

資 料

## 1. 調査団氏名・所属

## 調査団氏名・所属

No.	氏名	担当	所属	現地調査期間
1	小川 忠之	総括 (第1次現地調査時)	JICA 国際協力専門員	2014/4/13 ~ 2014/4/20
2	佐藤 洋史	総括 (第3次現地調査時)	JICA 産業開発・公共政策部	2015/1/10 ~ 2015/1/18
3	坂元 芳匡	計画管理 (第1次現地調査時)	同上	2014/4/13 ~ 2014/4/20
4	飯崎 堯	計画管理 (第3次現地調査時)	JICA 産業開発・公共政策部	2015/1/10 ~ 2015/1/18
5	泉 慶太	実施監理	JICA 資金協力業務部	2015/1/10 ~ 2015/1/18
6	河野 一虎	業務主任/施設計画1	(株)オリエンタルコンサルタンツグローバル 総合開発事業部 プロジェクト開発部	2014/4/13 ~ 2014/4/25 2014/6/1 ~ 2014/6/21 2015/1/10 ~ 2015/1/18
7	垣添 博之	変電設備1	東電設計(株) 電気本部 電気本部	2014/4/13 ~ 2014/4/25 2014/6/8 ~ 2014/6/21 2015/1/10 ~ 2015/1/18
8	長谷川 義次	変電設備2	(株)オリエンタルコンサルタンツグローバル 総合開発事業部 プロジェクト開発部	2014/4/13 ~ 2014/4/25 2014/6/1 ~ 2014/6/21
9	高瀬 英和	電力計画	東電設計(株) 電気本部	2014/4/13 ~ 2014/4/25 2014/6/1 ~ 2014/6/21
10	村田 孝一	配電設備	東電設計(株) 海外事業本部	2014/4/13 ~ 2014/5/4
11	門脇 拡	施設計画2/自然条件	(有)ジャイロス	2014/4/20 ~ 2014/5/4 2014/6/3 ~ 2014/6/21
12	藤田 和夫	調達計画/積算	(株)岩崎	2014/6/3 ~ 2014/6/21
13	ジャヤモハン ソーマスンダ	環境社会配慮	(株)オリエンタルコンサルタンツグローバル プランニング事業部 地球環境部	2014/4/20 ~ 2014/5/4 2014/6/3 ~ 2014/6/21

## 2. 調査行程

## 第1次現地調査日程

日数	月日		総括	計画管理	業務主任/ 施設計画1	変電設備1	変電設備2	電力計画	配電設備	施設計画2/ 自然条件	環境社会配慮	
			小川忠之	坂元芳匡	河野 一虎	垣添 博之	長谷川 義次	高瀬 英和	村田 孝一	門脇 拓	ジャヤモハン ソーマスダ	
1	4/13	日	移動(東京→マプト 翌朝着)									
2	4/14	月	JICA事務所にて打合せ / EDMとのキックオフミーティング									
3	4/15	火	移動(マプト→ナンブラ) / ナンブラ220、ナンブラセントラル調査						配電設備調査 (ナンブラ泊)			
4	4/16	水	ナミアロサイト、モナボ変電所、ナカラ変電所調査 / 移動(ナンブラ→マプト)									
5	4/17	木	EDM/MOEとの協議				データ収集 協議	ナンブラ220, ナンブラセン トラル調査				
6	4/18	金	JICA事務所 / 大使館への調査報告									
7	4/19	土	移動(機中泊)		データ整理			ナンブラ→ マプト	データ整理			
8	4/20	日	日本着		データ整理					移動(東京→マプト 翌朝着)		
9	4/21	月			データ収集、EDMとの協議				配電設備調査 (ナンブラ泊)	EDM 協議 / 再委託先との 協議 (地形地盤 調査)	EDM 協議 / 再委託先との 協議 (環境社会 配慮)	
10	4/22	火			データ収集、EDMとの協議							
11	4/23	水			EDMとの協議 / JICA事務所への調査報告							
12	4/24	木			移動(機中泊)							
13	4/25	金			日本着							
14	4/26	土							ナンブラ→ マプト	データ整理		
15	4/27	日							データ整理			
16	4/28	月							データ収集 EDM協議	EDM/再委託先協議		
17	4/29	火								マプト→ナンブラ移動		
18	4/30	水								ナミアロ現地調査 / ナンブラ→マプト移動		
19	5/1	木								EDM/再委託先協議		
20	5/2	金										
21	5/3	土							移動(機中泊)			
22	5/4	日							日本着			

## 第2次調査

日数	月日		業務主任/ 施設計画1	変電設備2	電力計画	変電設備1	調達計画 ／積算	施設計画2 ／自然条件	環境社会配慮
			河野 一虎	長谷川 義次	高瀬 英和	垣添 博之	藤田 和夫	門脇 拡	ジャヤモン ソーマスンダ
1	6/1	日	移動(東京→マプト) 翌朝着						
2	6/2	月	マプト着→JICAマプト事務所との協議→EDMとのキックオフ						
3	6/3	火	EDMとの協議(事業スコープ・仕様の確認・他) EDM&Norconsultとの協議(建設地最終確認) MOEおよびその他関連機関との打合せ				移動(東京→マプト) 翌朝着		
4	6/4	水					EDMとの協議 単価見積依頼等	EDMとの協議 再委託契約 鉄道局・道路局 単価見積支援	EDMとの協議 再委託契約
5	6/5	木							
6	6/6	金							
7	6/7	土	調査資料作成				調査資料作成		
8	6/8	日	移動マプト→ナンブラ			移動(東京→ ナンブラ翌朝着)	移動マプト→ナンブ ラ	調査資料作成	
9	6/9	月	ナミアロサイト視察 →ナカラ泊	ナンブラ変電所調査 →ナカラ泊	ナンブラセントラル 変電所調査	ナンブラ着	ナミアロサイト視察 →ナカラ泊	EDMとの協議 単価見積依頼支援	EDMとの協議 再委託着工確認
10	6/10	火	ナカラ港視察 →ナンブラ	メトロ変電所調査 →ベンバ泊	ナンブラ220変電所調査	ナカラ港視察 →ナンブラ	ナミアロサイト視察 →ナカラ泊		
11	6/11	水	ナンブラ→マプト	ベンバ→ナミアロ →マプト	ナミアロ変電所/配電調査→マプト	ナンブラ→マプト (am)	ナミアロサイト視察 →ナカラ泊		
12	6/12	木	EDMとの協議				EDMとの協議 単価見積依頼等		
13	6/13	金							
14	6/14	土	調査資料作成						
15	6/15	日						移動マプト→ナンブラ	
16	6/16	月						ナミアロサイト視察→ナンブラ	
17	6/17	火	EDMとの協議 & 調査資料作成				EDMとの協議 単価見積依頼等	ナンブラ→マプト	
18	6/18	水						EDMとの協議 単価見積依頼支援 再委託契約&発注	EDMとの協議 再委託契約協議
19	6/19	木	EDMとの協議 / JICA および 在モ国日本大使館 報告						
20	6/20	金							
21	6/21	土	移動(マプト→東京)						

## 第3次調査

日数	月日		JICA 総括	JICA 計画管理	JICA 実施監理	調査団 業務主任 施設計画1	調査団 変電設備1	
			佐藤 洋史	飯崎 堯	泉 恵太	河野 一虎	垣添 博之	
1	1/10	土	移動 (東京→マプト)					
2	1/11	日	マプト着					
3	1/12	月	JICAマプト事務所およびEDMとの協議					
			「モ」国他案件業務		EDMとの協議			
4	1/13	火	マプト→ナンプラ ナンプラ220、ナンプラセントラル変電所、 配電用変圧器供与先無電化村視察	「モ」国他案件業務		EDMとの協議 ・コンポーネント ・実施工程 ・概略設計 ・報告書に必要な情報		
5	1/14	水	「モ」国他案件業務  ナンプラ→マプト		EDMとの協議 ・ラップアップミーティング(協議結果確認) ・討議議事録署名(EDM側のみ)			
6	1/15	木	JICAマプト事務所とのラップアップミーティング					
7	1/16	金	中央給電指令所SCADAシステム視察			EDMとの協議 ・用地取得、他	中央給電指令所	
			「モ」国他案件業務					
8	1/17	土	移動(マプト→東京)					
9	1/18	日						

### 3. 関係者（面会者）リスト



## List of Parties Concerned in the Recipient Country

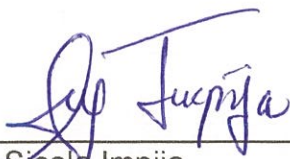
Organization	Department	Name	Position
MoE	Directorate of Studies and planning	Antonio Manda	Deputy Director
MoE	Directorate of Studies and planning	Antonio Checachama	Head of Analysis and Study Department
MoE	Directorate of Studies and planning	Izalde Jose	Technician
MoE	Directorate of Studies and planning	Jones Choluo	Head of Analysis and Study Department
EDM(Board of Directors)	Generation, Transmission, Telecominis and Market Operator	Carlos A. Yum	Board Member
EDM(Board of Directors)	Generation, Transmission, Telecominis and Market Operator	Adriano Jonas	Board Member
EDM(HQ Distribution)	Distribution & Customer Servies Directorate	Lvu Amando	Electrical Engineer
EDM (Transmission)	Transmission Network Directorate	Piloto Matola	Director
EDM (Transmission)	Transmission Network Directorate	Mario Houane	Electrical Engineer (MBA)
EDM (HQ Distribution)	Distribution & Customer Services Directorate	Alberto Rafael Banze	Director
EDM (Nacala Distribution)	Nacala Distribution Directorate	Caitano Mousao	Director
EDM (Nacala Distribution)	Nacala Distribution Directorate	Fenias Ndimande	Electrical Engineer
EDM (Nampula Distribution)	Nampula Customer Care Service	Hermirio Abrao Lucas	Director Nampula Customer Care Service
EDM (Nampula Distribution)	Nampula Area Distribution	Delfim Ali Salimo	Site Project Manager
EDM (Plan)	System Planning Directorate	Aly Sicola Impija	Director (DPS)
EDM (Plan)	System Planning Directorate	Antonio Gimo Junior	Electrical Engineer
EDM (Plan)	System Planning Directorate	Olga Cheila Utchavo	Electrical Engineer
EDM (Plan)	System Planning Directorate	Yara Assia Cabra	Electrical Engineer
EDM (Plan)	System Planning Directorate	Nilsa Pelembe	Electrical Engineer
EDM (Plan)	System Planning Directorate	Adriano Domingos Mandlate	Electrical Engineer (Substation)
EDM (Plan)	System Planning Directorate	Isaias Angelo Matshinhe	Electrical Engineer
EDM(Plan)	System Planning Direcorate	Nilda Pelembe	System & Protection Engineer
EDM(Plan)	System Planning Direcorate	Yara Assia Cabra	Electrical Engineer
EDM (Telecommunication/SCADA)	Electrification & Project Directorate	Roberto Baronet	Project Manager
EDM (Telecommunication/SCADA)	Electrification & Project Directorate	Jose Micas	Manager
EDM (ATSU)	EDM-ATSU	Bernardo Meleco	Technical Wizard Electric – CND
EDM(ATNO)	North Transmission Area	Angostinho Mucauro	Electrical Engineer (Director)
EDM(DRT)	EDM-DRT	Elisio Chaisse	Civil Technical Engineer
EDM(DRT)	EDM-DRT	Jorge Mahando	Electrical Engineer
EDM(Nampula)	Operation Department	Bernardo Nkhalamba	Chief (Nampula 220)
EDM(Nampula)	Operation Department	Geraldo Palmiro	Chief (Nampula Central)
EDM(Nampula)	Power Equipment Department	Nelson Claudio Baptista Masc	Chief
EDM(Nampula)	Protection Department	Mulate	Chief
EDM(Nampula)	Health and Safety Service Department	Jorge Namalela	Chief
EDM(Nampula)	Transmission Line Department	Jackson Evarigio Madeira	Chief
EDM(Namialo)	Customer Service Zone	Ernesto Aquimo	Chief
EDM(Monapo)	Customer Service Zone	Jose Nikot Cholaka	Chief
EDM(Monapo)	Customer Service Zone	Ijazio Barroci Isoufo	Electrician
EDM(Nampula Central)	Nampula Central	Luis Nhamuchus	Nampula Central Electrical Engineer
EDM(Communication)	Telecommunication System Unit (North)	Prosperino B.Saidane	Director
EDM(Environmental)	System Planning Directorate	Jeronimo Marrime	Environmental Manager
EDM(Environmental)	System Planning Directorate	Belarmina Mirasse Jossias	Environmental Planner (Geograpar)
EDM(Elec & Project)	Electrification & Project Directorate	Joaquim Osim	Director
EDM(Elec & Project)	Electification & Projects Directorate)	Robert Baronet	Telecommunication Engineer
EDM(Elec & Project)	Electification & Projects Directorate)	Jose Micas	Electrical Engineer
EDM(Transmission)	Transmission Network Directorate	Horacio Bive Domingos	System & Protection Engineer
EDM(Operation)	Operation Direcorate	Cristovano Novele	Operation Engineer
EDM(Equ & Pro)	Department of Equipment & protection	Feliciano Massingue	Electrical Engineer
EDM(Equ & Pro)	Department of Equipment & protection	Adriano Maudloto	Electrical Engineer
EDM(Equ & Pro)	Department of Equipment & protection	Solomone Monhigue	Electrical Engineer
Institute National Demining	-	Albelt M. Augusto	Directorate
CDN	Corredor de Desenvolment do Norte SA	Manuel Macopa	Rail Director

#### 4. 討議議事録 (M/D)

#### 4－1. 第一次及び第二次現地調査時の討議議事録

**THE MINUTES OF MEETINGS**  
**ON**  
**THE MISSION FOR THE PREPARATORY SURVEY**  
**ON**  
**THE PROJECT FOR REINFORCEMENT OF TRANSMISSION NETWORK**  
**IN NACALA CORRIDOR**  
**IN**  
**THE REPUBLIC OF MOZAMBIQUE**  
**AGREED UPON BETWEEN**  
**THE GOVERNMENT OF THE REPUBLIC OF MOZAMBIQUE**  
**AND**  
**THE JAPAN INTERNATIONAL COOPERATION AGENCY**

Maputo, 17<sup>th</sup> June, 2014



Mr. Aly Sicola Impija  
Director of Planning  
Electricidade de Mozambique, E.P.



Mr. Tadayuki OGAWA  
Leader  
Preparatory Survey Team  
Japan International Cooperation Agency

The Government of Republic of Mozambique (hereinafter referred to as "GOM") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") have made several preliminary discussions in order to identify priority projects in the field of Power Sector, and agreed to make preparation for The Project for Reinforcement of Transmission Network in Nacala Corridor (hereinafter referred to as "the Project"). Accordingly, JICA dispatched a mission on the Project (hereinafter referred to as "the JICA Mission") to Mozambique from 14<sup>th</sup> to 19<sup>th</sup> April 2014 in order to develop scope and implementing arrangements of a further survey which will study outline design of the Project (hereinafter referred to as "the Preparatory Survey"). The scope and implementing arrangements of the Preparatory Survey are described in the Appendix 1. The main points discussed during its visit are described in the Appendix 2.

It should be noted that implementation of the Preparatory Survey does not imply any decision or commitment by JICA to extend its grant for the project at this stage.

- Appendix 1: Scope and Implementing Arrangements of the Preparatory Survey
- Appendix 2: Main Points Discussed
- Appendix 3: List of Attendants
- Appendix 4: Japan's Grant Aid Scheme
- Appendix 5: Tentative Schedule of the Preparatory Survey
- Appendix 6: Site Location of Namialo Substation
- Appendix 7: Reinforcement and connection of Transmission lines



## SCOPE AND IMPLEMENTING ARRANGEMENTS OF THE PREPARATORY SURVEY

### I. BACKGROUND AND OBJECTIVES OF THE PREPARATORY SURVEY

In August of 2013, GOM made a request for Grant Aid for the Project to the Government of Japan (GOJ). GOJ decided to conduct the Preparatory Survey and entrusted JICA to examine the viability of the Project and sent the Survey team, headed by Mr. Tadayuki OGAWA, Senior Advisor on Power Sector, JICA.

### II. OBJECTIVES OF THE PROJECT

The project aims to construct the new substation at Namialo and improve the existing substations (Nampula 220 & Nampula Central) in order to bring reliability and redundancy of power supply to Nacala Corridor where power demand is rapidly increasing.

### III. ITEMS REQUESTED BY GOM

1. Project Site  
Nampula, Namialo, and unserved communities alongside Nacala corridor
2. Executing Agencies, Coordination Mechanisms  
Electricidade de Mozambique, E. P. (EDM)
3. Main Components  
GOM finally requested to GOJ the following components.
  - (1) Construction of New Namialo Substation
  - (2) Rehabilitation of the existing Substation Control System ("SCS") & Substation Protection System for Nampula Central Substation
  - (3) Introduction of Supervisory Control & Data Acquisition ("SCADA") for New Namialo, Nampula 220, and Nampula Central Substation
  - (4) Procurement of Distribution Pole Transformer for Non Electrified Community Area
  - (5) Other associated facilities

### IV. SURVEY AREA

Nacala Corridor Area between Nampula and Nacala

## **V. SCOPE OF THE PREPARATORY SURVEY**

### 1. Terms of Reference

The Preparatory Survey shall cover the following items:

- (1) Confirm the objective and contents of the Project
- (2) Study the effectiveness and validity of the Project
- (3) Identify the most suitable scope and components of the Project
- (4) Implement an outline design and project cost estimation
- (5) Propose the implementation plan and obligations of the recipient country for the Project

### 2. Desirable specialists for the Preparatory Survey

JICA will select and dispatch a survey team to carry out the Preparatory Survey.

The team will include the following specialists.

- Facility Planning
- Power Supply Planning
- Transformer Equipment
- Power Distribution
- Cost Estimation
- Environmental and Social Considerations

The assignment of the specialists may be subject to change.

The Survey team may engage local consultants, NGOs, and/or other supporting staffs.

## **VI. SCHEDULE OF THE PREPARATORY SURVEY**

The Preparatory Survey will be carried out in accordance with the tentative schedule attached in the Appendix 5. The schedule may be subject to change during the preparation and the course of the survey.

## **VII. REPORTS**

JICA will prepare and submit following reports in English to GOM.

### 1. Inception Report:

20 copies will be submitted at the commencement of the first work period in Mozambique. (already submitted on 14<sup>th</sup> April 2014)

### 2. Draft Final Report:

8 copies will be submitted 6 months after the commencement of the Preparatory Survey. This report will cover;

- (1) Outline of the Project,

- (2) Outline Design of the Project,
- (3) Outline of the undertakings of Mozambique side,
- (4) Operation and maintenance plan for the Project, and
- (5) Cost estimation.

GOM shall submit its comments within one month after the receipt of the Draft Final Report.

### 3. Final Report:

3 copies will be submitted within three months after the receipt of the comments on the Draft Final Report.

## **VIII. JAPAN'S GRANT AID SCHEME**

GOM understands the Japan's Grant Aid Scheme explained by the JICA Mission as described in Appendix 4.

