APPENDICES

APPENDIX 1

MEMBER LIST OF THE STUDY TEAM

1. Member List of the Study Team

Name	Work Assignment	Position
Mr. Toru KOBAYAKAWA	Survey Planning	Deputy Director Electric Power Division, Industrial Development and Public Policy Department, Japan International Cooperation Agency (JICA)
Mr. Kazuya MIYAKE	Distribution System Planning	Senior Engineering Officer, Planning and Coordination Division, Industrial Development and Public Policy Department, JICA Japan International Cooperation Agency (JICA)
Mr. Ryo TSUJIMOTO		Chief Representative Crown Agents
Mr. Kiyofusa TANAKA	Chief Consultant / Power Planning / Economic and Finance Analysis / Environment and Social Consideration	Yachiyo Engineering Co., Ltd.
Mr. Katsuhiro MORIYAMA	Generator Planning-1 (Electrical Facilities)	Yachiyo Engineering Co., Ltd.
Mr. Tetsuo YATSU	Procurement / Cost Estimation	Yachiyo Engineering Co., Ltd.
Mr. Hiromi OSAWA	Generator Planning-2 (Operation and Maintenance)	Yachiyo Engineering Co., Ltd.
Mr. Satoshi ISHIKAWA	Generator Planning-3 (Mechanical Facilities)	Yachiyo Engineering Co., Ltd. (Tojo Intelligent Network Co., Ltd.)
Mr. Yoshio NAKAGAWA	Coordinator / Assistant to Cost Estimation	Yachiyo Engineering Co., Ltd.

APPENDIX 2

STUDY SCHEDULE

2. Survey Schedule

(1) Field Survey

No.	Date	A day of the week	Contents of Survey JICA and Consultant (Tanaka, Moriyama, Yatsu, Ishikawa, Osawa, Nakagawa)			Stay at
1	26-Jul	Tue	(Tanaka, Moriyama, Osawa, Nakagawa) Trip[Narita 11:45 → London 16:20, JL401] Trip[London 22:15 → (on Flight)]			on Flight
2	27-Jul	Wed	(Tanaka, Moriyama, Osawa, Nakagawa) Trip[Abuja 04:35, BA083] ・Courtesy Call and explanation of Inception report to JICA Nigeria Office ・Courtesy Call and explanation of Inception report to Federal Ministry of Power (FMP)			Abuja
3	28-Jul	Thu	(Tanaka, Moriyama, Osawa, Nakagawa) Trip[Abuja → Jebba]			Jebba
4	29-Jul	Fri	(Tanaka, Moriyama, Osawa, Nakagawa) ・Courtesy Call and explanation of Inception report to Jebba Hydro Electric Plc.			Jebba
5	30-Jul	Sat	(Tanaka, Moriyama, Osawa, Nakagawa) ・Inspection of the Generator4-1			Jebba
6	31-Jul	Sun	(JICA) Trip[Narita 11:45 → London 16:20, JL401] Trip[London 22:15 → (on Flight)] (Tanaka,Nakagawa) ・Joining with Yatsu Trip[Jebba → Abuja]		(Moriyama, Osawa) ・Joining with Ishikawa ・Inspection of the Generator4-2	(JICA)on Flight (Tanaka Team) Abuja (Moriyama Team)Jebba
7	1-Aug	Mon	(JICA) Trip[Abuja 04:35, BA083] (JICA, Tanaka, Yatsu, Nakagawa) ・Courtesy Call and explanation of Inception report to JICA Nigeria Office and EOJ ・Courtesy Call and explanation of Inception report to Federal Ministry of Power(FMP) and National Planning		(Moriyama, Ishikawa, Moriyama) ・Inspection of the Generator4-3 Stop of G4	(JICA, Tanaka Team) Abuja (Moriyama Team) Jebba
8	2-Aug	Tue	(JICA, Tanaka, Yatsu) Trip[Abuja → Jebba] ・Inspection of the Generator4	(Nakagawa) ・Data Collection	(Moriyama, Ishikawa, Moriyama) ・Inspection of the Generator4-4	(JICA, Tanaka Team)Jebba (Yatsu, Nakagawa) Abuja
9	3-Aug	Wed	(JICA, Tanaka, Yatsu) ・Inspection of the Generator4 Trip[Jebba → Abuja]	(Nakagawa) ・Data Collection	(Moriyama, Ishikawa, Moriyama) ・Inspection of the Generator4-5 Trip[Jebba → Abuja]	Abuja
10	4-Aug	Thu	・Discussion on the contents of Minutes of Discussions (FMP) ・Reporting to EOJ/JICA			Abuja
11	5-Aug	Fri	・Signing on the contents of Minutes of Discussions (FMP) ・Reporting to EOJ/JICA			Abuja
12	6-Aug	Sat	(JICA) Trip[Abuja 08:45 → London 15:05, BA082] Trip[London 19:15 → (on Flight)]		(Consultant) ・Internal Meeting and Sorting Data	(JICA) on Flight (Consultant) Abuja
13	7-Aug	Sun	(JICA) Trip[Narita 15:00, JL402]		(Consultant) ・Preparation of Field Report, Supplement Survey-	Abuja
14	8-Aug	Mon	・Collecting of Questionnaire ・Preparation of Field Report, Supplement Survey-2			Abuja
15	9-Aug	Tue	・Preparation of Field Report, Supplement Survey-3			Abuja
16	10-Aug	Wed	・Discussion on Field Report, Supplement Survey			Abuja
17	11-Aug	Thu	・Signing on Field Report, Supplement Survey ・Reporting to EOJ/JICA			Abuja
18	12-Aug	Fri	(Tanaka, Moriyama, Nakagawa) Trip[Abuja 08:45 → London 15:05, BA082] Trip[London 19:15 → (on Flight)]		(Yatsu, Ishikawa, Osawa) ・Supplement Survey	(Tanaka team) on Flight (Yatsu team) Abuja
19	13-Aug	Sat	(Tanaka, Moriyama, Nakagawa) Trip[Narita 15:00, JL402]		(Yatsu, Ishikawa, Osawa) ・Internal Meeting and Sorting Data	Abuja
20	14-Aug	Sun	・Internal Meeting and Sorting of the Collecting Data			Abuja
21	15-Aug	Mon	・Discussion with the recipient country ・Data collection			Abuja
22	16-Aug	Tue	・Discussion with the recipient country ・Data collection			Abuja
23	17-Aug	Wed	・Discussion with the recipient country ・Data collection			Abuja
24	18-Aug	Thu	・Discussion with the recipient country ・Data collection			Abuja
25	19-Aug	Fri	Trip[Abuja 08:45 → London 15:05, BA082] Trip[London 19:15 → (on Flight)]			on Flight
26	20-Aug	Sat	Trip[Narita 15:00, JL402]			

(2) Explanation of Preparatory Survey Report

The Project for Emergency Repair and Overhaul Works for the Jebba Hydro Power Station

(2) Explanation of Preparatory Survey report

No.	Date	A day of the week	Contents of Survey JICA and Consultant (Tanaka, Moriyama, Yatsu)	Stay at
1	10-Jan	Tue	(Yatsu) Trip[Narita 11:45 → London 15:25, JL401] Trip[London 22:15 → (on Flight)]	on Flight
2	11-Jan	Wed	(Yatsu) Trip[Abuja 05:35 , BA083] ・Courtesy Call to Federal Ministry of Power (FMP) and JICA Nigeria Office (preparation survey)	Abuja
3	12-Jan	Thu	(Yatsu) ・Meeting with JICA, FMP and JHEP (preparation survey)	Abuja
4	13-Jan	Fri	(Yatsu) ・Meeting with JICA, FMP and JHEP (preparation survey)	Abuja
5	14-Jan	Sat		Abuja
6	15-Jan	Sun		Abuja
7	16-Jan	Mon	(Yatsu) ・Meeting with JICA, FMP and JHEP (preparation survey)	Abuja
8	17-Jan	Tue	(Yatsu) ・internal meeting	Abuja
9	18-Jan	Wed	(Yatsu) ・Meeting with JICA, FMP and JHEP	Abuja
10	19-Jan	Thu	(Yatsu) ・Meeting with JICA, FMP and JHEP	Abuja
11	20-Jan	Fri	(Yatsu) ・Meeting with JICA, FMP and JHEP	Abuja
12	21-Jan	Sat		Abuja
13	22-Jan	Sun		Abuja
14	23-Jan	Mon	(JICA, Tanaka, Moriyama) Trip[Narita 11:45 → London 15:25, JL401] Trip[London 22:15 → (on Flight)]	on Fliget
15	24-Jan	Tue	(JICA, Tanaka, Moriyama) Trip[Abuja 05:35 , BA083] (JICA, Tanaka, Moriyama, Yatsu) AM : Team Discussions PM : Courtesy Call to FMP, JHEP, JICA Nigeria Field Office and Embassy of Japan(EOJ) ・Confirm Survey and Reporting to M/D	Abuja
16	25-Jan	Wed	(JICA, Tanaka, Moriyama, Yatsu) ・Confirm Survey and Reporting to M/D	Abuja
17	26-Jan	Thu	(JICA, Tanaka, Moriyama, Yatsu) AM : Reporting and Sign to M/D PM : Reporting to EOJ/JICA	Abuja
18	27-Jan	Fri	(JICA, Tanaka, Moriyama, Yatsu) Trip[Abuja 10:05 → London 15:30, BA082] Trip[London 19:00 → (on Flight)]	on Flight
19	28-Jan	Sat	(JICA, Tanaka, Moriyama, Yatsu) Trip[Narita 16:00, JL402]	

APPENDIX 3

LIST OF PARTIES CONCERNED IN THE RECIPIENT COUNTRY

3. List of Parties Concerned in the Recipient Country

Name of Organization	Position
National Planning Commission	
Mr. Bassey Akpayumg	Director (International Cooperation)
Mr. Chris Eze Ezeilo	Deputy Director (International Cooperation)
Mr. Abdullahi Yakubu	Principal Planning Officer (Asia)
Ms. Blessing Ejeyeka	Planning Officer II (Asia)
Mr. Onwuemene Henry	Planning Officer II
Mr. Faniran Sanjo	Officer
Mr. S.O.Fahirah	Cheaf Planning Officer (Asia)HPC
Federal Ministry of Power	
Engr. Sanusi Garba	Director (Power)
Engr. E. O. Ajayi	Deputy Director (Power)
Engr. Briskilla Sapke	Assistant Director (Power) (Ms)
Mr. Adamu David E.	Electrical Engineer
Mr. Eugene Ejeregbe	Senior Mechanical Engineer
Jebba Hydro Electric Plc.	
Engr. Lamu Audu	Chief Executive Officer
Engr. Felix Azogu	Assistant General Manager (Maintenance)
Engr. D. J. Obadote	Assistant General Manager (Operations)
Engr. O. G. Etibeng	Principal Manager (Technical Services)
Engr. B. J. Awodem	Principal Manager (Procurement)
Mr. Gilbert Onwudegu	Principal Manager (Operations)
Mr. Umana M. D.	Principal Manager (Planning)
Mr. A. R. Abesina	Principal Manager (Estate and Civil Works)
Mr. Habub T. J	Principal Manager (Auxiliary)
Mr. G. O. Ogolekwu	Senior Manager (Hydrology)

Mr. J. O. Ademiyi	Senior Manager (Dam and Instrumentation)
Mr. Y. M. Gano	Manager (Performance Management)
Mr. P. A. Ondachi	Principal Manager (Generator and Workshop)
Mr. Baba M. J.	Manager (Planning)
Mr. Babade T. K	Principal Manager (Turbine/Governor)

Embassy of Japan in Nigeria

Mr. Takeshi Hagino	First Secretary
Mr. Yudai Maeda	First Secretary
Mr. Hiroshi Kawanobe	First Secretary

JICA Nigeria Office

Mr. Yoshitaka Sumi	Chief Representative
Mr. Ken Fujie	Representative
Mr. Yoshiro Masuda	Representative
Ms. Elizabeth Uluvbo Ejeregbe	Consultant

Crown Agents

Mr. Rei Tsujimoto	Chief Representative (Japan Office)
Mr. George Oligbo	Director (Nigeria)

APPENDIX 4

MINUTES OF DISCUSSIONS

Minutes of Discussions
on the Preparatory Survey for the Project for
Emergency Repair and Overhaul Works for the Jebba Hydro Power Station
in the Federal Republic of Nigeria

The Government of Japan (hereinafter referred to as "GoJ") cooperating actively with developing countries' efforts to reduce greenhouse gas emissions, such as efforts to promote clean energy. A new scheme of grant aid, "Program Grant Aid for Environment and Climate Change", was also created by GoJ as a component of this financial mechanism. The Japan International Cooperation Agency (hereinafter referred to as "JICA"), in consultation with GoJ, decided to conduct a Preparatory Survey (hereinafter referred to as "the Survey") for the Project for Emergency Repair and Overhaul Works for the Jebba Hydro Power Station (hereinafter referred to as "the Project").

JICA sent to the Federal Republic of Nigeria (hereinafter referred to as "Nigeria") the Preparatory Survey Team (hereinafter referred to as "the Team"), headed by Mr. Toru Kobayakawa, Advisor, Electric Power Division, Industrial Development and Public Policy Department, JICA. The Team is scheduled to stay in Nigeria from July 27th to August 19th 2011.

The Team held discussions with the concerned officials of the Government of Nigeria (hereinafter referred to as "the Nigerian side") and conducted a field survey.

In the course of discussions and field survey, both sides confirmed the main items described in the attached sheets.

Abuja, Nigeria
August 5th, 2011

Mr. Toru Kobayakawa
Team Leader
Preparatory Survey Team
Japan International Cooperation Agency

Engr. Sanusi Garba
Director, (Power)
Federal Ministry of Power

Engr. Lamu Audu
Chief Executive Officer (CEO)
Jebba Hydro Electric Plc.

Mr. B. O. Akpanyung
Director
International Cooperation Department,
National Planning Commission

ATTACHMENT

1. Current Situation

On the basis of the Exchange of Notes between GoJ and the Government of Nigeria dated April 11, 2011 (hereinafter referred to as "the E/N") concerning the Japanese grant assistance for the Project amounting to one billion nine hundred and ninety million Japanese Yen (¥1,990,000,000), JICA and the Government of Nigeria have concluded the Grant Agreement (hereinafter referred to as "the G/A") as on May 17th, 2011. Subsequent to the conclusion of the G/A, the Team aims in the Survey to collect necessary information and data, prepare the outline design and estimate costs, which are necessary to materialize the Project, within the framework set under the E/N and the G/A.

2. Objective of the Project

The objective of the Project is to rehabilitate No.4 Generator of Jebba Hydroelectric Power Station in Nigeria.

3. Project Site

The Project site based on the request from the Nigerian side is located in Jebba city as shown in Annex-1.

4. Responsible and Implementing Organizations

(1) The responsible organization is Federal Ministry of Power (FMOP).
(2) The implementing organization is Jebba Hydro Electric Plc. (JHEP).
(3) The organization structures of FMOP and JHEP are shown in Annex-2.

5. Result of Analysis on Preparatory Survey

JICA explained the results of analysis by the previous Preparatory Survey conducted in January 2011. According to such results, both sides discussed and agreed prioritization of the requested components for No.4 Generator as follows:

(1)	stator core and associated parts (core stacking kit)	A
(2)	stator coil and associated parts (stator rewinding kit)	A
(3)	rotor pole with field coil	A
(4)	rotor rim support modification kit with tools	A
(5)	lifting devises and sling wires	A
(6)	replacement parts and instruments	A
(7)	tools and equipment for site work	B
(8)	current transformer	B
(9)	generator circuit breaker	B
(10)	site work	A

Notes: Lubricating oils are not included in the above table, and to be prepared by Nigerian side.

The Team explained that the requested (10) components are considered as candidate components to be implemented; However, the components might be reduced due to the budget ceiling of the grant aid.

6. Japan's Grant Aid Scheme

(1) JICA confirmed that the Nigerian side understood Japan's Grant Aid Scheme explained by the Team as described in Annex-3 and 4. It has to be noted that this Survey corresponds to "the Preparatory Survey 2" shown in Annex-3 and 4, and in this case the E/N and the G/A have been concluded prior to the Survey.
(2) The Nigerian side will take the necessary measures, as described in Annex-5 and 6, for smooth

implementation of the Project as prerequisites for the Japan's Grant Aid to be implemented.

(3) JICA and the Nigerian side confirmed that the Crown Agents for Oversea Governments and Administrations Ltd has been appointed as the Procurement Management Agent for the Project under the Agreed Minutes made between the two governments.

7. Schedule of the Preparatory Survey

The Team will continue the Survey in Nigeria until August 19th, 2011.

8. Other Relevant Issues

(1) Submission of the Questionnaire

The Nigerian side shall submit answers to the Questionnaire given by the Team before August 9th, 2011.

(2) Environmental and Social Considerations

a) The Team requested the Nigerian side to conduct the required environmental works, and obtain approval on environmental clearance for implementation of the Project.

b) The Nigerian side shall submit a copy of the Waste Disposal and Public Cleaning law. The Team requested the Nigerian side to prepare disposal action plan in accordance with Nigeria Laws.

c) The Nigerian side agreed to make necessary arrangements with governmental organizations concerned in order to secure funding for and execution of the waste disposal within the timeframe as required for smooth execution of the Project.

d) The Nigerian side agreed that the waste disposal materials shall be approved by the Nigerian government by the end of December 2011.

(3) Temporary Work Arrangement

Securing temporary space of materials such as a coil for the rehabilitation works of No.4 Generator shall be done by the Nigerian side.

(4) Counterpart Personnel

The Team requested the Nigerian side that necessary number of counterpart personnel shall be assigned to the Team and necessary arrangements with related organizations shall be made during the Survey in Nigeria.

(5) Major Undertakings to be taken by the Nigerian side

The Nigerian side agreed to undertake the following particular items in addition to general undertakings described in Annex-7:

a) The Nigerian side agreed to interrupt operation of No.4 hydraulic turbine generator during the implementation of the Project.

b) The Nigerian side shall secure enough budget for the following undertakings in accordance with the implementation of the Project

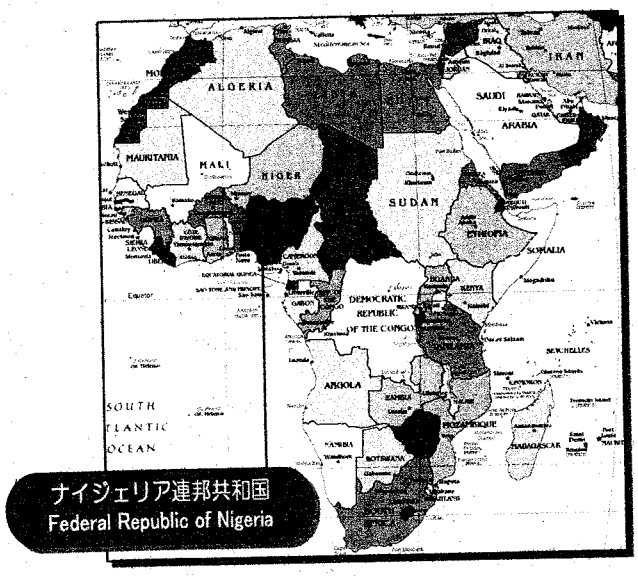
- Securing repair of the gantry crane of the Jebba Power Station prior to the commencement of the implementation of the Project.
- Securing maintenance parts, tools, measuring equipment and technical staff for No.4 hydraulic turbine generator and related facility, e.g., governor, exciter, station power and turbine steal, etc.

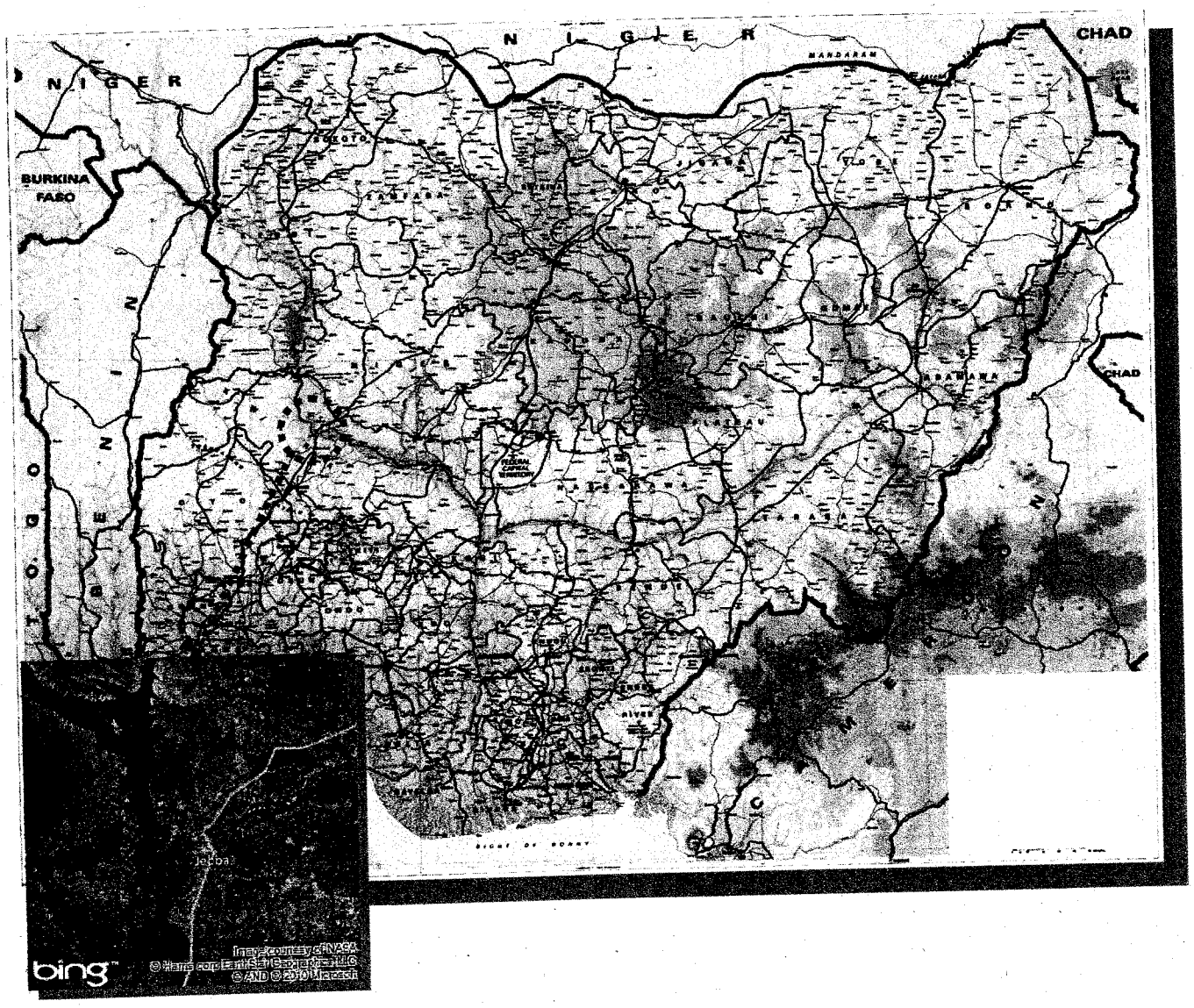
(6) Coordination with Relevant Organizations

The responsible organization of the Project shall be the focal point for the Team, and responsible for the coordination with relevant organizations. The Nigerian side agreed to establish a consultative committee in order to coordinate with the Japanese side which consists of the Embassy of Japan, the JICA office and the Procurement Management Agent. Terms of Reference of the Consultative Committee is shown in Annex-8.

