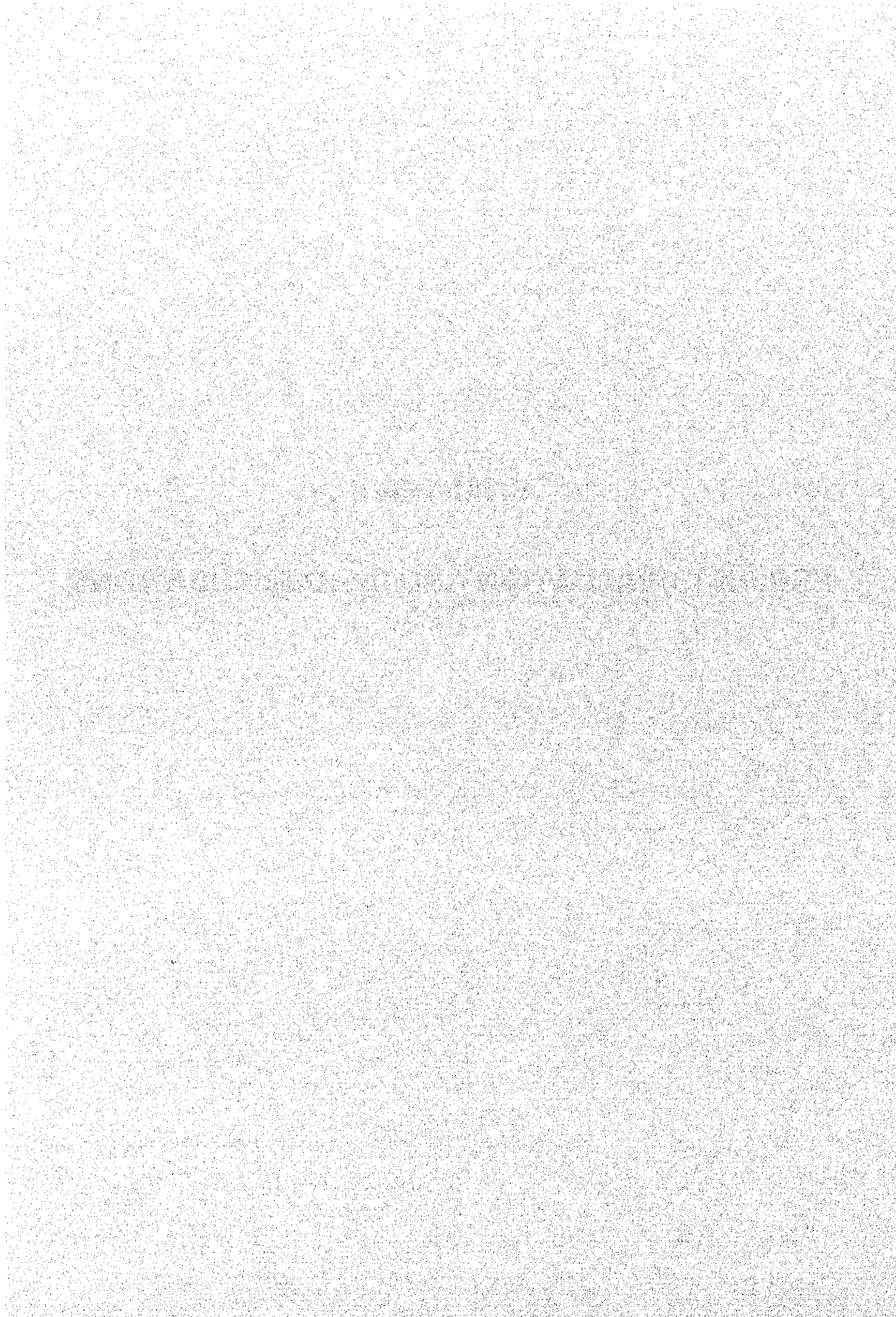


## **CHAPTER 4**

# **PROJECT EVALUATION AND RECOMMENDATIONS**



## CHAPTER 4 PROJECT EVALUATION AND RECOMMENDATIONS

### 4.1 Project Effects

The implementation of the Project will develop a 33 kV transmission network, which is essential for the electrification of hitherto unelectrified areas in key agricultural areas, which form the basis of the Ugandan economy. The successful completion of the Project will secure a stable electricity supply to these areas upto the target year of the Project, i.e. 2004, enabling improved local life, the stable management of such social and welfare facilities as hospitals and schools and the vitalization of industries in the Project areas. These results will facilitate "Providing social infrastructure to the masses through the provision of basic services, in order to remove people from poverty" which is the main target of the national development plan.