## **IX. UNDERTAKINGS OF THE GOVERNMENT OF THE REPUBLIC OF MOZAMBIQUE**

### 1. For Preparatory Survey

The GOM shall act as a counterpart agency to the survey team and also as a coordinating body with other organizations concerned for the smooth implementation of the Preparatory Survey.

GOM shall, at its own expense, provide the survey team with the following items in cooperation with other organizations concerned:

- (1) security-related information as well as measures to ensure the safety of the survey team;
- (2) information as well as support in obtaining medical service;
- (3) data and information related to the Preparatory Survey;
- (4) counterpart personnel;
- (5) suitable office space with necessary equipment and secretarial service;
- (6) credentials or identification cards;
- (7) entry permits necessary for the survey team members to conduct field surveys;
- (8) support in making transportation arrangements;
- (9) support in obtaining other privileges and benefits if necessary;
- (10) confirmation of the construction site for new Namialo substation by 23rd of April 2014





(see Appendix 6);

- (11) confirmation of environmental category and requirement for environmental clearance of the project at confirmed site including access road from MICOA by 20th of May 2014. (It was confirmed on 16<sup>th</sup> June 2014 as described in Paragraph 7 of Appendix 2.)

## 2. For Implementation of the Project

GOM shall, at its own expense, be responsible to the following items for the execution of the Project as mentioned in Annex of Appendix 4.

- (1) Land acquisition if the project site and access road go beyond the Right of Way of existing 110kV transmission lines;
- (2) 33kV cables connection from substation to distribution lines;
- (3) construction of the gates and boundary fences in and around the site;
- (4) construction of the access road outside the site;
- (5) provision of the city service line to the site such as water, drainage (storm water and sewer) and telephone line;
- (6) provision of the general furniture;
- (7) disposal of removed equipment and cables from existing substations and transmission towers;
- (8) tele-communication lines or optical fiber channel for SCADA system;  
(\* it is under consideration as shown in the paragraph 6 of Appendix 2.)
- (9) data preparation for supervisory alarms, metering, and control for SCADA system;
- (10) installation of distribution transformers procured by Japanese side;
- (11) procurement and installation of LV distribution lines & credit meters for customers billing;
- (12) procurement and installation of equipment related to the installation of distribution transformer (lightning arresters, dropout fuses, cross arms, connectors, lead wire, watt hour meters, etc.);

## X. CONSULTATION

JICA and the GOM shall consult with each other in respect of any matter that may arise from or in connection with the Preparatory Survey.

END



## THE MAIN POINTS DISCUSSED

### 1. Site Location of Namialo Substation

It was confirmed that the new Namialo Substation should be located within ROW of the existing 110kV transmission lines as shown in Appendix 6.

### 2. Constraint on the Transmission system

It was confirmed that 110kV transmission line between Nampla 220 and Nampla Central is already overloaded during peak period, and EDM has been forced to interrupt some loads. In addition, the voltage at Nacala substation sometimes go below the regulation (-5% of rated voltage). JICA Team will conduct power flow analysis including stability study to confirm the necessary countermeasures to improve the conditions of power supply in Nacala Corridor area.

### 3. Distribution Pole Transformer for Non Electrified Community Area

It was agreed that Japanese side will procure Transformers only, and EDM will be responsible for the installation works. Also, procurement and installation works of LV distribution lines, credit meters, and service drop wires will be implemented by EDM.

### 4. Access road to Namialo Substation

JICA Team explained that the temporary access road will be constructed by Japanese side to carry equipment and materials to the substation. Immediately after concluding the Exchange of Notes (E/N), EDM is requested to commence profiling and bush clearing and also the construction of railway crossing for the proposed access road. Also, complete and permanent access road shall be constructed by EDM in collaboration with Ministry of Transportation and Ministry of Agriculture.

### 5. Reinforcement and connection of Transmission lines

Construction of two transmission towers indicated on Appendix 7, wiring and final connection works to Namialo Substation for 110kV transmission lines shall be included in the project. Since these works were originally not included in the project, some other components shall be excluded from the Project in exchange. JICA Team will propose the components to be excluded after the project cost examination.

### 6. Communication backbone for SCADA system

EDM requested JICA Team to include the PLC for SCADA telecommunication and proprietary telephone in the Project. Since it was originally not included in the project, it will be confirmed after the technical study and the project cost examination.

### 7. Requirement for environmental clearance of the Project

On 16<sup>th</sup> June 2014, it was confirmed that no additional study for EIA approval on this project is required since the EIA approval for Chimuarua - Nacala Transmission Project does duly cover this project.

## List of Attendants

Name	Entity
Mozambique Side	
Mr. Antonio Gimo Junior	EDM System Planning Directorate
Mr. Antonio Munguanmbe	EDM System Planning Directorate (Transmission)
Mr. Jeronimo Marrime	Environmental Manager, EDM System Planning Directorate
Ms. Belarmina mirasse Jossias	Environmental Planner, EDM System Planning Directorate
Japanese Side	
Mr. Tadayuki Ogawa	JICA HQ
Mr. Yoshimasa Sakamoto	JICA HQ
Mr. Issei Aoki	JICA Mozambique
Mr. Elisio Chionze	JICA Mozambique
Mr. Kazutora Kono	Oriental Consultants
Mr. Yoshiji Hasegawa	Oriental Consultants
Mr. Hiroyuki Kakizoe	TEPSCO
Mr. Koichi Murata	TEPSCO
Mr. Hidekazu Takase	TEPSCO
Mr. Keita Hasebe	Interpreter

## **JAPAN'S GRANT AID SCHEME**

The Government of Japan (hereinafter referred to as “the GOJ”) is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on the law and the decision of the Government of Japan (hereinafter referred to as “the GOJ”), JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

### **1. Grant Aid Procedures**

The Japanese Grant Aid is conducted as follows-

- Preparatory Survey (hereinafter referred to as “the Survey”)
  - The Survey conducted by JICA
- Appraisal & Approval
  - Appraisal by The GOJ and JICA, and Approval by the Japanese Cabinet
- Determination of Implementation
  - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as “the G/A”)
  - Agreement concluded between JICA and a recipient country
- Implementation
  - Implementation of the Project on the basis of the G/A

### **2. Preparatory Survey**

#### **(1) Contents of the Survey**

The aim of the Survey is to provide a basic document necessary for the appraisal of the Project by JICA and the GOJ. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the implementation of the Project.

- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

## (2) Selection of Consultants

For smooth implementation of the Survey, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

## (3) Result of the Survey

The Report on the Survey is reviewed by JICA, and after the appropriateness of the Project is confirmed, JICA recommends the GOJ to appraise the implementation of the Project.

## 3. Japan's Grant Aid Scheme

### (1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a plea for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

### (2) Selection of Consultants

The consultant firm(s) used for the Survey will be recommended by JICA to the recipient

country to also work on the Project's implementation after the E/N and the G/A, in order to maintain technical consistency.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use the facilities constructed and the equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the



recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

(10) Social and Environmental Considerations

A recipient country must ensure the social and environmental considerations for the Project and must follow the environmental regulation of the recipient country and JICA socio-environmental guideline.

(End)



## Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
For The Construction of New Namialo Substation			
1	To secure land (Project site, Temporary yard and etc.)		•
2	To clear, level and reclaim the site when needed		•
3	To construct new substation		
	1) 110kV switchgears, bus and steel structures	•	
	2) 110kV/33kV Transformer	•	
	3) 33kV feeder switchgears	•	
	4) Protection relaying for both 110kV and 33kV equipment	•	
	5) Substation control board	•	
	6) Power and control cable and auxiliary devices including in-house power supply transformer	•	
	7) Power and control cable and auxiliary devices	•	
	8) Substation ground grid construction	•	
	9) 110kV transmission tower reinforcement and connection to substation	•	
	10) 33kV cables connection from substation to distribution lines		•
	11) Disposal of removed existing tower, line conductor and insulators		•
4	To construct the following facilities		
	1) The buildings	•	
	2) The gates and fences in and around the site		•
	3) The parking lot	•	
	4) The road within the site	•	
	5) The road outside the site		•
5	To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the sites		
	1) Electricity		
	a. The distributing power line to the site		•
	b. The drop wiring and internal wiring within the site	•	
	c. The main circuit breaker and transformer	•	
	2) Water Supply		
	a. The city water distribution main to the site		•
	b. The supply system within the site (receiving and elevated tanks)	•	
	3) Drainage		
	a. The city drainage main (for storm sewer and others to the site)		•
	b. The drainage system (for toilet sewer, common waste, storm drainage and others) within the site	•	
	4) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		•
	b. The MDF and the extension after the frame/panel	•	
	5) Furniture and Equipment		
	a. General furniture		•
	b. Project equipment	•	
For The Rehabilitation of Existing Substations (Nampula 220 & Nampula Central)			
6	To rehabilitate existing substations		
	1) Replacement of switching board and relaying to be renewed	•	
	2) Control cable connection and testing	•	
	3) Disposal of removed equipment and cables		•
For The Provision of SCADA & SCS at New Namialo Substation and Existing Nampula 220 & Nampula Central Substation, if needed			
7	To construct new SCADA or SCS system		
	1) Installation of new SCADA or SCS	•	
	2) Installation of RTU and control cable connection	•	
	3) Remote signal testing between SCADA/SCS and RTU	•	



No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
	4) Tele-communication lines or optical fibre channel * it is under consideration (see paragraph 6 of Appendix 2)	▲	▲
	5) Data preparation for supervisory alarms and metering, and control		●
	6) Implementation of supervisory and control data	●	
For The Provision of Pole Transformer to Non-Electrified Area			
8	To provide pole transformer		
	1) MV/LV pole mounted transformers	●	
	2) Related equipment (lightning arresters, dropout fuses, cross arms, connectors, lead wire, watt hour meters, etc)		●
	3) Installation of transformers and all related equipment		●
Common For All Components			
9	To ensure prompt unloading and customs clearance of the products at ports of disembarkation in recipient country and to assist internal transportation of the products		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be exempted / be borne by the Authority without using the Grant		●
11	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
12	To ensure that the facilities and equipment be maintained and used properly and effectively for the implementation of the Project		●
13	To give due environmental and social consideration in the implementation of the Project		●
14	To bear all the expenses, other than those covered by the Grant, necessary for implementation of the Project		●
15	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

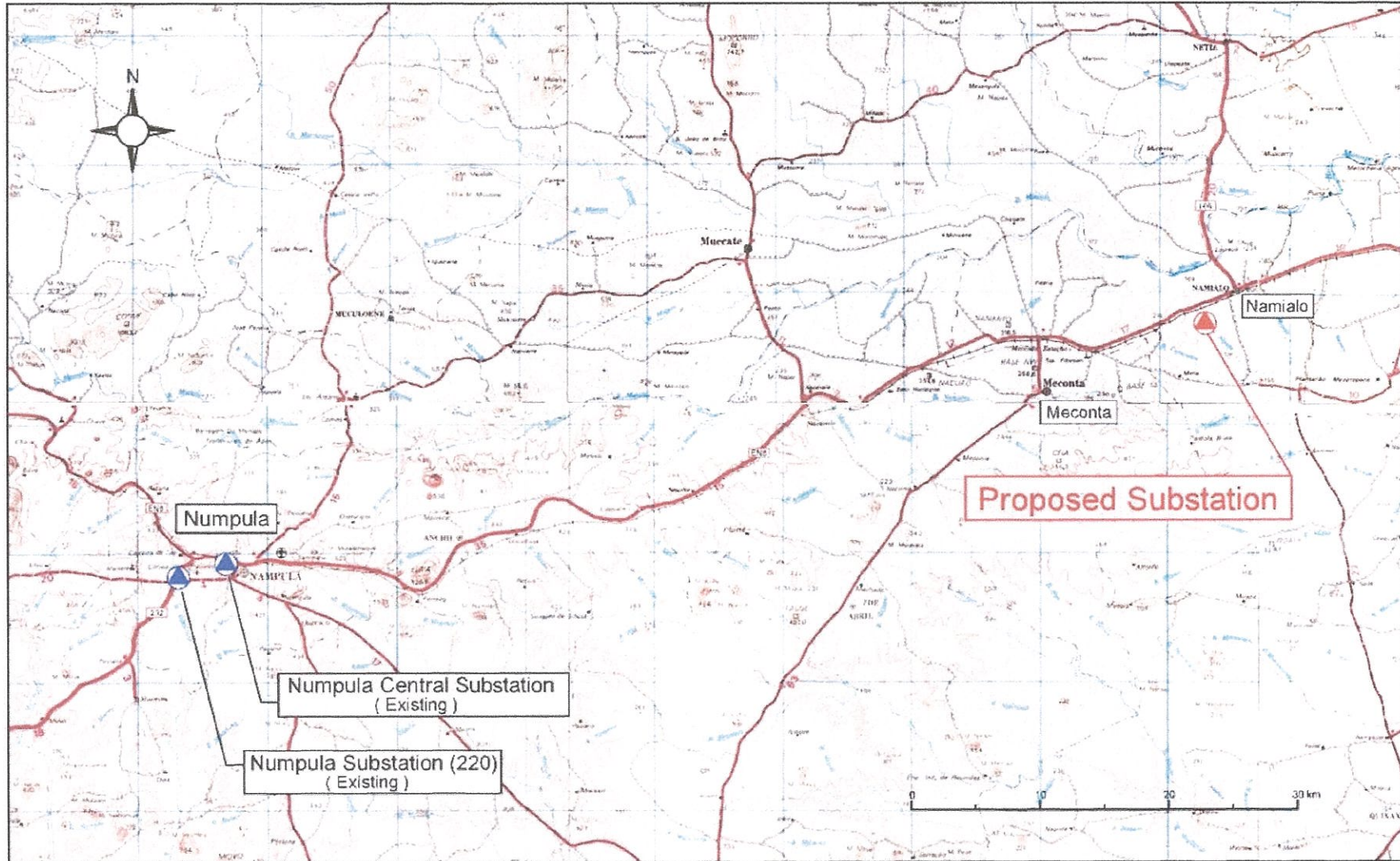


**Tentative Schedule of the Preparatory Survey**

Step	Item	2014										2015
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	
1	Preparatory works in Japan	□										
2	1 <sup>st</sup> Survey in Mozambique	■	13/Apr - 04/May									
3	1st Study in Japan		□									
4	2nd Survey in Mozambique			■	0 /Jue - 21/Jun							
5	2nd Study in Japan				□							
6	Explanation of Draft Report in Mozambique						■	28/Sep - 05/Oct				
7	Preparation and submission of Final Report							□				▲
												F/R

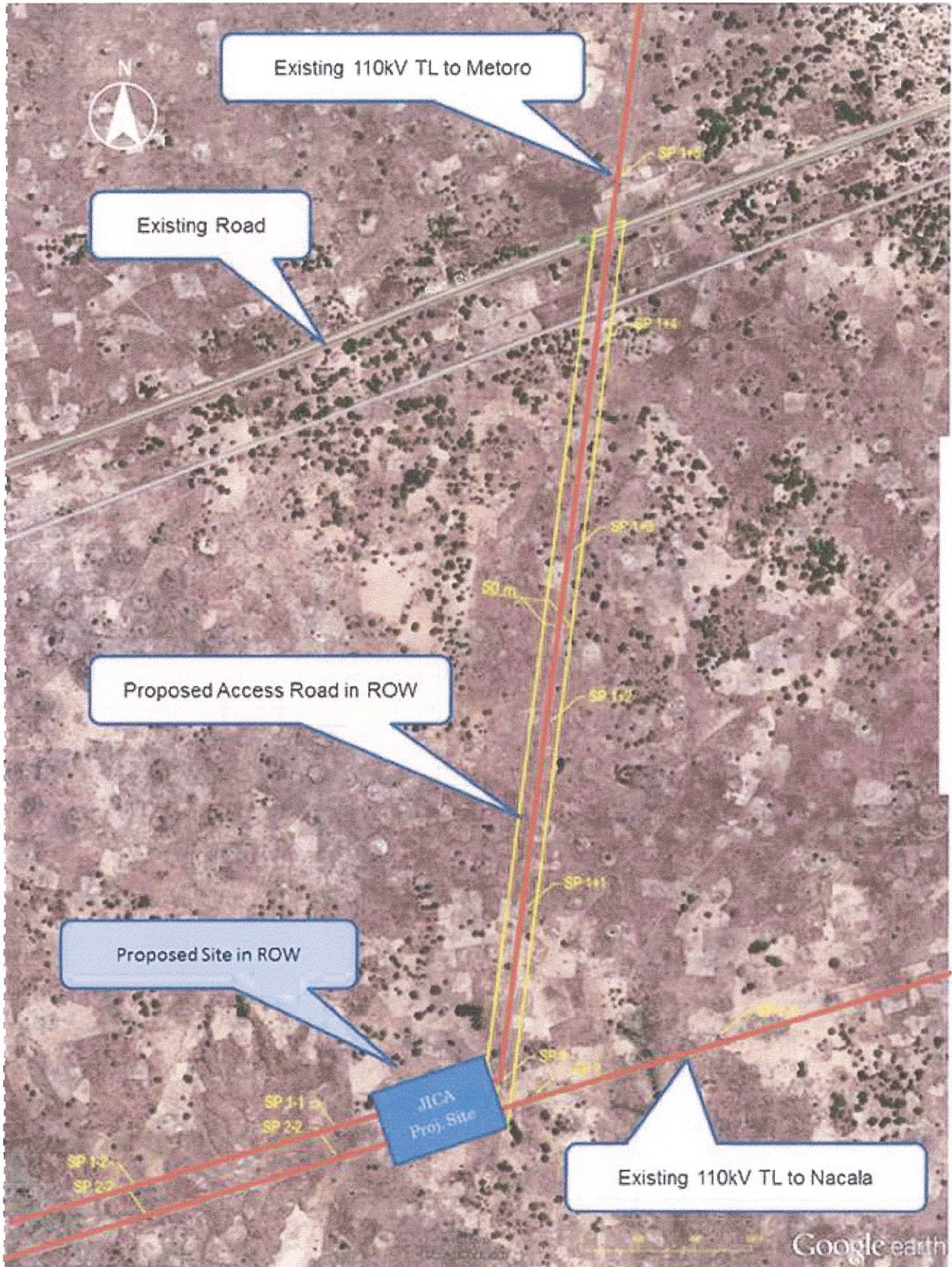
□ : Work in Japan      ■ : Work in Mozambique

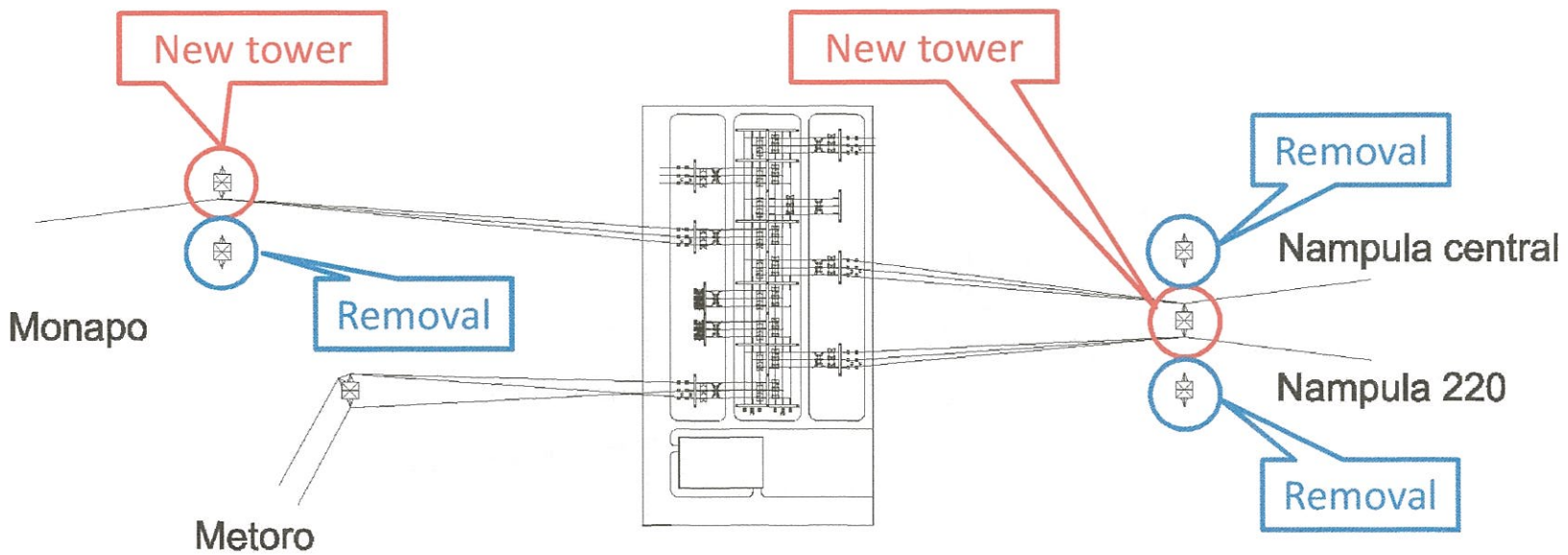
Site Location of Namialo Substation - 1



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## Site Location of Namialo Substation - 2





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#### 4－2. 第三次現地調査時の討議議事録

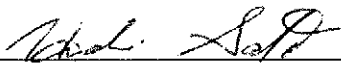
**Minutes of Discussions  
on the Preparatory Survey  
on the Project for Reinforcement of Transmission Network in Nacala Corridor  
in the Republic of Mozambique**

In response to the request from the Government of the Republic of Mozambique (hereinafter referred to as “Mozambique”), the Japan International Cooperation Agency (hereinafter referred to as “JICA”), in consultation with the Government of Japan, decided to conduct a Preparatory Survey (hereinafter referred to as “the Survey”) on the Project for Reinforcement of Transmission Network in Nacala Corridor (hereinafter referred to as “the Project”).