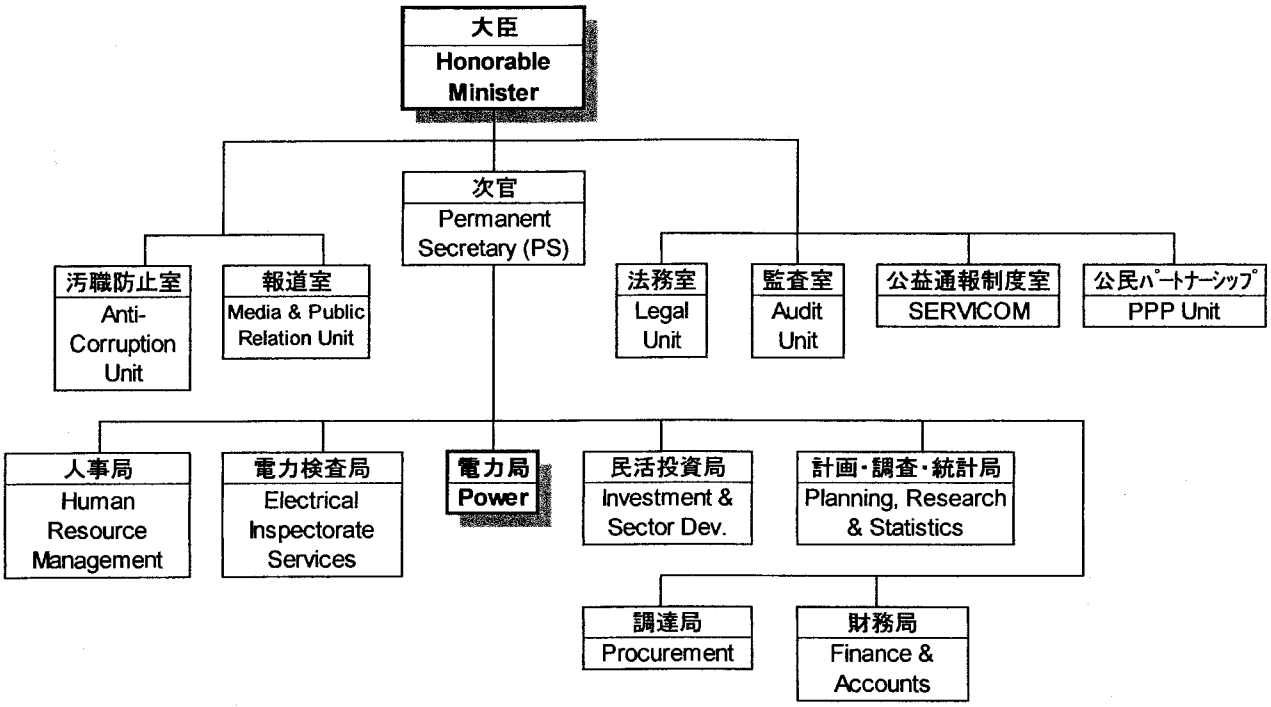
<List of Annex>

Project Site

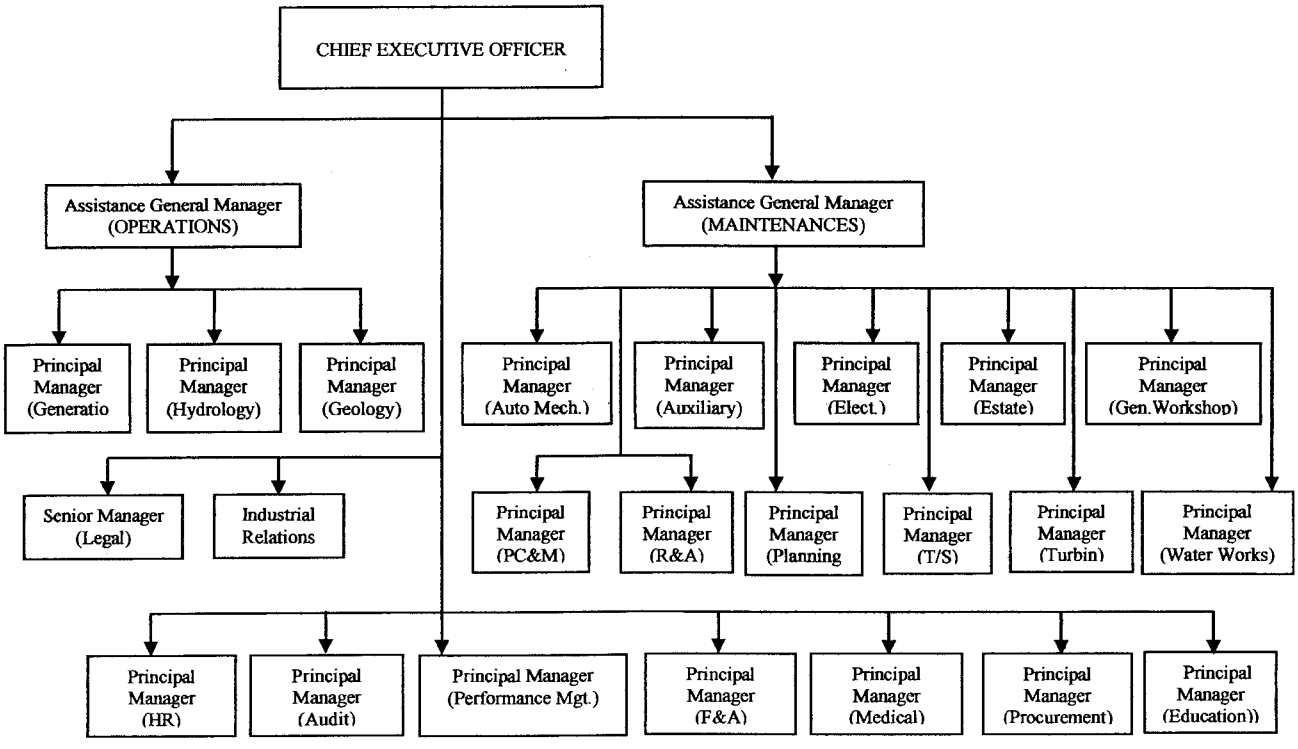




Organization Chart of Responsible Organization
(Federal Ministry of Power)



Organization Chart of Implementing Organization
(Jebba Hydroelectric Power Station)



Program Grant Aid for Environment and Climate Change of the Government of Japan
(Provisional)

The Grant Aid provides a recipient country (hereafter referred to as "the Recipient") with non-reimbursable funds 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 relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

The Program Grant Aid for Environment and Climate Change (hereafter referred to as "GAEC") aims to mitigate effects of global warming by reducing GHGs emission (mitigation; e.g. improvement of energy efficiency) and to take adaptive measures (adaptation; e.g. measures against disasters related to climate change, including disaster prevention such as enhancing disaster risk management). GAEC may contain multiple components that can be combined to effectively meet these needs.

1. Procedures for GAEC

GAEC is executed through the following procedures.

Preparatory Survey 1	Preparatory Survey for project identification conducted by Japan International Cooperation Agency (JICA)
Application	Request made by a recipient country
Appraisal & Approval	Appraisal by the Government of Japan and Approval by the Cabinet
Determination of Implementation	The Notes exchanged between the Government of Japan and the Recipient Country
Grant Agreement (hereinafter referred to as the "G/A")	Agreement concluded between JICA and the Recipient
Preparatory Survey 2	Preparatory Survey for design conducted by JICA
Implementation	Procurement through the Procurement Agency by the Recipient

Firstly, if the candidate project for a GAEC is identified by the Recipient and the Government of Japan, the Government of Japan (the Ministry of Foreign Affairs) examines it whether it is eligible for GAEC. When the request is deemed appropriate, JICA, in consultation with the Government of Japan, conducts the Preparatory Survey (hereafter referred to as "the Survey") on the candidate project as Phase 1 of the Survey with Japanese consulting firms.

Secondly, the Recipient submits the official request to the Government of Japan, while the appropriateness, necessity and the basic components of the project are examined in the course of Phase 1 of the Survey,

Thirdly, the Government of Japan appraises the project to see whether it is suitable for Japan's GAEC, based on the Survey report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the Recipient.

Fifthly, JICA engages Grant Agreement (G/A) with the Recipient and executes the Grant by making payments of the amount agreed in the E/N and strictly monitors that the funds of the Grant are properly and effectively used.

Procurement Management Agent is designated to conduct the procurement services of products and services (including fund management, preparing tenders, contracts) for GAEC on behalf of the Recipient. The Agent is an impartial and specialized organization that will render services according to the Agent Agreement with the Recipient. The Agent is recommended to the Recipient by the Government of Japan and agreed between the two Governments in the Agreed Minutes ("A/M").

2 Preparatory Survey

1) Contents of the Survey

The purpose of the Preparatory Survey (hereafter referred to as "the Survey"), conducted by JICA on a requested project (hereafter referred to as "the Project"), is to provide the basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Survey are as follows:

- Confirmation of background, objectives, and benefits of the Project and institutional capacity of agencies and communities concerned of the Recipient necessary for project implementation.
- Evaluation of relevance of the Project to be implemented under the Grant Aid Scheme for Environment and Climate Change from a technical, social, and economic point of view.
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- Preparation of the design of the Project and reference document for tender.
- Estimation of cost for the Project.

The contents of the original request will be modified, as found necessary, in the design of the Project according to the guidelines of Japan's Grant Aid scheme.

The Government of Japan requests the Government of the Recipient to take whatever measures necessary to ensure its responsibility in implementing the Project. Such measures must be guaranteed even if they may fall outside the jurisdiction of the implementing organization of the Recipient. This has been confirmed by all relevant organizations of the Recipient through the Minutes of Discussions.

2) Selection of consulting firms

For the smooth implementation of the Survey, JICA will conduct the Survey with registered consulting firms. JICA selects the firms based on proposals submitted by firms with interest in implementing the Survey. The firms selected will carry out the Preparatory Survey and prepare a report, based on the terms of reference set by JICA.

3. Implementation of GAEC after the E/N

1) Exchange of Notes (E/N)

The content of GAEC will be determined in accordance with the Notes exchanged by the two Governments concerned, in which items including, objectives of the project, period of execution,

conditions and amount of the Grant Aid are confirmed.

2) Details of Procedures
Details of procedures on procurement and services under GAEC will be agreed between the authorities of the two governments concerned at the time of the signing of the G/A.

Essential points to be agreed are outlined as follows:
a) JICA will supervise the implementation of the Project.
b) Products and services will be procured and provided in accordance with JICA's "Procurement Guidelines for the Program Grant Aid for Environment and Climate Change."
c) The Recipient will conclude a contract with the Agent.
d) The Agent is the representative acting in the name of the Recipient concerning all transfers of funds to the Agent.

3) Focal points of "Procurement Guidelines for the Program Grant Aid for Environment and Climate Change"
a) The Agent
The Agent is the organization, which provides procurement of products and services on behalf of the Recipient according to the Agent Agreement with the Recipient. The Agent is recommended to the Recipient by the Government of Japan and agreed between the two Governments in the A/M.

b) Agent Agreement
The Recipient will conclude the Agent Agreement, in principle, within two months after the signing of the G/A, in accordance with the A/M. The scope of the Agent's services will be clearly specified in the Agent Agreement.

c) Approval of the Agent Agreement
The Agent Agreement is prepared as two identical documents and the copy of the Agent Agreement will be submitted to JICA by the Recipient through the Agent. JICA confirms whether the Agent Agreement is concluded in conformity with the E/N, A/M, and G/A and the Procurement Guidelines for the Program Grant Aid for Environment and Climate Change then approves the Agent Agreement.

The Agent Agreement concluded between the Recipient and the Agent will become effective after the approval by JICA in a written form.

d) Payment Methods
The Agent Agreement will stipulate that "Regarding all transfers of the fund to the Agent, the Recipient will designate the Agent to act on behalf of the Recipient and issue a Blanket Disbursement Authorization ("the BDA")to conduct the transfer of the fund (hereinafter referred to as "the Advances") to the Procurement Account from the Recipient Account.

The Agent Agreement will clearly state that the payment to the Agent will be made in Japanese yen from the Advances and that the final payment to the Agent will be made when the total remaining amount become less than three percent (3%) of the Grant and its accrued interests excluding the Agent's fees.

e) Products and Services Eligible for Procurement
Products and services to be procured will be selected from those defined in the G/A.

f) Firm and Consultant
The firm and consultant who would contract with the Agent shall be Japanese Nationals.

The consultants that will be employed to do detail design and supervise the work for the Project, however will be in principle, Japanese nationals recommended by JICA for the purpose of maintaining technical consistency with the Study.

g) Method of Procurement

When conducting the procurement, sufficient attention will be paid to transparency in selecting the firms and for this purpose, competitive tendering will be employed in principle.

h) Tender Documents

The tender documents should contain all information necessary to enable tenderers to prepare valid offers for the products and services to be procured by GAEC.

The rights and obligations of the Recipient, the Agent and the firms supplying products and services should be stipulated in the tender documents to be prepared by the Agent. Aside from this, the tender documents will be prepared in consultation with the Recipient.

i) Pre-qualification Examination of Tenderers

The Agent may conduct a pre-qualification examination of tenderers in advance of the tender so that the invitation to the tender can be extended only to eligible firms. The pre-qualification examination should be performed only with respect to whether the prospective tenderers have the capability of concluding the contracts.

For this, the following points should be taken into consideration:

(1) Experience and past performance in contracts of similar kind
(2) Financial credibility (including assets such as real estate)
(3) Existence of offices and other items to be specified in the tender documents.
(4) Their potentialities to use necessary personnel and facilities.

j) Tender Evaluation

The tender evaluation should be implemented on the basis of the conditions specified in the tender documents.

Those tenderers which substantially conform to the technical specifications and other stipulations of the tender documents, will be judged in principle on the basis of the submitted price, and the tenderer who offers the lowest price will be designated as the successful tenderer.

The Agent will submit a detailed evaluation report of tenders to JICA for its information, while the notification of the results to the tenderers will not be premised on the confirmation by JICA.

k) Additional procurement

If there is any remaining balance after the competitive and/or selective tendering and/or direct negotiation for a contract, and if the Recipient would like to procure additional items, the Agent is allowed to conduct this additional procurement, following the points mentioned below:

(1) Procurement of same products and services

When the products and services to be additionally procured are identical with the initial tender and a competitive tendering is judged not efficient, additional procurement can be conducted by a negotiated contract with the successful tenderer of the initial tender.

(2) Other procurements

When products and services other than those mentioned above in (1) are to be procured, the procurement should be conducted through competitive tendering. In this case, the

products and services for additional procurement will be selected from among those in accordance with the G/A.

l) Conclusion of the Contracts
In order to procure products and services in accordance with the guideline, the Agent will conclude contracts with firms selected by tendering or other methods.

m) Terms of Payment
The contract will clearly state the terms of payment. The Agent will make payment from the "advances," against the submission of the necessary documents from the firm on the basis of the conditions specified in the contract. When the services are the object of procurement, the Agent may pay certain portion of the contract amount in advance to the firms on the conditions that such firms submit the advance payment guarantee worth the amount of the advance payment to the Agent.

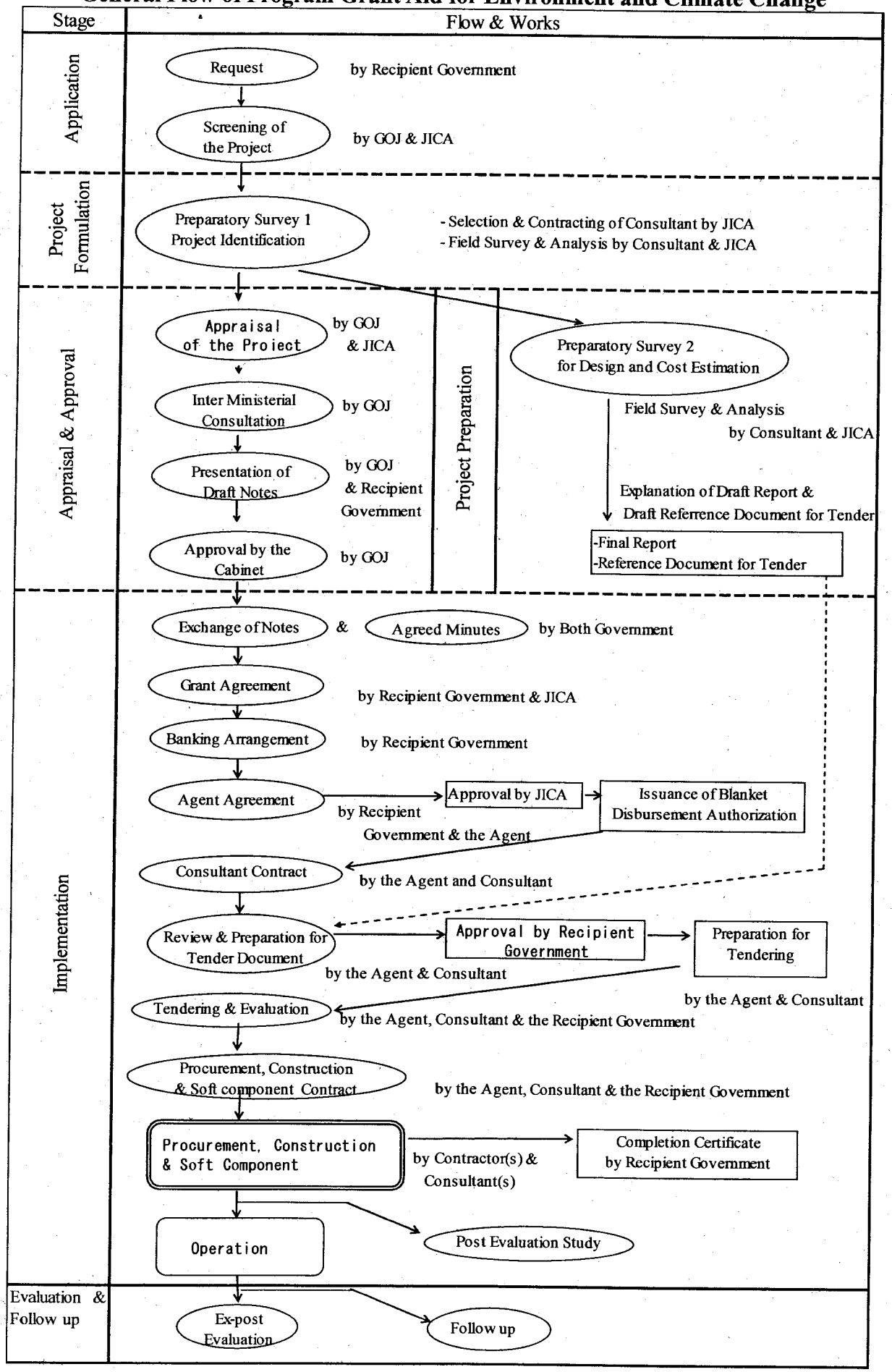
4) Undertakings required by the Government of the Recipient Country
In the implementation of the Grant Aid Project, the Recipient is required to undertake necessary measures as the following:

a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the Project.
b) To provide facilities for distributing electricity, water supply and drainage and other incidental facilities in and around the sites.
c) To ensure all the expense and prompt execution for unloading, customs clearing at the port of disembarkation and domestic transportation of products purchased under the Grant Aid,
d) To ensure that customs duty, internal taxes and other fiscal levies that may be imposed in the Recipient with respect to the purchase of the Components and the Agent's services will be exempted by the Government of the Recipient.
e) To accord all the concerned parties, whose services may be required in connection with supply of the products and services under the contracts, such facilities as may be necessary for their entry into the Recipient and stay therein for the performance of their work.