The UEB will be responsible for the operation and maintenance of the facilities and equipment in the post-Project period. The UEB is the only electric utility in Uganda and is engaged in power generation, transmission and distribution nationwide. Following the reform of public businesses in 1997, the UEB plans to partially privatize the highly profitable power generation business. However, it intends to keep rural electrification with low profitability and a strong public character in the public sector.

The reform in 1997 reduced the manpower of the UEB by some 30%. However, the UEB has rationalized the organizational structure of its head office into five departments with clearly defined functions (generation, transmission, distribution, planning and auditing) in order to strengthen its business management capability. As a result, the financial situation of the UEB is improving every year. In regard to the technical capability of the UEB, the state of operation and maintenance of the substation equipment and related facilities provided by the previous grant aid project suggests that staff members of the UEB have sufficient technical ability to install, operate and manage the 33 kV transmission network in question, posing no special problems in regard to the implementation of the Project. It will be unnecessary for the UEB to recruit new staff for project implementation as the operation and maintenance of the new transmission lines will be conducted by the existing staff of the UEB's local offices.

The implementation of the Project will develop a key social infrastructure component in unelectrified areas in five areas (Mukono in the Central Region, Kamuli/Jinja in Eastern Region, Nakasongola in Central Region, Hoima in the Western Region and Iganga in the Eastern Region), all of which are major agricultural areas in Uganda. The resulting stable supply of electricity will improve local life, stabilize the running of public facilities and vitalize industrial/economic activities in these areas, thus benefiting local people (total

benefiting population: 132,600, consisting of some 27,600 direct beneficiaries and some 105,000 indirect beneficiaries). Such advancement will facilitate the eradication of poverty, which is one of the main targets of the national development plan in Uganda.

Current State and Problems	Improvement Measures Under the Project	Project Effects and Degree of improvement
<p>1. Some 86% of Uganda's total population lives in rural areas. The average national electrification rate is as low as 5% and the widening gap between urban areas and rural areas in terms of the standard of living is accelerating poverty in rural areas. The eradication of poverty is the main target of the national development plan. The population concentration in urban areas also poses a serious problem.</p>	<p>Procurement and installation of equipment and materials to construct 33 kV transmission lines and substation, etc. in the five subject rural areas of the Project with a target year of 2004</p>	<p>The electrification of the subject rural areas will improve the standard of living in these areas. The availability of power to operate well pumps will reduce the heavy burden of water fetching on women and children.</p>
<p>2. The absence of electricity supply for such important social and welfare facilities as hospitals and schools in unelectrified areas means insufficient medical care and educational activities, signifying unsatisfactory social and welfare services for local people.</p>	<p>As above</p>	<p>The steady supply of electricity for such important social facilities as hospital 24 hours a day will improve local life.</p>
<p>3. The delayed development of the power transmission network to support agriculture which is Uganda's main industry and which constitutes the basis for the lives of rural people had made it impossible to vitalize and/or modernize industries. The inefficient industrial activities mean low profitability.</p>	<p>As above</p>	<p>The development of the power supply system, which is an important component of social infrastructure, will improve productivity and will enable the introduction of modern industries, by using refrigerators, mills, etc.</p>
<p>4. Because of the low national electrification rate of some 5%, it is impossible for all Ugandan people to share the benefits of domestic hydropower generation. This makes the promotion of rural electrification and urgent necessary. However, progress has been slow, as it is difficult to obtain loans for rural electrification, which offers low profitability despite the substantial initial investment.</p>	<p>As above</p>	<p>The provision of the main equipment and materials for rural electrification with foreign aid will make rural electrification a reality.</p>
<p>5. At present, some 90% of the national energy consumption relies on the use of fuelwood. Almost all fuelwood is consumed in rural areas, causing a problem of environmental destruction through the extensive felling of forest trees. It is, therefore, hoped that electric energy will be increasingly relied upon by means of developing the hydropower generation capacity and extending the transmission network.</p>	<p>As above</p>	<p>The electrification of hitherto unelectrified areas will reduce the consumption of fuelwood, enabling forest protection.</p> <p>By developing of transmission lines, the promotion of hydro-electric power, which is a domestic energy, will reduce the consumption of imported energy sources, such as kerosene.</p>

## 4.2 Recommendations

As the Project is expected to achieve the significant effects described in 4.1 above as well as positively contributing to the BHN of local people living in the Project areas, the appropriateness of implementing the Project with Japan's grant aid is positively confirmed. Moreover, the Ugandan side is deemed to have sufficient manpower and funding capability to operate and maintain the equipment and facilities provided under the Project. However, it is judged that the Project can be more smoothly and effectively implemented with the improvement of the following points.