JICA sent to Mozambique the Preparatory Survey Team (hereinafter referred to as “the Team”) headed by Dr. Hiroshi Sato, Director, Team 2 of Energy and Mining Group, JICA. The Team is scheduled to stay in the country from 11<sup>th</sup> to 17<sup>th</sup> January, 2015.

The Team held discussions with the concerned officials of Mozambique (hereinafter referred to as “the Mozambican side”). In the course of the discussions, the Mozambican side agreed and accepted the contents of the Draft Final Report, the Mozambican side and the Team have confirmed the main items described in the sheets attached hereto.

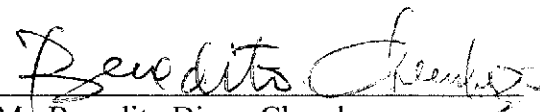
Maputo, Mozambique  
14<sup>th</sup> January, 2015



Dr. Hiroshi Sato  
Leader  
Preparatory Survey Team  
Japan International Cooperation Agency  
(JICA)



Mr. Carlos Yum  
Board Member  
Electricidade de Mozambique, E.P.  
(EDM)



Mr. Benedito Diogo Chembeze  
Deputy Director National  
Ministry of Energy

## ATTACHMENT

### 1. Contents of the Draft Final Report

The Mozambican side agreed and accepted in principle the contents of the Draft Final Report explained by the Team. The Team emphasized that the scope, the schedule and the cost for the Project are tentative and subject to change due to the domestic circumstances in Japan and in Mozambique. The Mozambican side understood it.

### 2. Objective of the Project

The Project aims to construct the new substation at Namialo (Namialo substation) and improve the existing substations (Nampula 220 & Nampula Central) in order to bring reliability and redundancy of power supply to Nacala Corridor where power demand is rapidly increasing.

### 3. Project Site

The Project sites are located as shown in Annex-1 and Annex-2.

### 4. Responsible and Implementing Organizations

- (1) The responsible sector ministry is the Ministry of Energy.
- (2) The implementing agency is Electricidade de Mozambique, E.P. (EDM)
- (3) The organization structure of the Ministry of Energy and EDM is shown in Annex-3 and 4 respectively.

### 5. Components of the Project

The major components of the Project are shown in Table below.

Components	Capacity
<b>1. Substation facilities</b>	
<b>(1) Namialo Substation</b>	
- 110/33 kV Transformer	40 MVA×1 unit
- 110 kV Gas Circuit Breaker	6 units
- 110kV Bus-bar and relevant air insulated switchgear	1 unit
- 33 kV Switchgears	6 units
- 110 kV Control and Protection Panel	6 units
- Other control panels	3units
- Low voltage facilities	1units
- Emergency Battery facilities (DC110V)	2 unit
- Emergency Battery facilities (DC48V)	1 unit
- SCADA system	1 unit
- PLC	1 unit
- 33kV outgoing distribution lines	4 lines
- Emergency generator	1 unit
- Control building and Guard house	1 unit
- New Transmission tower and conductor	2 units
<b>(2) Nampula 220 Substation (existing)</b>	
- SCADA system	1 unit
- PLC	1 unit
<b>(3) Nampula Central Substation (existing)</b>	
- SCADA system	1 unit
- PLC	2 units
<b>2. Distribution transformers for non-electrified communities along Nacala corridor</b>	
- 160 kVA distribution transformers	2 units
- 250 kVA distribution transformer	1 unit
- 33kV distribution lines for connection of transformer	3 lines

[Notes] SCADA: Supervisory Control and Data Acquisition, PLC: Power Line Carrier  
Please see Annex-5 for the details of project component selection.



## **6. Japan's Grant Aid Scheme**

- (1) The Mozambican side reconfirmed Japan's Grant Aid Scheme explained by the Team as described in Annex-6 and Annex-7.
- (2) The Mozambican side will take the necessary measures, as described in Annex-8, for smooth implementation of the Project.

## **7. Project Cost**

The Mozambican side agreed that the cost for the Project should not exceed the amount agreed on Exchange of Notes (E/N). The Mozambican side also agreed that the cost for the Project contains procurement cost of equipment, transportation cost up to the Project site, construction cost and the Consultant fees.

## **8. Confidentiality of the Project**

### **(1) Detailed specifications of the Facilities and Equipment**

The Mozambican side and the Team agreed that all the information related to the Project including detailed drawings and specifications of the facilities and equipment and other technical information shall not be disclosed to any outside parties (i.e. outside of JICA and the Mozambican side) before the conclusion of all contract(s) for the Project.

### **(2) Confidentiality of the Cost Estimation**

The Team explained the estimated cost of the Project as described in Annex-9. The Mozambican side and the Team agreed that the estimated cost for the Project should never be duplicated or disclosed to any outside parties (i.e. outside of JICA and the Mozambican side) before tender for the Project. The Mozambican side also understood that the estimated cost for the Project attached as Annex-9 is not the final and is subject to change as a result of examination through revision of the Outline Design Study.

## **9. Possibility of Change in Scope, Schedule and Cost of the Project**

The Mozambican side and the Team confirmed that the scope, the schedule, and the cost for the Project are tentative and subject to change due to the domestic circumstances in Japan and in Mozambique.

## **10. Environmental and Social Considerations**

- (1) The JICA mission explained that 'JICA Guidelines for Environmental and Social Considerations (April 2010)' (hereinafter referred to as 'the JICA Guidelines') is applicable for the Project. The Project is categorized as B because The project is not considered to be a large-scale Power Transmission and Distribution Lines project, is not located in a sensitive area, and has none of the sensitive characteristics under the JICA guidelines for environmental and social considerations (April 2010), it is not likely to have a significant adverse impact on the environment.
- (2) The Mozambican side agreed to comply with the JICA Guidelines as well as laws and regulations in Mozambique, and was requested to prepare Environmental Checklist and Monitoring Form which are designated by JICA Guidelines for an outline design.
- (3) The Mozambican side and the Team confirmed information on environmental and social considerations including major impacts and relevant mitigation measures are summarized in the Environmental Checklist attached as Annex-10. The Mozambican side will inform JICA of any major changes which may affect environmental and social considerations made for the Project by revising the Checklist in a timely manner.
- (4) The Mozambican side and the Team confirmed environmental monitoring will be conducted by EDM and the Contractor in accordance with the Environmental Management Plan and Environmental Management Monitoring Plan during the construction and operation.

- (5) EDM agreed that the results of environmental monitoring will be provided to JICA as a part of Quarterly Progress Report (hereinafter “QPR”) by filling in the monitoring form as Annex-11 on a quarterly basis during the construction and operation. In case there is a remaining issue that needs to be addressed (e.g. insufficient restoration of livelihood of displaced Project Affected Persons (PAPs)), JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed and solved in accordance with the agreement between The Mozambican side and JICA
- (6) The Mozambican side and the JICA mission confirmed it will take stipulated procedures for information disclosure in accordance with Decree 45/2004. In addition, the JICA mission requested EDM to disclose the monitoring results to local project stakeholders, and EDM agreed to disclose monitoring results on their website.  
The Mozambican side agreed JICA’s disclosure of provided monitoring results in the Monitoring Form (Annex-11) on its website to the extent that they are made public in Mozambique. When third parties request further information, JICA disclose it, subject to approval by EDM.
- (7) The Mozambican side agreed to make necessary arrangements with concerned governmental organizations in order to secure funding for and execution of the above environmental matters in a schedule as required for smooth execution of the Project.

## 11. Major Undertakings by the Mozambican side

Major undertakings by the Mozambican side are the following (see Annex-14 for easy reference).

### (1) 33kV distribution lines

The Mozambican side and the Team agreed that 33kV cables connection between Namialo substation and the existing distribution lines connecting to Meconta (1 line), Metoro (1 line) and Monapo (2 lines) will be covered by the Japan’s Grant Aid in order to secure smooth outcome of the impact of the Project as shown in Annex-12. Both sides also agreed that 33kV distribution lines connecting to other areas will be provided by the Mozambican side, if necessary.

### (2) Strength analysis and reinforcement of existing transmission towers

The Mozambican side agreed to carry out the structural examination and reinforcement of existing transmission towers adjacent to new transmission towers as indicated in Annex-13 by the time of contract with a contractor of the Project in January, 2016.

### (3) Installation of distribution transformers and LV distribution lines for non-electrified communities.

The Mozambican side and the Team agreed that the distribution transformers (2 units to “Poste de Secreteriado de 25 de Setembro” and 1 unit to “Muxaieque”) with related equipment and LV distribution lines to the Government Office and the Elementary School in “Poste de Secreteriado de 25 de Setembro” and to the Elementary School in “Muxaieque” will be covered by the Japan’s Grant Aid.

The Mozambican side agreed to carry out the detailed design and cost estimation for the rest of installation of the said LV distribution lines upon the request from the communities and execute the budget allocation by the time of signing the contract with a contractor of the Project in January, 2016. The Mozambican side also agreed to provide and install the rest of LV distribution lines in the said 2 communities in accordance with the detailed design by the completion of the Project.

### (4) Construction of permanent access road

The Mozambican side and the Team confirmed that a contractor of the Project would provide the temporary access road during construction period. However, since it is a temporary solution, it would not be subject to Defect Liability of the contractor. In order to ensure the access route from EN12 to the Project site for daily operation and maintenance, The Mozambican side agreed to construct and maintain the permanent access road after the completion of the Project.

### (5) Construction of railroad crossing

The Mozambican side agreed to construct the railroad crossing on the access road to the Project site in order to secure the access from EN12 to the Project site by the tender announcement in September, 2015. The Mozambican side explained that it would be conducted by CDN and EDM shall coordinate with it and secure its arrangement including the budget allocation by the time of signing the contract with a consultant of the Project in June, 2015.

(6) Power supply to the Project site

The Mozambican side and the Team agreed that the power supply to the Project site for construction works of the Project will be done by the Mozambican side. The connection cable from the existing distribution line along EN12 to the Project site will be covered by the Grant Aid. The said cable will be utilized for a part of 33kV cables connection from Namialo substation to distribution lines after the completion of the Project.

(7) Construction of gate and boundary wall

The Mozambican side agreed to construct the gate and the boundary wall of Namialo substation by the time of contract with a contractor of the Project in January, 2016.

(8) Disposal of removed transmission tower materials

The Mozambican side agreed to dispose removed materials properly after the demolition of existing transmission towers.

(9) Provision of general furniture

The Mozambican side agreed to provide the general furniture necessary for the operation of Namialo substation such as desks, chairs, racks, etc.

(10) Water supply for the operation of Namialo substation

The Mozambican side agreed to provide water supply for the operation building at Namialo substation. The Mozambican side explained that purchased water will be provided to the building with water storage tank and sewage drainage will be treated by septic tank and soak pit.

(11) Land acquisition and Site clearance

- 1) The Mozambican side and the Team confirmed that the land acquisition for Namialo substation will be needed since the Project site go beyond the Right of Way of existing 110kV transmission lines. The Mozambican side agreed to complete necessary land acquisition by the tender announcement in September, 2015.

No.	Item	Total
1	Approximate area of land to be acquired (ha)	1.88
2	Affected Households	19
3	Households to be resettled	0

- 2) The Mozambican side agreed to clear and level the construction site and access route from EN12 to the Project site by the tender announcement in September, 2015.

(12) Compensation for Land Use

The Mozambican side agreed to obtain the acceptance of Simplified Land Use Compensation Plan (SLUCP) from Ministry of Coordination for Environmental Actions (MICOA) and to compensate for the people cropping within the construction site and access route in accordance with the SLUCP by the tender announcement in September, 2015.

(13) Clearance of Mines

The Mozambican side informed that the Project site and access route are free from Mines. The Mozambican side will provide the official mine-map showing the Project site is mine-free certified by IND to JICA Mozambique office within 15 days of the signing of the Minutes.

(14) Approval of the contracts between EDM and for a consultant / a contractor by CREE

The Mozambican side ensured that the contract between EDM and a consultant / a contractor shall be approved by CREE without any delay. The Mozambican side and the Team confirmed that the contract with a consultant shall be concluded by June, 2015, and the contract with a

contractor shall be concluded by January, 2016.

(15) Tax Exemption

The Mozambican side assured the Team to ensure the budget allocation for custom duties and complete necessary governmental procedures for smooth VAT refund upon request from a consultant / a contractor of the Project.

(16) Issuance of Work Permit and VISA

The Mozambican side agreed that EDM shall facilitate with concerned agencies including the Ministry of Labor and assist Japanese nationals / others from third countries who are involved in the Project to obtain VISA and work permit smoothly so that they can enter and stay in Mozambique without any hindrance at the Project implementation stage.

(17) Project Cost to be borne by the Mozambican side

The Mozambican side assured the Team that the Project cost to be borne by Mozambican side, mentioned in Annex-9, shall be secured and allocated timely.

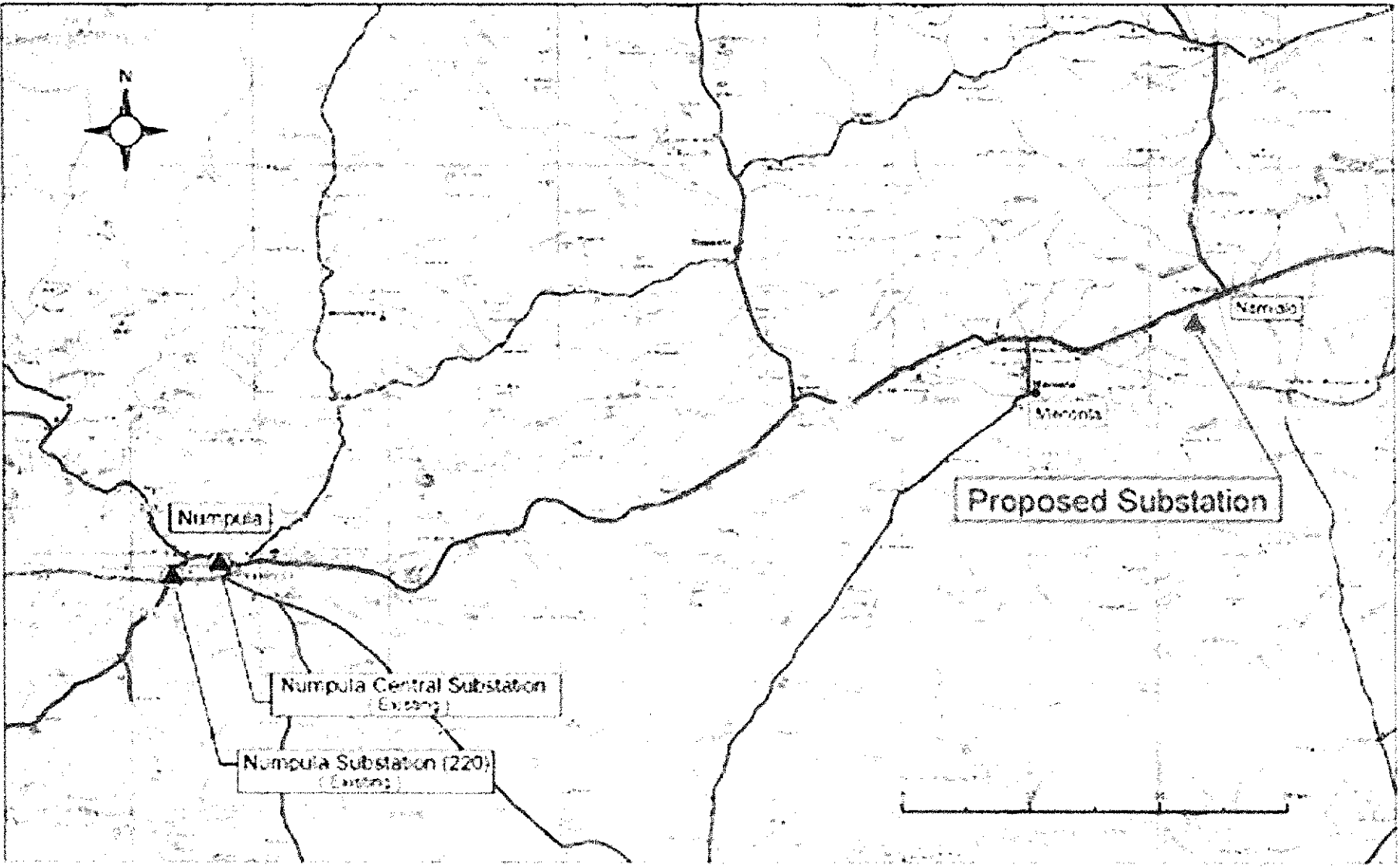
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<List of Annex>