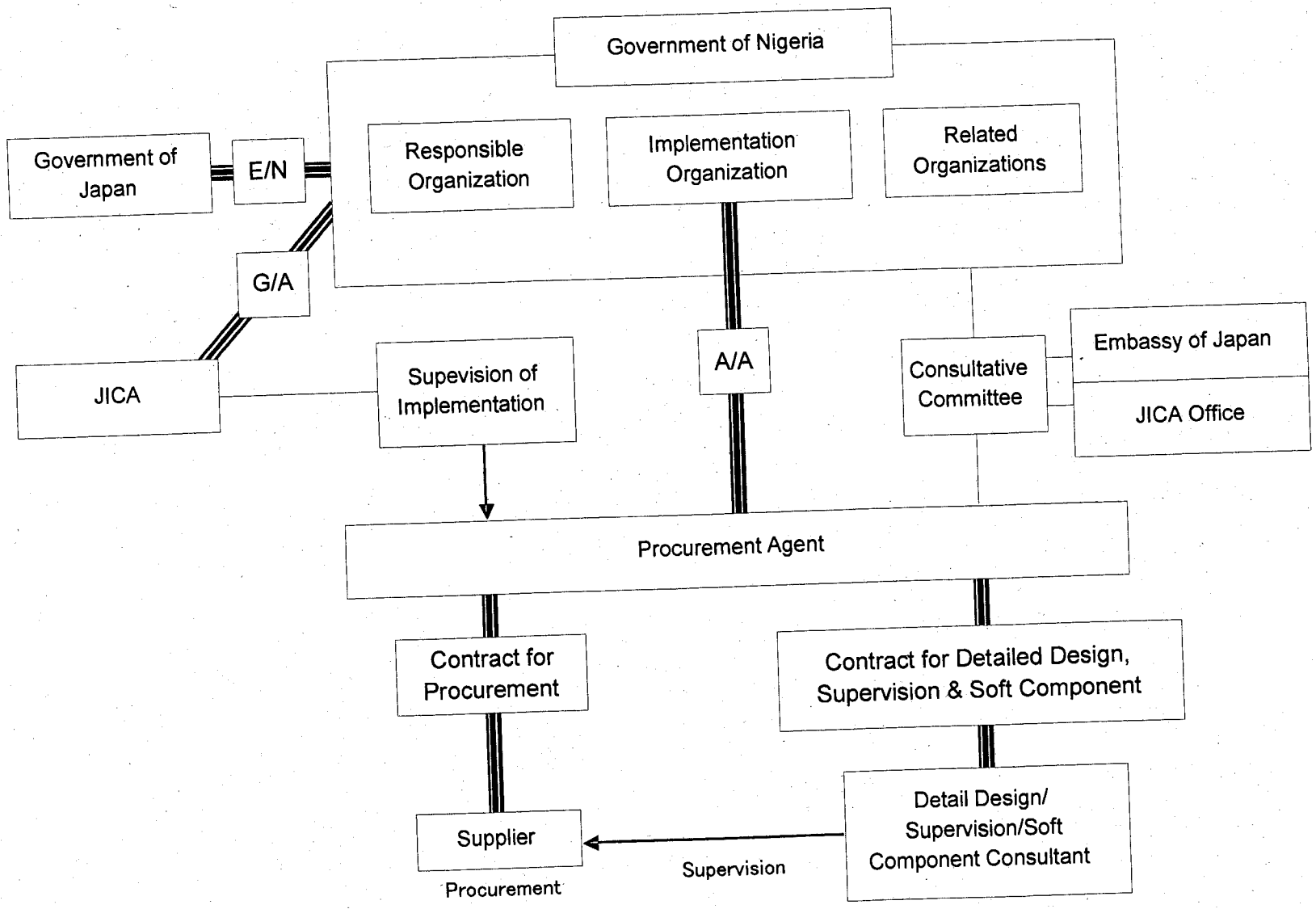
5) "Proper use of funds"
The Recipient is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign personnel necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

6) "Export and Re-export" of products
The products purchased under the Grant and its accrued interest will not be exported or re-exported from the Recipient.

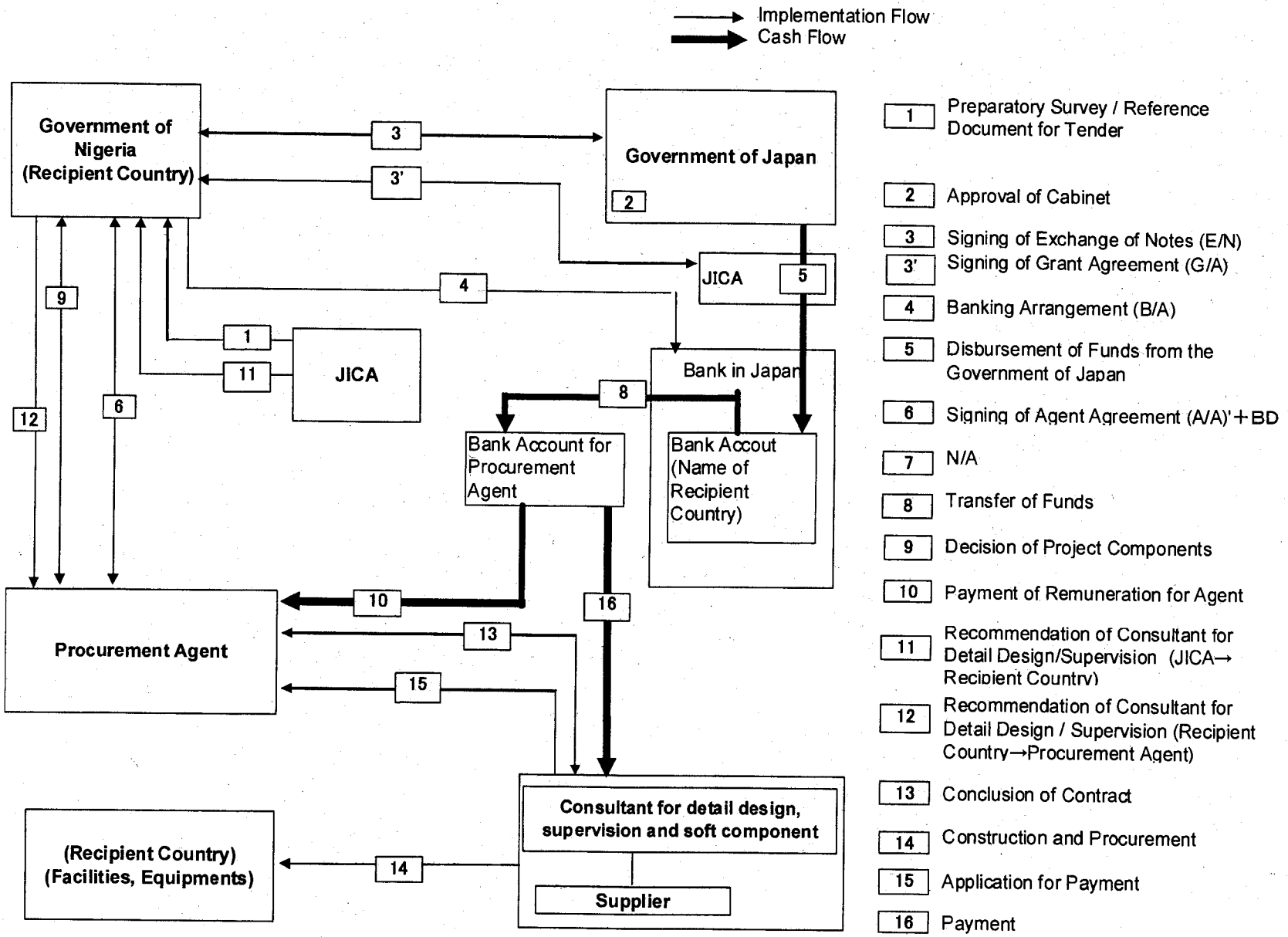
General Flow of Program Grant Aid for Environment and Climate Change



Project Implementation System



Flow of Funds for Project Implementation



Major undertakings to be taken by each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed urgently		●
3	To construct gates and fences in and around the site		●
4	To construct a parking lot if necessary		●
5	To construct roads		
	1) Within the site	●	
	2) Outside the site and Access road		●
6	To construct the facility and install the equipment	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities if necessary:		
	1) Electricity		
	a. The power distribution line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer for the site	●	
	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 conveying storm water, sewage, etc. from the site)		●
	b. The drainage system within the site (for sewage, ordinary waste, storm water, etc.)	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) 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	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following commissions applied by the bank in Japan for banking services based upon the Bank Arrangement (B/A):		
	1) Payment of bank commission		●
9	To ensure all the expense and prompt execution of unloading and customs clearance at the port of disembarkation in the recipient country		
	1) Marine or air transportation of the products from Japan or third countries to the recipient	●	
	2) To ensure all the expense and prompt execution of unloading, tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10	To accord Japanese nationals and / or nationals of third countries, including persons employed by the agent whose services may be required in connection with the Components such facilities as may be necessary for their entry into recipient country and stay therein for the performance of their work.		●
11	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 Components and to the employment of the Agent will be exempted by the Government of recipient country		●
12	To maintain and use properly and effectively the facilities that are constructed and the equipment that is provided under the Grant.		●
13	To bear all the expenses, other than those covered by the Grant and its accrued interest, necessary for the purchase of the Components as well as for the agent's fees.		●
14	To ensure environmental and social consideration for the Programme.		●

Terms of Reference of the Consultative Committee (Provisional)

1. To confirm an implementation schedule of the Program for the speedy and effective utilization of the Grant and its accrued interest.

2. To discuss the modifications of the Program, including modification of the design of the facility.

3. To exchange views on allocations of the Grant and its accrued interest as well as on potential end-users.

4. To identify problems which may delay the utilization of the Grant and its accrued interest, and to explore solutions to such problems.

5. To exchange views on publicity related to the utilization of the Grant and its accrued interest.

6. To discuss any other matters that may arise from or in connection with the G/A.

Minutes of Discussions
on the Preparatory Survey for the Project for
Emergency Repair and Overhaul Works for the Jebba Hydro Power Station
in the Federal Republic of Nigeria
(Explanation of Draft Final Report)

In response to the request from the Government of the Federal Republic of Nigeria (hereinafter referred to as "Nigeria"), 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 Emergency Repair and Overhaul Works for the Jebba Hydro Power Station (hereinafter referred to as "the Project").

In July and August 2011, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") to Nigeria, and through discussions, field survey and the result of technical examination in Japan, JICA prepared a Draft Final Report of the Survey.

In order to explain and to consult with the concerned officials of the Government of Nigeria (hereinafter referred to as "the Nigerian side") on the contents of the Draft Final Report, JICA sent the Team for explanation of the Draft Final Report, which is headed by Mr. Toru KOBAYAKAWA, Advisor, Electric Power Division, Industrial Development and Public Policy Department, JICA, from January 23rd to 28th, 2012.

As a result of the discussions, the both Nigerian side and the Team (hereinafter referred to as "both sides") have confirmed the main items described in the sheets attached hereto.

Abuja, Nigeria
January 26, 2012

Mr. Toru Kobayakawa
Team Leader
Preparatory Survey Team
Japan International Cooperation Agency

Engr. Sanusi Garba
Director, (Power)
Federal Ministry of Power

Engr. Lamu Audu
Chief Executive Officer (CEO)
Jebba Hydro Electric Plc.

Mr. B. O. Akpanyung
Director
International Cooperation Department,
National Planning Commission

ATTACHMENT

1. Current Situation

On the basis of the Exchange of Notes between the Government of Japan and the Government of Nigeria dated April 11th, 2011 (hereinafter referred to as "the E/N") concerning the Japanese grant assistance for the Project amounting to one billion nine hundred and ninety million Japanese Yen (¥1,990,000,000), JICA and the Government of Nigeria have concluded the Grant Agreement (hereinafter referred to as "the G/A") on May 17th, 2011. Subsequent to the conclusion of the G/A, the Preparatory Survey Team was dispatched from July 27th to August 19th 2011 in order to collect necessary information and data, prepare the outline design and estimate costs within the framework set under the E/N and the G/A. Based on the result of the Survey, the Draft Final Report has been prepared.

2. Contents of the Draft Final Report

The Nigerian side agreed and accepted the contents of the Draft Final Report explained by the Team.

3. Responsible and Implementing Organizations

(1) The responsible organization is Federal Ministry of Power (FMOP).
(2) The implementing organization is Jebba Hydro Electric Plc. (JHEP).
(3) The organization structures of FMOP and JHEP are shown in Annex-2.

4. Components of the Project

Considering the budget ceiling indicated in the E/N, the following (1) to (8) are selected as the Project Components through the Survey. The Nigerian side agreed and accepted the Project Components including the explanation detailed in the Draft Final Report. Annex-1 shows the location of the Project site.

(1) stator core and associated parts
(2) stator coil and associated parts
(3) rotor pole with field coil
(4) rotor rim support modification
(5) replacement parts and instruments (without rebabbitting thrust and guide bearings)
(6) current transformer
(7) site work

Notes: Lubricating oils are not included in the above table, and to be prepared by Nigerian side.

The Team explained that the above components are considered as candidate components to be implemented. However, the components may be further reduced due to the budget ceiling.

5. Japan's Grant Aid Scheme

The Nigerian side reconfirmed the Japan's Grant Aid Scheme and the necessary measures to be taken by the Nigerian side explained by the Team as described in Annex-3, 4, 5, and 6. It is to be noted that this Survey corresponds to "the Preparatory Survey 2" shown in Annex-3 and 4, and in this case the E/N and the G/A have been concluded prior to the Survey.

6. Project Cost

The Team explained that the estimated cost for the Project as described in Annex-9 contains

procurement cost of equipment, transportation cost up to the Project site, installation cost and the Consultant fees. The Nigerian side understood that the estimated cost for the Project is not final and is subject to change as a result of further examination.

7. Environmental and Social Considerations

(1) Appropriate Treatment and Disposal of Asbestos-contained Waste

JHEP confirmed that the Project will not cause the adverse impact to the environment, but only needs to make appropriate treatment and disposal of asbestos-contained wastes.

For example, when insulation coils are rehabilitated by the Project, disassembled wastes containing asbestos will be generated. Since most of asbestos is stuck with insulation lacquering called varnish, the quantity of asbestos scattering when insulation coils are dismantled will be minimized.

In accordance with the relevant Nigerian regulations, i.e., the National Environmental (Construction Sector) Regulation 2011, JHEP will appoint a local professional treatment company, which holds the inspector certified by the National Environmental Standards and Regulations Enforcement Agency ("NESREA"), to be in charge of inspection and evaluation for the presence of asbestos at the site as well as disposal of such waste. The above local professional company shall be selected from companies registered by the Federal Ministry of Environment. After removal of asbestos-contained parts by the contractor properly, the local professional company will receive such wastes for final treatment and disposal. Finally, the inspector of the local professional company will make a report to NESREA upon completion of the disposal of asbestos-contained wastes.

(2) Environmental Checklist

JHEP confirmed that the environmental and social considerations including major impacts and mitigation measures for the Project, especially appropriate treatment and disposal of asbestos-contained waste as mentioned above, are summarized in the Environmental Checklist, attached as Annex-7.

(3) Monitoring for Environmental and Social Considerations

Monitoring for environmental and social considerations will be conducted by JHEP. The results of monitoring will be provided to JICA on a quarterly basis until the completion of the work handling asbestos by filling in the Monitoring Form attached as Annex-8. Since there are no environmental and social concerns except asbestos-containing wastes as per the Environmental Checklist, the primary monitoring item envisaged at this moment is the waste treatment only.

(4) Disclosure of Monitoring Results

JHEP agreed that JICA may disclose (the part of) the monitoring results as shown in Annex-8 conducted by JHEP. JICA explained that JICA may disclose further information, when third parties request, subject to approval of JHEP.

8. Confidentiality of the Project

Both sides agreed that all the information related to the Project including the outline design drawings, technical specifications, and estimated cost for the Project should never be duplicated or disclosed to any outside parties before the conclusion of all contracts for the Project.

9. Other Relevant Issues

(1) Schedule of the Preparatory Survey

JICA will complete the Final Report in accordance with the confirmed items and send it to the Nigerian side by the end of March.

(2) Counterpart Personnel

The Nigerian side agreed that necessary number of counterpart personnel shall be assigned to the Project and necessary arrangements with related organizations shall be made during the implementation stage in Nigeria.

(3) Major Activities to be undertaken by the Nigerian side

The Team explained the scope of works to be undertaken by the Japanese and Nigerian sides respectively based on the Draft Final Report. The Nigerian side agreed to secure necessary budget and undertake the following particular activities in addition to general undertakings described in Annex-10. The cost estimation of the major items is shown in Annex-9.

a) Interruption of the operation of No.4 hydraulic turbine generator during the implementation of the Project;
b) Securing temporary space of materials such as a coil for the rehabilitation works of No.4 Generator during the implementation stage;
c) Repair of the overhead traveling crane of the Jebba Power Station prior to the commencement of the implementation of the Project;
d) Securing operators of the overhead traveling crane during the site work;
e) Replacement, adjustment and maintenance work for No.4 hydraulic turbine generator and related facilities such as the exciter, speed governor, station power supply, shaft seals, and servo motor of the guide vane;
f) Securing maintenance parts, tools, measuring equipment and technical staff for No.4 hydraulic turbine generator and related facilities (including special tools for rotor rim repairs, lifting devices and sling wires);
g) Granting labor permits to foreign workers (and/or corporations) dispatched for the purpose of the Project implementation and exempting them from bearing commissions (or business taxes);
h) Allocation of specialist engineers and technicians for technical transfer activities related to the Project operation and maintenance as well as for attending equipment and materials quality inspections on site; and
i) Proper treatment of asbestos-containing wastes in accordance with appropriate procedure which satisfies related Nigerian regulation.

(4) Coordination with Relevant Organizations

The responsible organization of the Project shall be the focal point for JICA, and responsible for the coordination with relevant organizations. The Nigerian side agreed to establish a consultative committee in order to coordinate with the Japanese side which consists of the Embassy of Japan, the JICA office and the Procurement Management Agent. Terms of Reference of the Consultative Committee is shown in Annex-11.

(5) Procurement Management Agent

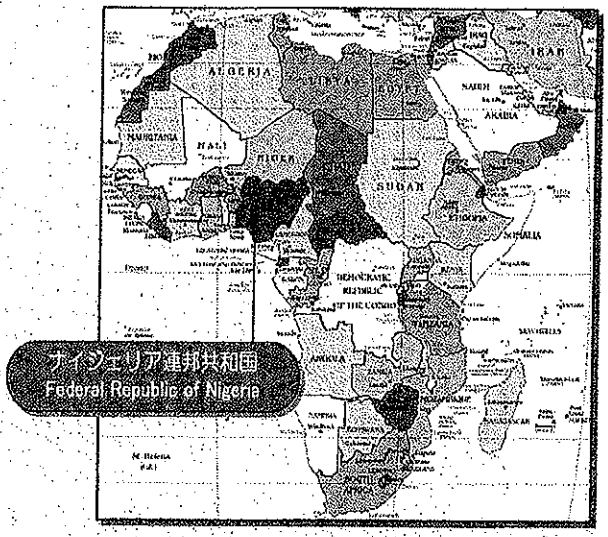
JICA and the Nigerian side reconfirmed that the Crown Agents for Oversea Governments and Administrations Ltd has been appointed as the Procurement Management Agent for the Project under the Agreed Minutes made between the two governments.

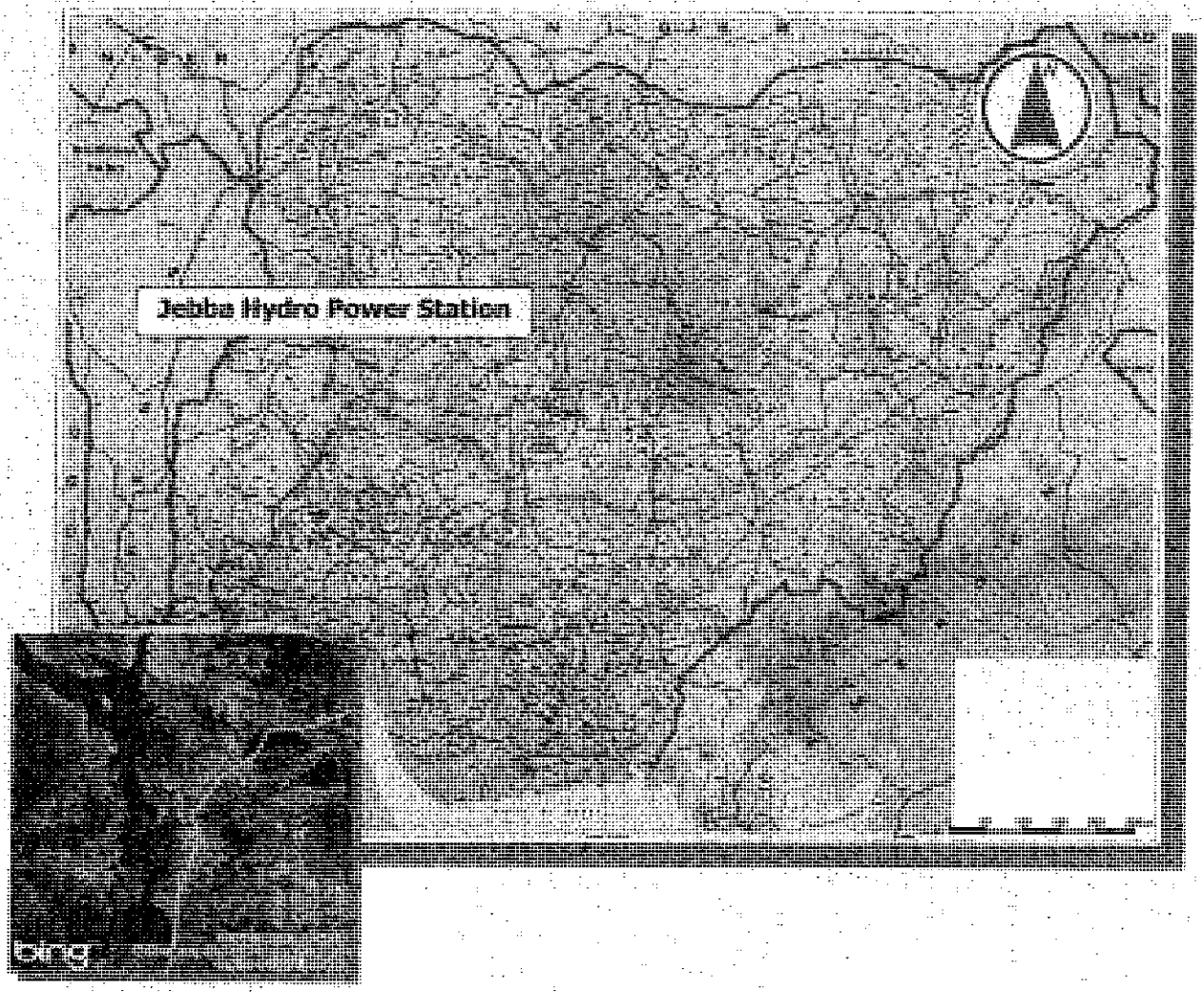
(6) Power Sector Reform

The Nigerian side is currently planning to introduce the concession to O&M of the hydro power plants as a part of its efforts for the power sector reform. The Nigerian side confirmed that even after introduction of such a concession, the property rights as well as the responsibility to secure proper and effective operation and maintenance of the facilities and equipment provided under the Japan's Grant Aid shall remain under the Government of Nigeria. Furthermore, if by any chance the institutional status of JHEP as a public entity changes, JICA and the Nigerian side agreed that the implementing organization of the Project shall be a public entity under the Government of Nigeria which would succeed relevant contracts and agreements from JHEP.

