line part		NO.of HH								
Substation part		NO.of HH								

Implementation status of livelihood recovery support

Action Item	Implementation content	Implementation result

Complaints from affected residents

Number of complaints	Complaint content	Correspondence situation and result

Other points of note (free description))

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Source: JICA Study Team

Table 11.3.54 External Monitoring Form (Draft)

Inhabitant consultation

No.	Date and time	place	Main contents of consultation, main comments and responses from PAPs

Activity	expected number	Unit	Progress (number)			Progress (%)		Completion date	Responsible body	
			During the quarter	Until last quarter	Until the current quarter	Until last quarter	Until the current quarter			
									KeNHA	
Consultant procurement		M/M								
Implementation of census survey (including socioeconomic investigation)										
RAP authorization			Authorization date							
Finalization of PAPs list										
Acquisition of land use right		ha								
Land acquisition		ha								
Progress of Resettlement		NO.of HH								
Power transmission line part		NO.of HH								
Substation part		NO.of HH								
Progress of compensation		NO.of HH								
Power transmission line part		NO.of HH								
Substation part		NO.of HH								

Implementation status of livelihood recovery support

Action Item	Implementation content	Implementation result

Complaints from affected residents

Number of complaints	Complaint content	Correspondence situation and result

Other points of note (free description))

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Source: JICA Study Team

Standard TOR for external monitoring services is shown below.

Terms of Reference for RAP Implementation Monitoring by External Agency

During RAP implementation, it is important to have an external expert carry out monitoring to verify and assess the information that is relevant to the implementation of the Project.

The Monitoring Expert will:

- j) Verify entitlements provided to the affected people;
- k) Review records of compensation payments;
- l) Evaluate and verify the internal monitoring that is carried out by KeNHA Resettlement Unit (KRU);
- m) Advise KRU on safeguard compliance issues that arise in connection with the Project and agree on the activities and timelines of addressing them;
- n) Carry out visits to the project area;
- o) Convene meetings with relevant authorities involved in land acquisition so as to review status and take note of the challenges being experienced;
- p) Review progress on the implementation of resettlement activities 2 times a year;
- q) Assess the significance of identified measures in restoring/enhancing PAPs quality of life or livelihood;
- r) In case of noncompliance, a report shall be prepared and recommended corrective actions incorporated in the Corrective Action Plan (CAP).

Scope of Work

Monitoring Plan

- c) Prepare an Evaluation and Monitoring Plan, for review and approval by KeNHA.
- d) The plan should clearly define the activities and deliverables per reporting schedule and highlight the scope and strategy of the monitoring system, key indicators and methodology that will be used in the collection and analysis of data;

Evaluation of RAP Implementation Activities

- j) Validate the internal monitoring and reporting of KRU. The monitoring expert is expected to review the adequacy of KRU's internal monitoring and reporting procedure, including:
 - The number and qualification of the staff engaged in the implementation of the the RAP at different stages,
 - Determine the adequacy and integrity of the process,
 - Verify claims through sampling check at the field level to assess whether land acquisition/resettlement objectives have been generally met;
 - Recommend corrective actions and agree on the schedule of implementation of these corrective actions, if and where necessary;

- k) Validate the adequacy of public consultation and disclosure of information as designed and described in the RAP. Where necessary, the monitoring expert should advise KRU if additional public consultation and disclosure of information needs to be undertaken. The monitoring expert should validate on ground that appropriate consultations and information disclosure actually took place;
- l) Assess the extent to which the entitlement matrix, list of affected persons/households (authorized representative of affected households), and specific entitlements such as compensation amounts and procedures, are followed including timeliness of payment.
- m) Evaluate the veracity/correctness of available proof of compensation such as receipt or any other document stating acceptance of compensation by the representative of affected persons/households;
- n) Review the quality and suitability of the relocation sites from the perspective of both the affected and host communities;
- o) Involve the affected people and community groups in assessing the impact of land acquisition for monitoring and evaluation purposes;
- p) Assess the adequacy of income restoration strategy and evaluate the matching of specific livelihood development activities against the needs of the intended recipients/beneficiaries. The monitoring expert should document the implementation of each activity and determine effectiveness to affected people including women and vulnerable groups;
- q) Assess the adequacy of institutional arrangements, specifically the capacity of KRU, the local authorities involved in the land acquisition and resettlement process and other organizations expected to implement the RAP to ensure that the objectives of the RAP, JICA Guidelines for Environmental and Social Considerations and World Bank Safeguard Policy OP 4.12 are achieved, and suggest necessary enhancement measures, if and where this is found necessary;
- r) Evaluate and validate the adequacy of the Grievance Redress Mechanism (GRM) and suggest necessary enhancement measures, subject to further public consultations and disclosure. Carry out ground verification on the level of awareness of the community within the project impact area on the existence of GRM. Take note of:
- Common issues/complaints raised,
 - The resolution of each registered case and
 - The level of satisfaction of community on the GRM;