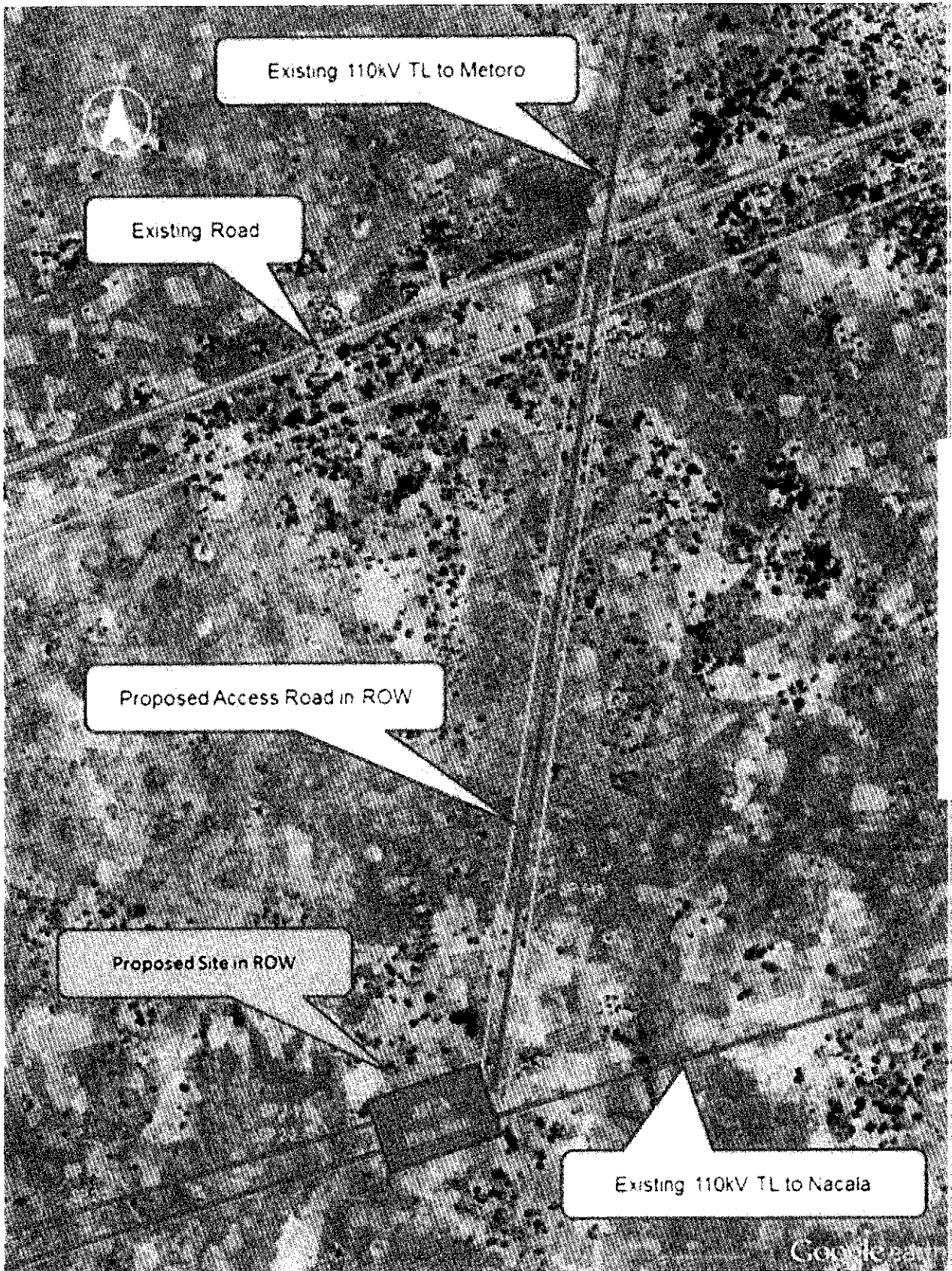
- Annex-1 Location of the Project Sites
- Annex-2 Layout of the Project Sites
- Annex-3 Organization Structure of the Ministry of Energy
- Annex-4 Organization Structure of Electricidade de Mozambique, E.P.
- Annex-5 Details of Project Components Selection
- Annex-6 Japan's Grant Aid
- Annex-7 Flow Chart of Japan's Grant Aid Procedures
- Annex-8 Major Undertakings to be taken by Each Government
- Annex-9 Estimated Project Cost
- Annex-10 Environmental Checklist
- Annex-11 Environmental Monitoring Form
- Annex-12 Overview of Layout Plan of Namialo Substation
- Annex-13 Reinforcement and Connection of Transmission Lines
- Annex-14 Time Flame of Major Undertakings by the Mozambican side

LOCATION OF THE PROJECT SITES

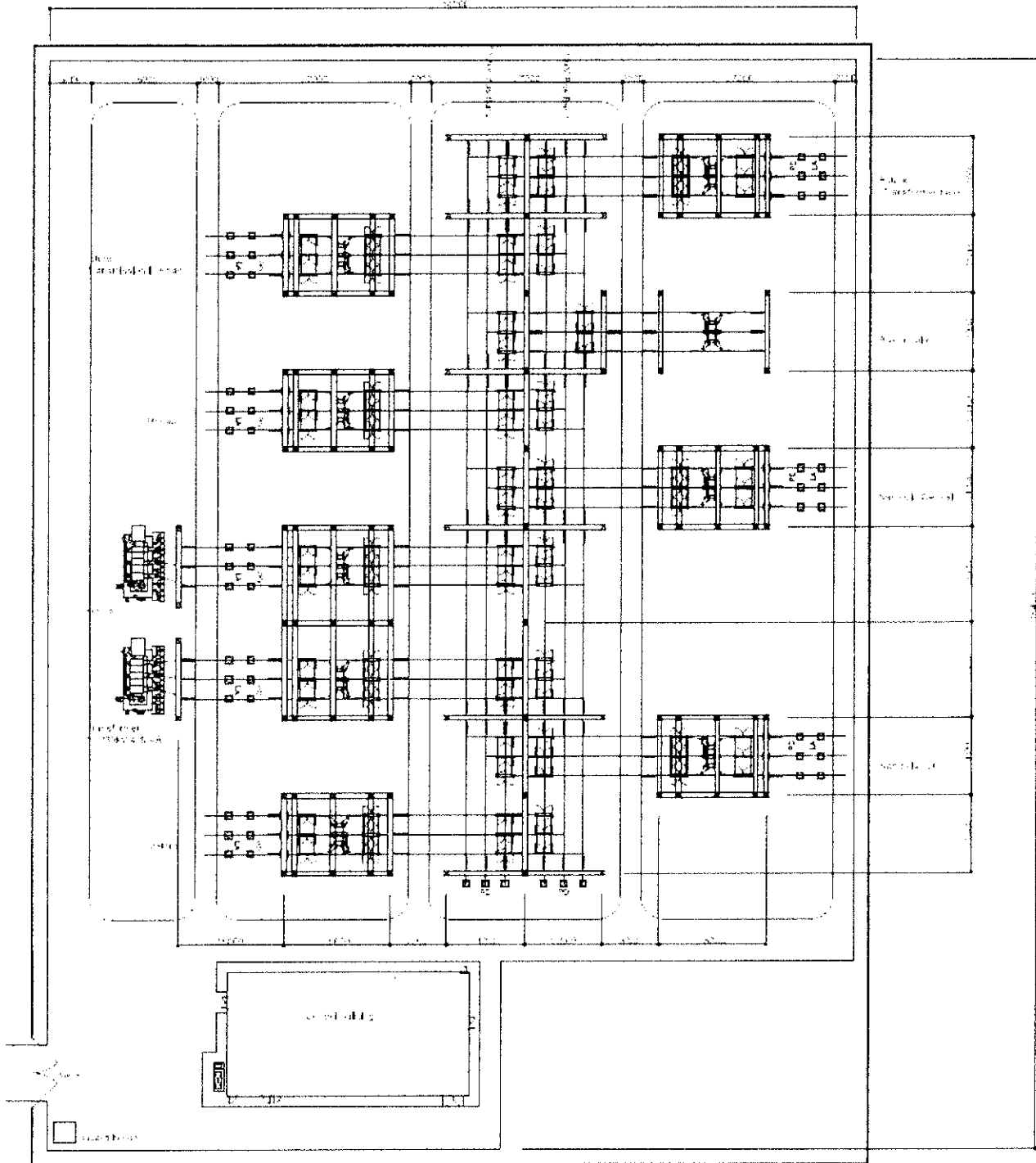
Annex - 1



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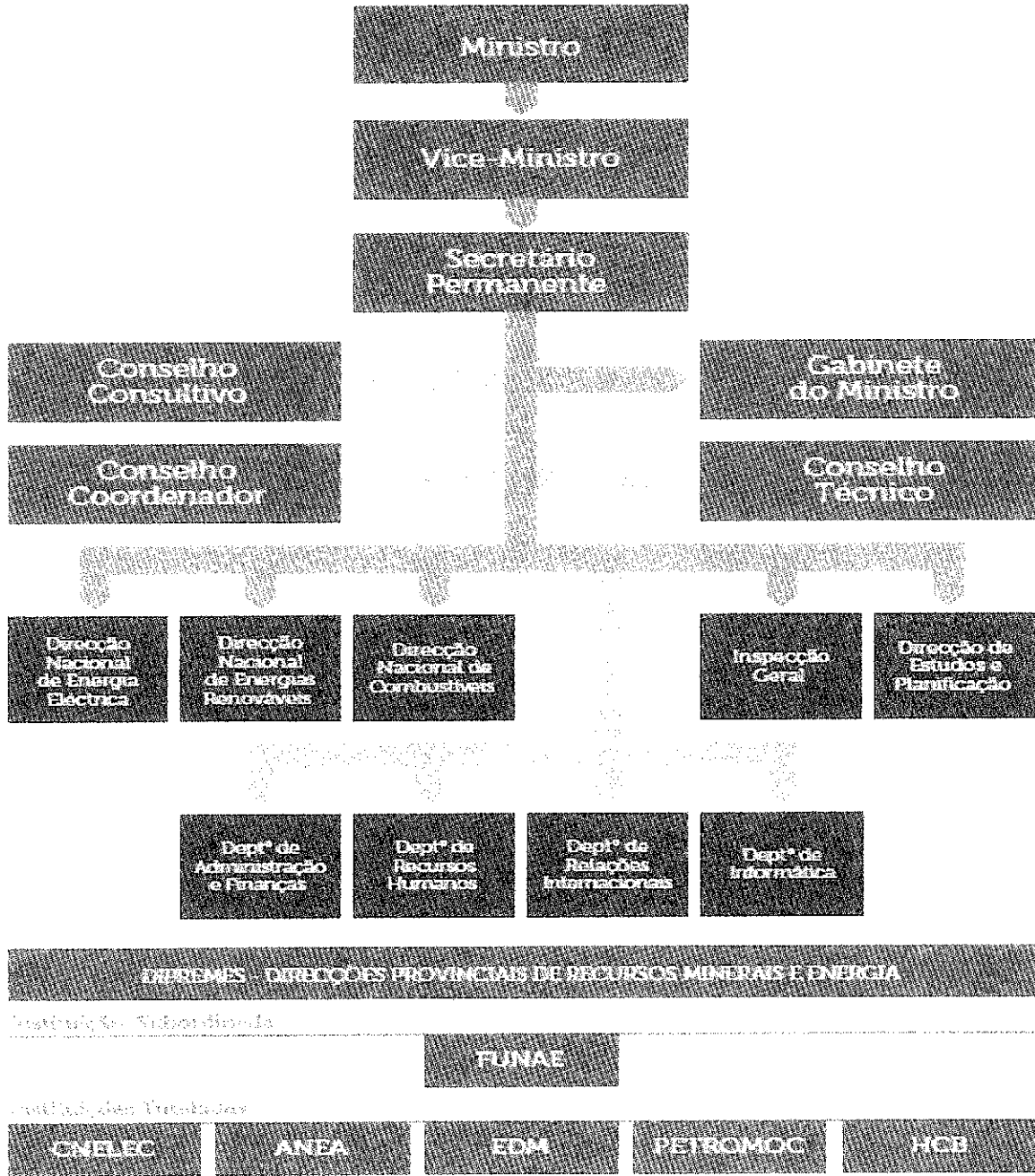


### LAYOUT OF THE PROJECT SITES



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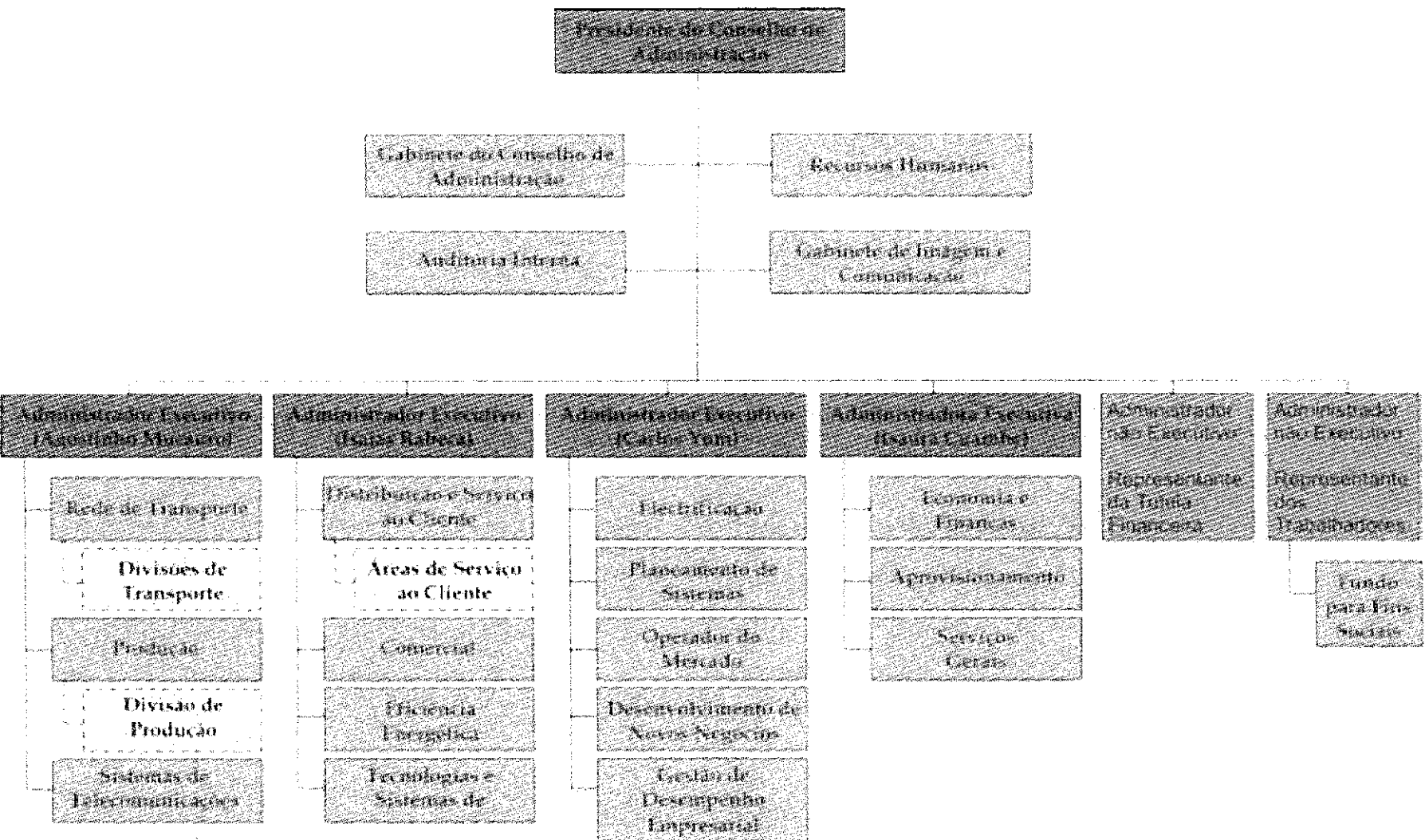
**ORGANIZATION STRUCTURE OF THE MINISTRY OF ENERGY**





ORGANIZATION STRUCTURE OF  
ELECTRICIDADE DE MOZAMBIQUE, E.P.

Annex-4



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Details of Project Components Selection

At Project Proposal (Jul 2013) >>>		At the end of 2nd survey (Jun 2014) >>>		At DOD Mission (Jan 2015)				
No.	Component	No.	Component	Remarks	No.	Component	Adoption	Reason of adoption/exclusion
1.	Namialo Substation 110kV Line Bay 110kV Transformer Bay 110kV Switchgear 33kV Swithgear 33kV Swithgear cubicle 33kV Feeder control panel SCADA	1.	Namialo Substation 110kV Line Bay 110kV Transformer Bay 110kV Switchgear 33kV Swithgear 33kV Swithgear cubicle 33kV Feeder control panel SCADA		1.	Namialo Substation 110kV Line Bay 110kV Transformer Bay 110kV Switchgear 33kV Swithgear 33kV Swithgear cubicle 33kV Feeder control panel SCADA	Adopted	Adopted since EDM needs the early operation of new Namialo substation.
2.	Nampula 220 substation (existing) SCADA Necessary rehabilitation of existing distribution panel to install SCADA	2.	Nampula 220 substation (existing) SCADA Necessary rehabilitation of existing distribution panel to install SCADA		2.	Nampula 220 substation (existing) SCADA Rehabilitation of existing distribution panel	Adopted	Adopted for the easy operation by EDM
3.	Nampula central substation (existing) SCADA Rehabilitation of existing distribution panel	3.	Nampula central substation (existing) SCADA Rehabilitation of existing distribution panel		3.	Nampula central substation (existing) SCADA Rehabilitation of existing distribution panel	Adopted	Adopted for the easy operation by EDM
		4.	Building (Control building and Guard house)	Proposed by JICA due to its necessity	4.	Building (Control building and Guard house)	Adopted	Adopted since it is indispensable for the operation of new Namialo substation.
		5.	Distribution transformers for non-electrified community along Nacala corridor (10 units)	Proposed by JICA in consideration of the contribution to non-electrified communities	5.	Distribution transformers for non-electrified community along Nacala corridor (3 units for 2 communities)	Reduced	Adopted but numbers of transformers are reduced due to budgetary limitation.
		6.	PLC · Namialo <-> Nampula central · Nampula central <-> Nampula 220 · Namialo <-> Nampula 220 · Namialo <-> Monapo · Namialo <-> Metoro	Requested by EDM	6.	PLC · Namialo <-> Nampula central · Nampula central <-> Nampula 220	Adopted	Adopted but the following lines are excluded from the project since it is not indispensable for the SCADA system · Namialo <-> Nampula 220 · Namialo <-> Monapo · Namialo <-> Metoro
		7.	New transmission tower and cable	Requested by EDM	7.	New transmission tower and cable	Adopted	Adopted since it is indispensable for the operation of new Namialo substation.
		8.	Emergency generator	Requested by EDM	8.	Emergency generator	Adopted	Adopted since it is indispensable for the operation of new Namialo substation.
	Estimated Project Cost ¥2,273,572,000		Estimated Project Cost ¥3,121,824,000			Estimated Project Cost ¥1,893,049,000		
	: Additional component requested by EDM		: Additional component proposed by JICA			: Component excluded from the Project after sorting out by the consultant in consideration of its necessity and budgetary limitation.		