<List of Annex>

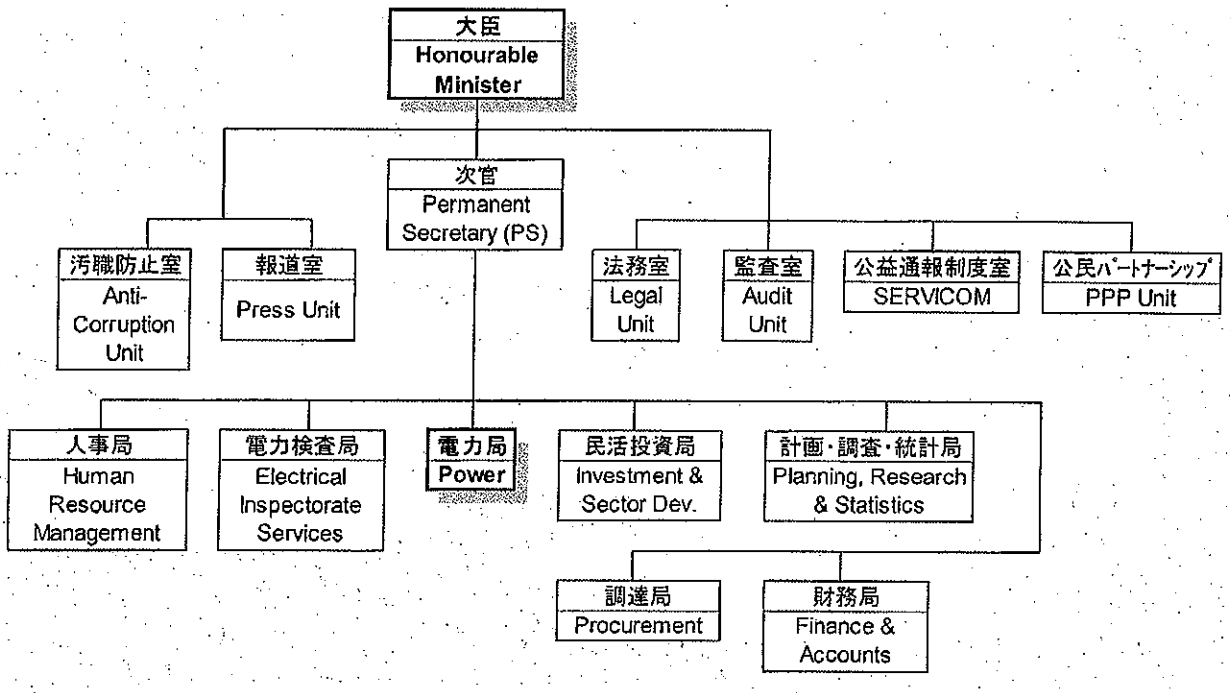
The Project Site



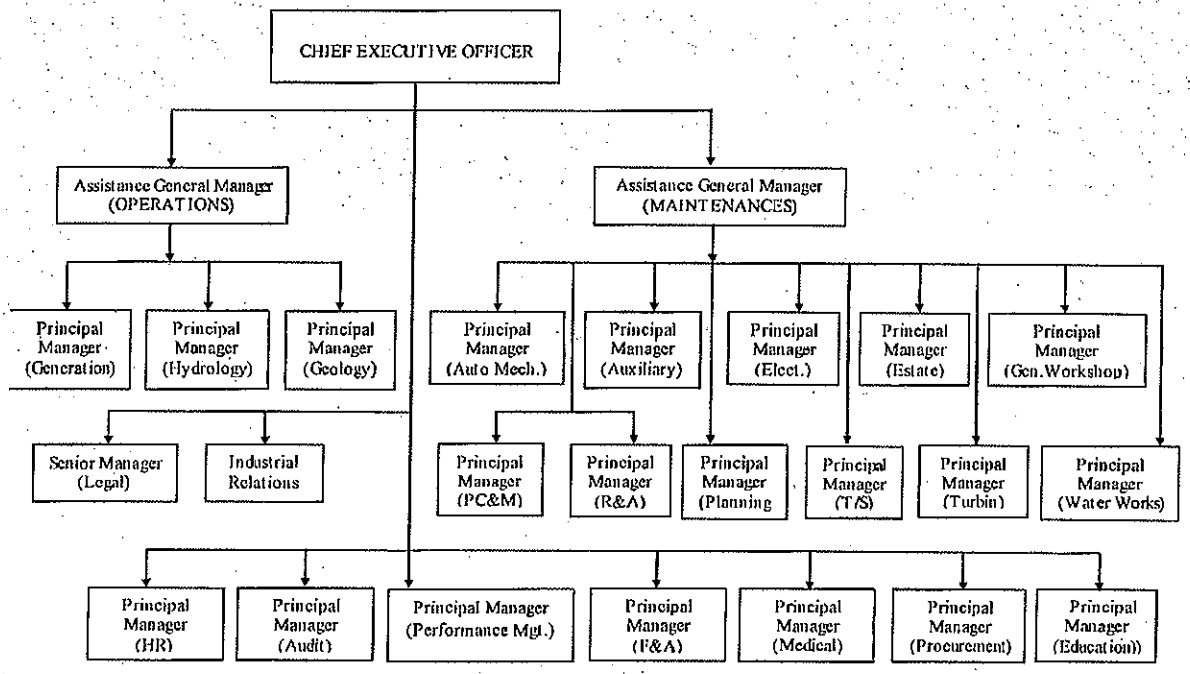


Annex - 2

Organization Chart of Responsible Organization (Federal Ministry of Power)



Organization Chart of Implementing Organization (Jebba Hydroelectric Power Station)



Program Grant Aid for Environment and Climate Change of the Government of Japan
(Provisional)

The Grant Aid provides a recipient country (hereafter referred to as "the Recipient") with non-reimbursable funds 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 relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

The Program Grant Aid for Environment and Climate Change (hereafter referred to as "GAEC") aims to mitigate effects of global warming by reducing GHGs emission (mitigation; e.g. improvement of energy efficiency) and to take adaptive measures (adaptation; e.g. measures against disasters related to climate change, including disaster prevention such as enhancing disaster risk management). GAEC may contain multiple components that can be combined to effectively meet these needs.

1. Procedures for GAEC

GAEC is executed through the following procedures.

Preparatory Survey 1	Preparatory Survey for project identification conducted by Japan International Cooperation Agency (JICA)
Application	Request made by a recipient country
Appraisal & Approval	Appraisal by the Government of Japan and Approval by the Cabinet
Determination of Implementation	The Notes exchanged between the Government of Japan and the Recipient Country
Grant Agreement (hereinafter referred to as the "G/A")	Agreement concluded between JICA and the Recipient
Preparatory Survey 2	Preparatory Survey for design conducted by JICA
Implementation	Procurement through the Procurement Agency by the Recipient

Firstly, if the candidate project for a GAEC is identified by the Recipient and the Government of Japan, the Government of Japan (the Ministry of Foreign Affairs) examines it whether it is eligible for GAEC. When the request is deemed appropriate, JICA, in consultation with the Government of Japan, conducts the Preparatory Survey (hereafter referred to as "the Survey") on the candidate project as Phase 1 of the Survey with Japanese consulting firms.

Secondly, the Recipient submits the official request to the Government of Japan, while the appropriateness, necessity and the basic components of the project are examined in the course of Phase 1 of the Survey,

Thirdly, the Government of Japan appraises the project to see whether it is suitable for Japan's GAEC, based on the Survey report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the Recipient.

Fifthly, JICA engages Grant Agreement (G/A) with the Recipient and executes the Grant by making payments of the amount agreed in the E/N and strictly monitors that the funds of the Grant are properly and effectively used.

Procurement Management Agent is designated to conduct the procurement services of products and services (including fund management, preparing tenders, contracts) for GAEC on behalf of the Recipient. The Agent is an impartial and specialized organization that will render services according to the Agent Agreement with the Recipient. The Agent is recommended to the Recipient by the Government of Japan and agreed between the two Governments in the Agreed Minutes ("A/M").

2 Preparatory Survey

1) Contents of the Survey

The purpose of the Preparatory Survey (hereafter referred to as "the Survey"), conducted by JICA on a requested project (hereafter referred to as "the Project"), is to provide the basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Survey are as follows:

- Confirmation of background, objectives, and benefits of the Project and institutional capacity of agencies and communities concerned of the Recipient necessary for project implementation.
- Evaluation of relevance of the Project to be implemented under the Grant Aid Scheme for Environment and Climate Change from a technical, social, and economic point of view.
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- Preparation of the design of the Project and reference document for tender.
- Estimation of cost for the Project.

The contents of the original request will be modified, as found necessary, in the design of the Project according to the guidelines of Japan's Grant Aid scheme.

The Government of Japan requests the Government of the Recipient to take whatever measures necessary to ensure its responsibility in implementing the Project. Such measures must be guaranteed even if they may fall outside the jurisdiction of the implementing organization of the Recipient. This has been confirmed by all relevant organizations of the Recipient through the Minutes of Discussions.

2) Selection of consulting firms

For the smooth implementation of the Survey, JICA will conduct the Survey with registered consulting firms. JICA selects the firms based on proposals submitted by firms with interest in implementing the Survey. The firms selected will carry out the Preparatory Survey and prepare a report, based on the terms of reference set by JICA.

3. Implementation of GAEC after the E/N

1) Exchange of Notes (E/N)

The content of GAEC will be determined in accordance with the Notes exchanged by the two Governments concerned, in which items including, objectives of the project, period of execution,

conditions and amount of the Grant Aid are confirmed.

2) Details of Procedures
Details of procedures on procurement and services under GAEC will be agreed between the authorities of the two governments concerned at the time of the signing of the G/A.

Essential points to be agreed are outlined as follows:
a) JICA will supervise the implementation of the Project.
b) Products and services will be procured and provided in accordance with JICA's "Procurement Guidelines for the Program Grant Aid for Environment and Climate Change."
c) The Recipient will conclude a contract with the Agent.
d) The Agent is the representative acting in the name of the Recipient concerning all transfers of funds to the Agent.

3) Focal points of "Procurement Guidelines for the Program Grant Aid for Environment and Climate Change"
a) The Agent
The Agent is the organization, which provides procurement of products and services on behalf of the Recipient according to the Agent Agreement with the Recipient. The Agent is recommended to the Recipient by the Government of Japan and agreed between the two Governments in the A/M.

b) Agent Agreement
The Recipient will conclude the Agent Agreement, in principle, within two months after the signing of the G/A, in accordance with the A/M. The scope of the Agent's services will be clearly specified in the Agent Agreement.

c) Approval of the Agent Agreement
The Agent Agreement is prepared as two identical documents and the copy of the Agent Agreement will be submitted to JICA by the Recipient through the Agent. JICA confirms whether the Agent Agreement is concluded in conformity with the E/N, A/M, and G/A and the Procurement Guidelines for the Program Grant Aid for Environment and Climate Change then approves the Agent Agreement.

The Agent Agreement concluded between the Recipient and the Agent will become effective after the approval by JICA in a written form.

d) Payment Methods
The Agent Agreement will stipulate that "Regarding all transfers of the fund to the Agent, the Recipient will designate the Agent to act on behalf of the Recipient and issue a Blanket Disbursement Authorization ("the BDA")to conduct the transfer of the fund (hereinafter referred to as "the Advances") to the Procurement Account from the Recipient Account.

The Agent Agreement will clearly state that the payment to the Agent will be made in Japanese yen from the Advances and that the final payment to the Agent will be made when the total remaining amount become less than three percent (3%) of the Grant and its accrued interests excluding the Agent's fees.

e) Products and Services Eligible for Procurement
Products and services to be procured will be selected from those defined in the G/A.

f) Firm and Consultant
The firm and consultant who would contract with the Agent shall be Japanese Nationals.

The consultants that will be employed to do detail design and supervise the work for the Project, however will be in principle, Japanese nationals recommended by JICA for the purpose of maintaining technical consistency with the Study.

g) Method of Procurement

When conducting the procurement, sufficient attention will be paid to transparency in selecting the firms and for this purpose, competitive tendering will be employed in principle.

h) Tender Documents

The tender documents should contain all information necessary to enable tenderers to prepare valid offers for the products and services to be procured by GAEC.

The rights and obligations of the Recipient, the Agent and the firms supplying products and services should be stipulated in the tender documents to be prepared by the Agent. Aside from this, the tender documents will be prepared in consultation with the Recipient.

i) Pre-qualification Examination of Tenderers

The Agent may conduct a pre-qualification examination of tenderers in advance of the tender so that the invitation to the tender can be extended only to eligible firms. The pre-qualification examination should be performed only with respect to whether the prospective tenderers have the capability of concluding the contracts.

For this, the following points should be taken into consideration:

(1) Experience and past performance in contracts of similar kind
(2) Financial credibility (including assets such as real estate)
(3) Existence of offices and other items to be specified in the tender documents.
(4) Their potentialities to use necessary personnel and facilities.

j) Tender Evaluation

The tender evaluation should be implemented on the basis of the conditions specified in the tender documents.

Those tenderers which substantially conform to the technical specifications and other stipulations of the tender documents, will be judged in principle on the basis of the submitted price, and the tenderer who offers the lowest price will be designated as the successful tenderer.

The Agent will submit a detailed evaluation report of tenders to JICA for its information, while the notification of the results to the tenderers will not be premised on the confirmation by JICA.

k) Additional procurement

If there is any remaining balance after the competitive and/or selective tendering and/or direct negotiation for a contract, and if the Recipient would like to procure additional items, the Agent is allowed to conduct this additional procurement, following the points mentioned below:

(1) Procurement of same products and services
When the products and services to be additionally procured are identical with the initial tender and a competitive tendering is judged not efficient, additional procurement can be conducted by a negotiated contract with the successful tenderer of the initial tender.

(2) Other procurements
When products and services other than those mentioned above in (1) are to be procured, the procurement should be conducted through competitive tendering. In this case, the

products and services for additional procurement will be selected from among those in accordance with the G/A.

l) Conclusion of the Contracts
In order to procure products and services in accordance with the guideline, the Agent will conclude contracts with firms selected by tendering or other methods.

m) Terms of Payment
The contract will clearly state the terms of payment. The Agent will make payment from the "advances," against the submission of the necessary documents from the firm on the basis of the conditions specified in the contract. When the services are the object of procurement, the Agent may pay certain portion of the contract amount in advance to the firms on the conditions that such firms submit the advance payment guarantee worth the amount of the advance payment to the Agent.

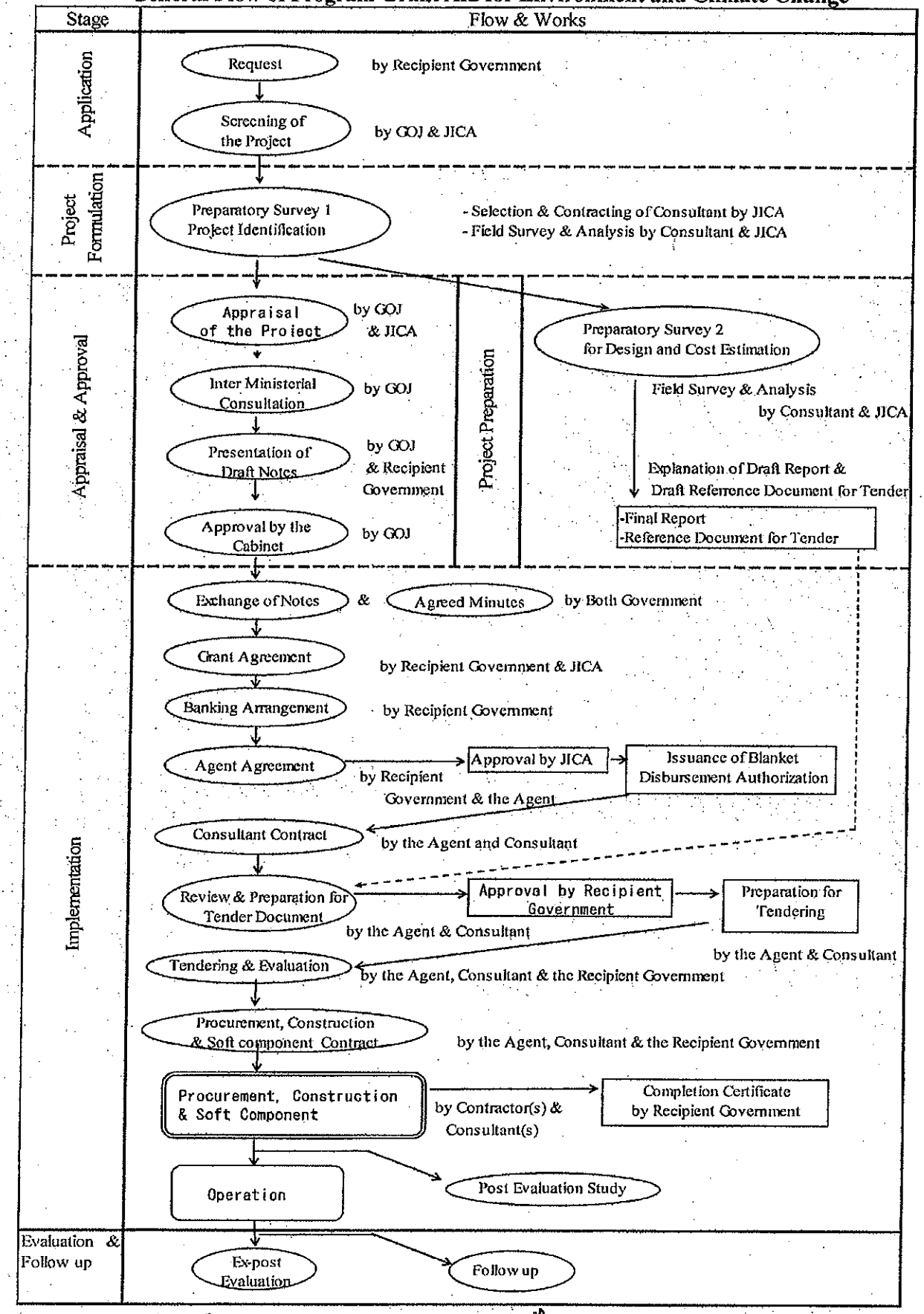
4) Undertakings required by the Government of the Recipient Country
In the implementation of the Grant Aid Project, the Recipient is required to undertake necessary measures as the following:

a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the Project.
b) To provide facilities for distributing electricity, water supply and drainage and other incidental facilities in and around the sites.
c) To ensure all the expense and prompt execution for unloading, customs clearing at the port of disembarkation and domestic transportation of products purchased under the Grant Aid,
d) To ensure that customs duty, internal taxes and other fiscal levies that may be imposed in the Recipient with respect to the purchase of the Components and the Agent's services will be exempted by the Government of the Recipient.
e) To accord all the concerned parties, whose services may be required in connection with supply of the products and services under the contracts, such facilities as may be necessary for their entry into the Recipient and stay therein for the performance of their work.

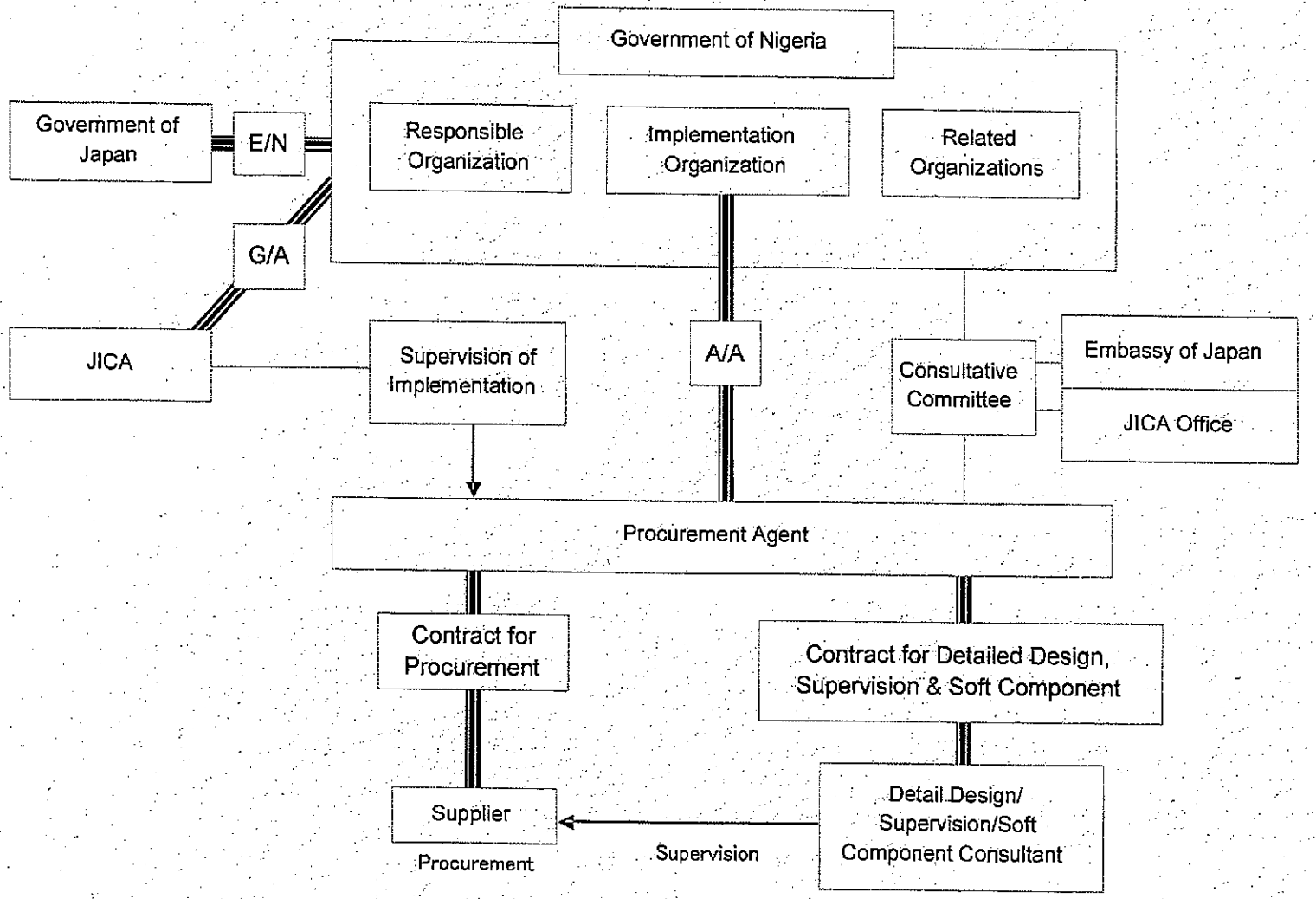
5) "Proper use of funds"
The Recipient is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign personnel necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

6) "Export and Re-export" of products
The products purchased under the Grant and its accrued interest will not be exported or re-exported from the Recipient.