To conduct an interim audit of land acquisition, compensation and resettlement activities for people affected by the Project, the following will be conducted:

Socio-economic Survey

Socio-economic survey will be undertaken to gather information on the affected land area, land use including farm and livelihood activities, yield and income derived from the affected land, and sources of incomes, etc. prior to the Project taking possession of the land;

The following assessment should be done:

- d) Audit the status of compensation payments, use of funds received by the affected people and current socio-economic living conditions;
- e) Audit the project impacts on women as well as their needs and concerns and identify any additional potential assistance for women in affected villages;
- f) Assess whether compensation at replacement cost has been paid, whether the livelihoods and standard of living of the affected persons have been restored and whether all activities implemented are in line with JICA Guidelines and World Bank Safeguard Policy requirements;

Corrective Actions

The monitoring expert should execute the following:

- g) Prepare a Corrective Action Plan with estimated budget, timeline and implementation arrangements;
- h) Where unanticipated involuntary resettlement impacts are found during RAP implementation, the monitoring expert should assess and advise KRU on the need to conduct additional social impact assessment and/or update the RAP, and ensure that all existing applicable requirements, entitlements and provisions are followed;
- i) Document and highlight major problems/issues encountered and lessons learned;
- j) The monitoring expert should conduct semi-annual site visits, interview affected people and conduct consultations;
- k) Undertake a RAP Completion Audit covering all affected persons immediately after completion of RAP implementation. The audit will also be supported by findings of the socio-economic survey which will include data on livelihoods and income levels of affected people that would help to determine whether affected households have been able to restore or improve their socio-economic status compared to the pre-Project level;
- l) Where the RAP Completion Audit finds that the objectives of the RAP and JICA Guidelines have not been met, the monitoring expert will continue with quarterly site visits during implementation of the Corrective Action Plan; and 2 years following the completion of RAP implementation. Where Audit findings show non-compliance), annual site visits should be carried out to monitor whether affected people have maintained or improved their socio-economic status.

Deliverables

The following reports will be delivered by the monitoring expert:

- f. A Monitoring and Evaluation Plan, within one month after being appointed;
- g. Interim Audit Report, within 3 months after completion of land acquisition compensation payments;
- h. Regular Monitoring Reports
- i. In the event that a Corrective Action Plan is prepared following the audit, prepare a close out report upon completion of CAP implementation.
- j. Preparation of Annual Monitoring Reports following completion of RAP/CAP implementation;

The monitoring reports and all other reports will be submitted to KRU.

An evaluation report at the end of the project will be prepared with critical analysis of the achievements of the program and performance of the project as well as KRU.

Qualification and Experience of Consultant

The Consultant will have the following qualifications:

- Sufficient technical capacity to provide the above services.
- A Masters degree in social science or relevant field with a minimum of 10 years' experience in dealing with social/community development projects.
- Demonstrated experience in resettlement matters and RAP Audits.
- Familiarity with Land Act 2012, JICA Guidelines for Environmental and Social Consideration and World Bank Safeguard Policy, OP 4.12 - Involuntary Resettlement.