AA-2-12

## JAPAN'S GRANT AID

Based on the new JICA law entered into effect on October 1, 2008, JICA is designated as the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

### 70. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures :

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal & Approval
  - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A" )
  - Agreement concluded between JICA and a recipient country
- Implementation
  - Implementation of the Project on the basis of the G/A

### 2. Preparatory Survey

#### (1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of a outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

#### (2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

#### (3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

### 3. Japan's Grant Aid Scheme

#### (1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such

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as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex-8.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

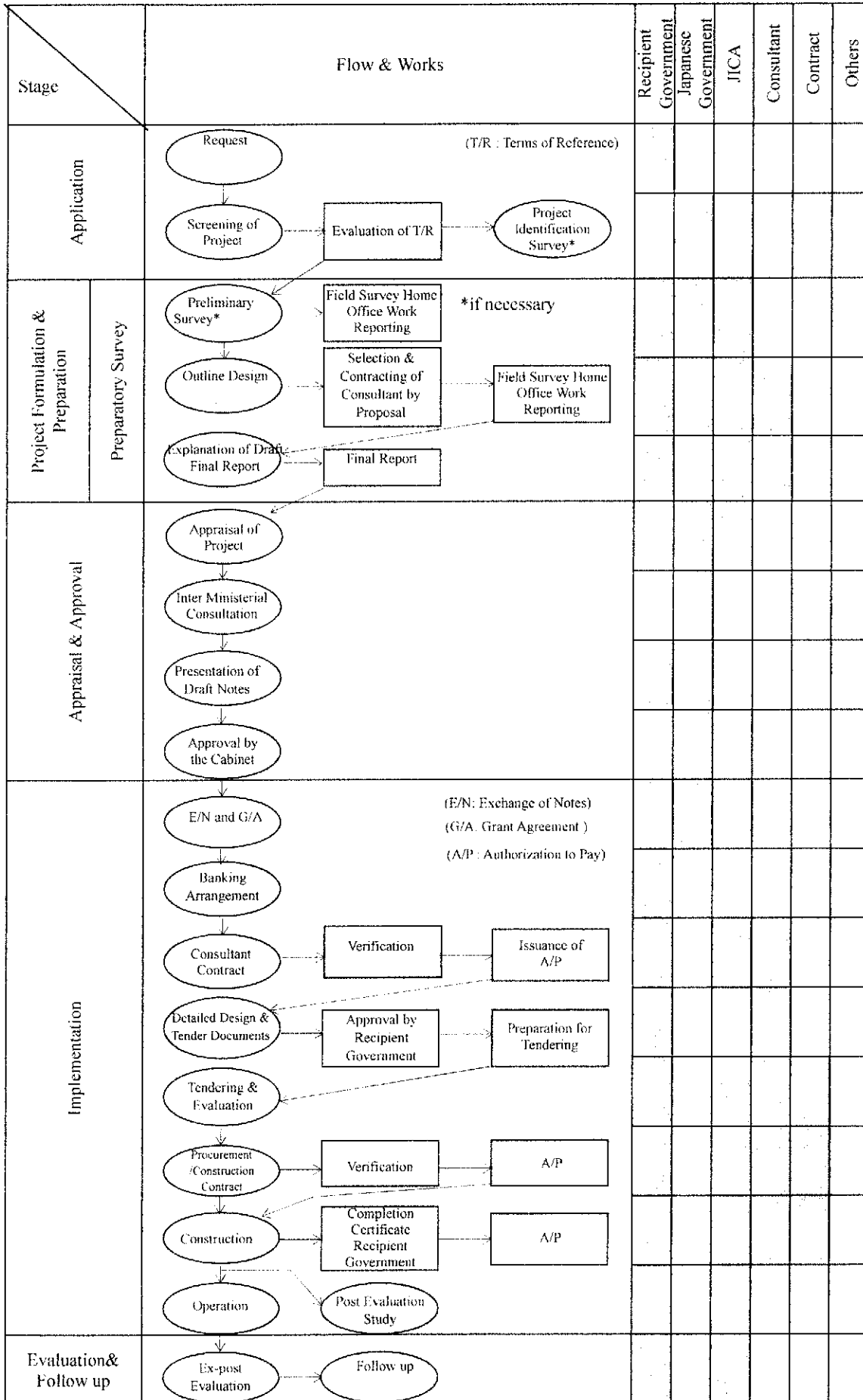
The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

(End)

**FLOW CHART OF JAPAN'S GRANT AID PROCEDURES**



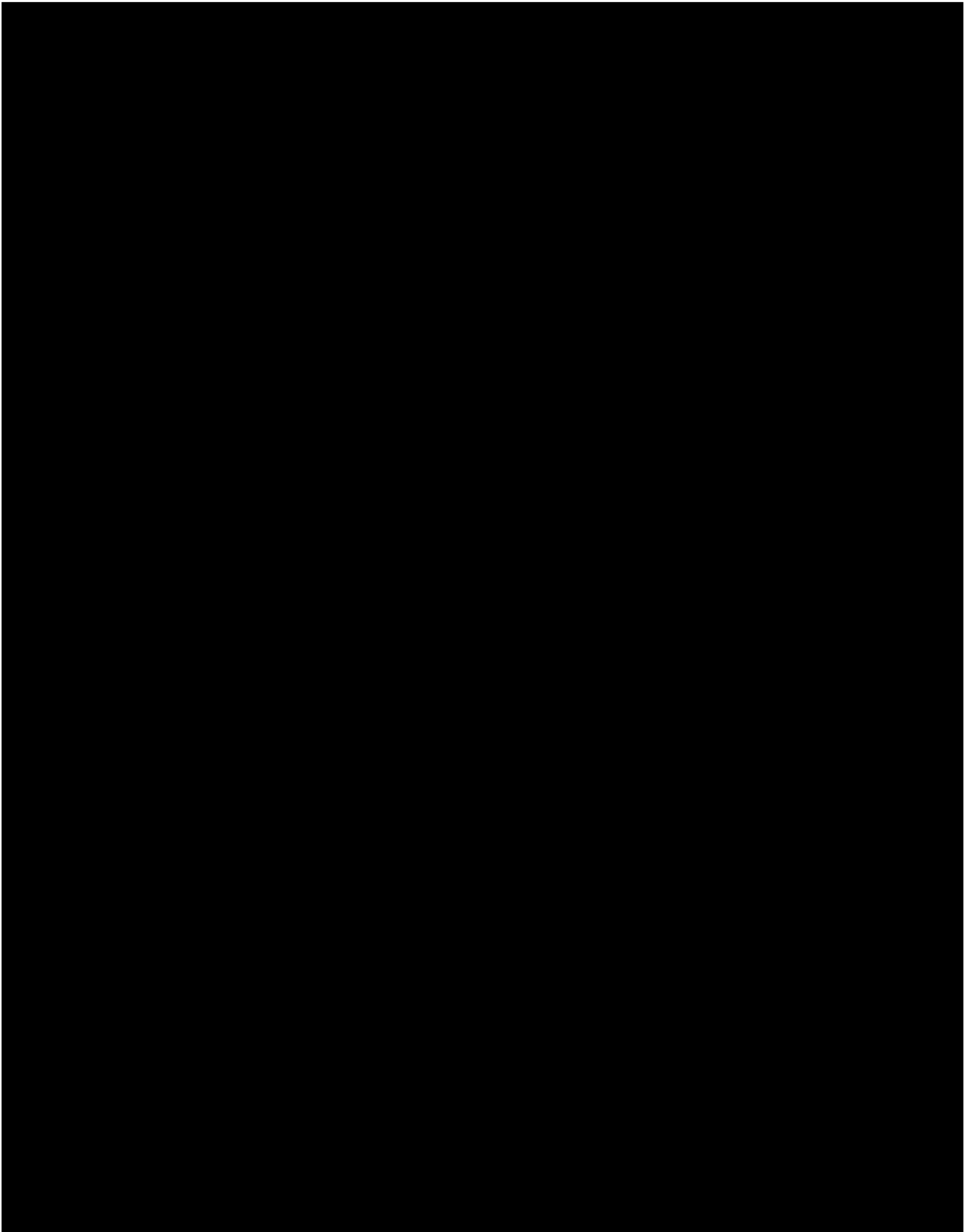
### Major Undertakings to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
<b>For The Construction of New Namialo Substation</b>			
1	To secure land (Project site, Temporary yard and etc.)		•
2	To compensate against farming and fruit trees		•
3	To clear, level and reclaim the site when needed		•
4	To certify that the project area is free from mines		•
5	To approve the contract with Japanese consultant and contractor (by CREE)		•
6	To construct new substation		
	1) 110kV switchgears, bus and steel structures	•	
	2) 110kV/33kV Transformer	•	
	3) 33kV feeder switchgears	•	
	4) Protection relaying for both 110kV and 33kV equipment	•	
	5) Substation control board	•	
	6) Power and control cable and auxiliary devices including in-house power supply transformer	•	
	7) Power and control cable and auxiliary devices	•	
	8) Substation ground grid construction	•	
	9) 110kV transmission tower reinforcement	•	
	10) 110kV new transmission tower construction and connection to substation	•	
	11) 33kV cables connection from substation to distribution lines	•	
	12) Disposal of removed existing tower, line conductor and insulators		•
7	To construct the following facilities		
	1) The buildings	•	
	2) The gates and fences in and around the site		•
	3) The parking lot	•	
	4) The road within the site	•	
	5) The permanent access road to the site		•
	6) The railway crossing for the access road		•
	7) The temporary access road to the site for the construction activities	•	
8	To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the sites		
	1) Electricity		
	a. The distributing power line to the site	•	
	b. The drop wiring and internal wiring within the site	•	
	c. The main circuit breaker and transformer	•	
	2) Water Supply		
	a. The city water supply for the operation of substation		•
	b. The supply system within the site (receiving and elevated tanks)	•	
	3) Drainage		
	a. The city drainage main (for storm sewer and others to the site)	N/A	N/A
	b. The drainage system (for toilet sewer, common waste, storm drainage and others) within the site	•	
	4) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		•
	b. The MDF and the extension after the frame/panel	•	
	5) Furniture and Equipment		
	a. General furniture		•
	b. Project equipment	•	
<b>For The Rehabilitation of Existing Substations (Nampula 220 &amp; Nampula Central)</b>			
9	To rehabilitate existing substations		
	1) Replacement of switching board and relaying to be renewed		•
	2) Control cable connection and testing	•	
	3) Disposal of removed equipment and cables		•
<b>For The Provision of SCADA at New Namialo Substation and Existing Nampula 220 &amp; Nampula Central Substation</b>			
10	To construct new SCADA system		
	1) Installation of new SCADA	•	
	2) Installation of RTU and control cable connection	•	
	3) Remote signal testing between SCADA and RTU	•	

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
	4) Tele-communication lines for SCADA	•	
	5) Data preparation for supervisory alarms and metering, and control		•
	6) Implementation of supervisory and control data	•	
For The Provision of Pole Transformer to Non-Electrified Area			
11	To provide pole transformer		
	1) MV/LV pole mounted transformers	•	
	2) Related equipment (lightning arresters, dropout fuses, cross arms, connectors, lead wire, etc)	•	
	3) Installation of transformers and all related equipment	•	
Common For All Components			
12	To ensure prompt unloading and customs clearance of the products at ports of disembarkation in recipient country and to assist internal transportation of the products		
	1) Marine (Air) transportation of the products from Japan to the recipient country	•	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the Project site	•	
13	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be exempted / be borne by the Authority without using the Grant		•
14	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
15	To ensure that the facilities and equipment be maintained and used properly and effectively for the implementation of the Project		•
16	To give due environmental and social consideration in the implementation of the Project		•
17	To bear all the expenses, other than those covered by the Grant, necessary for implementation of the Project		•
18	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•

(B/A : Banking Arrangement, A/P : Authorization to pay)

**(Confidential)**  
**Estimated Project Cost**



※施工・調達業者契約認証まで非公表

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## Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) Y (c) N (d) Y	(a) EIA Study was approved as overall component of much large-scale NORCONSULT F/S study by MICOA as per the official letter (No.138/GM/MICOA/13 to EDM) dated 6 December 2013. (b) As of above the EIA study has already been approved. Also for this project with some modification like slight relocation of the substation and new access road it has already been confirmed by MICOA (Letter No. 826/MICOA/DNAIA/180/14 dated 12 June 2014 to EDM) that no additional official environmental clearance is required since this project (Namialo SS with access road) is located within the area of influence of the approved EIA study in December 2013 for NORCONSULT F/S. (c) Resettlement Plan was recommended for revision as it was regarded as rather preliminary though this aspect is not relevant since no population resettlement is involved for this Namialo SS Project. (d) No other additional permit is required.
	(2) Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Stakeholder consultation and related agreement was obtained as component of approved EIA study for NORCONSULT F/S. Additionally, a public participation meeting was performed at Meconta District (on August 22, 2014) with the aim of presenting the project, potential impacts and recommended mitigation measures. The meeting followed the requirements regarding dissemination and procedures for presentation and inclusion of interested and affected parties. (b) The issues raised during the public participation meeting dealt mainly with the project set up and initiation, the benefits it will bring to the population of Meconta and hiring local labor. Issues that would result in the need to change the design of the project were not raised.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Analysis of alternatives was performed, particularly regarding the location of the project substation, and as to the condition of not implementing the project. Concerning the analysis of an alternative location, an alternative site was initially chosen under the scope of the Feasibility Study on Chimwara-Nacala Transmission Project (2013), approximately 800 meters from the current Namialo site; this alternative site was less advantageous than the current Namialo site due to erosion potential, closer proximity to a village and higher potential for economic relocation. The "no action" alternative was analyzed in the light of the increased demand for electric power in the coming years, the needs for expanding the access to stable electrical power of good quality to more households and new industries in the Northern region and the restrictions that such alternative imposes (given the use and requirements by other countries in the region using the Cahora Bassa electric power). It was concluded that within such context the implementation of the Namialo substation is crucial.
2 Pollution Control	(1) Water Quality	(a) Is there any possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in downstream water areas? If the water quality degradation is anticipated, are adequate measures considered?	(a) N	(a) In consideration to the flat topography of the area and no surface water bodies like rivers in its vicinity no adverse effects on water quality is anticipated.

3 Natural Environment	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	(a) There are no protected/ecologically significant areas in project area and its vicinity.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (d) Are adequate measures taken to prevent disruption of migration routes and habitat fragmentation of wildlife and livestock? (e) Is there any possibility that the project will cause the negative impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystem due to introduction of exotic (non-native invasive) species and pests? Are adequate measures for preventing such impacts considered? (f) In cases where the project site is located in undeveloped areas, is there any possibility that the new development will result in extensive loss of natural environments?	(a) N (b) N (c) - (d) - (e) N (f) N	(a) No. The project site is basically barren/open flat land. (b) No. Project site does not encompass habitats of protected/endangered species. (c) No significant ecological impacts is anticipated (d) The project site is located at existing power transmission line (route) and no effect on migration is anticipated. (e) No such effect is anticipated since the project site is located at existing power transmission line. (f) Project area though rather undeveloped has high anthropogenic (human) influence to result in extensive loss in natural environmental resources (Project site located along existing power transmission line).
3 Natural Environment	(3) Topography and Geology	(a) Is there any soft ground on the route of power transmission and distribution lines that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed? (b) Is there any possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides? (c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?	(a) N (b) N (c) N	(a) The topography is flat land. So there is no potential for slope failure or landslide. (b) No large-scale cutting and filling works is involved. (c) No significant waste, soil and other run-off is anticipated. Still, construction contractor shall take necessary measures as appropriate as overall EHS (environment, health safety) measures to realize good construction practice.
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Are the compensations going to be paid prior to the resettlement? (e) Are the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement	(a) N (b) Y (c) Y (d) Y (e) Y (f) Y (g) N (h) Y (i) Y (j) Y	(a) No resettlement of population is required since both project site and access road are located in an area with no human settlements. However, the area is characterized by small plots of farmland (machambas) where the local community cultivates, mostly subsistence agriculture. Therefore, economic displacement of Project Affected Persons (PAP) is expected (19 households/HHs), involving losses of income and/or means of livelihood The implementation of a Simplified Land Use Compensation Plan (SLUCP) was proposed to address the social impacts of the project and to ensure successful restoration and improvement of the living standards, income earning capacity and production levels of PAPs.  (b) Adequate explanation to affected subsistence farmers for relocation of their farms and compensation for losses is assured by the SLUCP. The implementation of the SLUCP shall be pursued by EDM in cooperation with Nampula Provincial Government, Nampula District Administration, Nampula Provincial Directorate of Agriculture, Nampula Provincial Services of Geography and Cadastre as well as