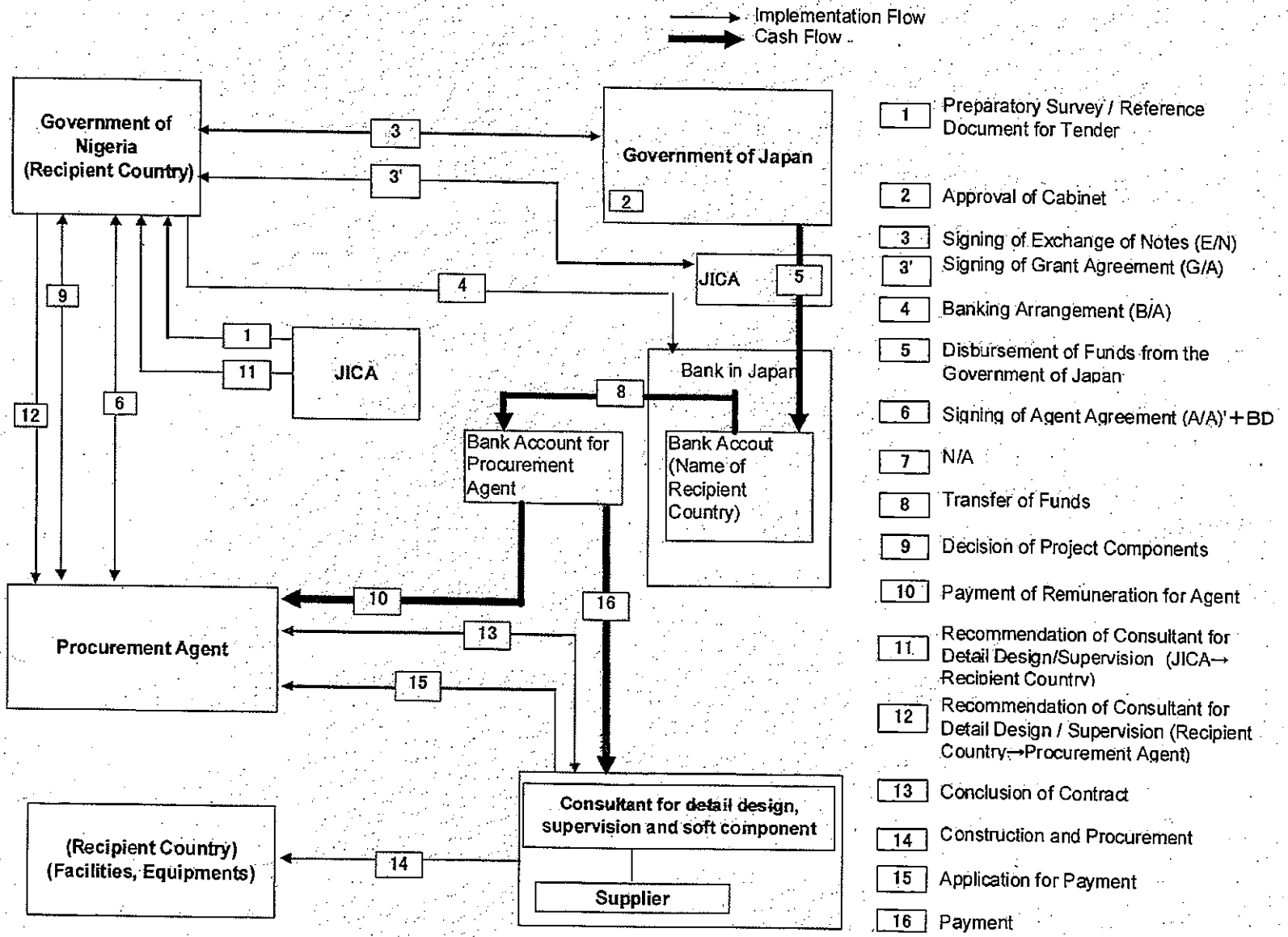
General Flow of Program Grant Aid for Environment and Climate Change



Project Implementation System



Flow of Funds for Project Implementation



Environmental Checklist: 19. Other Infrastructure Projects (1)

Annex - 7

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?	(a) N	(a) There is no need of preparation of EIA due to the fact that the scope of this project is the replacement of the existing deteriorated generation facilities, which have been in-use since 1983, with the new ones with improved performance, hence no environmental degradation will be expected.
		(b) Have EIA reports been approved by authorities of the host country's government?	(b) N	(b) Not applicable because of the reason stated above.
		(c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied?	(c) N	(c) Not applicable because of the reason stated above.
		(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?	(d) N	(d) There is no environmental permit 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?	(a) N	(a) There is no impact to the Local stakeholders because of the reason stated above and the project site is isolated and remote from the residential area.
		(b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(b) N	(b) Not applicable because of the reason stated above.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) N	(a) There is no possible alternative plans exist since the project is the replacement of the existing generation facilities.
2 Pollution Control	(1) Air Quality	(a) Do air pollutants, (such as sulfur oxides (SOx), nitrogen oxides (NOx), and soot and dust) emitted from the proposed infrastructure facilities and ancillary facilities comply with the country's emission standards and ambient air quality standards? Are any mitigating measures taken?	(a) N	(a) There is no possibility of emission of air pollutants from the rehabilitated facilities in the existing hydro electric power station.
		(b) Are electric and heat source at accommodation used fuel which emission factor is low?	(b) N	(b) There is no fuel used for electric and heat source at accommodation because the source is the electric power produced in the hydro electric power station in an environmentally friendly manner.
	(2) Water Quality	(a) Do effluents or leachates from various facilities, such as infrastructure facilities and the ancillary facilities comply with the country's effluent standards and ambient water quality standards?	(a) N	(a) There is no possibility of effluents or leachate from the rehabilitated facilities.
	(3) Wastes	(a) Are wastes from the infrastructure facilities and ancillary facilities properly treated and disposed of in accordance with the country's regulations?	(a) Y	(a) Some of the parts subject for rehabilitation contain asbestos. In accordance with National Environmental (Construction Sector) Regulation, 2011 published in FNG Offical Gazzette No.46 Lagos-17th May 2011 Vol.98, the proponent will appoint a local professional treatment company which holds a person certified by the National Enviromental Stadards and Regulations Enforcement Agency (NESREA) to be in charge of inspection and evaluation for the presence of asbestos at the site as well as disposal of such waste. The above local professional treatment company shall be appointed from companies registered by the Federal Ministry of Environment.

Environmental Checklist: 19. Other Infrastructure Projects (2)

Annex - 7

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2 Pollution Control	(4) Soil Contamination	(a) Are adequate measures taken to prevent contamination of soil and groundwater by the effluents or leachates from the infrastructure facilities and the ancillary facilities?	(a) N	(a) There is no possibility of soil and groundwater contamination from the rehabilitated facilities since the project is implemented inside of the exsiting powerhouse.
	(5) Noise and Vibration	(a) Do noise and vibrations comply with the country's standards?	(a) N	(a) Noise and vibrations from the rehabilitated facilities are less than those from the existing ones and comply with Nigerian standards.
	(6) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	(a) N	(a) There is no possibility of groundwater extraction from the rehabillitated facilities.
	(7) Odor	(a) Are there any odor sources? Are adequate odor control measures taken?	(a) N	(a) There is no possibility of odor from the rehabillitated facilities.
3 Natural Environment	(1) Protected Areas	(a) Is the project site or discharge area 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 is no possibility that the project will adversely affect the protected areas since the project is implemented inside of the exsiting powerhouse.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?	(a) N	(a) There is no possibility of impact to the existing ecosystem since the project is implemented inside of the exsiting powerhouse.
		(b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?	(b) N	(b) Same as above.
		(c) Is there a possibility that changes in localized micro-meteorological conditions, such as solar radiation, temperature, and humidity due to a large-scale timber harvesting will affect the surrounding vegetation?	(c) N	(c) There is no possibility of such changes.
		(d) Is there a possibility that the amount of water (e.g., surface water, groundwater) used by the project will adversely affect aquatic environments, such as rivers? Are adequate measures taken to reduce the impacts on aquatic environments, such as aquatic organisms?	(d) N	(d) There is no possibility of usage of huge volume of water other than the same volume of water presently used for power generation.
	(3) Hydrology	(a) Is there a possibility that hydrologic changes due to the project will adversely affect surface water and groundwater flows?	(a) N	(a) There is no possibility of hydraulic changes due to the project.
	(4) Topography and Geology	(a) Is there a possibility the project will cause large-scale alteration of the topographic features and geologic structures in the project site and surrounding areas?	(a) N	(a) There is no possibility of large-scale alteration of the topographic features and geologic structures in the project site and surrounding areas.
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?	(a) N	(a) There is no possibility of involuntary resettlement by project implementation since the project is done in the enclosed environment inside of the exisitng powerhouse.
		(b) Is adequate explanation on compensation and resettlement assistance	(b) N	(b) Not applicable due to the above reason.
		(c) Is the resettlement plan, including compensation with full replacement	(c) N	(c) Not applicable due to the above reason.
		(d) Is the compensations going to be paid prior to the resettlement?	(d) N	(d) Not applicable due to the above reason.
		(e) Is the compensation policies prepared in document?	(e) N	(e) Not applicable due to the above reason.
		(f) Does the resettlement plan pay particular attention to vulnerable groups	(f) N	(f) Not applicable due to the above reason.
		(g) Are agreements with the affected people obtained prior to resettlement?	(g) N	(g) Not applicable due to the above reason.

Environmental Checklist: 19. Other Infrastructure Projects (3)

Annex - 7

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(1) Resettlement	(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?	(h) N	(h) Not applicable due to the above reason.
		(i) Are any plans developed to monitor the impacts of resettlement?	(i) N	(i) Not applicable due to the above reason.
		(j) Is the grievance redress mechanism established?	(j) N	(j) Not applicable due to the above reason.
	(2) Living and Livelihood	(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?	(a) N	(a) There is no possibility of impacts to the living conditions of inhabitants since the project site is remote from the residential area.
	(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 is no possibility of adverse impact to the local archeological, historical, cultural, and religious heritage since the project is implemented inside of the exsiting powerhouse.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) There is no possibility of damage to the local landscape since the project is implemented inside of the exsiting powerhouse.
		(b) Is there a possibility that landscape is spoiled by construction of high-rise buildings such as huge hotels?	(b) N	(b) There is no possibility of spoil to the local landscape since the project is implemented inside of the exsiting powerhouse.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples?	(a) N	(a) There is no possibility of impacts on the culture and lifestyle of ethnic minorities and indigenous peoples since the project is implemented inside of the exsiting powerhouse.
		(b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(b) N	(b) Not applicable due to the above reason.
	(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?	(a)N	(a) The project proponet is a licensed power producer and is not violating any laws and ordinances associated with the working conditions of Nigeria.
		(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?	(b) Y	(b) The project proponent will require to the contractor for rehabilitation works to install safety equipment and protective means which prevents industrial accidents, and management of asbestos-containing parts. The project proponent will also entrust the treatment and disposal of such waste to the local professional treatment company registered by the Ministry of Environment.
		(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.?	(c) Y	(c) The project proponent will require to the contractor for rehabilitation works to provide execution programme including safety management of asbestos to establish, implement and maintain safety and health of workers against risks from asbestos throughout the period of removal of asbestos-containing parts.
		(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?	(d) Y	(d) The project proponent will require to the contractor for rehabilitation works to provide execution programme including safety management of asbestos to make sure that the safety and security be strictly observed and maintained in all aspects and occasions during removal work of asbestos-containing parts.

Environmental Checklist: 19. Other Infrastructure Projects (4)

Annex - 7

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
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)?	(a) N	(a) There is no impact of noise, vibrations, turbid water, dust and exhaust gases during construction. Howerver, some of the parts subject for rehabilitation contain asbestos. In accordance with National Environmental (Construction Sector) Regulation, 2011 published in FNG Offical Gazzwtte No.46 Lagos-17th May 2011 Vol.98, a local professional treatment company which holds a person certified by NESREA will carry out inspection and assessment for the presence of asbestos at the site. The project proponent will engage the qualified contractor for disassembly of such waste under the scope of contractual works and entrust the treatment and disposal of such waste to the above local professional treatment company registered by the Federal Ministry of Environment.
		(b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?	(b) N	(b) There is no possibility of adverse impact to the natural environment during rehabilitation work since the project is implemented inside of the exsiting powerhouse.
		(c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(c) N	(c) There is no possibility of impact to the social environment during rehabilitation work since the project site is remofe from the residential area.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?	(a) Y	(a) There is no need of monitoring of asbestos required by the law in Nigeria. However, the proponent will require to the contractor for rehabilitation works to develop and implement an execution programme for treatment of and protection from the asbestos-containing wastes during disassembly, internal transportation and temporary storage at the designated place outside of the powerhouse. The proponent with assistance from the consultant will monitor and supervise these contractors works.
		(b) What are the items, methods and frequencies of the monitoring program?	(b) Y	(b) As shown in the monitorig form.
		(c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?	(c) N	(c) The emvironmental officer from the proponent together with the environmental specialist from the consultant will monitor and supervise the contractor's performance of the related works in accordance with the approved execution programme. Budget for such supervision will be provided as a part of counterpart fund.
		(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?	(d) N	(d) There is no regulatory requirement pertaining to the monitoring report system. However, the local professional treatment company shall be appointed from companies registerd by the Federal Ministry of Environment.

Annex - 7

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways and Bridges checklist should also be checked (e.g., projects including access roads to the infrastructure facilities).	(a) N	(a) It is not necessary to refer to checklist pertaining to other sectors since the project is implemented in the enclosed environment inside of the exisitng powerhouse.
		(b) For projects, such as installation of telecommunication cables, power line towers, and submarine cables, where necessary, pertinent items described in the Power Transmission and Distribution Lines checklists should also be checked.	(b) N	(b) It is not necessary to refer to checklist pertaining to the projects with long distance sites since the project is implemented in the enclosed environment inside of the exisitng powerhouse.
	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) N	(a) It is not necessary to confirm transboundary or global issues since the project is implemented in the enclosed environment inside of the exisitng powerhouse.

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 the project is located.

MONITORING FORM

-If environmental reviews indicate the need of monitoring by JICA, JICA undertakes monitoring for necessary items that are decided by environmental reviews. JICA undertakes monitoring based on regular reports including measured data submitted by the project proponent. When necessary, the project proponent should refer to the following monitoring form for submitting reports.

-When monitoring plans including monitoring items, frequencies and methods are decided, project phase or project life cycle (such as construction phase and operation phase) should be considered.

1. Responses/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period
N/A	

2. Mitigation Measures

(1) Air Quality (Emission Gas / Ambient Air Quality)

Not applicable.

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
SO_2						
NO_2						
CO						
O_3						
Soot and dust						
SPM						
Dust						

Note:
There is no regulation in terms of air quality in relation to treatment and/or disposal of asbestos. Treatment of asbestos during dismantle and removal shall be done as stated under "Waste" in accordance with National Environmental (Construction Sector) Regulation, 2011 published in FGN Official Gazette No.46 Lagos-17th May, 2011 Vol. 98 as per attached.

(2) Water Quality (Effluent/Wastewater/Ambient Water Quality)

Not applicable.

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
pH						
SS (Suspended Solid)						
BOD/COD						
DO						
Total Nitrogen NO_3						
Total Phosphorus$_3$ PO_4						
Heavy Metals						
Hydrocarbons / Mineral Oils						
Phenols						
Cyanide						
Temperature						

(3) Waste

Monitoring Item	Monitoring Results during Report Period
Waste contained asbestos	Refer to Note hereunder.
1) Appointment of a contractor for rehabilitation works by Jebba Hydro Power Station (JHEP)	Date of contract Name of company: Person in charge: Contact number
2) Establishment of execution programme including safety management of asbestos for treatment of and protection from the asbestos-containing wastes during disassembly, internal transportation and temporary storage at site, by the contractor	Execution date:
3) Appointment of local professional treatment company, which owns a person certified by NESREA, by JHEP	Date of contract Name of company: Person in charge: Contact number
4) A notification from the contractor to the local professional treatment company	Execution date:
5) Inspection and assessment of asbestos-containing parts by a person certified by NESREA who belongs to the local professional treatment company prior to the renovation work	Execution date: Name of a certified person in charge: Contact number of the person
6) Determination of quantity and type of	Execution date:

asbestos-containing materials, and recommendation by the above person in (5)	Quantity of asbestos: Type of asbestos: Contents of recommendation:
7) Execution of removal and internal transportation of asbestos-containing wastes to the designated temporary storage at site by the contractor	Duration: From .... to ....
8) Receipt, transportation, treatment if necessary and disposal of asbestos-containing wastes by the local company	Execution date:
9) Report of work by the contractor regarding asbestos- containing wastes by the contractor to JHEP	Execution date:
10) Report of work by the local company to JHEP by the local company	Execution date:
11) Report of work by the certified person from the local company to NESREA	Execution date:
12) Submission of the Monitoring Form to JICA as a part of periodical report prepared by JHEP to JICA	Issue date of report:

Note

1) Country's Standard:
Treatment of asbestos during dismantle and removal shall be done in accordance with National Environmental (Construction Sector) Regulation, 2011 published in FGN Official Gazette No.46 Lagos-17th May, 2011 Vol. 98.

2) Referred International Standards:
Treatment and disposal of asbestos will be carried out in accordance with the relevant regulations in a country where a selected contractor belongs to.
In case of Japan, there is no legal duty to measure concentrations of asbestos during work of treatment and removal of asbestos in the Ordinance on Prevention of Health Impairment due to Asbestos.

3) Procedure of treatment of asbestos containing parts:
The process of disassembly of the asbestos-containing parts shall comply with the following procedure:

i) Prior to the commencement of any demolition or renovation, JHEP will appoint the local professional treatment company (hereinafter referred to as "the local company") who has a person certified by the National Environmental Standards and Regulations Enforcement Agency (NESREA) for assessment, treatment and disposal of asbestos-containing wastes (hereinafter referred to as "the inspector").
ii) Prior to all demolition activities, including those where no asbestos material is present, a notification by the demolishing contractor (hereinafter referred to as "the contractor") must be sent to the inspector.
iii) The affected structure/equipment or part of the structure/equipment where the work is to take place must be thoroughly inspected and assessed for the presence of asbestos by the inspector at a work implementation site.
iv) The types and quantities of asbestos-containing materials shall be determined by the inspector who shall make recommendations for the need to remove and dispose appropriately, asbestos-containing materials.
v) The contractor will set up a temporary 'clean room', generally made of plastic sheet with

sufficient dimensions to be able to cater for treatment of asbestos containing parts inside of the room, at the site. The entrance/exit will be twofold closures with plastic sheet. Also, negative-pressure dust prevention filters (HEPA filter) will be provided on the wall of this room to keep the room under negative pressure as well as to remove floating asbestos fibers. The room will also be kept in high moisture content by humidifier to prevent from scattering of asbestos fibers.

vi) As workers enter into the room, they wear dust prevention gears against asbestos fibers such as masks, glasses and clothes. Also workers will take all gears off before leaving the room. All used gears will be packed into plastic bags in twofold for disposal.

vii) During a work, water mist is sprayed on asbestos containing parts to prevent asbestos from scattering. At the same time, the room is kept under negative-pressure by the above mentioned filter so that no air will leak out of the room.

viii) When the removal work of such parts finishes, asbestos containing waste are packed into plastic bags in twofold for disposal.

ix) Prior to dismantling the clean room, the inner space will be made free from asbestos by HEPA filtered vacuum cleaner under negative pressure created by the HEPA filter.

x) Removed wastes which contain asbestos shall be kept at the designated place outside of the powerhouse until the local company will come to receive such waste for final treatment and disposal under responsibility of the local company.

xi) The inspector will make report to NESREA upon completion of the disposal of asbestos-containing wastes.

xii) No further monitoring will be required once the above exercises are completed.

(4) Noise / Vibration

Not applicable

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level						
Vibration level						

(5) Odor

Not applicable

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Major undertakings to be taken by each Government

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed urgently		●
3	To construct gates and fences in and around the site		●
4	To construct a parking lot if necessary		●
5	To construct roads		
	1) Within the site	●	
	2) Outside the site and Access road		●
6	To construct the facility and install the equipment	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities if necessary:		
	1) Electricity		
	a. The power distribution line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer for the site	●	
	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 conveying storm water, sewage, etc. from the site)		●
	b. The drainage system within the site (for sewage, ordinary waste, storm water, etc.)	●	
	4) Gas Supply		
	a. The city gas main to the site	n/a	n/a
	b. The gas supply system within the site	n/a	n/a
	5) 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	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following commissions applied by the bank in Japan for banking services based upon the Bank Arrangement (B/A):		
	1) Payment of bank commission		●
9	To ensure all the expense and prompt execution of unloading and customs clearance at the port of disembarkation in the recipient country		
	1) Marine or air transportation of the products from Japan or third countries to the recipient	●	
	2) To ensure all the expense and prompt execution of unloading, tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
10	To accord Japanese nationals and / or nationals of third countries, including persons employed by the agent whose services may be required in connection with the Components such facilities as may be necessary for their entry into recipient country and stay therein for the performance of their work.		●
11	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 Components and to the employment of the Agent will be exempted by the Government of recipient country		●
12	To maintain and use properly and effectively the facilities that are constructed and the equipment that is provided under the Grant.		●
13	To bear all the expenses, other than those covered by the Grant and its accrued interest, necessary for the purchase of the Components as well as for the agent's fees.		●
14	To ensure environmental and social consideration for the Programme.		●

Terms of Reference of the Consultative Committee (Provisional)

1. To confirm an implementation schedule of the Program for the speedy and effective utilization of the Grant and its accrued interest.