11.3.21 Public Consultation

To address the project affected community, two public consultation meetings were held in accordance with the JICA Guidelines. The purpose of the first meeting was to explain the outline of the project, the content and schedule of the census / socio-economic survey and the cooperation request. The purpose of the second meeting was to present the result of socio-economic survey, details of the impact of the project, compensation policy and support measurements. Explanations and materials at all the meetings were implemented using the Swahili language which is easily understood by residents. The first meeting was held on January 31, 2019. An invitation to participate in the community was broadcast 9 times on the radio (5 Swahili languages, 4 English) and was also advertised in the newspaper (Daily Nation, January 24, 2019). In addition, it was announced verbally at the meeting place of the community by Chief and Deputy Chief of the local administration. At the same time, a meeting guide was posted at the offices of local administrations, village plazas, hospitals and markets. Both Area Chief and local lawmakers are women, so actively inviting women to participate has resulted in the participation of many women.

(4) Public Consultation Meetings (January 31, 2019 / 09: 00 ~ 12: 15)

The meeting was chaired mainly by Deputy County Commissioner, Assistant County Commissioner, Chief, KeNHA and KPA. With the office of Deputy Commissioner of Dongo Kundu as the venue, 438 people participated. Male and female participants were almost the same number. Introduction of the project outline and the schedule of the survey were explained in Swahili, prepared large panels at the venue. Understanding of requests for cooperation to the survey was obtained. The main questions and answers at the Public Consultation Meeting are shown in Table 11.3.55. The second meeting is scheduled on March 14, 2019. There was no objection against the explanation of the project in the consultation meeting.

Table 11.3.55 Main Questions and Answers

No.	Question	Answer
1.	Some have already been partially compensated with another road project. I heard that there is no redundant compensation for compensation, but what if those people will be affected by the SEZ project? (Residents of Mbuta)	<i>Compensation is made on the assets affected by the project. For example, even if an asset is affected by three projects (South Bypass, this road project, SEZ development project), compensation is only once. (KeNHA Support Local Consultant)</i>

No.	Question	Answer
2.	When trees that are individual assets are cut down, is there a way to transplant them somewhere else? (Nature conservation activist)	<i>First of all, compensation is given to the owner of the tree to be logged. An assessment related to compensatory afforestation will be conducted. For example, if violent forest destruction is proceeding in neighboring areas, afforestation and planting will be considered. (KPA Support Local Consultant)</i>
3.	How do you evaluate land? If there is no land title, how will you compensate? Will land issuance be issued in this process? Which projects covered by the previous report were developed? How was it handled?	<i>This place consults about relocation and development, it is not a place to issue land rights documents. The purpose of the review of the Nairobi University's report is to make fair compensation through updating the contents in response to subsequent changes in the situation. (KPA Support Local Consultant)</i>
4.	What will happen to Kaya in the SEZ area if the land is expropriated? Kaya is a traditional asset of the community, it is a bond with the ancestors of the inhabitants, past, and should be handed over to the next generation. (Elder of Kaya)	<i>Kaya is not affected. It is properly enclosed and protected. Consideration is given so that the elder of Kaya and those who value Kaya can access. (KPA Support Local Consultant)</i>
5.	It is desirable to acquire only the land necessary for the project and the residents to continue living by using them as before. Are non-perennial crops eligible for compensation? (Farmer)	<i>Because 3,000 acres of land are needed for development. All will be acquired. All crops are eligible for compensation. (KPA Support Local Consultant)</i>
6.	Some residents are compensated in the southern bypass project, but other residents are still like, what is going on? (Residents)	<i>Before the start of the project, all affected residents are to receive compensation. Since NLC is in the process, residents want to be patient and wait. (KeNHA)</i>

Source: JICA Study Team

(5) 2nd Public Consultation Meetings (March 14, 2019 / 09: 00 ~ 14: 15)

The meeting was held with KPA, KeNHA, Likoni Deputy County Commissioner, Dongo Kundu Assistant County Commissioner, Mtongwe Senior Chief, Assistant Chief, NLC Regional Coordinator, Likoni Sub-County Administrator, and a secretary of member of parliament. As shown in Table 11.3.56 the total number of participants was 356 (210 male and 146 female). An overview of the project content, RAP survey content (impacts and compensation policy), NLC's role in resettlement and an outline of the schedule for the future will be explained, and then questions and answers will be set. Basic agreement was reached on the evaluation policy for the affected assets.