	<p>resettlement? Are the capacity and budget secured to implement the plan?</p> <p>(i) Are any plans developed to monitor the impacts of resettlement?</p> <p>(j) Is the grievance redress mechanism established?</p>	<p>with the Traditional Authorities. Among others, these entities should ensure that PAPs are well informed at each stage of the process, including procedures and time frames for displacement and compensation, as well as aware of their rights and obligations. On the other hand, during socio-economic field survey, the survey team had already made a short report on the project and its impacts to the secretary of the affected area and the secretary of the nearest area and interviews were conducted to assess the prevailing socioeconomic conditions and to obtain further detailed information on their opinion with regards to the project, displacement and income restoration.</p> <p>(c) SLUCP was developed based on a socio-economic survey and data analysis which comprised a census covering 100% of the project affected Household Head (HH) with farming activity within the project area (19 HH in total). The identification of the farmers and land holders inside the project area was made with the help of the traditional authority that joined the socioeconomic team from day one through all stages.</p> <p>(d) No resettlement. Implementation of the SLUCP will begin prior to the constructions works. No construction work will begin until all PAPs have been compensated and farms are relocated from the project site. On other hand, relocation will be undertaken after necessary compensation and assistance have been provided. A total estimated time of 14 month will be required for the implementation of SLUCP. The process of compensation and posterior reallocation will occur within the first 4 months. Additional 10 months will be required for monitoring PAP and ensure that livelihood and income have improved at least to the pre-project standard, by allowing the monitoring to cover at least 2 harvest seasons. Implementation timetable will commence after the final approval of the Simplified Land Use Compensation Plan.</p> <p>(e) The SLUCP embodies an extensive analysis of policies, legal framework and guidelines, both Mozambican and JICA, to be respected and followed. Additionally, the document presents the eligibility criteria, and the entitlement for different types of losses (loss of agricultural land, loss of cropping areas and loss of fruit trees).</p> <p>(f) SLUCP pays special attention to vulnerable groups (elders, young people, the handicapped, the poor, isolated groups and single heads of households), since they are more susceptible to negative impacts of displacement than the rest of the PAPs. The plan states that EDM will support all costs associated with the assistance to vulnerable persons such as transportation, logistics and administration, when required. In addition monitoring actions of the plan implementation should evaluate the impact of project on the socio-economic status of PAP after the displacement and compensation process, whether they are better or worse regarding livelihoods restoration, especially for vulnerable persons.</p> <p>(g) SLUCP defines a set of measures to be adopted in accordance with JICA guidelines and Mozambican legislation. These are pre-defined measures that include certain countervailing duties already defined by law, including the eligibility and entitlement for compensation.</p> <p>(h) No resettlement is involved. Still, SLUCP incorporates an institutional and implementation framework. It was proposed that the implementation of the SLUCP shall be pursued by EDM in cooperation with Nampula Provincial Government, Nampula District Administration, Nampula Provincial Directorate of Agriculture, Nampula Provincial Services of Geography and</p>
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			<p>Cadastre as well as with the Traditional Authorities; the plan defined their respective roles. SLUCP also estimated the total cost for compensating PAP based on the market price.</p> <p>(i) No resettlement is involved. However, the SLUCP indicates that monitoring and evaluation are critical tools in order to assess the overall project performance, particularly regarding PAP livelihood restoration. According to this, EDM, the implementing entity, shall establish an internal monitoring system for collection, analysis and reporting on SLUCP progress. In addition, an independent external monitoring and evaluation agency must be commissioned for monitoring the impact of the SLUCP implementation and periodic evaluation of compensation process and final outcome. The performance indicators will be listed and monitored by means of the above two monitoring mechanisms.</p> <p>(j) The SLUCP establishes and defines Procedures for Grievance Redress Claims. Grievances related to any aspect of the SLUCP will be handled through negotiation aimed at achieving consensus. Complaints will pass through 3 stages before applying to a court of law as a last resort: address the complaint in writing or verbally to traditional leaders which must resolve the dispute within 7 days; if the aggrieved PAP is not satisfied with the decision taken at the first level, must present the complaint to the Compensation Advisory Committee which will communicate the proposed resolution within 10 days; in a last level, when conflicts cannot be resolved informally at the Project level, formal mechanisms will be required and the Provincial Government can be referred to.</p>
(2) Living and Livelihood		<p>(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary?</p> <p>(b) Is there a possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary?</p> <p>(c) Is there any possibility that installation of structures, such as power line towers will cause a radio interference? If any significant radio interference is anticipated, are adequate measures considered?</p> <p>(d) Are the compensations for transmission wires given in accordance with the domestic law?</p>	<p>(a)N/ Y (b) Y (c) N (d) -</p> <p>(a) The project site and access road are located in an area with no human settlement. However, the area is characterized by small plots of farmland (machambas) where the local community cultivates, mostly subsistence agriculture. Therefore economic displacement of PAPs is encountered (19HHs), involving losses of income or means of livelihood. As such a Simplified Land Use Compensation Plan (SLUCP) study was carried out to address the social impacts of the project and to ensure successful restoration of the living standards, income earning capacity and production levels of PAPs.</p> <p>In this respect the SLUCP proposed compensation and assistance system for the PAPs that included the following elements:</p> <ul style="list-style-type: none"> <li>- Provision of land for land with same agricultural potential for all farmland losers with paid labor by the affected farm land losers themselves for the preparation of such new farmlands</li> <li>- Monetary compensation for lost crops and fruit trees with each lost fruit tree being replanted with 2 fruit trees (twice replacement of lost fruit trees)</li> <li>- Provision of seeds</li> <li>- Assistance to vulnerable people</li> </ul> <p>(b) The Construction Contractor shall incorporate appropriate mitigation measures to protect its workforce, as a general component of EHS associated with the construction phase.</p> <p>(c) No such effect is regarded as significant since the project site is located along already existing power transmission line (route).</p> <p>(d) No such compensation is regarded as</p>

				necessary since the project site is located along existing power transmission line.
4 Social Environment	(3) Heritage	(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) There are no heritage related sites in and in the vicinity of the project area.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) No significant effect on landscape is anticipated by the project. It is noted that the project site is traversed by existing transmission power line and is bare flat land.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) - (b) -	(a) There are no ethnic minorities/indigenous people living in the site or in the vicinity of project area. (b) No effect as of above.
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) N (b) Y (c) Y (d) Y	(a) EDM as the project proponent/owner shall ensure all such domestic laws are duly followed by the construction contractor. As good construction practice and also to conform to EHS of construction works construction contractor also shall ensure compliance with relevant domestic laws on safe working condition. (b) As overall EHS of construction works construction contractor shall ensure due safety of construction works (good construction practice with due commitment to "Safety First" concept). (c) As of above EHS of contractor shall ensure all tangible safety programs are implemented. (d) As of above construction contractor shall ensure due safety and security of construction site.
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) Y (b) Y (c) Y	(a) The required management/mitigation measures for construction works were incorporated in the SES study. The study analyzed impacts on soils and topography, air quality, hydrology, production of waste, noise, flora and fauna, landscape, land use, traffic and transportation, public utilities, health, economy and tensions. Since the project site is sparsely populated with vast expanse of uninhabited area, most of the impacts were classified as having low significance. A number of mitigation measures have been recommended for the potential impacts of this phase, whose implementation is the responsibility of the Contractor. Construction Contractor also shall ensure that appropriate processes are used to mitigate adverse environmental effects as a general component of the EHS of construction works. (b) No significant adverse effects on natural environment is anticipated with due compliance by construction contractor on EHS (good construction practice). (c) Same as above.

	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	(a) Y (b) Y (c) Y (d) -	(a) Required monitoring program on tentative basis that covered ambient air quality and noise and vibration was formulated by the SES Study. The proponent will monitor the implementation of monitoring plan. (b) Same as above, the required items, methods, frequencies aspects are incorporated in the monitoring program developed by the SES Study. (c) Monitoring during construction works will be under the responsibility of the construction contractor and supervision of EDM, the cost of which will be incorporated in the overall construction works. No significant monitoring requirement is expected consequent to the operation of the SS with due mitigation measures to control noise/vibration (green area surrounding the SS and/or structural noise control measures as appropriate). (d) EDM as the project proponent/owner shall ensure due reporting system of the monitoring results will be followed during the project implementation.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Road checklist should also be checked (e.g., projects including installation of electric transmission lines and/or electric distribution facilities).	(a) Y	(a) No additional requirement is noted.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed, (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) Y	(a) There are no significant transboundary or global warming issues for this Namialo SS project.

- 1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made. In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan's experience).
- 2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which it is located.

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## Environmental Monitoring Form

## Monitoring Plan

Environmental Items	Environmental Parameters/ Monitoring Item	Unit	Mozambique Standards: Decree 18/2004 and supplement 67/2010	Referred International Standards – WB/IFC Guidelines	Remarks (Measurement Point, Frequency, Method)	Responsible Agency	Cost of Monitoring
<b>Construction Phase</b>							
Air Quality	SPM <sub>10</sub>	µgm/m <sub>3</sub>	Not Specified	50 150 Interim Value	· One Sampling Point near the project site and one sampling point 1 km away from the project site · At least once in three months (one every season) – one 24 hr. day sampling · High Volume Dust Sampler may be used	Implementation – Contractor / EDM	5000 USD per set Included in the overall construction cost
	SPM <sub>2.5</sub>	µgm/m <sub>3</sub>	Not Specified	35 75 Interim Value	· One Sampling Point near the project site and one sampling point 1 km away from the project site · At least once in three months (one every season) – one 24 hr. day sampling · High Volume Dust Sampler may be used	Implementation – Contractor / EDM	5000 USD per set Included in the overall construction cost
Noise and vibration	Noise and vibration level	dB	Not Specified	70 (Night-time) 70 (Day-time) (Industrial Area)	100m from the construction site Per Month one 24-hr. day sampling Sound level meter	Implementation – Contractor / EDM	5350 USD per set Included in the overall construction cost
Waste	Solid waste (including demolition waste) Sanitary waste Housekeeping waste	-	-	-	Worksite and camp site (weekly)	Implementation – Contractor / EDM	Included in the overall construction cost
<b>Operation Phase</b>							
Waste	Solid waste and sanitary waste Housekeeping waste of the substation	-	-	-	Substation Worksite (weekly)	Implementation – EDM (North Region)	Included in the overall operation cost

A4-2-25

Monitoring Form

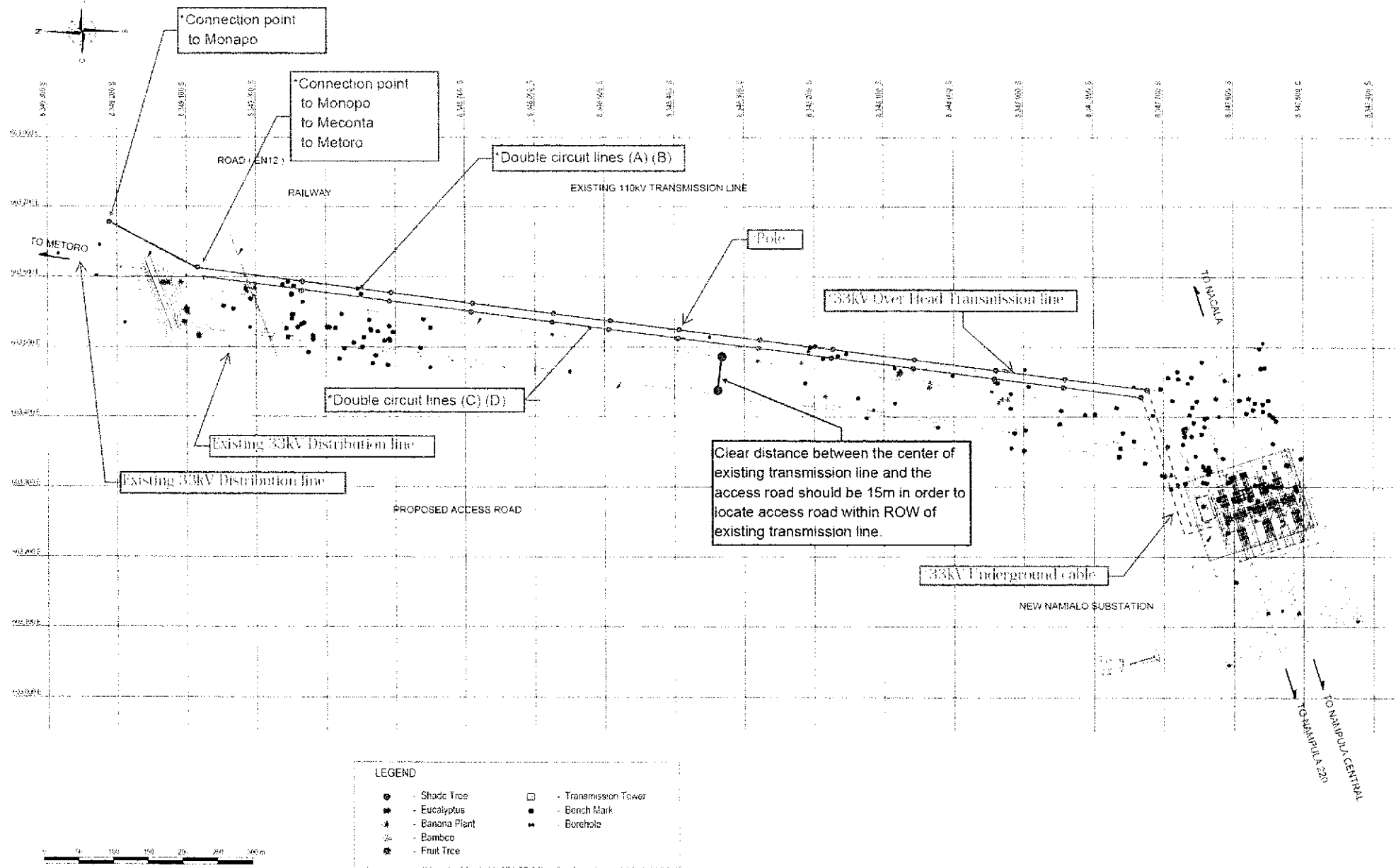
Environmental Parameter	Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Mozambique Standards: Decree 18/2004 and supplement 67/2010	Referred International Standards – WB/IFC Guidelines	Remarks (Measurement Point, Frequency, Method)
<b>Construction Phase</b>							
Air Quality	SPM <sub>10</sub>	µg/m <sup>3</sup>			Not Specified	50 150 Interim Value	One Sampling Point near the project site and one sampling point 1 km away from the project site At least once in three months (one every season) – 24 hr. day sampling High Volume Dust Sampler may be used
	SPM <sub>2.5</sub>	µg/m <sup>3</sup>			Not Specified	35 75 Interim Value	One Sampling Point near the project site and one sampling point 1 km away from the project site At least once in three months (one every season) – 24 hr. day sampling High Volume Dust Sampler may be used
Noise and vibration	Noise and vibration level	dB			Not Specified	70 (Day-time) 70 (Night-time)	· 100m from the construction site · Per Month one 24-hr. day sampling · Sound level meter
Waste	Solid waste (including demolition waste) Sanitary waste Housekeeping waste						Worksite and camp site (weekly)
<b>Operation Phase</b>							
Waste	Solid waste and sanitary waste Housekeeping waste of the substation						Substation Worksite (weekly)

A4-2-26

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Overview of Layout Plan of Namialo Substation

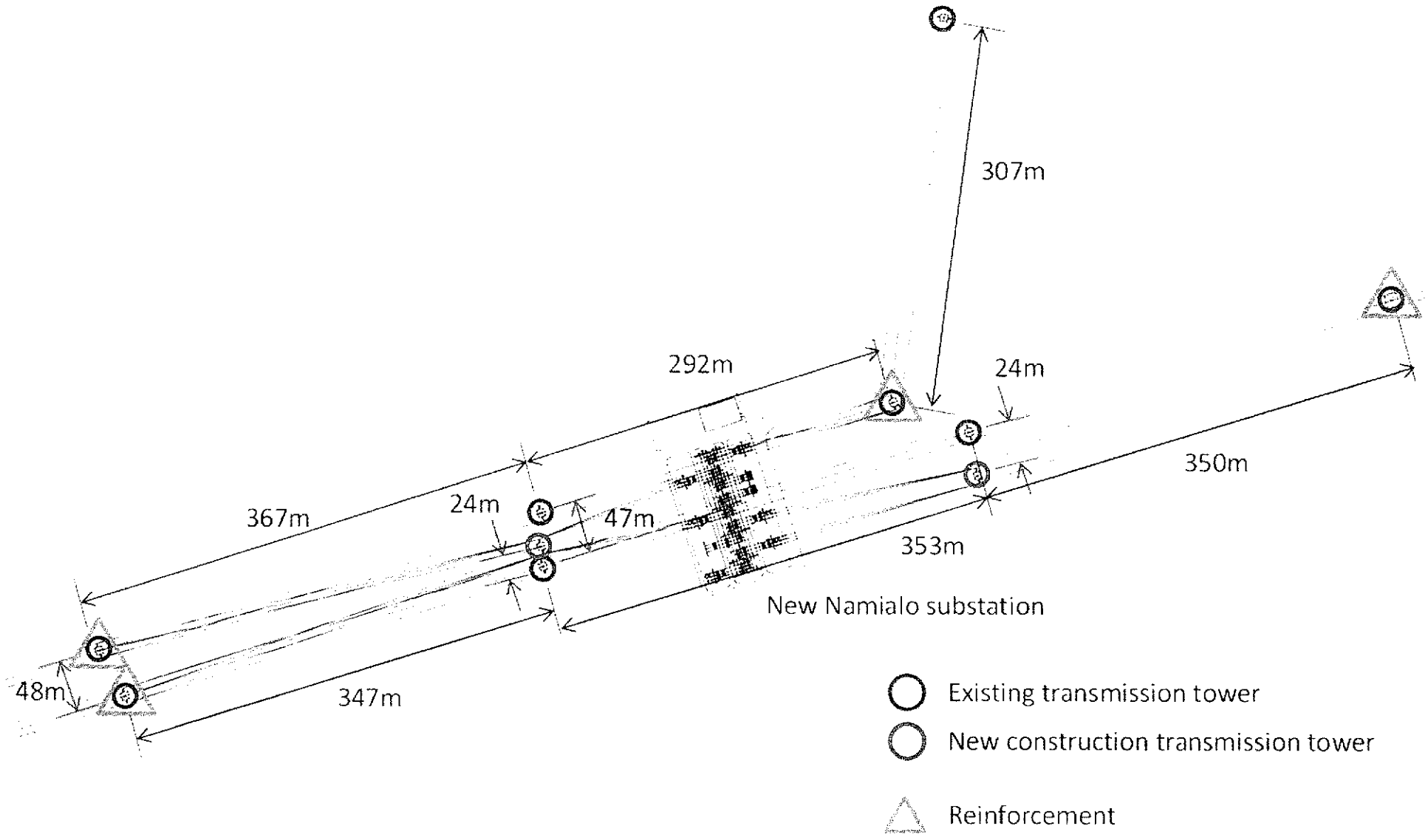


LEGEND

●	- Shade Tree	□	- Transmission Tower
◆	- Eucalyptus	■	- Bench Mark
★	- Banana Plant	●	- Borehole
☼	- Bamboo		
✿	- Fruit Tree		

A4-2-27

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- Existing transmission tower
- New construction transmission tower
- △ Reinforcement

A4-2-28

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Time Flame of Major Undertakings by the Mozambican side

No	Item	Details	2015												2016												2017												Timing
			Apr G/A	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan H/O of Dist.	Feb Transformer	Mar	Apr	May	Jun H/O of the Project	Jul	Aug	Sep	Oct	Nov	Dec				
<b>General</b>																																							
1.	Tax Exemption	EDM is to ensure that Japanese consultant and contractor shall be exempted from custom duties, internal taxes and other fiscal levies.																																					Through the project period
2.	Commissions to Bank	EDM is to bear the following commissions paid to Japanese bank for banking services based upon the Banking Arrangement( B/A).																																					Through the project period
<b>Preparatory Stage</b>																																							
1.	Land Acquisition	EDM is to acquire the land if the project site and access road go beyond the Right of Way (ROW) of existing 110kV transmission lines.																																					Prior to the "Invitation to Tender"
2.	Site clearance	EDM is clear and level the construction site and access route from EN12 to the site.																																					Prior to the "Invitation to Tender"
3.	Clearance of Mines	EDM is certify that the construction site and access route are free from Mines. It would be confirmed by the Map of Mines by IMD.																																					Between G/A and "Invitation to Tender"
4.	Compensation for land use	EDM is to compensate for the people cropping within the construction site and access route.																																					Between G/A and "Invitation to Tender"
5.	Construction of gate and boundary wall	EDM is to construct the gate and wall of new Namialo substation.																																					Between "Contract with Consultant" and "Contract with Contractor"
6.	Construction of railroad crossing	EDM is to construct the railroad crossing in order to secure the access from EN12 to site. <i>*EDM is to perform the work required to ensure the offset distance from existing 33kV distribution lines when containers and main transformers are brought in.</i>																																					Between G/A and "Invitation to Tender"
7.	Approval of contracts for Consultant and Contractor by CREE	EDM is to ensure that the contract with Japanese Consultant and Contractor shall be approved by CREE without any delay.																																					2 months before the contract
<b>Construction Stage</b>																																							
8.	Structural examination and reinforcement for existing transmission tower	EDM is to carry out the structural examination and reinforcement of existing transmission towers adjacent to new transmission towers.																																					Between "Invitation to Tender" (finalization of detail design) and "Contract with Contractor"
9.	Disposal of removed transmission tower materials	EDM is to dispose removed materials after the demolition of existing transmission towers.																																					After the demolition of existing transmission towers
10.	Installation of LV distribution lines other than those covered by the Grant Aid	EDM is to install the LV distribution lines other than those covered by the Grant Aid in "Poste de Secretariado de 25 de Setembro" and "Muxaleque" with related equipment																																					To be completed by the commencement of the operation of Namialo substation
11.	Construction of permanent access road	EDM is to construct and maintain the permanent access road.																																					EDM may start the construction of permanent access road during construction period in coordination with the contractor.
12.	Provision of the general furniture	EDM is to provide the general furniture necessary for the operation of new Namialo substation.																																					Between "Completion of Control Bldg." and "H/O of the Project".
13.	Water supply for the operation of new Namialo substation	EDM is to provide water supply for the operation of new Namialo substation.																																					After the commencement of new Namialo substation

Note:  
 PLC required for SCADA system (Namialo - Nampula Central & Nampula Central - Nampula 220) will be provided by Japan side, and PLC not required for SCADA system (Namialo - Nampula 220, Namialo - Monapo and Namialo - Metoro) should be provided by EDM. However, it is not considered as "undertakings by EDM" for this project, since it is not directly related to the operation of Namialo substation.