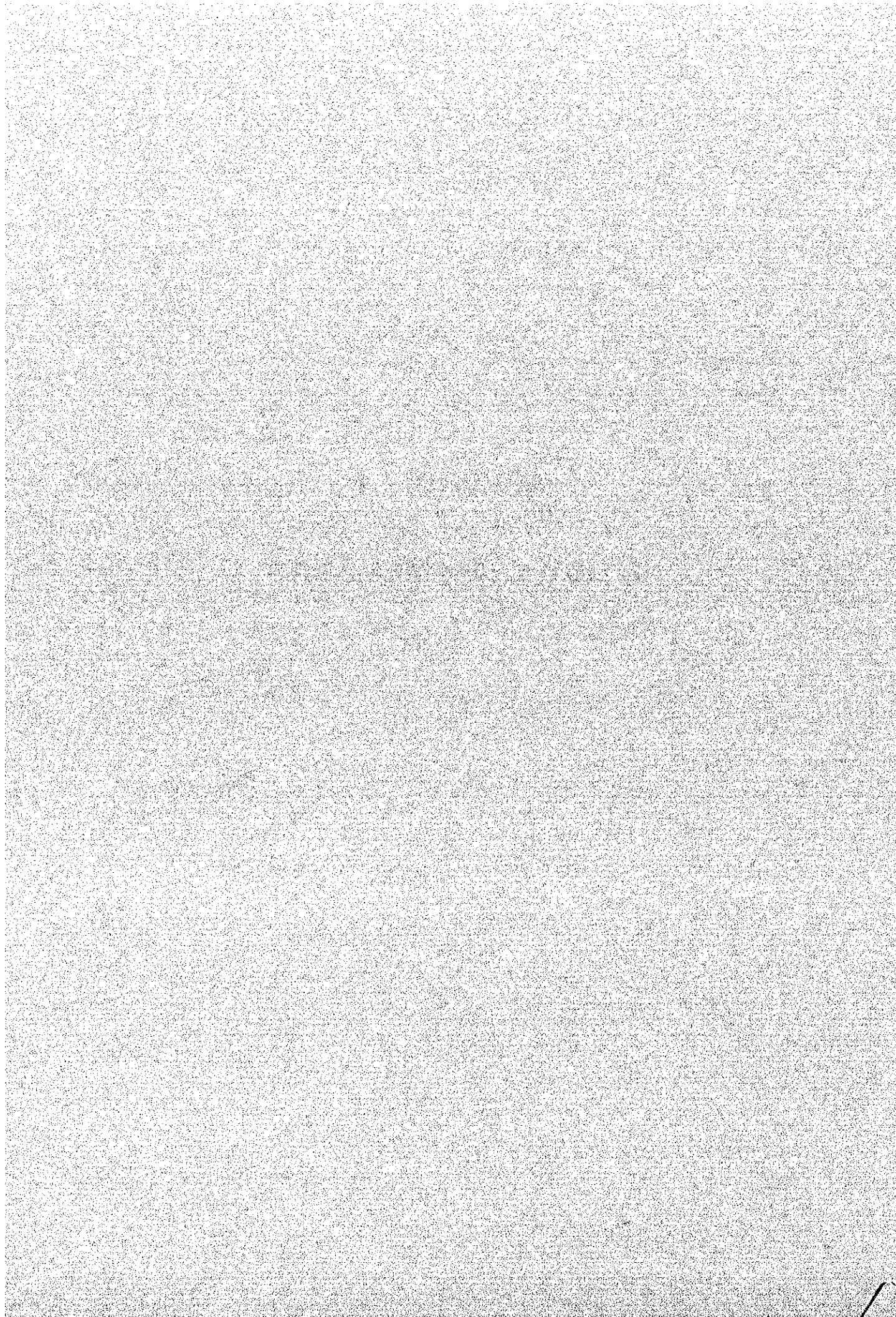
- (1) If the Ugandan work to install the transmission equipment to be procured under the Project is delayed, the envisaged functions as a result of project implementation will not be achieved within the Project period. In view of such a prospect, the Ugandan side should form or appoint installation work teams and prepare a schedule plan, personnel plan and procurement plan, etc. to ensure the prompt completion of the installation work together with the necessary budgetary appropriation.
- (2) Pole-mounted distribution transformers will be installed under the Project to meet the expected load in the project areas upto the year 2004. For any subsequent increase of the power demand thereafter, it will be necessary for the Ugandan side to review the power demand as required with a view to preparing a plan to install additional pole mounted transformers and also secure the budget for the procurement of new equipment.
- (3) Although an electricity supply system for users in major villages along the planned transmission lines will be developed under the Project, it will be necessary for the Ugandan side to review the transmission and distribution networks in view of the expansion of areas requiring power supply in the future in order to improve the local standard of living and to narrow the gap in living infrastructure between villages.
- (4) It will be necessary for the Ugandan side to promote a plan to expand the generating facilities by means of preparing an appropriate power demand forecast from time to time to prevent a power supply shortage, carefully considering the increase trend of new power demand as well as the existing load following extension of the transmission network.
- (5) It will be necessary for the Ugandan side to conduct regular patrols to implement preventive maintenance, including the felling of trees along the transmission routes, in