The main questions from the residents and the responses to them are shown in Table 11.3.57.

All proceedings were conducted using Swahili, which the residents understand. Also, there was no big opposition to the implementation of the project.

Table 11.3.56 Venue, Date, Time and Participants

Venue	Date	Time	County	Sub-County	Location	Participants
Dongo Kundu AP Camp	Thursday, 14 March 2019	09.00 ~ 14:15	Mombasa	Likoni	Mtongwe	Total = 356 Male = 210 Female = 146

Source: JICA Study Team

Table 11.3.57 Main Questions and Answers

No.	Question	Answer
1	What happens to Kayas once people move? People have lived here for a long time without title deeds. What happens when they are moved? (Rasid Kivasyo)	<i>Project proposes to save Kayas, and any impact would be discussed and resolved with Kaya elders; RAP proposes compensation for all affected assets. NLC would compensate in accordance with applicable laws</i>
2	PAP Committee has not been visible on the ground. PAP gave them a few grievances to resolve with KPA but there are no answers (Suleiman Said Sufi)	<i>PAP Committee has just been formed do not even have an operation budget. They are doing their best; Resolving issues with government agencies takes time and PAP have to be patient</i>
3	Anybody who has lived in the land for more than 12 years can claim ownership. How is valuation done without title (Ibrahim Said Mwafrika)	<i>Determination of Title by Adverse position is mandate of the court. The affected person has to petition through court if he intends to go this way, and courts will decide after hearing from all parties. Valuation based on market rates in the area for plots without titles, and is done by a professional valuer</i>
4	How are impacts on the environment being addressed? It has not been mentioned at this meeting ((George Konyo)	<i>Impacts in the environment were addressed in the EIA. The previous public meeting discussed environmental impacts in detail</i>
5	He was given a fake name in RAP for MSBR and fears he might lose his dues (Hassan Juma)	<i>Report the matter to local administration who would investigate and ensure justice</i>
6	Where are the details of valuation for each person? Are children with ID Cards also entitled for compensation? (Hassan Juma)	<i>Details of compensation will be in the RAP report being prepared, and will be shared with all PAP. RAP report contains enumeration of all affected HH, including those with ID cards</i>
7	There are plots without structures whose owners are not living there. Were these considered? (Suleiman Mwanundu)	<i>Yes, all assets were surveyed and valued</i>
8	Do we go ahead with farming on our land after today? (Mohammed Nyangumi)	<i>Yes, you may continue farming until advised later by NLC when compensation begins</i>
9	PAP should be allowed to hold their own meeting away from government officers so that they can deliberate freely; Were immature crops also considered? (Mkongga Kibwana)	<i>Nothing prevents PAP from holding their meeting – freedom of association is provided in the constitution; All crops were considered, even young ones</i>
10	Valuation should be based on agreement with PAP, not just consultant figure (Mwanyeli Ruba)	<i>Consultant gives estimates of assets for purposed of budget. Before payment of compensation NLC will discuss figures with PAP. PAP tend to expect a lot when there is compensation by government but valuation is based on actual. Even for NLC any amount above the market rates must be explained</i>
11	How would people affected by multiple projects be compensated (Ngujiri)	<i>Each plot compensates section of land it intends to acquire</i>
12	PAP have been living in the land since colonial days. The white man who forcefully acquired their land was executed in early last century (Mzee Kasumo)	<i>Constitution provides for retribution for historical land injustices for anybody offended since 1895. There must be a written affidavit to NLC followed by Public Hearing before gazette.</i>

Source: JICA Study Team

Chapter 12 Conclusions and Recommendations

12.1 SEZ

- The Government of Kenya (GoK) gazetted the SEZ Act in 2013 and Batch 1 of the SEZ Regulation in 2016. However, the SEZ Regulation controls only up to the SEZ registration, and no regulation on SEZ operation is available. For smooth operation of the SEZs, improvement of the legal framework is required.
- The SEZ Authority has been allocated budget to ensure required staff in FY 2018/19. Considering the current situation, capacity development of the SEZ Authority is expected.