A4-2-29

## 5. 環境影響評価承認に係る MICOA からのレター



REPÚBLICA DE MOÇAMBIQUE

MINISTÉRIO PARA A COORDENAÇÃO DA ACÇÃO AMBIENTAL  
DIRECÇÃO NACIONAL DE AVALIAÇÃO DO IMPACTO AMBIENTAL  
DNAIA

À:  
EDM

Maputo

Nossa referência Nº 26 /MICOA/DNAIA/180/14

Data: 12-06-2014

**Assunto: Projecto de Transporte de Energia Chimuara – Nacala / Alteração do local da Subestação 400/220/110 Kv de Namialo**

Exmos Senhores,

A DNAIA recebeu de V.Excias o pedido de alteração do local inicialmente proposto para a construção da Subestação de Namialo para um novo local, por forma a capitalizar as infra-estruturas existentes e respectiva minimização de impactos sobre o meio ambiente. Da análise dos antecedentes do projecto e da visita ao novo local, efectuada pela Direcção Provincial para a Coordenação da Acção Ambiental de Nampula, somos de parecer favorável à alteração do local tendo em conta que os impactos ambientais identificados são abrangentes, e não existem pessoas e benfeitorias a serem afectadas.

Com os melhores cumprimentos.



C.C: DPCA-Nampula

## 6. 農作物補償額一覽表

REPUBLIC OF MOZAMBIQUE

Nampula Provincial Government

Provincial Directorate of Agriculture

**Prices of food crops compensation for loss of harvest (MZM)**

1. Fruit Trees

Plants	Each new plant	Each plant at reproductive stage	Old plant (does not reproduce and dry)
Cashew Tree	1,000.00	1,250.00	500.00
Mango Tree	300.00	400.00	150.00
Banana Tree	150	200.00	100.00
Citrus	500.00	750.00	300.00
Lychee Tree	1,100.00	1,500.00	700.00
Jackfruit Tree	250.00	500.00	200.00
Pear/Avocado Tree	500.00	750.00	300.00
Pawpaw Tree	300.00	600.00	200.00
Coconut Tree	1,000.00	1,500.00	500.00
Guava Tree	500.00	750.00	300.00
Starfruit Tree	500.00	750.00	300.00
Sugar Apple Tree	300.00	600.00	200.00
Climbing Fruit Plants	300.00	600.00	200.00
Vine or Grape Tree	350.00	750.00	250.00
Peach Tree	500.00	900.00	400.00
Pineapple Tree	25.00	50.00	15.00
Strawberry Tree*	50.00	100.00	30.00

\*Cost evaluated per square meter (m<sup>2</sup>)

## 2. Cereals and Oilseeds

Harvest	Per square meter (m <sup>2</sup> )
Rice	20.00
Maize	25.00
Sorghum	25.00
Peanut	30.00
Sesame	35.00
Beans	20.00
French Beans	25.00
Sunflower	35.00
Castor	25.00

## 2. Vegetables

Harvest	Per square meter (m2)
Cabbage ( <i>brassica oleracea var. Capitata</i> ), carrot, eggplant, tomato, okra, squash, onion, garlic, pepper, cabagge ( <i>brassica carinata</i> ), lettuce, cucumber, beet, african spinach or amaranthus, spinach, other	50.00

## 3. Roots and Tubers

Harvest	Each stack (Root)	Each stack (Tubers)
Cassava	5.00	20.00
Sweet Potato*	15.00	
Potato*	40.00	
Yam	10.00	15.00

\*Cost evaluated per square meter (m2)



#### 4. Other crops

<b>Harvest</b>	<b>Per square meter (m2)</b>
Tobacco	15.00
Sisal	50.00
Sugar cane*	15.00
Cotton	7.50
Eucalyptus**	missing in original

\*cost evaluated per stack

\*\*cost evaluated per plant

Nampula, 06<sup>th</sup> February 2014

The Provincial Director

Pedro Daniel Dzucule

(M.A. in Development Management)

## 7. 損失財産インベントリー

## 損失財産インベントリー

HH Code	HH Name	Farmland (ID Code)	Farmland area (m2)	Farmland Status	Crop	N° of Cassava	Crop Price (MZM)	Total Crop Value (MZM)	Type of Fruit Tree	N° of Fruit Trees	Fruit Tree Price	Total Fruit Tree Value (MZM)	Total Valuation	
1	Marquita Emilio		1	1440	Cultivated	Cassava	4	5	20	Banana	169	150	25350	
			2	3456	Fallow					Cashew	12	1000	12000	
			3	1240	Fallow									
			4	1558	Fallow									
			5	1085	Fallow									
			6	5135	Fallow									
			7	2550	Fallow									
			8	136	Cultivated	Cassava	7	5	35					
		10	2500	Fallow										
		<b>Sub-Total</b>	<b>9</b>	<b>19100</b>				<b>55</b>				<b>37350</b>	<b>37405</b>	
2	Maria Seleque Muquiquire		9A	5900	Fallow					Cashew	2	1000	2000	
			9B	713	Fallow									
			9C	3900	Cultivated	Cassava	43	5	215					
			9D	2655	Cultivated	Cassava	20	5	100					
				<b>Sub-Total</b>	<b>4</b>	<b>13168</b>			<b>63</b>	<b>315</b>				
3	Alexandre		12	0	Fallow				Cashew	1	1000	1000		

HH Code	HH Name	Farmland (ID Code)		Farmland area (m2)	Farmland Status	Crop	N° of Cassava	Crop Price (MZM)	Total Crop Value (MZM)	Type of Fruit Tree	N° of Fruit Trees	Fruit Tree Price	Total Fruit Tree Value (MZM)	Total Valuation
	Puompuela		15	940	Fallow					Mango	6	300	1800	
			16	940	Fallow									
		<b>Sub-Total</b>	<b>3</b>	<b>1880</b>									<b>2800</b>	
4	Rafael Chahano		13A	8500	Fallow					Banana	1	150	150	
			13B	15	Fallow					Cashew	7	1000	7000	
			17	2948	Fallow									
		<b>Sub-Total</b>	<b>3</b>	<b>11463</b>								<b>7150</b>	<b>7150</b>	
5	José Chico		14	0	Fallow					Cashew	6	1000	6000	
			<b>Sub-Total</b>	<b>14</b>									<b>6000</b>	
6	Agostinho Muquamoá		18	575	Cultivated	Cassava	8	5	40	Banana	51	150	7650	
										Cashew	37	1000	37000	
		<b>Sub-Total</b>	<b>1</b>	<b>575</b>			<b>8</b>		<b>40</b>				<b>44650</b>	
7	Fatima Ernesto		19	750	Cultivated	Cassava	54	5	270	Cashew	17	1000	17000	
			20	2356	Cultivated	Cassava	27	5	135	Banana	3	150	450	
		<b>Sub-Total</b>	<b>2</b>	<b>3106</b>			<b>81</b>		<b>405</b>				<b>17450</b>	
8	Amade sabonete		21A	525	Fallow					Cashew	10	1000	10000	
			21B	1050	Fallow									
		<b>Sub-Total</b>	<b>2</b>	<b>1575</b>									<b>10000</b>	
9	Julietta Manuel		22	15000	Fallow					Banana	357	150	53550	

HH Code	HH Name	Farmland (ID Code)		Farmland area (m2)	Farmland Status	Crop	N° of Cassava	Crop Price (MZM)	Total Crop Value (MZM)	Type of Fruit Tree	N° of Fruit Trees	Fruit Tree Price	Total Fruit Tree Value (MZM)	Total Valuation
										Cashew	39	1000	39000	
		<b>Sub-Total</b>	<b>1</b>	<b>15000</b>									<b>92550</b>	<b>92550</b>
10	Mauricio dos Santos		23	329	Fallow									
	Rosario	<b>Sub-Total</b>	<b>1</b>	<b>329</b>									<b>0</b>	
11	Arira Momade		24	0	Fallow					Cashew	6	1000	6000	
		<b>Sub-Total</b>	<b>1</b>	<b>0</b>									<b>6000</b>	<b>6000</b>
12	Francisco Horta		25	1325	Cultivated	Cassava	25	5	125	Cashew	4	1000	4000	
										Pear	1	500	500	
		<b>Sub-Total</b>	<b>1</b>	<b>1325</b>					<b>125</b>				<b>4500</b>	<b>4625</b>
13	Cardoso Manuel		27	3975	Fallow					Mango	19	300	5700	
	Manhaca	<b>Sub-Total</b>	<b>1</b>	<b>3975</b>									<b>5700</b>	<b>5700</b>
14	Rosario Vasco		26	1875	Cultivated	Beans		20	37500	Banana	416	150	62400	
										Cashew	5	1000	5000	
										Mango	2	300	600	
										Guava	4	500	2000	
		<b>Sub-Total</b>	<b>1</b>	<b>1875</b>					<b>37500</b>				<b>70000</b>	<b>37500</b>
15	Fatima João		27	1875	Cultivated	Beans		20	37500	Banana	97	150	14550	
	(Tenant)	<b>Sub-Total</b>	<b>1</b>	<b>1875</b>					<b>37500</b>				<b>14550</b>	<b>52050</b>
16	Arminda Rafael		28	3750	Cultivated	Beans		20	75000	Banana	153	150	22950	

HH Code	HH Name	Farmland (ID Code)		Farmland area (m2)	Farmland Status	Crop	N° of Cassava	Crop Price (MZM)	Total Crop Value (MZM)	Type of Fruit Tree	N° of Fruit Trees	Fruit Tree Price	Total Fruit Tree Value (MZM)	Total Valuation
	(Tenant)									Cashew	3	1000	3000	
										Mango	10	300	3000	
											Papaya	1	300	
		<b>Sub-Total</b>	<b>1</b>	<b>3750</b>					<b>75000</b>				<b>29250</b>	<b>104250</b>
17	João Martins Alberto		29	9000	Fallow					Cashew	6	1000	6000	
										Mango	2	300	600	
		<b>Sub-Total</b>	<b>1</b>	<b>9000</b>									<b>6600</b>	<b>6600</b>
18	Fernando Selemane		30	675	Fallow					Banana	247	150	37050	
										Cashew	1	1000	1000	
											Mango	1	300	
		<b>Sub-Total</b>	<b>1</b>	<b>675</b>									<b>38350</b>	<b>38350</b>
19	Elisa Megila		31	9000	Cultivated	Cassava	15	5	75	Banana	4	150	600	
											Cashew	8	1000	
		<b>Sub-Total</b>	<b>1</b>	<b>9000</b>				<b>15</b>		<b>75</b>			<b>8600</b>	<b>8675</b>
		<b>Total</b>		<b>97 671</b>					<b>151 015</b>				<b>403 500</b>	<b>554 515</b>

## 8. 簡易用地補償内部モニタリングフォーム

簡易用地補償内部モニタリングフォーム SLUCP

N	Monitoring Indicators	Unit	Monthly Progress (N°)	Monthly Progress (% of the total)	Cumulative Achievement (N°)	Cumulative Achievement (% of the total)
<b>1. Displacement Preparation</b>						
1	Identification of PAP	N°				
2	N° of HH signatures for Compensation contracts	N°				
3	N° of HH with bank account	N°				
4	Identification of farmlands	N°				
5	Identification of Fruit Trees	N°				
6	Identification of Crops	N°				
7	N° of Meeting with PAP	N°				
<b>2. Delivery on Compensation</b>						
1	N° of PAP replaced	N°				
2	Size of farmland allocated	Ha				
3	N° of farmland plots allocated	N°				
4	N° of fruit trees replaced	N°				
5	N° of HH that received seeds assistance	N°				
6	N° of HH-VP that received assistance	N°				
7	Amount of Compensation on Land preparation	MZ M				
8	Amount of Compensation on Crops	MZ M				
9	Amount of Compensation on Fruit Trees	MZ M				
10	Amount of Compensation on Seed	MZ M				
11	Amount of assistance to HH-VP	MZ M				
<b>3. Public Consultation including Grievance Redress</b>						
1	N° of compensation and reallocation meetings	N°				
2	N° of Grievance redress procedures filed	N°				
3	N° of Grievance resolved	N°				



## 9. 簡易用地補償外部モニタリングフォーム

簡易用地補償外部モニタリングフォーム

Relocation Activities	Planned Total	Unit	Progress in Quantity			Progress in %		Expected Date of Completion	Responsible Organization
			During the quarter	Till the last quarter	Up to the quarter	Till the last quarter	Up to the quarter		
Preparation of SLUCP									
Employment of Consultants		Month							
Implementation of Census Survey (Including Socio Economic Survey)									
Approval of SLUCP			Date of Approval						
Finalization of PAPs List		No of PAPs							
Progress of Compensation payment		No of HHs							
Lot 1 (Land)		No of							

Relocation Activities	Planned Total	Unit	Progress in Quantity			Progress in %		Expected Date of Completion	Responsible Organization
			During the quarter	Till the last quarter	Up to the quarter	Till the last quarter	Up to the quarter		
		HHs							
Lot 2 (Crop)		No of HHs							
Lot 3 (Trees)		No of HHs							
Lot 4 (Seeds)		No of HHs							
Lot 5 (VP)		No of HHs							
Progress of Land Acquisition (All Lots)		m <sup>2</sup>							
Progress of Asset Replacement (All lots):		No of HHs							
Lot 1 (Land)		No of HHs							
Lot 2 (Crop)		No of							

Relocation Activities	Planned Total	Unit	Progress in Quantity			Progress in %		Expected Date of Completion	Responsible Organization
			During the quarter	Till the last quarter	Up to the quarter	Till the last quarter	Up to the quarter		
		HHs							
Lot 3 (Trees)		No of HHs							
Lot 4 (Seeds)		No of HHs							
Lot 5 (VP)		No of HHs							

## 10. 指標別モニタリングフォーム

指標別モニタリングフォーム

Serial	Monitoring Item/Indicator	Report Period			
		Month-1	Month-2	Month-3	-----
1	Amicable Negotiation (Total 100%) Cumulative progress				
2	Successful grievance resolution (No.) Cumulative progress				
3	Timely delivery of Compensation (in MZM) Cumulative progress				
4	Satisfied with agreed relocation (No. of PAPs) Cumulative progress				
5	Restoration of economic/agricultural activities (No. of PAPs) Cumulative progress				
6	No of occupational disruption and major damages (No. of PAPs) Cumulative Figure				
7	Land prepared for compensation Cumulative Figure				
8	Trees provided for compensation Cumulative Figure				
9	Seed provided to PAPs Cumulative Figure				
10	Enhanced livelihood through effective use of compensation (No. of PAPs) Cumulative progress				
11	Assistance provided to Vulnerable Persons -In MZM -No. PAPs				

## 1 1. 環境チェックリスト

環境チェックリスト

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) Y (c) N (d) Y	(a) EIA Study was approved as overall component of much large-scale NORCONSULT F/S study by MICOA as per the official letter (No.138/GM/MICOA/13 to EDM) dated 6 December 2013. (b) As of above the EIA study has already been approved. Also for this project with some modification like slight relocation of the substation and new access road it has already been confirmed by MICOA (Letter No. 826/MICOA/DNAIA/180/14 dated 12 June 2014 to EDM) that no additional official environmental clearance is required since this project (Namialo SS with access road) is located within the area of influence of the approved EIA study in December 2013 for NORCONSULT F/S. (c) Resettlement Plan was recommended for revision as it was regarded as rather preliminary though this aspect is not relevant since no population resettlement is involved for this Namialo SS Project. (d) No other additional permit is required.

A11-1



	(2) Explanation to the Local Stakeholders	<p>(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders?</p> <p>(b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?</p>	<p>(a) Y</p> <p>(b) Y</p>	<p>(a) Stakeholder consultation and related agreement was obtained as component of approved EIA study for NORCONSULT F/S. Additionally, a public participation meeting was performed at Meconta District (on August 22, 2014) with the aim of presenting the project, potential impacts and recommended mitigation measures. The meeting followed the requirements regarding dissemination and procedures for presentation and inclusion of interested and affected parties.</p> <p>(b) The issues raised during the public participation meeting dealt mainly with the project set up and initiation, the benefits it will bring to the population of Meconta and hiring local labor. Issues that would result in the need to change the design of the project were not raised.</p>
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Analysis of alternatives was performed, particularly regarding the location of the project substation, and as to the condition of not implementing the project. Concerning the analysis of an alternative location, an alternative site was initially chosen under the scope of the Feasibility Study on Chimuara-Nacala Transmission Project (2013), approximately 800 meters from the current Namialo site; this alternative site was less advantageous than the current Namialo site due to erosion potential, closer proximity to a village and higher potential for economic relocation. The "no action" alternative was analyzed in the light of the increased demand for

				electric power in the coming years, the needs for expanding the access to stable electrical power of good quality to more households and new industries in the Northern region and the restrictions that such alternative imposes (given the use and requirements by other countries in the region using the Cahora Bassa electric power). It was concluded that within such context the implementation of the Namialo substation is crucial.
2 Pollution Control	(1) Water Quality	(a) Is there any possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in downstream water areas? If the water quality degradation is anticipated, are adequate measures considered?	(a) N	(a) In consideration to the flat topography of the area and no surface water bodies like rivers in its vicinity no adverse effects on water quality is anticipated.
3 Natural Environment	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	(a) There are no protected/ecologically significant areas in project area and its vicinity.