order to reduce the number of accidents involving transmission lines to secure a stable power supply system.

- (6) It will be necessary for the Ugandan side to install a watt-hour meter at all user premises and to strictly conduct meter readings and billing in order to establish a fair electricity charge collection system.

## **APPENDIX 1**

### **STUDY TEAM MEMBERS**





## APPENDIX 1 STUDY TEAM MEMMBERS

### 1. Basic Design Study

Name	Work Assignment	Current Position
Mr. Takao Yamazaki	Leader	Development Specialist, Institute for International Cooperation, JICA
Mr. Masatsugu Komiya	Chief Consultant/ Electrification Planner,	Yachiyo Engineering Co., Ltd.
Mr. Noritsune Chiba	Power Distribution Facilities Planner	Yachiyo Engineering Co., Ltd.
Mr. Masayuki Tamai	Substation Facilities Planner (Until September 4, 1998)	Yachiyo Engineering Co., Ltd.
Mr. Yutaka Muraki	Substation Facilities Planner (After September 17, 1998)	Yachiyo Engineering Co., Ltd.
Mr. Mitsuhsa Nishikawa	Facility Planner (Work in Japan)	Yachiyo Engineering Co., Ltd.
Mr. Atsuhito Uruno	Procurement Planner/ Cost Estimator	Yachiyo Engineering Co., Ltd.