2. To discuss the modifications of the Program, including modification of the design of the facility.

3. To exchange views on allocations of the Grant and its accrued interest as well as on potential end-users.

4. To identify problems which may delay the utilization of the Grant and its accrued interest, and to explore solutions to such problems.

5. To exchange views on publicity related to the utilization of the Grant and its accrued interest.

6. To discuss any other matters that may arise from or in connection with the G/A.

APPENDIX 5

TECHNICAL MEMORANDUM

CONFIDENTIAL

TECHNICAL MEMORANDUM
FOR
THE PREPARATORY SURVEY
ON
THE PROJECT FOR EMERGENCY REPAIR AND OVERHAUL WORKS FOR THE JABBA HYDRO POWER STATION (Unit 2&4)
IN
THE FEDERAL REPUBLIC OF NIGERIA

AGREED UPON BETWEEN

JEBBA HYDRO ELECTRIC PLC.

AND

JICA STUDY TEAM

Abuja, August 5th, 2011

Mr. Kiyofusa TANAKA
Chief Consultant
JICA Study Team

Engr. Lamu Audu
Chief Executive Officer (CEO)
Jebba Hydro Electric Plc.
The Federal Republic of Nigeria

1. Introduction

Jebba Hydro Electric Plc. (hereinafter referred to as "JHEP") and JICA Study Team for the Preparatory Survey on the Project for Emergency Repair and Overhaul Works for the Jebba Hydro Power Station in the Federal Republic of Nigeria (hereinafter referred to as "the Team") had series of technical discussion to form a mutual understanding of the tentative contents and outline design of the Project at the stage of preparatory survey and both parties agreed to record the following points as a conclusion of the discussions.

It is noted that all the information as described in this report will be decided after further studies in Japan and consultations with JICA and relevant organizations of the Government of Japan. JICA will submit the draft final report, which describes the final component of the Project, to Nigeria side in January 2011 as stated in the Minutes of Discussions (M/D) signed by both parties on 5th August 2011.

2. Present Situation of the Jebba Hydro Power Station

(1) Background

On April 21st, 2009, generator units 2G6 and 2G4 have suffered a serious trouble for a period of about 25 min., which is told most probably as a phenomenon called "Motoring" triggered by a loss of station service power. As a result of the trouble, the unit 2G6 has faced a ground fault of the stator winding and overheating of rotor poles, and the unit 2G4 has faced overheating of the stator winding and the rotor poles.

With regarding to the generator unit 2G4, it was not stopped by the emergency trip at the time of the mentioned trouble. This condition brought excessive current on the generator during longer time than it of unit 2G6. Therefore, it is assumed that the generator is received severe influences which bring shortening of the life of the generator.

In this document, the assumed influences are explained in the following sections and we would like to recommend carrying out the rehabilitation work on unit 2G4.

(2) Current status of the generator unit 2G4

As a result of site survey, the current status of the generator unit 2G4 is confirmed as the Figure 2-1.

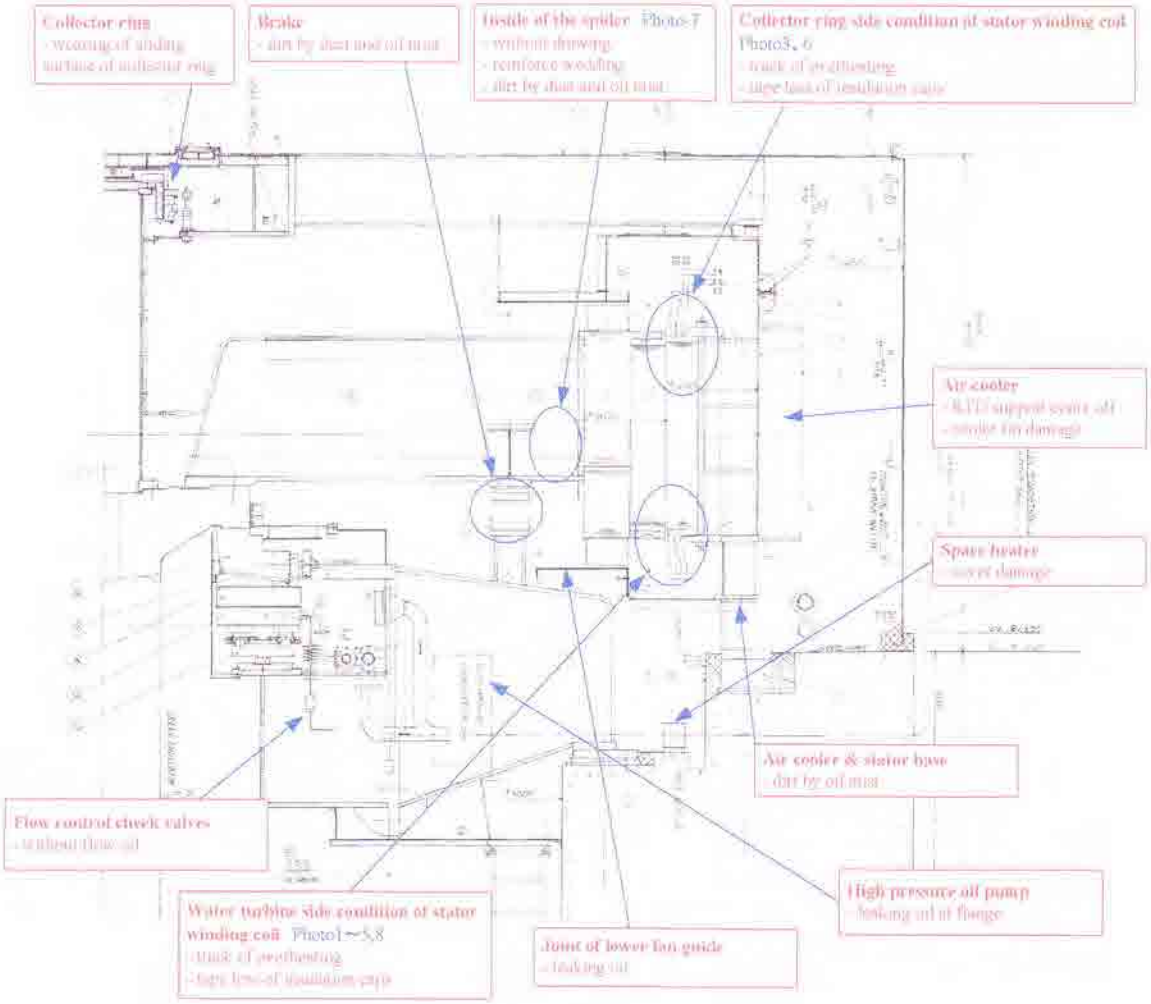


Figure 2-1. Current condition of the generator unit 2G4

Photo-1: 2G4 Insulation caps at WT side

Almost of all caps were swelled and finishing varnish was peeled off partially. In addition, flowed tar was observed on the insulation caps.

Photo-2: 2G4 Field coil (Interpole) and stator coil ends

Resin of stator coil end spacers was found blistered by excessive heating.

Peeled off glass fiber tape

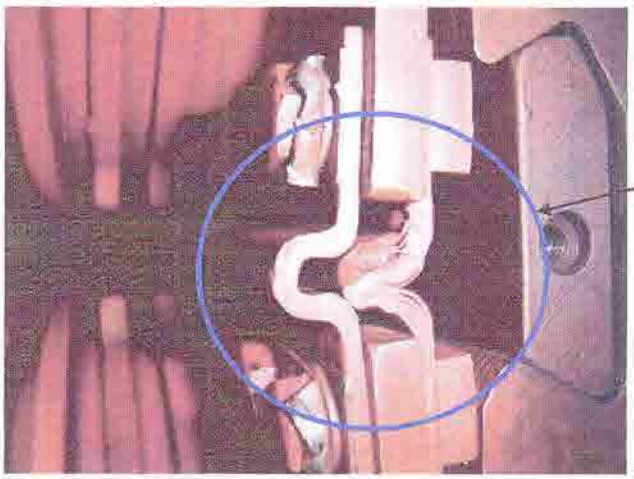


Photo-3: 2G4 Field coil (Interpole) connector

Shape of the flexible field coil connector was found not deformed badly.

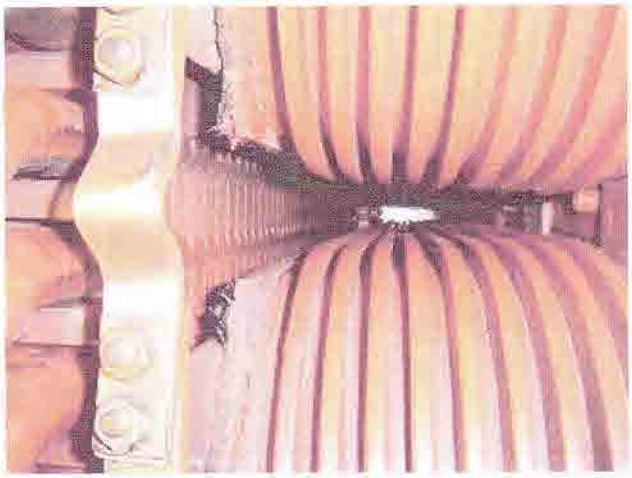


Photo-4: 2G4 Field coil and stator coil ends

Insulation collar of the field coil was found damaged badly by excessive heating.

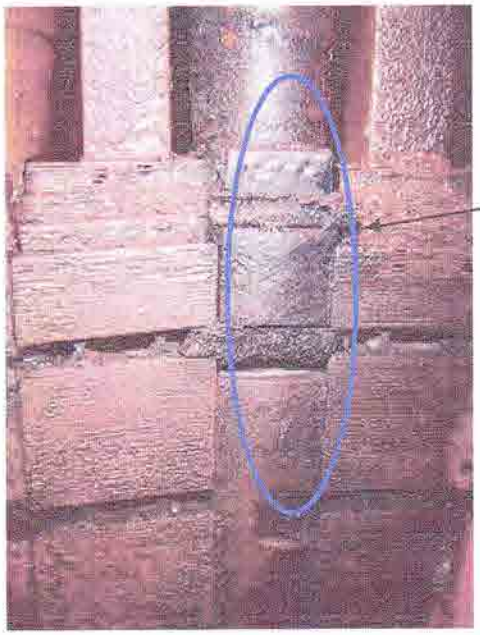


Photo-5: 2G4 Stator coil ends

Insulation collar of the field coil was found damaged badly by excessive heating.

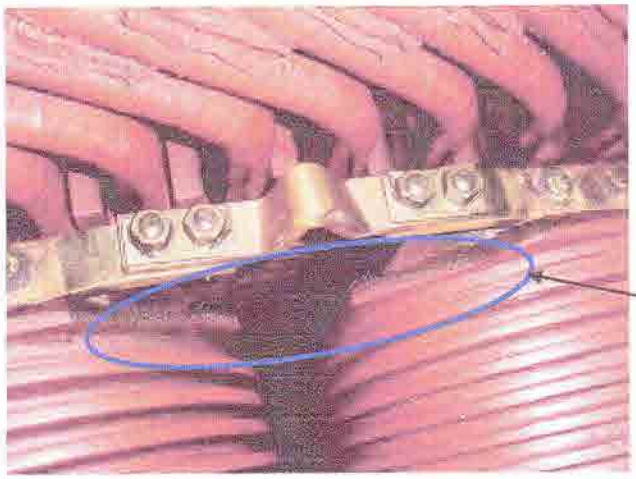


Photo-6: 2G4 Field coil

Insulation collar was damaged by overheating, and trace of migration of the insulation collar was not obvious.

End of Bobbin was damaged

Photo-7: 2G4 Rotor rim support

Reinforcement of the rim support was confirmed sound. Dust accumulation was observed. Entire rotor was smeared with oil including brake dust.

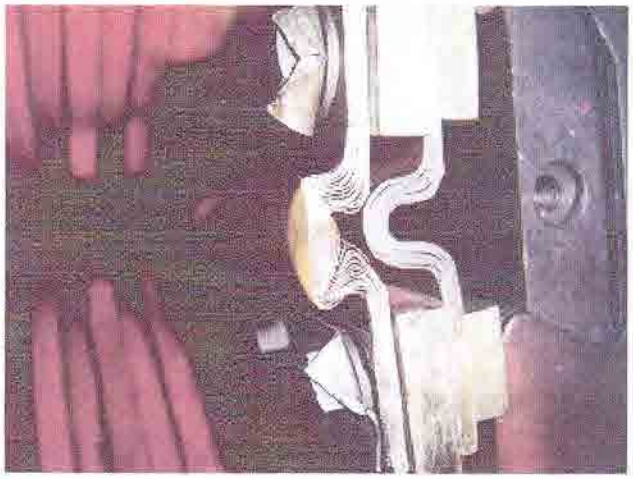


Photo-8: 2G4 Field coil connector

A flexible connector of field coils was deformed sharply.

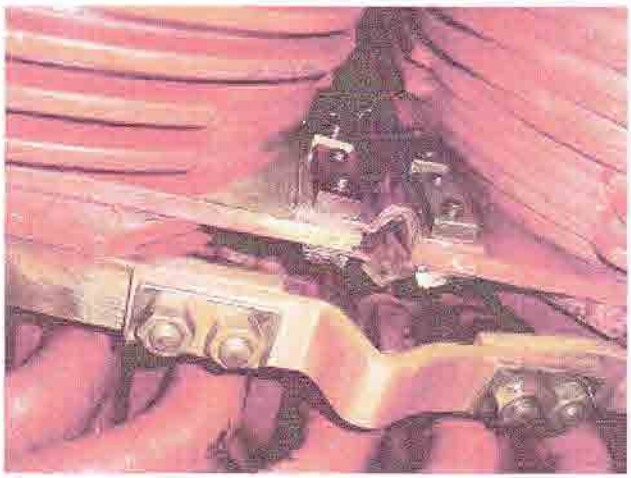


Photo-9: 2G4 End winding at WT side

Surface of coil end was badly blistered by excessive heating. Some insulation tape was peeled off. A flexible connector of field coils was deformed sharply.

3. Countermeasures for Motoring Accident occurred in 2009 year

It was reported that the accident was caused by the power lost of internal use in the power plant due to the earth fault to the power network. Although detail and true reason of the accident was uncertain because any event recorder which records protection relays operation, circuit breaker operation and operated procedures has not been provided in the power plant, the following facts are known.

1) Circuit breaker did not automatically trip at the accident.
2) Although the operator tried to open the 2G4 generator circuit breaker manually, its operation was failed by any reason. Then after, operator opened the high voltage side circuit breaker located at substation.

Judging from the reasons above, JHEP took the following countermeasures.

3) Operation system of the 2G4 generator circuit breaker was changed from pressure air type to spring coil operation type.
4) Circuit in the control panel was modified to have the function to trip the circuit breaker by means of the protection relay at any motoring accidents.

The JHEP decided that any motoring accidents could be protected from those occurrences by the measures shown in above 3) and 4).

4. Major Technical Issues

Based on the current status of the generator unit 2G4, it is assumed that there is a possibility of happening severe trouble on the generator in near future. We would like to recommend carrying out the rehabilitation work including Stator coil, stator core and field poles in addition to the normal overhauling work. The details are described as follows.

(1) Stator coil

According to the site investigation, the stator coil end at water turbine side (WT), as remarkably deteriorated by excessive heat during the motoring trouble. But, the conditions of stator coil end at collector ring (CLR) side was not able to be checked because CLR side has already been varnished for the purpose of a prompt restoring work by JHEP. Surface of coil end at WT side was badly blistered. This fact suggests that serious corona discharge may occur during operation because, specially corona suspension layer treatment (semi-conductive corona shield layer treatment)at slot entrance position must have been remarkably deteriorated and damaged by excessively high temperature. In the worst case, the creep failure would occur between stator coil ends, if the deterioration is enlarged by the operation.

On the other hand, resin of coil end spacers at WT side was also blistered. This fact suggests

that the coil end spacer must have lost their mechanical strength to some extent.

Furthermore, almost of all insulation caps of end coils at WT side were found badly blistered and broken. This fact tells that insulation caps will not work as an insulator anymore. This means the ground fault would be occur if the deterioration is enlarged by the operation.

Based on the above-mentioned facts, it can be concluded that this unit 2G4 has suffered higher temperature rise or longer duration of the motoring condition.

These facts were brought by the excessive current due to the trouble. The ground insulation has received this influence as well .It is assumed that the ground insulation of the inner part is burnt by this excessive heat and the severe deterioration of it is occurred which would bring the ground fault in a short time.

(2) Stator core

According to the site investigation, waving deformation and color changing of the stacked core back laminations at the split faces was observed .Many pieces of burnt insulation material, which came from the stator winding, and dust were found.

As explained above, it is assumed that the excessive current flowed in the stator coils. This excessive current brought the excessive magnetic flux in the stator core. In this case, the coated varnish applied on both surfaces of the stator core for insulation of each core sheet would be damaged. This damage cannot be seen from outside. This damage will be enlarged by eddy current between the damaged core sheets during operation. Finally this damage would bring melting of the stator core in a short time.

(3) Field pole

According to the site investigation, pole surface was discolored by excessive heat and a melting trouble of damper bars was observed. Damper plates were confirmed vent. All damper connectors seem to have been torn. Insulation collars of the field coils at air gap side were seriously damaged by excessive heat coming from pole surface and damper bar. On the other hand, it is very difficult to distinguish which is the pole came out from unit 2G4 or 2G6 because some poles have been already changed by the similarly damaged but better looked poles which were taken out from unit 2G6 by JHEP after the motoring trouble.

At present, the unit 2G4 is operated using damaged poles without connecting damper plates. The burnt insulation would become a current path of the creeping fault between the field coil and the field core. Furthermore, it is assumed that the mechanical strength of it has been reduced by this trouble. This would bring the shift of the position of the field coil which brings unforeseen shaft vibration during operation. On the other hand, the poles, which have different melting condition on the damper bars would also bring unforeseen shaft vibration because it is

assumed that the condition of the mechanical balance of the rotor is not good.

5. Equipment Plan

The Team and JHEP have agreed to the following contents of the equipment plan (hereinafter referred to as "the Equipment") as a draft items for further studies by the Team in Japan, such as project cost estimation, preparations of the detail equipment specification and the draft final report, etc.

Category	No.	Description	Q'ty
A	1	**Stator Core and associated parts (core stacking kit)**	**1 lot**
	1.1	Stator Core	1 Set
	1.2	Stator Core Duct Spacer	1 Set
	1.3	Stator End Spacer	1 Set
	1.4	Stator End Clamping Plate	1 Set
	1.5	Accessories for above	1 Set
	1.6	RTD for stator core	1 Set
	1.7	Finishing varnish for stator	1 Set
	1.8	Stator Core	1 Set
	1.9	Stator Core Duct Spacer	1 Set
A	2	**Stator Coil and associated parts (stator rewinding kit)**	**1 lot**
	2.1	Stator Coil	1008 pcs
	2.2	Wedge	1 Set
	2.3	Stator Coil Support Ring	1 Set
	2.4	Bus lead for Inside of stator frame	1 Set
	2.5	Insulation Cap	1 Set
	2.6	Line and Neutral Lead	1 Set
	2.7	Accessories for above (including insulating material and RTD)	1 Set
	2.8	RTD for stator coil	20 Set
	2.9	Protection cover	1 Set
A	3	**Rotor Pole with field coil**	**1 lot**
	3.1	Pole	64 pcs
	3.2	Connection parts between Poles	1 Set
	3.3	Pole Cotter and Liner	64 Sets
	3.4	Field lead	1 Set
	3.5	Finishing Varnish for Rotor	1 Set
A	4	**Rotor Rim support modification kit with tools**	**1 lot**
	4.1	Special tool	1 Set
	4.2	Repair material for damaged spider	1 Set

Category	No.	Description	Q'ty
	4.3	Rotor rim keys	1 Set
	4.4	Stopper for rotor rim keys	1 Set
	4.5	Distance piece (Rotor rim support)	1 Set
A	5	**Lifting devises and sling wires**	1 lot
A	6	**Replacement Parts and Instruments**	1 lot
	6.1	Carbon Brush	44 pcs
	6.2	Oil Deflector	1 Set
	6.3	Flow Control Valve	36 pcs
	6.4	RTD for Thrust Bearing Oil Temp.	1 pc
	6.5	Thermal Relay for Air Cooler and Bearing	12 pcs
	6.6	Dial Thermometer for Bearing	2 pcs
	6.7	Oil Level Gauge	1 pc
	6.8	Assembling parts for bearing	1 Set
	6.9	Wiring material	1 Set
	6.10	Installation materials (Bolts, nuts, etc.)	1 Set
	6.11	Thrust and Guide Bearings	1 Set
	6.12	Rebabbitting of Thrust and Guide Bearings	1 Set
	6.13	High pressure oil pump set for Thrust Bearings	1 Set
	6.14	Bearing oil coolers	1 Set
	6.15	Bearing oil circulating pumps	1 Set
	6.16	Air coolers	12 Sets
	6.17	Brake Lining (shoe)	8 pcs
	6.18	Dial Thermometer for Oil Cooler	2 pcs
	6.19	Creep Detector	1 Set
	6.20	Vibration detector and monitor	1 Set
	6.21	Generator door switch	2 pcs
	6.22	Water flow relay for coolers	2 pcs
	6.23	Oli flow meter	1 pc
	6.24	Limit switch for brake and jack	8 pcs
	6.25	Carbon Brush Folder	44 pcs
	6.26	Space heater	12 pcs
	6.27	Dial thermometer for air cooler	6 pcs
B	7	**Tool and equipment for site work**	1 lot
B	8	**Current Transformer**	1 lot
	8.1	Current Transformers located in Generator Air Housing	1 lot
B	9	**Generator Circuit Breaker**	1 lot
	9.1	Generator Main Circuit Breaker	1 Set
	9.2	Isolated Phase Bus Duct	1 Set

Category	No.	Description	Q'ty
	9.3	Modification	1 Set
A	**10**	**Site Work**	**1 lot**

Notes: Lubricating Oils are not including above table, and prepared by Nigerian side.

6. Details of Undertakings by JHEP

The following items are the undertakings of JHEP during the preparatory survey and implementation stages.

(1) Preparatory Survey Stage

No.	Items	Details of undertakings
1	Gantry crane	JHEP shall secure enough budget and repair the gantry crane of the Jebba Power Station prior to the commence of the implementation of the Project.