	(2) Ecosystem	<p>(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?</p> <p>(b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?</p> <p>(c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem?</p> <p>(d) Are adequate measures taken to prevent disruption of migration routes and habitat fragmentation of wildlife and livestock?</p> <p>(e) Is there any possibility that the project will cause the negative impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystem due to introduction of exotic (non-native invasive) species and pests? Are adequate measures for preventing such impacts considered?</p> <p>(f) In cases where the project site is located in undeveloped areas, is there any possibility that the new development will result in extensive loss of natural environments?</p>	<p>(a) N</p> <p>(b) N</p> <p>(c) -</p> <p>(d) -</p> <p>(e) N</p> <p>(f) N</p>	<p>(a) No. The project site is basically barren/open flat land.</p> <p>(b) No. Project site does not encompass habitats of protected/endangered species.</p> <p>(c) No significant ecological impacts is anticipated</p> <p>(d) The project site is located at existing power transmission line (route) and no effect on migration is anticipated.</p> <p>(e) No such effect is anticipated since the project site is located at existing power transmission line.</p> <p>(f) Project area though rather undeveloped has high anthropogenic (human) influence to result in extensive loss in natural environmental resources (Project site located along existing power transmission line).</p>
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3 Natural Environment	(3) Topography and Geology	<p>(a) Is there any soft ground on the route of power transmission and distribution lines that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed?</p> <p>(b) Is there any possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides?</p> <p>(c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?</p>	<p>(a) N</p> <p>(b) N</p> <p>(c) N</p>	<p>(a) The topography is flat land. So there is no potential for slope failure or landslide.</p> <p>(b) No large-scale cutting and filling works is involved.</p> <p>(c) No significant waste, soil and other run-off is anticipated. Still, construction contractor shall take necessary measures as appropriate as overall EHS (environment, health safety) measures to realize good construction practice.</p>
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4 Social Environment	(1) Resettlement	<p>(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?</p> <p>(b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement?</p> <p>(c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement?</p> <p>(d) Are the compensations going to be paid prior to the resettlement?</p> <p>(e) Are the compensation policies prepared in document?</p> <p>(f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?</p> <p>(g) Are agreements with the affected people obtained prior to resettlement?</p> <p>(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?</p> <p>(i) Are any plans developed to monitor the impacts of</p>	<p>(a) N (b) Y (c) Y (d) Y (e) Y (f) Y (g) N (h) Y (i) Y (j) Y</p>	<p>(a) No resettlement of population is required since both project site and access road are located in an area with no human settlements. However, the area is characterized by small plots of farmland (machambas) where the local community cultivates, mostly subsistence agriculture. Therefore, economic displacement of Project Affected Persons (PAP) is expected (19 households/HHs), involving losses of income and/or means of livelihood. The implementation of a Simplified Land Use Compensation Plan (SLUCP) was proposed to address the social impacts of the project and to ensure successful restoration and improvement of the living standards, income earning capacity and production levels of PAPs.</p> <p>(b) Adequate explanation to affected subsistence farmers for relocation of their farms and compensation for losses is assured by the SLUCP. The implementation of the SLUCP shall be pursued by EDM in cooperation with Nampula Provincial Government, Meconta District Administration, Nampula Provincial Directorate of Agriculture, Nampula Provincial Services of Geography and Cadastre as well as with the Traditional Authorities. Among others, these entities should ensure that PAPs are well informed at each stage of the process, including procedures and time frames for displacement and compensation, as well as aware of their rights and obligations. On the other hand, during socio-economic field</p>
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		<p>resettlement?</p> <p>(j) Is the grievance redress mechanism established?</p>	<p>survey, the survey team had already made a short report on the project and its impacts to the secretary of the affected area and the secretary of the nearest area and interviews were conducted to assess the prevailing socioeconomic conditions and to obtain further detailed information on their opinion with regards to the project, displacement and income restoration.</p> <p>(c) SLUCP was developed based on a socio-economic survey and data analysis which comprised a census covering 100% of the project affected Household Head (HH) with farming activity within the project area (19 HH in total). The identification of the farmers and land holders inside the project area was made with the help of the traditional authority that joined the socioeconomic team from day one through all stages.</p> <p>(d) No resettlement. Implementation of the SLUCP will begin prior to the constructions works. No construction work will begin until all PAPs have been compensated and farms are relocated from the project site. On other hand, relocation will be undertaken after necessary compensation and assistance have been provided. A total estimated time of 14 month will be required for the implementation of SLUCP. The process of compensation and posterior reallocation will occur within the first 4 months. Additional 10 months will be required for monitoring PAP and ensure that livelihood and income</p>
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			<p>have improved at least to the pre-project standard, by allowing the monitoring to cover at least 2 harvest seasons. Implementation timetable will commence after the final approval of the Simplified Land Use Compensation Plan.</p> <p>(e) The SLUCP embodies an extensive analysis of policies, legal framework and guidelines, both Mozambican and JICA, to be respected and followed. Additionally, the document presents the eligibility criteria, and the entitlement for different types of losses (loss of agricultural land, loss of cropping areas and loss of fruit trees).</p> <p>(f) SLUCP pays special attention to vulnerable groups (elders, young people, the handicapped, the poor, isolated groups and single heads of households), since they are more susceptible to negative impacts of displacement than the rest of the PAPs. The plan states that EDM will support all costs associated with the assistance to vulnerable persons such as transportation, logistics and administration, when required. In addition monitoring actions of the plan implementation should evaluate the impact of project on the socio-economic status of PAP after the displacement and compensation process, whether they are better or worse regarding livelihoods restoration, especially for vulnerable persons.</p> <p>(g) SLUCP defines a set of measures to be adopted in accordance with JICA guidelines and Mozambican legislation. These are</p>
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			<p>pre-defined measures that include certain countervailing duties already defined by law, including the eligibility and entitlement for compensation.</p> <p>(h) No resettlement is involved. Still, SLUCP incorporates an institutional and implementation framework. It was proposed that the implementation of the SLUCP shall be pursued by EDM in cooperation with Nampula Provincial Government, Meconta District Administration, Nampula Provincial Directorate of Agriculture, Nampula Provincial Services of Geography and Cadastre as well as with the Traditional Authorities; the plan defined their respective roles. SLUCP also estimated the total cost for compensating PAP based on the market price.</p> <p>(i) No resettlement is involved. However, the SLUCP indicates that monitoring and evaluation are critical tools in order to assess the overall project performance, particularly regarding PAP livelihood restoration. According to this, EDM, the implementing entity, shall establish an internal monitoring system for collection, analysis and reporting on SLUCP progress. In addition, an independent external monitoring and evaluation agency must be commissioned for monitoring the impact of the SLUCP implementation and periodic evaluation of compensation process and final outcome. The performance indicators will be listed and monitored by means of</p>
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				<p>the above two monitoring mechanisms.</p> <p>(j) The SLUCP establishes and defines Procedures for Grievance Redress Claims. Grievances related to any aspect of the SLUCP will be handled through negotiation aimed at achieving consensus. Complaints will pass through 3 stages before applying to a court of law as a last resort: address the complaint in writing or verbally to traditional leaders which must resolve the dispute within 7 days; if the aggrieved PAP is not satisfied with the decision taken at the first level, must present the complaint to the Compensation Advisory Committee which will communicate the proposed resolution within 10 days; in a last level, when conflicts cannot be resolved informally at the Project level, formal mechanisms will be required and the Provincial Government can be referred to.</p>
(2) Living and Livelihood	<p>(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary?</p> <p>(b) Is there a possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary?</p> <p>(c) Is there any possibility that installation of structures, such as</p>	<p>(a)N/Y</p> <p>(b) Y</p> <p>(c) N</p> <p>(d) -</p>	<p>(a) The project site and access road are located in an area with no human settlement. However, the area is characterized by small plots of farmland (machambas) where the local community cultivates, mostly subsistence agriculture. Therefore economic displacement of PAPs is encountered (19HHs), involving losses of income or means of livelihood. As such a Simplified Land Use Compensation Plan (SLUCP) study was carried out to address the</p>	

		<p>power line towers will cause a radio interference? If any significant radio interference is anticipated, are adequate measures considered?</p> <p>(d) Are the compensations for transmission wires given in accordance with the domestic law?</p>		<p>social impacts of the project and to ensure successful restoration of the living standards, income earning capacity and production levels of PAPs.</p> <p>In this respect the SLUCP proposed compensation and assistance system for the PAPs that included the following elements:</p> <ul style="list-style-type: none"> <li>- Provision of land for land with same agricultural potential for all farmland losers with paid labor by the affected farm land losers themselves for the preparation of such new farmlands</li> <li>- Monetary compensation for lost crops and fruit trees with each lost fruit tree being replanted with 2 fruit trees (twice replacement of lost fruit trees)</li> <li>- Provision of seeds</li> <li>- Assistance to vulnerable people</li> </ul> <p>(b) The Construction Contractor shall incorporate appropriate mitigation measures to protect its workforce, as a general component of EHS associated with the construction phase.</p> <p>(c) No such effect is regarded as significant since the project site is located along already existing power transmission line (route).</p> <p>(d) No such compensation is regarded as necessary since the project site is located along existing power transmission line.</p>	
4	Social Environment	(3) Heritage	(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are	(a) N	(a) There are no heritage related sites in and in the vicinity of the project area.

		adequate measures considered to protect these sites in accordance with the country's laws?		
(4) Landscape		(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) No significant effect on landscape is anticipated by the project. It is noted that the project site is traversed by existing transmission power line and is bare flat land.
(5) Ethnic Minorities and Indigenous Peoples		(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) - (b) -	(a) There are no ethnic minorities/indigenous people living in the site or in the vicinity of project area. (b) No effect as of above.
(6) Working Conditions		(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security	(a) N (b) Y (c) Y (d) Y	(a) EDM as the project proponent/owner shall ensure all such domestic laws are duly followed by the construction contractor. As good construction practice and also to conform to EHS of construction works construction contractor also shall ensure compliance with relevant domestic laws on safe working condition. (b) As overall EHS of construction works construction contractor shall ensure due safety of construction works (good construction practice with due commitment to "Safety First" concept). (c) As of above EHS of contractor shall ensure all tangible safety programs are implemented. (d) As of above construction contractor shall ensure due safety and security of construction site.

		guards involved in the project not to violate safety of other individuals involved, or local residents?		
5 Others	(1) Impacts during Construction	<p>(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?</p> <p>(b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?</p> <p>(c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?</p>	<p>(a) Y</p> <p>(b) Y</p> <p>(c) Y</p>	<p>(a) The required management/mitigation measures for construction works were incorporated in the SES study. The study analyzed impacts on soils and topography, air quality, hydrology, production of waste, noise, flora and fauna, landscape, land use, traffic and transportation, public utilities, health, economy and tensions. Since the project site is sparsely populated with vast expanse of uninhabited area, most of the impacts were classified as having low significance. A number of mitigation measures have been recommended for the potential impacts of this phase, whose implementation is the responsibility of the Contractor. Construction Contractor also shall ensure that appropriate processes are used to mitigate adverse environmental effects as a general component of the EHS of construction works.</p> <p>(b) No significant adverse effects on natural environment is anticipated with due compliance by construction contractor on EHS (good construction practice).</p> <p>(c) Same as above.</p>

	(2) Monitoring	<p>(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?</p> <p>(b) What are the items, methods and frequencies of the monitoring program?</p> <p>(c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?</p> <p>(d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?</p>	<p>(a) Y</p> <p>(b) Y</p> <p>(c) Y</p> <p>(d) -</p>	<p>(a) Required monitoring program on tentative basis that covered ambient air quality and noise and vibration was formulated by the SES Study. The proponent will monitor the implementation of monitoring plan.</p> <p>(b) Same as above, the required items, methods, frequencies aspects are incorporated in the monitoring program developed by the SES Study.</p> <p>(c) Monitoring during construction works will be under the responsibility of the construction contractor and supervision of EDM, the cost of which will be incorporated in the overall construction works. No significant monitoring requirement is expected consequent to the operation of the SS with due mitigation measures to control noise/vibration (green area surrounding the SS and/or structural noise control measures as appropriate).</p> <p>(d) EDM as the project proponent/owner shall ensure due reporting system of the monitoring results will be followed during the project implementation.</p>
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Road checklist should also be checked (e.g., projects including installation of electric transmission lines and/or electric distribution facilities).	(a) Y	(a) No additional requirement is noted.

	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed, (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) Y	(a) There are no significant transboundary or global warming issues for this Namialo SS project.
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1) Regarding the term “Country’s Standards” mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made.

In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan's experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which it is located.

## 1 2. 無電化村向配電用変圧器設置コミュニティ選定経緯

## Selection of Non-electrified Communities for the Supply of Distribution Transformers along Nacala Corridor

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Based on the field surveys along Nacala Corridor carried out in 1<sup>st</sup> and 2<sup>nd</sup> survey in Mozambique as well as the budgetary limitation of the project, consultant team selected the following two sites (non-electrified communities) for the supply of distribution transformer.

- Posto de Secreteriado de 25 de Setembro
- Muxaieque

The following documents showing how these two communities were selected are attached herewith for EDM's perusal.

- Site selection for the supply of distribution transformers  
This document explains the way of site selection.
- Survey results of electrification candidate site for the supply of distribution transformers  
This table shows the result of field surveys and also the information provided from EDM.

Please be noted that the survey results do not always tally with the information provided by EDM as shown in the attached table. Therefore, this site selection should be duly reviewed by EDM so that the sites for the supply of distribution transformer can be finalized during our 3<sup>rd</sup> mission.



## Selection of the Non-electrified Communities for the supply of distribution transformers

### 1. Considered factors for selecting candidate sites

- ① Supply area of Namialo substation
  - Candidate sites should be located in the area where Namialo substation will supply electric power.
- ② Location and Population
  - Japan's contribution will be larger when there is high population in candidate sites along Nacala corridor.
- ③ Less cost allocation for EDM
  - EDM's cost allocation will be less and the construction period will be shorter if candidate sites are located near existing distribution lines.
- ④ Presence of electrification requests from residents to EDM.
  - The presence of the requests will be one of the essential reasons for electrification.
- ⑤ Time of electrification
  - EDM's electrification schedule of the site should be matched to the period of this project.(2016-2017)

### 2. The result of selection

A table below shows the evaluation results for selecting candidate sites with considering factors above. The consultant team concluded that No.2 (Posto de Secreteriado de 25 de Setembro) and No.4 (Muxaieque) are suitable as candidate sites based on the evaluation.

Candidate site Considered factor	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10
①Supply area of Namialo substation	○	○	○	○	○	○	○	×	×	×
②Location (along Nacala corridor) & Population	×	○	-	○	△	△	△	×	-	-
③EDM's cost allocation (Distance from existing distribution lines)	○	○	×	○	×	○	○	×	×	×
④Presence of electrification request	○	○	×	○	○	○	○	×	×	×
⑤Time of electrification	×	○	○	○	×	○	○	×	×	×






### 3. Capacity of transformers

EDM suggested the capacity of transformers for these two sites as below:

- Posto de Secreteriado de 25 de Setembro: 160kVA x 2
- Muxaieque: 200kVA x 1 (according to EDM's design manual, 250kVA would be selected instead.)

The consultant team needs the explanation for the selection of these transformers from EDM during our 3rd mission in Maputo.

## Survey results of electrification candidate sites for the supply of distribution transformers

	Candidate site NO. 1	Candidate site NO. 2	Candidate site NO. 3	Candidate site NO. 4	Candidate site NO. 5
Field view and the state for hearing of opinion					
Location	Ratani	Posto de Secreteriado de 25 de Setembro	Posto Administrativo de Namialo	Muxaieque	Zona de Matanusca
Electrification schedule	2015	2016~2017	2017	2016~2017	2018~2019
Present main buildings	<ul style="list-style-type: none"> <li>A large number of villages by the roadside</li> <li>A school</li> </ul>	<ul style="list-style-type: none"> <li>A government postal related office</li> <li>Scattered Villages in wide area</li> </ul>	<ul style="list-style-type: none"> <li>A regional government office (under construction)</li> <li>It is planned to construct governmental residences in the future.</li> <li>Almost no villages</li> </ul>	<ul style="list-style-type: none"> <li>Scattered villages from roadside to inland</li> </ul>	<ul style="list-style-type: none"> <li>Villages spreading widely by the roadside</li> </ul>
Present population based on field survey	<No investigation>	7,974 households · 5~6 people/ household [Estimated population: 44,000]	<No investigation>	3,800 households · 6 people/ household [Estimated population: 22,800]	600 households · 6 people /household [Estimated population: 3,600]
Present population from EDM	500	200	200	300	200
Prospect of electric power demand increase	<Waiting for a response>	<Waiting for a response>	<Waiting for a response>	<Waiting for a response>	<Waiting for a response>
Distance from existing distribution lines	About 50m far from 33kV distribution lines	Directly under 33kV distribution lines	About 500m far from 33kV distribution lines (New distribution lines need road crossing.)	About 50m far from 33kV distribution lines	About 500m far from 33kV distribution lines
Construction scale & estimated cost of the new distribution facilities based on field survey	Pole: 2 MV Line: 50m [500USD]	Pole: 0 MV Line: A few meter [Less than 500USD]	Pole: 3 MV Line: 500m [5,000USD]	Pole: 2 MV Line: 50m [500USD]	Pole: 3 MV Line: 500m [5,000USD]
Construction scale of the new distribution facilities from EDM & estimated cost by survey team	MV: line×1km, pole×12 LV: line×2.5km, pole×65 (TR: 200kVA×2) [73,250 USD excluding TR]	MV: line×1.2km, pole×15 LV: line×3km, pole×75 (TR: 160kVA×2) [87,900 USD excluding TR]	MV: line×1.2km, pole×15 LV: line×4km, pole×100 (TR: 160kVA×2) [106,800 USD excluding TR]	MV: line×1.5km, pole×19 LV: line×3km, pole×75 (TR: 200kVA×1) [95,700 USD excluding TR]	MV: line×0.5km, pole×10 LV: line×2.5km, pole×65 (TR: 160kVA×1) [60,250 USD excluding TR]
Power supplying substation (After the construction of Namialo substation)	Monapo substation (Namialo substation)	Monapo substation (Namialo substation)	Monapo substation (Namialo substation)	Monapo substation (Namialo substation)	Monapo substation (Namialo substation)
Necessity and urgency for electrification	<ul style="list-style-type: none"> <li>Existing electrified area will be expanded.</li> <li>Written request for electrification has already been submitted to EDM.</li> </ul>	<ul style="list-style-type: none"> <li>It is expected that the number of private residences will increase in the future.</li> <li>Written request for electrification has already been submitted to EDM.</li> </ul>	<ul style="list-style-type: none"> <li>It is expected that the number of private residences will increase after a couple of years.</li> </ul>	<ul style="list-style-type: none"> <li>Written request for electrification has already been submitted to EDM.</li> </ul>	<ul style="list-style-type: none"> <li>Written request for electrification has already been submitted to EDM.</li> </ul>
Special Notes	<ul style="list-style-type: none"> <li>If electricity is supplied from Namialo substation, voltage drop will decrease.</li> </ul>	<ul style="list-style-type: none"> <li>If electricity is supplied from Namialo substation, voltage drop will decrease.</li> </ul>	<ul style="list-style-type: none"> <li>If electricity is supplied from Namialo substation, voltage drop will decrease.</li> </ul>	N/A	N/A

※ Updated based on the secondary research

※ Information provided by EDM