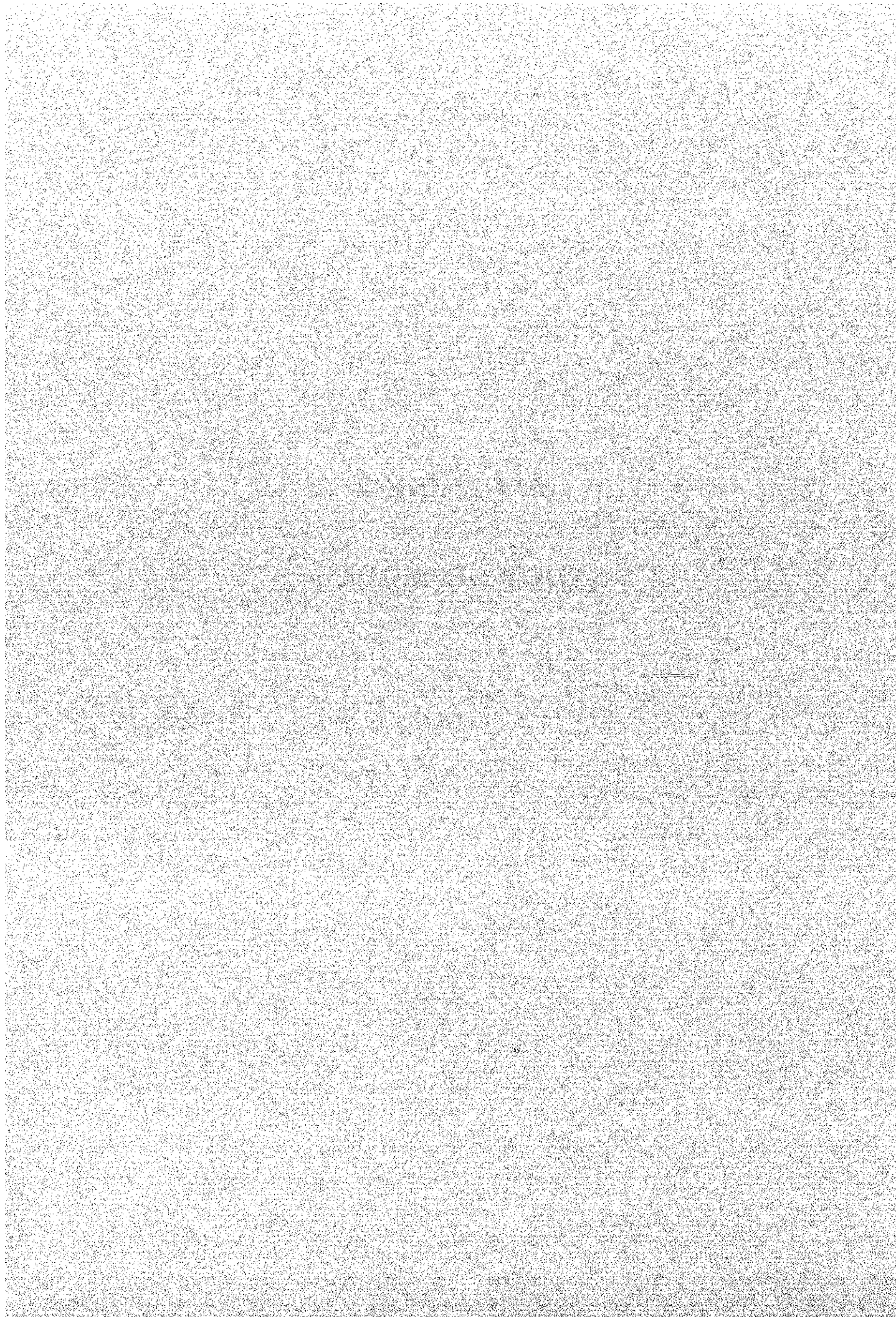
### 2. Draft Report Consultations

Name	Work Assignment	Current Position
Mr. Yuichi Sugano	Leader	First Project Study Division, Grant Aid Project Study Department, JICA
Mr. Masatsugu Komiya	Chief Consultant/ Electrification Planner	Yachiyo Engineering Co., Ltd.
Mr. Noritsune Chiba	Power Distribution Facilities Planner	Yachiyo Engineering Co., Ltd.



## **APPENDIX 2**

### **STUDY SCHEDULE**



## APPEENDIX 2 STUDY SCHEDULE

### 1. Field Survey for Basic Design Study

No	Day		Contents of Field survey		Stay at
			Official Members	Consultant Members	
1	8/31	Mon.	Trip [Tokyo ~ London by JL401]		London
2	9/1	Tue.	Trip [London ~ by BA2067]		In Flight
3	9/2	Wed.	Trip [ ~ Entebbe by BA2067] • Courtesy Call to Embassy of Japan • Courtesy Call to Ministry of Energy and Minerals (MEM) • Courtesy Call to Uganda Electricity Board (UEB) and Submission of and Explanation on the Inception Report (at UEB)		Kampala
4	9/3	Thu.	Discussions with UEB regarding the Inception Report and Contents of the Field Survey		Kampala
5	9/4	Fri.	Site Survey (A-1 area : from Njeru to Bale and Owen Falls Power Station) (Traffic accident)		Kampala
6	9/5	Sat.	(Intermitted)		Kampala
7	9/6	Sun.	(Intermitted)		Kampala
8	9/7	Mon.	Discussion on M/D		Kampala
9	9/8	Tue.	Signing of M/D		Kampala
10	9/9	Wed.	Report to Embassy of Japan		Kampala
			Trip [Entebbe ~ Nairobi by QU536]	(Intermitted)	
11	9/10	Thu.	• Report to JICA Kenya Office • Trip [Nairobi ~ by KL1566]	(Intermitted)	Kampala
12	9/11	Fri.	• Trip [ ~ Amsterdam by KL1566] • Trip [Amsterdam ~ by JL412]	(Intermitted)	Kampala
13	9/12	Sat.	Trip [ ~ Tokyo by JL412]	(Intermitted)	Kampala
14	9/13	Sun.		(Intermitted)	Kampala
15	9/14	Mon.		(Intermitted)	Kampala
16	9/15	Tue.		(Intermitted)	Kampala
17	9/16	Wed.		(Intermitted)	Kampala
18	9/17	Thu.		Market survey and Inquiry of Soil Explorations	Kampala
19	9/18	Fri.		• Study team arrive at Entebbe (by BA2067) • Market survey and Inquiry of Soil Explorations • Meeting with Embassy of Japan • Meeting with UEB	Kampala
20	9/19	Sat.		• Data Correction and Data sorting • Site survey (A-1 area : from Njeru to Kayunga to Bale)	Kampala
21	9/20	Sun.		Internal meeting	Kampala
22	9/21	Mon.		• Confirmation of Organization, Manpower, Budget, etc. of UEB • Confirmation of the existing substations and lines (for calculations of voltage drop) • Data collection of demand forecast in the Project Area • Site survey (A-2 area : from Jinja to Mbulamati) • Market survey ( Inland Transportation cost)	Kampala