12.2 Port Sector

- The port planning and design for this study was conducted mainly based on statistical data and actual operation of port, as of 2016. For successive design studies (i.e., detailed design), it is desirable to refer to the latest statistical data and situation and to conduct review on planning and design in case needed.
- The yard area of DK1 terminal was minimized considering the uncertainty of future cargo demand of the SEZ at the earlier phase and considering the environmental impact caused by the construction. When a certain demand of cargo can be estimated as the SEZ development continues in the future, additional berths (e.g., DK2 and DK3) will be designed to fulfill the demand as adaptive development.
- The DK1 berth was designed as a multipurpose berth to handle vehicles with first priority and containers with second priority. Annual productivities for vehicles and containers were estimated based on this prioritization; however, it should be noted that actual productivities will be affected by several aspects such as cargo demand and the SEZ development situation.
- Conventional experience reveals that there are cases when an estimated result of siltation is quite different from the actual value. It is expected that the quantity of sedimentation is greater in the new dredging area than in the existing dredging area. More thorough sedimentation should be carried out during the detailed design stage. However, there is still difficulty in predicting accurately without data of actual sedimentation in the target area. Considering this constraint in the prediction of sedimentation in port projects, it is recommended that construction of a test pit and continuous monitoring be conducted before the commencement of the actual port construction.
- Dredged material is expected to be disposed of at the same location designated for Phase 2 of the Second Container Terminal Development Project. However, adverse impact due to the dispersal of the dredged material may be expected. Therefore, it is desirable to conduct simulation analysis in order to predict the influence of the operation of dredged material disposal during the detailed design stage.

12.3 Access Road Sector

- Water transmission pipes will be installed within the right-of-way (ROW) of the Mombasa SEZ Main Road under the grant aid project. For the time being, the construction of the grant aid project and the Yen Loan project will start almost at the same time with different procurement packages. Therefore, it is important to share information on the construction period and construction planning during the detailed design stage.

- Package 3 of the Construction of "Mombasa Port Area Road Development Project" started in December 2018, and the Mombasa SEZ Main Road plans to pass under the Mombasa Port Area Road. The basic design of the box culvert at the underpass section was conducted by the design mission and was transmitted to Kenya National Highways Authority (KeNHA) for detailed design. KeNHA will issue a variation order to the contractor. During construction, it is necessary to confirm the installation position of the box culvert and the construction plan.

12.4 Power Supply Sector

- The Mombasa SEZ power supply facilities need to maintain N-1 redundancy for all transmission and major distribution components. If one of the electrical components, such as power lines or transformers, becomes unusable, N-1 conditions can be applied to guarantee reliability. It is recommended to install equipment with N-1 redundancy for load equipment as well as 33-kV distribution systems.
- KETRACO agreed that the low-loss Aluminum Conductor Steel Reinforced (LL-ACSR) will be adopted for transmission lines and distribution lines, which allows about 20% less power transmission loss than the conventional ACSR (Aluminum Conductor Steel Reinforced). It is recommended that vendor selection of the LL-ACSR electric wire be determined by comprehensive evaluation considering manufacturing technology, employment results, and costs.

12.5 Water Supply Sector

- It is necessary to secure the alternative water source to the SEZ and the DK1 terminal until completion of the Mwache Dam construction (World Bank fund) and the water supply project (AFD fund). As a result of well digging investigations at the Tiwi site, three wells were successfully secured. The total appropriate pumping capacity is 98.7 m³/h (approximately 2,300 m³/day in 24-hour operation). However, it is expected and necessary to distribute surplus water to neighboring inhabitants despite the primary objective of water supply to the SEZ.
- Taking into account the policy of the Mombasa SEZ master plan, the assumed industrial type and the unit water consumption were updated in addition to the review of the land-use plan of SEZ. Receiving water from the Mwache Dam development and water transmission line project is indispensable for a water supply plan to the SEZ in the mid and long terms. Furthermore, it is necessary to continue sharing information with relevant donors (e.g., World Bank, AFD) and concerned authorities.