(2) Implementation Stage

No.	Items	Details of undertakings
1	Speed Detector for Govemor	For governing of the turbine speed, speed sensors (3 pieces) are installed around the turbine shaft. The sensors do not work properly and therefore should be replaced with new ones.
2	Exciter System	New exciter systems for Unit Nos. 4 & 6 have been already purchased by the Recipient. Although the replacement works of the excitation systems are out of scope of the Project, such work should be carried out by the Recipient in the same period as the Project.
3	Electric Power for internal Use	AC and DC powers internally used in the power plant do not have enough spare capacity. Before commencement of the Project, the AC and DC power systems should be maintained and modified in order to supply fully enough capacities for future use.
4	Shaft Seal	Excessive leakage water is found at the shaft seal. In order to fully reduce the leakage water volume, the shaft seal structure should be modified not only by replacement of seal segments (Teflon made) buy also by minor modification of the structure itself.
5	Governor	From the reason of past long time operation, any spare parts (Printed circuit cards) are no longer available from the original manufacturer. It is recommendable that the existing electric governor cabinet to be replaced with new governor together with the digitalization.
6	Guide Vane Servomotor	Excessive oil leakage from guide vane servomotor is found and accumulated on turbine top cover. All oil seals and o-rings of the servomotor should be replaced with new ones in order to minimize the oil leakage.

(End)

Attachment

Annex-I: Tentative Implementation Schedule

Annex-II: Minutes of Discussion (August 5, 2011)

Annex-I: Tentative Implementation Schedule

Tentative Implementation schedule for the Project for Emergency Repair and Overhaul Works for the Jebba Hydro Power Station

Year	2011												2012												2013												2014		
Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Place													1	2	3	4	5	6	7	8	9	10	11		12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Preparatory Survey (OD-DFR-DD)																																							
Exchange of Notes (EN)																																							
Grant Agreement (G/A)																																							
Agent Agreement (A/A)																																							
Consultant service Agreement																																							
TENDER																																							
Preparation of Tender Documents																																							
Obtaining of approvals for the Tender Document																																							
Tender Announcement																																							
Tender price estimation by Tenderers																																							
Tender Opening (in Japan)																																							
Tender evaluation																																							
Concluding the Contract with the successful Tenderer																																							
PROCUREMENR / INSTALLATION WORK																																							
Preparation of drawings by the Supplier																																							
Procurement and Manufacturing of Equipment																																							
Transportation of Equipment and Materials																																							
Installation works of Equipment and Materials																																					(8 Month)		
Site test / inspection and trial run																																							
Commissioning / Handing over																																							

APPENDIX 6

OTHER RELEVANT DATA (IF APPLICABLE)

6. Other Relevant Data

Survey Title: Preparatory Survey Report on the Project for Emergency Repair and Overhaul Works for the Jebba Hydro Power Station in the Federal Republic of Nigeria

No	Title	Type (Printed Document, Video, Map, Photo, etc.)	Original/ Copy	Published by	Year of Publication
1	Vision20:2020	Printed Document	Copy	National Planning Commission	May. 2011
2	The first national implementation plan for NV20:2020	Printed Document	Copy	National Planning Commission	May. 2011
3	Roadmap for power sector reform	Printed Document	Copy	Federal Republic of Nigeria	May. 2011
4	National Energy Policy	Printed Document	Copy	Energy Commission of Nigeria	May. 2011
5	JEBBA HYDROELECTRIC POWER STATION 578,400KW	Printed Document	Copy	Federal Republic of Nigeria	
6	Federal Republic of Nigeria Official Gazette	Printed Document	Copy	Federal Republic of Nigeria	May. 2011
7	ORGANOGRAM FOR JEBBA HYDRO ELECTRIC PLC	Printed Document	Copy	JEBBA HYDRO ELECTRIC PLC	
8	DEPARTMENTAL STAFF STRENGTH	Printed Document	Copy	JEBBA HYDRO ELECTRIC PLC	JUL. 2011
9	NATIONAL CONTROL CENTRE OSOGBO GENERATION AND TRANSMISSION GRID OPERATIONS 2007 (ANNUAL TECHNICAL REPORT)	Printed Document	Copy	National Control Centre, Osogbo	Feb. 2008
10	NATIONAL CONTROL CENTRE OSOGBO GENERATION AND TRANSMISSION GRID OPERATIONS 2008(ANNUAL TECHNICAL REPORT)	Printed Document	Copy	National Control Centre, Osogbo	Feb. 2008
11	NATIONAL CONTROL CENTRE OSOGBO GENERATION AND TRANSMISSION GRID OPERATIONS 2009(ANNUAL TECHNICAL REPORT)	Printed Document	Copy	National Control Centre, Osogbo	Feb. 2008

No	Title	Type (Printed Document, Video, Map, Photo, etc.)	Original/ Copy	Published by	Year of Publication
12	RESTRUCTURING PAPER ON A PROPOSED PROJECT RESTRUCTURING OF NIGERIA NATIONAL ENERGY DEVELOPMENT PROJECT CREDIT July 1, 2005 TO THE FEDERAL REPUBLIC OF NIGERIA	Printed Document	Copy	The World Bank	Sep. 2010
13	Jebba Trouble Report	Printed Document	Copy	Jebba Hydro Electric Plc.,	Apr. 2009

APPENDIX 7

ENVIRONMENTAL CHECKLIST

Environmental Checklist: 19. Other Infrastructure Projects（1）

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?	(a) N	(a) There is no need of preparation of EIA due to the fact that the scope of this project is the replacement of the existing deteriorated generation facilities, which have been in use since 1985, with the new ones with improved performance, hence no environmental degradation will be expected.
		(b) Have EIA reports been approved by authorities of the host country's government?	(b) N	(b) Not applicable because of the reason stated above.
		(c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied?	(c) N	(c) Not applicable because of the reason stated above.
		(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?	(d) N	(d) There is no environmental permit 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?	(a) N	(a) There is no impact to the Local stakeholders because of the reason stated above and the project site is isolated and remote from the residential area.
		(b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(b) N	(b) Not applicable because of the reason stated above.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) N	(a) There is no possible alternative plans exist since the project is the replacement of the existing generation facilities.
2 Pollution Control	(1) Air Quality	(a) Do air pollutants, (such as sulfur oxides (SOx), nitrogen oxides (NOx), and soot and dust) emitted from the proposed infrastructure facilities and ancillary facilities comply with the country's emission standards and ambient air quality standards? Are any mitigating measures taken?	(a) N	(a) There is no possibility of emission of air pollutants from the rehabilitated facilities in the existing hydro electric power station.
		(b) Are electric and heat source at accommodation used fuel which emission factor is low?	(b) N	(b) There is no fuel used for electric and heat source at accommodation because the source is the electric power produced in the hydro electric power station in an environmentally friendly manner.
	(2) Water Quality	(a) Do effluents or leachates from various facilities, such as infrastructure facilities and the ancillary facilities comply with the country's effluent standards and ambient water quality standards?	(a) N	(a) There is no possibility of effluents or leachate from the rehabilitated facilities.
	(3) Wastes	(a) Are wastes from the infrastructure facilities and ancillary facilities properly treated and disposed of in accordance with the country's regulations?	(a) Y	(a) Some of the parts subject for rehabilitation contain asbestos. In accordance with National Environmental (Construction Sector) Regulation, 2011 published in FNG Offical Gazzette No.46 Lagos-17th May 2011 Vol.98, the proponent will appoint a local professional treatment company which holds a person certified by the National Enviromental Stadards and Regulations Enforcement Agency (NESREA) to be in charge of inspection and evaluation for the presence of asbestos at the site as well as disposal of such waste. The above local professional treatment company shall be appointed from companies registered by the Federal Ministry of Environment.

Environmental Checklist: 19. Other Infrastructure Projects（2）

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2 Pollution Control	(4) Soil Contamination	(a) Are adequate measures taken to prevent contamination of soil and groundwater by the effluents or leachates from the infrastructure facilities and the ancillary facilities?	(a) N	(a) There is no possibility of soil and groundwater contamination from the rehabilitated facilities since the project is implemented inside of the exsiting powerhouse.
	(5) Noise and Vibration	(a) Do noise and vibrations comply with the country's standards?	(a) N	(a) Noise anf vibrations from the rehabilitated facilities are less than those from the existing ones and comply with Nigerian standards.
	(6) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	(a) N	(a) There is no possibility of groundwater extraction from the rehabillitated facilities.
	(7) Odor	(a) Are there any odor sources? Are adequate odor control measures taken?	(a) N	(a) There is no possibility of odor from the rehabillitated facilities.
3 Natural Environment	(1) Protected Areas	(a) Is the project site or discharge area 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 is no possibility that the project will adversely affect the protected areas since the project is implemented inside of the exsiting powerhouse.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?	(a) N	(a) There is no possibility of impact to the existing ecosystem since the project is implemented inside of the exsiting powerhouse.
		(b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?	(b) N	(b) Same as above.
		(c) Is there a possibility that changes in localized micro-meteorological conditions, such as solar radiation, temperature, and humidity due to a large-scale timber harvesting will affect the surrounding vegetation?	(c) N	(c) There is no possibility of such changes.
		(d) Is there a possibility that the amount of water (e.g., surface water, groundwater) used by the project will adversely affect aquatic environments, such as rivers? Are adequate measures taken to reduce the impacts on aquatic environments, such as aquatic organisms?	(d) N	(d) There is no possibility of usage of huge volume of water other than the same volume of water presently used for power generation.
	(3) Hydrology	(a) Is there a possibility that hydrologic changes due to the project will adversely affect surface water and groundwater flows?	(a) N	(a) There is no possibility of hydraulic changes due to the project.
	(4) Topography and Geology	(a) Is there a possibility the project will cause large-scale alteration of the topographic features and geologic structures in the project site and surrounding areas?	(a) N	(a) There is no possibility of large-scale alteration of the topographic features and geologic structures in the project site and surrounding areas.
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?	(a) N	(a) There is no possibility of involuntary resettlement by project implementation since the project is done in the enclosed environment inside of the exisitng powerhouse.
		(b) Is adequate explanation on compensation and resettlement assistance	(b) N	(b) Not applicable due to the above reason.
		(c) Is the resettlement plan, including compensation with full replacement	(c) N	(c) Not applicable due to the above reason.
		(d) Is the compensations going to be paid prior to the resettlement?	(d) N	(d) Not applicable due to the above reason.
		(e) Is the compensation policies prepared in document?	(e) N	(e) Not applicable due to the above reason.
		(f) Does the resettlement plan pay particular attention to vulnerable groups	(f) N	(f) Not applicable due to the above reason.
		(g) Are agreements with the affected people obtained prior to resettlement?	(g) N	(g) Not applicable due to the above reason.
	(1) Resettlement	(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?	(h) N	(h) Not applicable due to the above reason.

Environmental Checklist: 19. Other Infrastructure Projects（3）

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(1) Resettlement	(i) Are any plans developed to monitor the impacts of resettlement?	(i) N	(i) Not applicable due to the above reason.
		(j) Is the grievance redress mechanism established?	(j) N	(j) Not applicable due to the above reason.
	(2) Living and Livelihood	(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?	(a) N	(a) There is no possibility of impacts to the living conditions of inhabitants since the project site is remote from the residential area.
	(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 is no possibility of adverse impact to the local archeological, historical, cultural, and religious heritage since the project is implemented inside of the exsiting powerhouse.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) There is no possibility of damage to the local landscape since the project is implemented inside of the exsiting powerhouse.
		(b) Is there a possibility that landscape is spoiled by construction of high-rise buildings such as huge hotels?	(b) N	(b) There is no possibility of spoil to the local landscape since the project is implemented inside of the exsiting powerhouse.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples?	(a) N	(a) There is no possibility of impacts on the culture and lifestyle of ethnic minorities and indigenous peoples since the project is implemented inside of the exsiting powerhouse.
		(b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(b) N	(b) Not applicable due to the above reason.
	(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?	(a)N	(a) The project proponet is a licensed power producer and is not violating any laws and ordinances associated with the working conditions of Nigeria.
		(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?	(b) Y	(b) The project proponent will require to the international contractor for rehabilitation works to install safety equipment and protective means which prevents industrial accidents, and management of asbestos-containing parts. The project proponent will also entrust the treatment and disposal of such waste to the local professional treatment company registered by the Ministry of Environment.
		(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.?	(c) Y	(c) The project proponent will require to the international contractor for rehabilitation works to provide execution programme including safety management of asbestos to establish, implement and maintain safety and health of workers against risks from asbestos throughout the period of removal of asbestos-containing parts.
		(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?	(d) Y	(d) The project proponent will require to the international contractor for rehabilitation works to provide execution programme including safety management of asbestos to make sure that the safety and security be strictly observed and maintained in all aspects and occasions during removal work of asbestos-containing parts.

Environmental Checklist: 19. Other Infrastructure Projects（4）

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
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)?	(a) N	(a) There is no impact of noise, vibrations, turbid water, dust and exhaust gases during construction. Howerver, some of the parts subject for rehabilitation contain asbestos. In accordance with National Environmental (Construction Sector) Regulation, 2011 published in FNG Offical Gazzwtte No.46 Lagos-17th May 2011 Vol.98, a local professional treatment company which holds a person certified by NESREA will carry out inspection and assessment for the presence of asbestos at the site. The project proponent will engage the qualified international contractor for disassembly of such waste under the scope of contractual works and entrust the treatment and disposal of such waste to the above local professional treatment company registered by the Federal Ministry of Environment.
		(b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?	(b) N	(b) There is no possibility of adverse impact to the natural environment during rehabilitation work since the project is implemented inside of the exsiting powerhouse.
		(c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(c) N	(c) There is no possibility of impact to the social environment during rehabilitation work since the project site is remofe from the residential area.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?	(a) Y	(a) There is no need of monitoring of asbestos required by the law in Nigeria. However, the proponent will require to the international contractor for rehabilitation works to develop and implement an execution programme for treatment of and protection from the asbestos-containing wastes during disassembly, internal transportation and temporary storage at the designated place outside of the powerhouse. The proponent with assistance from the consultant will monitor and supervise these contractors works.
		(b) What are the items, methods and frequencies of the monitoring program?	(b) Y	(b) As shown in the monitorig form.
		(c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?	(c) N	(c) The emvironmental officer from the proponent together with the environmental specialist from the consultant will monitor and supervise the contractors performance of the related works in accordance with the approved execution programme. Budget for such supervision will be provided as a part of counterpart fund.
		(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?	(d) N	(d) There is no regulatory requirement pertaining to the monitoring report system. However, the local professional treatment company shall be appointed from companies registerd by the Federal Ministry of Environment.

Environmental Checklist: 19. Other Infrastructure Projects（5）

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways and Bridges checklist should also be checked (e.g., projects including access roads to the infrastructure facilities).	(a) N	(a) It is not necessary to refer to checklist pergaining to other sectors since the project is implemented in the enclosed environment inside of the exisitng powerhouse.
		(b) For projects, such as installation of telecommunication cables, power line towers, and submarine cables, where necessary, pertinent items described in the Power Transmission and Distribution Lines checklists should also be checked.	(b) N	(b) It is not necessary to refer to checklist pergaining to the projects with long distance sites since the project is implemented in the enclosed environment inside of the exisitng powerhouse.
	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) N	(a) It is not necessary to confirm transboundary or global issues since the project is implemented in the enclosed environment inside of the exisitng powerhouse.

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 the project is located.

APPENDIX 8

MONITORING FORM

MONITORING FORM

-If environmental reviews indicate the need of monitoring by JICA, JICA undertakes monitoring for necessary items that are decided by environmental reviews. JICA undertakes monitoring based on regular reports including measured data submitted by the project proponent. When necessary, the project proponent should refer to the following monitoring form for submitting reports.

-When monitoring plans including monitoring items, frequencies and methods are decided, project phase or project life cycle (such as construction phase and operation phase) should be considered.

１．Responses/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period
N/A	

２．Mitigation Measures

- Air Quality（Emission Gas / Ambient Air Quality）

Not applicable.

Item	Unit	Measured Value（Mean）	Measured Value（Max.）	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
SO_2	N/A					
NO_2	N/A					
CO	N/A					
O_3	N/A					
Soot and dust	N/A					
SPM	N/A					
Dust	N/A					

Note:
There is no regulation in terms of air quality in relation to treatment and/or disposal of asbestos.
Treatment of asbestos during dismantle and removal shall be done as stated under "Waste" in accordance with National Environmental (Construction Sector) Regulation, 2011 published in FGN Official Gazette No.46 Lagos-17th May, 2011 Vol. 98 as per attached.

- Water Quality（Effluent/Wastewater/Ambient Water Quality）

Not applicable.

Item	Unit	Measured Value（Mean）	Measured Value（Max.）	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
pH	mg/l					
SS（Suspended Solid）	mg/l					
BOD/COD	mg/l					
DO	mg/l					

Total Nitrogen NO_3	mg/l					
Total Phosphorus$_3$ PO_4	mg/l					
Heavy Metals	mg/l					
Hydrocarbons / Mineral Oils	mg/l					
Phenols	-					
Cyanide	-					
Temperature	^{0}C					

- Waste

Monitoring Item	Monitoring Results during Report Period
Waste contained asbestos	Refer to Note hereunder.
(1) Appointment of international contractor for rehabilitation works by Jebba Hydro Power Station (JHEP)	Date of contract Name of company: Person in charge: Contact number
(2) Establishment of execution programme including safety management of asbestos for treatment of and protection from the asbestos-containing wastes during disassembly, internal transportation and temporary storage at site, by the contractor	Execution date:
(3) Appointment of local professional treatment company, which owns a person certified by NESREA, by JHPS	Date of contract Name of company: Person in charge: Contact number
(4) A notification from the contractor to the local professional treatment company	Execution date:
(5) Inspection and assessment of asbestos-containing parts by a person certified by NESREA who belongs to the local professional treatment company prior to the renovation work	Execution date: Name of a certified person in charge: Contact number of the person
(6) Determination of quantity and type of asbestos-containing materials, and recommendation by the above person in (6)	Execution date: Quantity of asbestos: Type of asbestos: Contents of recommendation:
(7) Execution of removal and internal transportation of asbestos-containing wastes to the designated temporary storage at site by the contractor	Duration: From …. to ….
(8) Receipt, transportation, treatment if necessary and disposal of asbestos-containing wastes by the local company	Execution date:
(9) Report of work by the international contractor regarding asbestos- containing wastes by the contractor to JHPS	Execution date:
(10) Report of work by the local company to JHPS by the local company	Execution date:
(11) Report of work by the certified person from the local company to NESREA	Execution date:
(12) Submission of the Monitoring Form to JICA as a part of periodical report prepared by JHPS to	Issue date of report:

JICA	

Note

1) Country's Standard:
Treatment of asbestos during dismantle and removal shall be done in accordance with National Environmental (Construction Sector) Regulation, 2011 published in FGN Official Gazette No.46 Lagos-17th May, 2011 Vol. 98.

2) Referred International Standards:
Treatment and disposal of asbestos will be carried out in accordance with the relevant regulations in a country where a selected international contractor belongs to.
In case of Japan, there is no legal duty to measure concentrations of asbestos during work of treatment and removal of asbestos in the Ordinance on Prevention of Health Impairment due to Asbestos.

3) Procedure of treatment of asbestos containing parts:
The process of disassembly of the asbestos-containing parts shall comply with the following procedure:

i) Prior to the commencement of any demolition or renovation, JHPS will appoint the local professional treatment company (hereinafter referred to as "the local company") who has a person certified by the National Environmental Standards and Regulations Enforcement Agency (NESREA) for assessment, treatment and disposal of asbestos-containing wastes (hereinafter referred to as "the inspector").
ii) Prior to all demolition activities, including those where no asbestos material is present, a notification by the demolishing contractor (hereinafter referred to as "the contractor") must be sent to the inspector.
iii) The affected structure/equipment or part of the structure/equipment where the work is to take place must be thoroughly inspected and assessed for the presence of asbestos by the inspector at a work implementation site.
iv) The types and quantities of asbestos-containing materials shall be determined by the inspector who shall make recommendations for the need to remove and dispose appropriately, asbestos-containing materials.
v) The contractor will set up a temporary 'clean room', generally made of plastic sheet with sufficient dimensions to be able to cater for treatment of asbestos containing parts inside of the room, at the site. The entrance/exit will be twofold closures with plastic sheet. Also, negative-pressure dust prevention filters (HEPA filter) will be provided on the wall of this room to keep the room under negative pressure as well as to remove floating asbestos fibers. The room will also be kept in high moisture content by humidifier to prevent from scattering of asbestos fibers.
vi) As workers enter into the room, they wear dust prevention gears against asbestos fibers such as masks, glasses and clothes. Also workers will take all gears off before leaving the room. All used gears will be packed into plastic bags in twofold for disposal.
vii) During a work, water mist is sprayed on asbestos containing parts to prevent asbestos from scattering. At the same time, the room is kept under negative-pressure by the above mentioned filter so that no air will leak out of the room.
viii) When the removal work of such parts finishes, asbestos containing waste are packed into plastic bags in twofold for disposal.
ix) Prior to dismantling the clean room, the inner space will be made free from asbestos by HEPA filtered vacuum cleaner under negative pressure created by the HEPA filter.
x) Removed wastes which contain asbestos shall be kept at the designated place outside of the powerhouse until the local company will come to receive such waste for final treatment and disposal under responsibility of the local company.
xi) The inspector will make report to NESREA upon completion of the disposal of asbestos-containing wastes.
xii) No further monitoring will be required once the above exercises are completed.