23	9/22	Tue.		<ul style="list-style-type: none"> <li>• Confirmation of Organization, Manpower, Budget, etc. of UEB</li> <li>• Information of the existing substations and lines (for calculations of voltage drop)</li> <li>• Data collection of demand forecast in the Project Area</li> <li>• Site Survey (D area: from Lugolole to Mayuge)</li> <li>• Collection of Quotation for Soil Explorations</li> </ul>	Kampala
24	9/23	Wed.		<ul style="list-style-type: none"> <li>• Confirmation on National Development plan, Privatization policy, etc.</li> <li>• Data sorting</li> <li>• Collection of Quotation for Soil Explorations</li> <li>• Preparing Report to JICA Headquarter of Soil Explorations quotation</li> </ul>	Kampala
25	9/24	Thu.		<ul style="list-style-type: none"> <li>• Confirmation on tariff system and electrification charge collection system</li> <li>• Site Survey (B area : from Wabigalo to Migera)</li> <li>• Collection of Quotation for Soil Explorations</li> <li>• Confirmation for Previous Project</li> </ul>	Kampala Masindi Kampala
26	9/25	Fri.		<ul style="list-style-type: none"> <li>• Confirmation on tariff system and electrification charge collection system</li> <li>• Site Survey (C area : from Hoima to Muteme)</li> <li>• Negotiation with local company for Soil Explorations</li> </ul>	Kampala
27	9/26	Sat.		<ul style="list-style-type: none"> <li>• Data sorting</li> <li>• Clarification Meeting with local company for Soil Explorations</li> </ul>	Kampala
28	9/27	Sun.		<ul style="list-style-type: none"> <li>• Internal meeting</li> </ul>	Kampala
29	9/28	Mon.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Meeting with UEB regarding the Site Survey, etc.</li> <li>• Data Correction</li> </ul>	Kampala
30	9/29	Tue.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Meeting with UEB</li> <li>• Clarification Meeting with local company for Soil Explorations.</li> <li>• Contract draft and report send to Tokyo.</li> </ul>	Kampala
31	9/30	Wed.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Data Correction</li> </ul>	Kampala
32	10/1	Thu.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Meeting with UEB regarding the detail topographic survey, etc.</li> <li>• Contract signing of soil explorations with Hydrotech Consultants.</li> </ul>	Kampala
33	10/2	Fri.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Collection of quotation for construction cost and inland transportation</li> </ul>	Kampala
34	10/3	Sat.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Correction of inquiry for local costs.</li> </ul>	Kampala
35	10/4	Sun.		<ul style="list-style-type: none"> <li>• Internal meeting</li> </ul>	Kampala
36	10/5	Mon.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Meeting with UEB</li> <li>• Meeting with Hydrotech Consultants regarding the laboratory test itmes.</li> </ul>	Kampala

37	10/6	Tue.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Meeting with UEB</li> <li>• Correction of inland transportation cost</li> </ul>	Kampala
38	10/7	Wed.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Meeting with UEB</li> <li>• Correction of local cost</li> </ul>	Kampala
39	10/8	Thu.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Meeting with UEB</li> <li>• Kayunga site visited and conformed boring location with UEB and Hydrotech Consultants.</li> </ul>	Kampala
40	10/9	Fri.		<ul style="list-style-type: none"> <li>• Preparation of Field Report (F/R)</li> <li>• Meeting with UEB</li> </ul>	Kampala
41	10/10	Sat.		• Preparation of Field Report (F/R)	Kampala
42	10/11	Sun.		• Internal meeting	Kampala
43	10/12	Mon.		<ul style="list-style-type: none"> <li>• Discussion on F/R</li> <li>• VISA extended at the immigration office.</li> </ul>	Kampala
44	10/13	Tue.		<ul style="list-style-type: none"> <li>• Discussion on F/R</li> <li>• Data correction</li> </ul>	Kampala
45	10/14	Wed.		<ul style="list-style-type: none"> <li>• Discussion on F/R</li> <li>• Data correction</li> </ul>	Kampala
46	10/15	Thu.		<ul style="list-style-type: none"> <li>• Obtaining of approval for F/R from UEB</li> <li>• Data correction</li> </ul>	Kampala
47	10/16	Fri.		Courtesy call to MEM and UEB Report to Embassy of Japan	Kampala
48	10/17	Sat.		Data sorting	Kampala
49	10/18	Sun.		Trip [Entebbe ~ Nairobi by KQ413]	Nairobi
50	10/19	Mon.		<ul style="list-style-type: none"> <li>• Report to JICA Kenya Office</li> <li>• Trip [Nairobi ~ by BA2068]</li> </ul>	In Flight
51	10/20	Tue.		<ul style="list-style-type: none"> <li>• Trip [ ~ London by BA2068]</li> <li>• Trip [London ~ by JL402]</li> </ul>	In Flight
52	10/21	Wed.		Trip [ ~ Tokyo by JL402]	Tokyo