12.6 Economic and Financial Analysis

- As a result of economic and financial analysis, both port/access road and electricity sub-projects are confirmed to be feasible. In addition, sensitivity analysis was conducted to confirm their feasibility when conditions such as benefits/revenues and expenses are changed. These conditions were also confirmed to exceed the threshold.
- It is desirable to monitor the situation surrounding this business plan continuously and to re-evaluate if necessary. Points to be particularly noted are as follows:
 - Change in construction costs and operating costs due to changes in target facilities/equipment, design conditions, etc.

- Amendment of implementation schedule with change of construction time, completion time, construction period, etc.
- Review of demand forecast (freight and required energy) and correction of benefit/revenue amount
- Correction of the amount of revenue accompanying changes in cargo handling charges, port due, power generation charges, distribution charges, etc.

12.7 Environmental Consideration

- With regard to the TL, it is proposed to reconsider in the detailed design (D/D) stage whether the tree shrine and Kiteje Secondary School can be avoided by rerouting the TL route. The most appropriate route should be determined through alternative analysis and through consultation with KETRACO and stakeholders.
- To minimize the risk of bird collision to the TL, it is proposed to install avian flight diverters. However, since it is unrealistic to install these devices along the entire route, so it is necessary to devise a cost-effective installation plan. For this, a detailed bird survey should be conducted in the D/D stage to identify high-risk birds and locations and to subsequently determine the installation locations, quantity, and type. To implement such study, it is recommended to assign a bird expert in the D/D study team and to subcontract to a local expert with sufficient experience to undertake the survey (KETRACO has undertaken a similar study for the Loiyangalani-Susuwa 400 kV Transmission Line project; hence, they have information on the local bird expert).
- The main environmental concern of the port and road component is associated with turbidity dispersion from dredging and offshore dumping, especially considering that there are corals and MPA located in the vicinity of the dumping site. Since there are uncertainties in turbidity, it is proposed to proactively and continuously monitor water quality and corals and to revise dumping methods in case any signs of impacts are identified in the process. Furthermore, if the timing of dredging and dumping overlaps with other dredging projects in the Mombasa Port, it will require coordination between both projects and will further strengthen the ESMP and ESMoP, as necessary.
- The compensation and assistance scheme for the project-affected fishermen was studied, but no agreement has been reached between KPA and fishermen yet. The fisheries authority is in the process of developing a Fishermen Compensation Framework, which KPA considers necessary to follow for developing the compensation and assistance scheme. Furthermore, to understand more accurately the number of project-affected fishermen, KPA considers it necessary to implement a detailed fishery impact assessment, including sediment dispersion simulation. It is therefore recommended to assign a fisheries expert in the D/D study team as well as undertake a sediment dispersion simulation in the D/D stage based on a detailed construction plan.

12.8 Social Consideration

- Issues related to land ownership in the coastal area of Kenya are historical problems; therefore, they are not easy to solve in single subproject basis in a timely manner. As originally planned, it is desirable for the Kenyan side to convene working group meetings in which relevant authorities actively involve. Based on the agreed policy in the meeting, proper coordination and initiative on the matters related with land ownership may be possibly applied for each subproject. In particular, when implementing several

infrastructure developments in one region at different phases in a timely manner, as in this SEZ project, it is necessary to set a common resettlement basic policy for the final stage of the SEZ project.

- Although project impacts have been identified and necessary livelihood restoration measures have been worked out during the preparation study period, it is still required to reconfirm the number of affected households, assets, and necessary livelihood recovery measures in the D/D stage so as not to adversely affect the lives of people, especially vulnerable households. In particular, affected households in the Dongo Kundu area have lived without legal land title documents, so such situation should be closely monitored.
- It is necessary to immediately identify, hopefully in the preliminary planning stage, the facilities in the project area to be avoided. In some cases, it may be possible to solve the problem by cash compensation and customary rituals, but it is desirable to avoid if possible. Since in some cases, local consultants who carry out RAP study tend to treat such matters lightly, timely and proper advice shall be required in accordance with the JICA guidelines.
- Although compensation policies for socially vulnerable households in the transmission line project and the road project are different, it seems that it is unavoidable because the result is based on strong intentions of each project proponent.
- As for the land in conflict, it is necessary to clarify very specific solutions, the role of the government office involved, and the number of days required for the final solution in the preparatory study stage. This will make the next step more efficient.