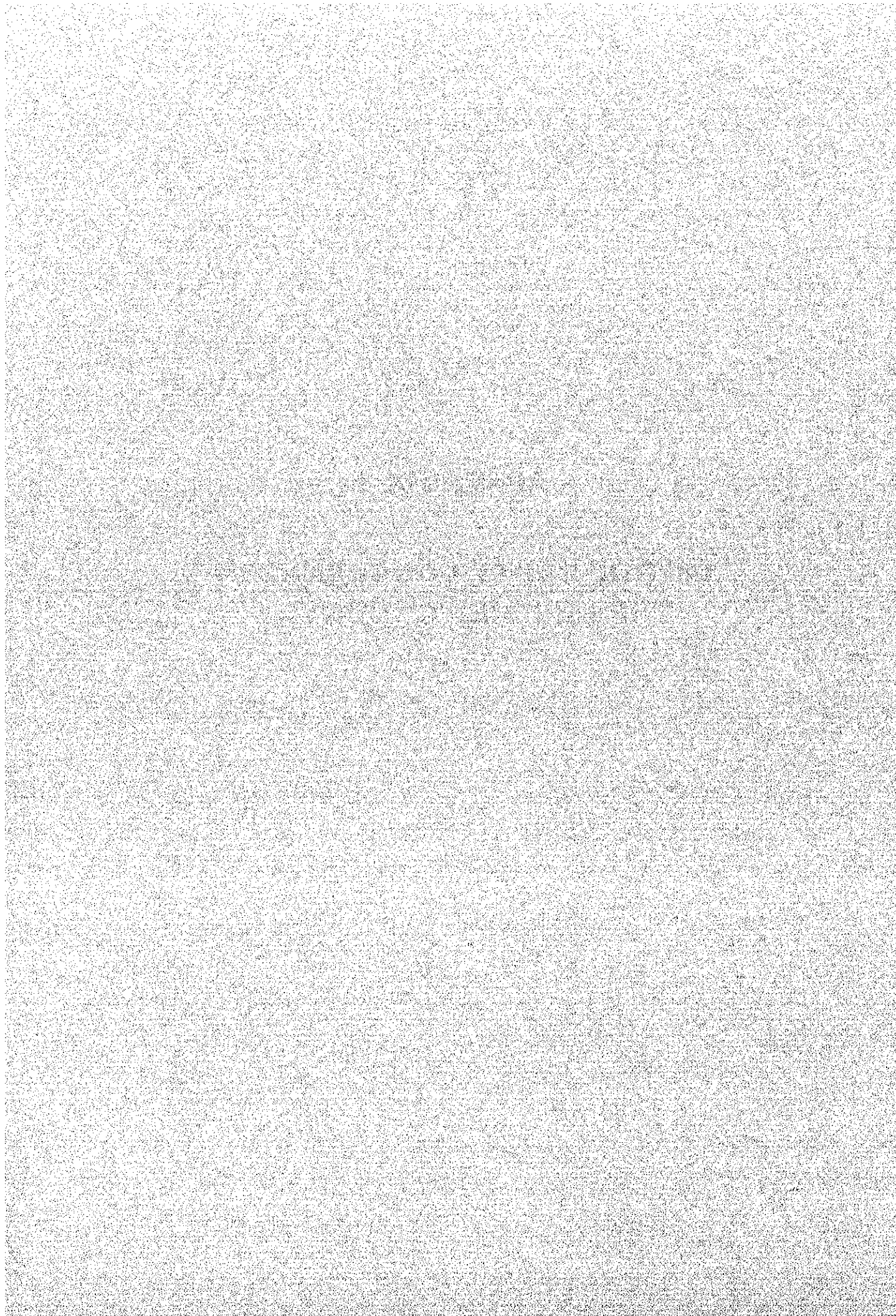
## 2. Draft Final Report Consultations

No	Day		Contents of Field survey		Stay at
			Official Members	Consultant Members	
1	12/10	Thu.		Trip [Tokyo ~ London by JL401] Trip [London ~ by BA2067]	In Flight
2	12/11	Fri.		Trip [ ~ Entebbe by BA2067] • Courtesy Call to Embassy of Japan • Courtesy Call to Ministry of Energy and Minerals (MEM) • Courtesy Call to Uganda Electricity Board (UEB)	Kampala
3	12/12	Sat.		Discussions with UEB regarding the Draft Report (DF/R)	Kampala
4	12/13	Sun.		Internal Meeting	Kampala
5	12/14	Mon.	Trip [Tokyo ~ London by NH201]	Discussions with UEB regarding the DF/R	Kampala
6	12/15	Tue.	Trip [London ~ by BA2067]	Ditto	Kampala
7	12/16	Wed.	Trip [ ~ Entebbe by BA2067] • Courtesy Call to Embassy of Japan • Courtesy Call to Ministry of Energy and Minerals (MEM) • Courtesy Call to Uganda Electricity Board (UEB) • Courtesy Call to Ministry of Finance, Planning and Economic Development		Kampala
8	12/17	Thu.	Explanation of DF/R and Discussion Discussion on M/D		Kampala
9	12/18	Fri.	• Signing of M/D • Report to Embassy of Japan		Kampala
10	12/19	Sat.	• Site Survey		Kampala
11	12/20	Sun.	Internal Meeting		Kampala
12	12/21	Mon.	• Internal Meeting • Trip [Entebbe ~ Nairobi by QU514]		Kampala
13	12/22	Tue.	• Report to JICA Kenya Office • Trip [Nairobi ~ by BA2068]		In Flight
14	12/23	Wed.	• Trip [ ~ London by BA2068] • Trip [London ~ by NH202]		In Flight
15	12/24	Thu.	Trip [ ~ Tokyo by NH202]		Tokyo



## **APPENDIX 3**

### **LIST OF PARTY CONCERNED IN THE RECIPIENT COUNTRY**



### APPENDIX 3 LIST OF PATY CONCERNED IN THE RECIPIENT COUNTRY

#### The Ministry of Finance, Planning and Economic Development

Mr. Kalanguka Kayondho	Commissioner (Social and Infrastructures Development Dept.)
Mr. Magona Mweru Ishmael	Ag. Assistant Commissioner (Social and Infrastructures Development Dept.)
Mr. Emmanuel Kotwe	Senior Finance Officer

#### The Ministry of Foreign Affaires

Dr. Arther Gakwandi	Director for Asian, South American, Pacific Region
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#### The Ministry of Energy and Mineral Development

Mr. Fred Kabagambe Kalisa	Permanent Secretary
Mr. Godfrey Reweihunga Turyahikayo	Commissioner for Energy

#### Uganda Electricity Board (UEB)

Mr. Alex E.M. Mugoya	Managing Director (Acting)
Mr. Kamu R.T. Karekaho	General Manager (Project)
Mr. Eriasi Kiyemba	General Manager (Transmission)
Mr. Dison B. Okumu	Manager (Corporate Planning & Strategy)
Ms. Grania Rosette Rubomboras	Manager (Projects Coordination)
Mr. Gerald Muganga	Manager (Transmission Service)
Mr. William K, Kiryahika	Manager (Transmission O&M)
Mr. John E. Mugyenzi	Manager (Generation Services)
Mr. G.S. Kagolobya	Manager (Customer Services)
Ms. Placid M. Ssekamatte	Manager (Customer Service, Kampala)
Mr. Herman Senyondwa	Principal Planning Engineer
Dr. Terry Kahuma	Principal Safety & Service Engineer
Mr. Nasser Kasendwa	Principal Development Engineer
Mr. Richard Katongole	Principal Accountant
Mr. Baringanire Paul	Principal Projects Officer
Mr. Semitala Norbert	Planning Engineer (Specifications)
Mr. Andrew Geno Omalla	Planning Engineer
Mr. William Nkemba	Planning Engineer
Mr. Mukasa Fred	Civil Engineer (Transmission Dept.)

Mr. Makanga T. Paul

Junior Construction Engineer

**Embassy of Japan in Uganda**

Mr. Yonezo Otake

Charge d'Affairs, Counsellor

Mr. Motoharu Watanabe

Second Secretary

**Japan International Cooperation Agency (JICA) Kenya Office**

Mr. Minoru Tagami

Resident Representative

Mr. Jun Matsumoto

Deputy Resident Representative

Mr. Masaaki Miyagawa

Assistant Resident Representative