- Noise / Vibration
Not applicable

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level						
Vibration level						

- Odor

Monitoring Item	Monitoring Results during Report Period
N/A	

3. Natural Environment

- Ecosystem

Monitoring Item	Monitoring Results during Report Period
N/A	

4. Social Environment

- Resettlement

Monitoring Item	Monitoring Results during Report Period
N/A	

- Living / Livelihood

Monitoring Item	Monitoring Results during Report Period
N/A	

APPENDIX 9

TOTAL OUTPUT OF JHPS AND AVERAGE OUTPUT OF THE UNIT

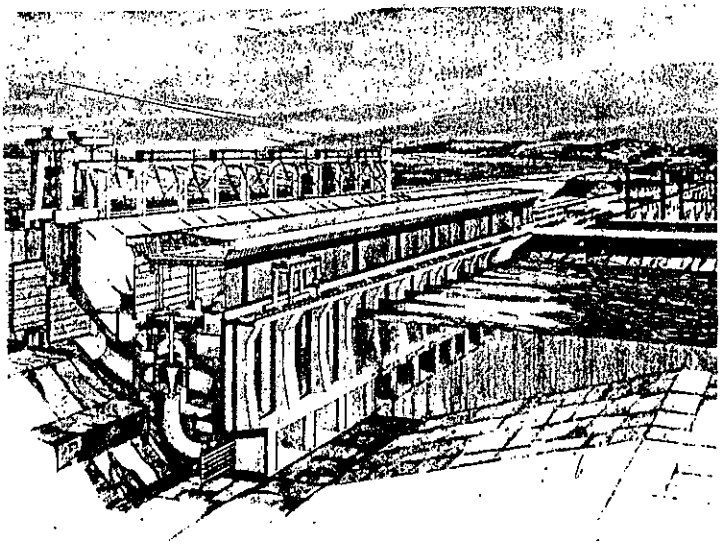
Total output of JHPS and average output of the unit

Year	2G1	2G2	2G3	2G4	2G5	2G6	Total(MWh) /Net Water of 2005 (33,462,979,200m3)
	Total output (MWh)	Total output (MWh)	Total output (MWh)	Total output (MWh)	Total output (MWh)	Total output (MWh)	
1999	385,989	152,480	443,661	186,195	330,120	321,188	2,707,324
2000	587,754	291,694	564,114	104,180	418,452	225,243	2,514,084
2001	578,317	436,678	210,673	88,303	395,405	350,843	2,144,392
2002	409,096	279,666	741,357	110,952	514,717	221,605	2,086,500
2003	501,930	308,621	342,521	272,238	437,612	162,556	2,571,041
2004	449,976	355,829	479,227	362,996	359,299	245,622	2,703,749
2005	465,233	294,732	563,057	311,977	438,475	194,756	2,268,230
2006	578,882	266,539	456,296	182,041	460,470	285,202	2,171,747
2007	386,006	291,856	498,638	311,262	363,302	323,774	2,728,899
2008	488,561	293,103	420,634	333,138	402,276	285,566	2,794,974
2009	443,262	435,325	540,756	255,853	440,704	99,691	2,677,057
2010	579,998	432,023	539,099	283,607	441,937	0	2,693,741
Average (1999-2008)	**483,174**	**297,120**	**472,018**	**226,328**	**412,013**	**261,636**	**2,152,288**

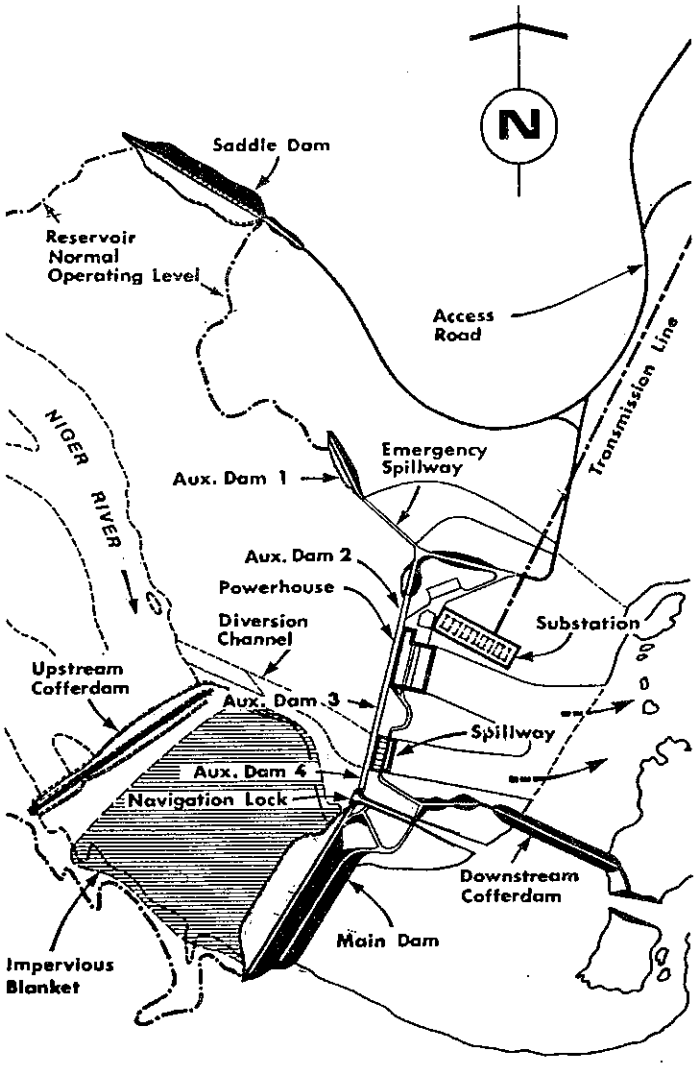
APPENDIX 10

JEBBA HYDROELECTRIC POWER STATION
589,400KW

JEBBA HYDROELECTRIC POWER STATION 578, 400 KW



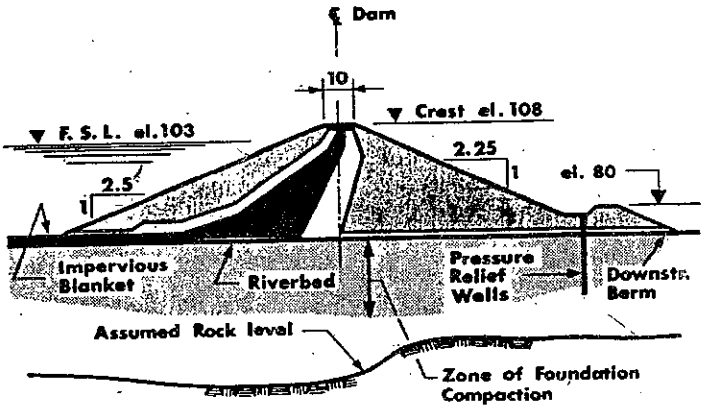
NIGERIA



GENERAL ARRANGEMENT

LOCATION

Niger River, Nigeria, adjacent to the town of Jebba, approximately 350 km north of Lagos



MAIN DAM

RESERVOIR

Normal Operating Level	103.0	m
Minimum Reservoir Operation	99.0	m
Water Surface Area @ El. 103.0m	303	km²
Live Storage, approximate	1,000,000,000	m³
Length	100	km

MAJOR CONSTRUCTION QUANTITIES

Total Volume of Excavation	3,950,000	m³
Total Volume of Fill	4,050,000	m³
Total Volume of Concrete	485,000	m³
Total Volume of Foundation Compaction	3,000,000	m³

MAIN DAM

Type – Zoned Earth and Rockfill		
Crest Elevation	108.0	m
Crest Width	10	m
Crest Length	670	m
Maximum Height above Lowest Foundation Level	40	m

IMPERVIOUS BLANKET

Type – Impervious Fill		
Length from Upstream Toe of Main Dam	450	m
Maximum Thickness	5	m

SADDLE DAM

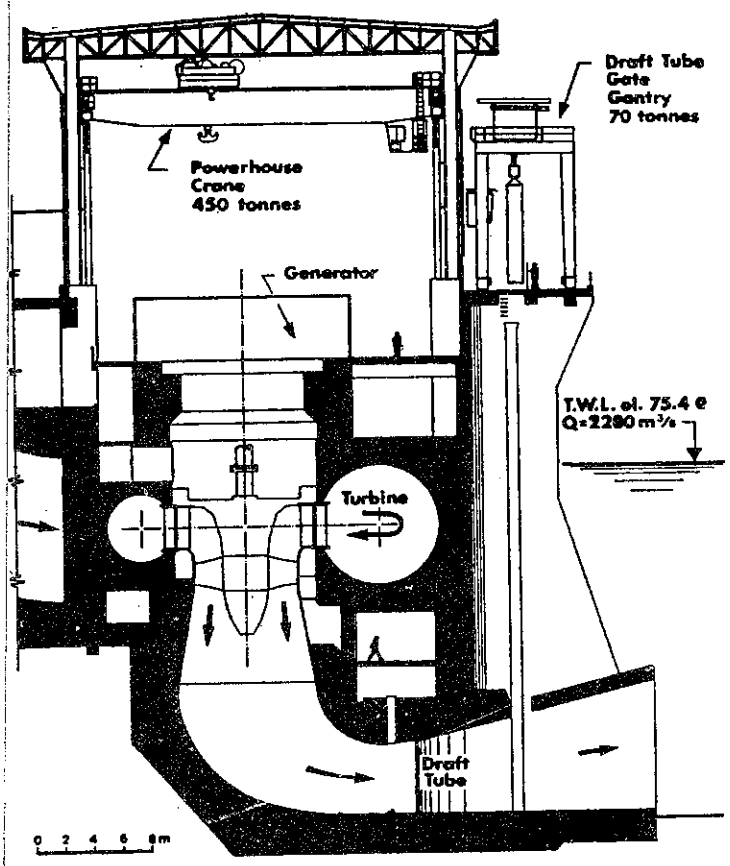
Type – Zoned Earth and Rockfill		
Crest Elevation	108.0	m
Crest Width	7	m
Crest Length	540	m
Maximum Height above Lowest Foundation Level	29	m

AUXILIARY DAM 1

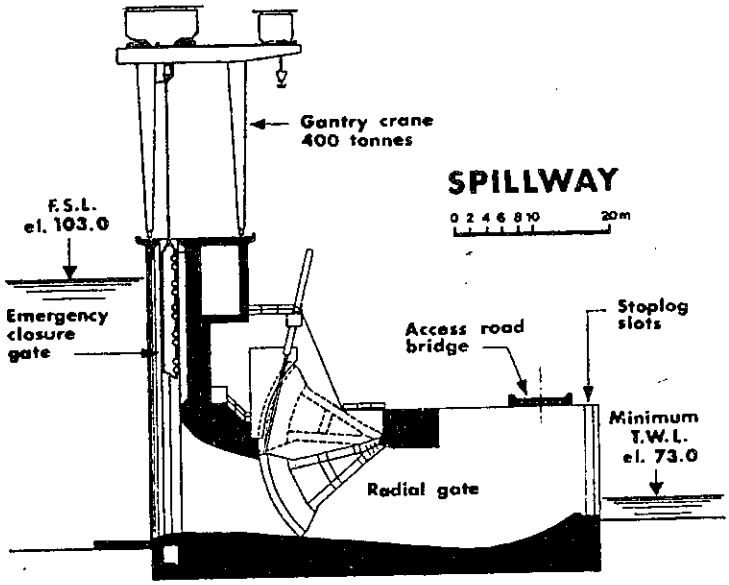
Type – Zoned Earth and Rockfill		
Crest Elevation	108.0	m
Crest Width	7	m
Crest Length	275	m
Maximum Height above Lowest Foundation Level	14	m

AUXILIARY DAMS 2, 3 and 4

Type – Concrete Gravity		
Crest Elevation	108.0	m
Total Crest Length	337	m
Maximum Height above Lowest Foundation Level	26.5	m



POWERHOUSE



POWER INSTALLATIONS

PLANT

Number of Units	6	
Total Rated Output	578.4	MW
Length of Powerhouse	206	m
Width of Powerhouse	36	m
Max. Capacity of Overhead Crane	450	Tonnes
Number of Intake Gates	6	
Height of each Intake Gate	12.4	m
Width of each Intake Gate	10	m
Inside Diameter of each Steel Penstock	10	m

TURBINES

Type – Fixed Blade (Propeller)

Net Head – Rated	27.6	m
Net Head – Maximum	29.3	m
Output at Rated Net Head	96,400	kW
Output at Maximum Net Head	102,900	kW
Speed	93.75	rpm

GENERATORS

Type – Vertical Shaft Synchronous

Base Load Rating	103,500	kVA
Continuous Maximum Rating	119,000	kVA
Voltage	16	kV
Power Factor	0.85	

SPILLWAY

CAPACITY

At Normal Operating Level (El. 103m)	13,600	m³/s
At El. 106.0m Reservoir Level (Including Emergency Spillway)	16,400	m³/s

MAIN SPILLWAY

Type – Underflow with Flip Bucket

Sill Elevation	70.0	m
Radial Gates – Number	6	
Size of each Gate		
– Width	12.0	m
– Height	9.5	m

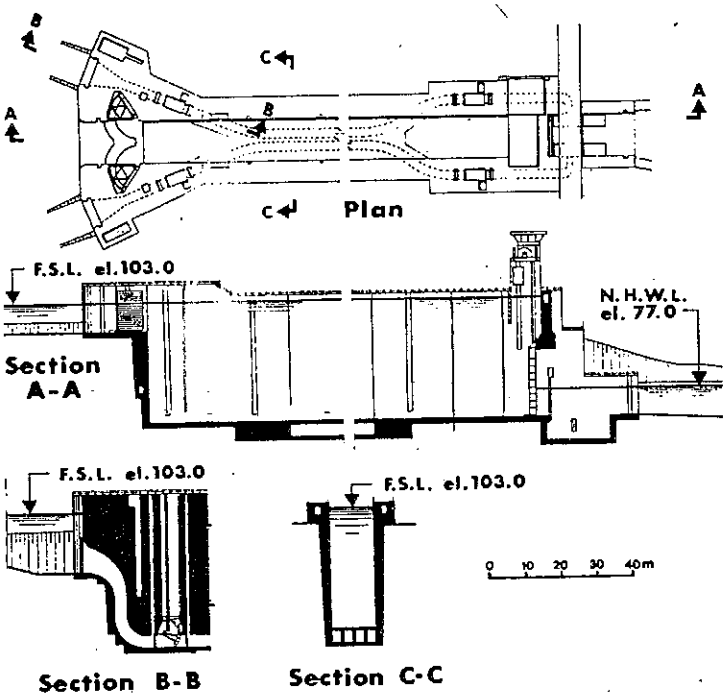
EMERGENCY SPILLWAY

Type – Free Overflow

Length of Overflow	220	m
Crest Elevation	103.15	m

ADMINISTRATION BUILDING

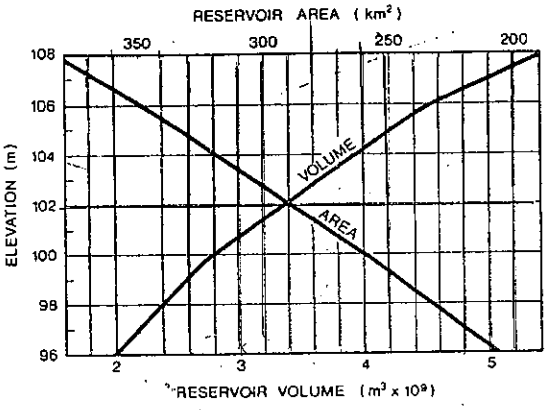
Type of Construction – Reinforced Concrete		
Number of Floors	3	
Total Floor Area	2,100	m²



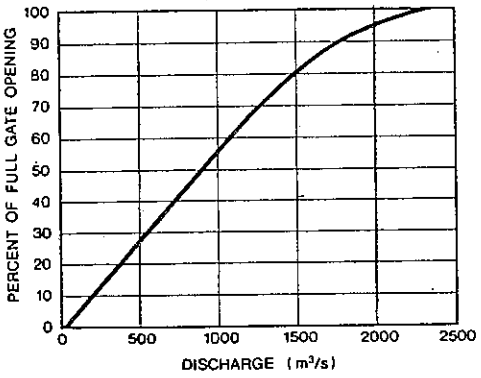
NAVIGATION LOCK

NAVIGATION LOCK

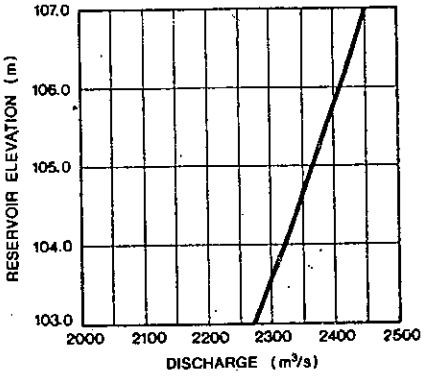
Usable Length	200 m
Width	12.2 m
Maximum Lift	30.0 m
Maximum Allowable Draft	3.0 m
Upstream Gate – Sector Gate	
– Height	10.5 m
– Width	12.2 m
Downstream Gate – Vertical Lift Gate	
– Height	18.5 m
– Width	12.2 m
Filling and Emptying Valves	
– Number	4
Size of each Valve	
– Height	3.5 m
– Width	2.5 m



RESERVOIR AREA – VOLUME CURVE



SPILLWAY DISCHARGE THROUGH ONE GATE
RESERVOIR AT ELEVATION 103.0m



SPILLWAY DISCHARGE THROUGH ONE GATE

APPENDIX 11

FEDERAL REPUBLIC OF NIGERIA OFFICIAL GAZETTE

Federal Republic of Nigeria Official Gazette

No. 46 **Lagos - 17th May, 2011** **Vol. 98**

Government Notice No. 133

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NATIONAL ENVIRONMENTAL (CONSTRUCTION SECTOR) REGULATIONS, 2011

ARRANGEMENT OF REGULATIONS

SCHEDULES

NESRA

S. I. No. 19 of 2011 B 593

NATIONAL ENVIRONMENTAL (CONSTRUCTION SECTOR, REGULATIONS, 2011

In exercise of the powers conferred on me by section 34 of the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007 and all other powers enabling me in that behalf, I, MR JOHN ODEY, Honourable Minister, Federal Ministry of Environment hereby make the following Regulations.

[28*th Day of April*, 2011] Commencement.

PART I—GENERAL PROVISIONS

1. These Regulations may be cited as the National Environmental (Construction Sector) Regulations, 2011. Citation.

2.—(1) The purpose of these Regulations is to prevent and minimize pollution from Construction, Decommissioning and Demolition Activities to the Nigerian Environment. Thrust of these Regulations.

(2) Every facility shall comply with Duty of Care with respect to generation, transportation and disposal of wastes.

3.—(1) New projects in the construction sector shall apply Cost-Effective, up-to-date, efficient, Best Available Technology (BAT) to minimize pollution to the barest degree practicable. Planning.

(2) Any operator applying new design techniques shall evaluate the proposed installations and ensure that control measures are sufficient to prevent risks of pollution or accident.

(3) Every operator or facility shall :

(*a*) carry out an Environmental Impact Assessment (EIA) for new projects or modification including expansion of existing ones before commencement of activity ;

(*b*) submit an Environmental Audit Report (EAR) of its project/ operational base on a three (3) yearly basis or as may be required by the Agency ; and

(*c*) submit an Environmental Management Plan (EMP) as contained in Schedule III.

(4) Without prejudice to sub-regulation (3)(*b*) of this regulation, where a project is to be decommissioned, transferred or alienated for any reason whatsoever, an Environmental Audit shall be conducted and submitted to the Agency by the owner/operator for verification and approval.

(5) There shall be routine Environmental Monitoring throughout the various phases of the project.

Best Practices.

4.—(1) Every facility shall implement programmes on best practices as set out in Schedule I of these Regulations.

(2) Every facility shall provide base for ancillary equipment and bund wall for containment of waste oil in the event of any unanticipated discharge or spillage.

(3) Every operator of construction facility/site shall ensure :

(*a*) it has a functional, adequate and appropriate drainage system for the project ;

(*b*) the separation or diversion of clean water runoff to prevent it from mixing with water containing high solid particle content ;

(*c*) it minimizes the volume of water to be treated prior to release (same as storm water control system) ;

(*d*) the use of color coding for the drainage system such as blue for surface water drains and red for foul water drains ;

(*e*) safe movement of materials and fuel to and from site ;

(*f*) tanks are clearly labelled with their contents and storage capacity ;

(*g*) workers are trained to carry out the outlined procedures in the Emergency Response Plan as specified in Schedule II to these Regulations ;

(*h*) absorbent materials and other containment equipment (*e.g.* spill kits) suitable for the construction type, are available in adequate quantity on site ; and

(*i*) all tanks are properly covered.

(4) The operator shall ensure :

(*a*) high standard of housekeeping ;

(*b*) that dust/particulate matter arising from loaded trucks entering or leaving the site is kept to a minimum level by the use of tarpaulin materials as cover and that water sprays or other dust suppression or collection methods are used at every dusty place where work is carried out ;

(*c*) appropriate use of Personnel Protective Equipment (PPE) by all persons at construction site as in Schedule VI to these Regulations ;

Emergency Response Plan.

5. Every facility shall have an Emergency Response Plan in accordance with the guide template specified in Schedule II to these Regulations.

PART II—SPECIFIC PROVISIONS

Site Waste Management Plans.

6.—(1) The operator/facility shall submit a Site Waste Management Plan (SWMP) to the Agency for all new construction projects that will require mandatory Environmental Impact Assessment (EIA) or such projects that may generate significant waste.

(2) A SWMP shall contain :

(*a*) types of waste to be generated on site ;

(*b*) identity of the waste manager/contractor and the registration number ;

(*c*) waste destination ; and

(*d*) environmental permit held for the site where the waste is to be managed.

(3) A SWMP shall be updated throughout the course of the project as the need arises.

(4) At the end of the project, a report on the Waste Management Status shall be submitted to the Agency before close-out.

(5) The collection, treatment, transportation and final disposal of wastes within extant standards and guidelines, shall be the responsibility of the operator generating the wastes.

(6) A record shall be kept of waste generated on daily basis during the project's life span.

Storm Water Discharge Permit.

7.—(1) The Operators of construction sites shall be required to obtain Construction Storm Water Discharge Permit from the Agency.

(2) To obtain a Construction Storm Water Discharge Permit, the operator shall be required to—

(*a*) submit a Notice of Intent (NOI) or Permit Application.

(*b*) develop and Implement a Storm Water Pollution Prevention Plan (SWPPP) that describes the :

(*i*) physical characteristics of the site ;

(*ii*) potential sources of pollutants ;

(*iii*) erosion prevention measures ; and

(*iv*) sediment control and storm water management practices.

(*c*) Submit a Notice of Completion (NOC) at the end of construction activities or when another party assumes control of the site ; and

(*d*) Provide any other requirements as may be determined by the appropriate statutory authority from time to time.

Lighting Activities.

8. Where the level of illumination created in the course of construction activity does not conform with the minimum limits as prescribed in Schedule VIII, to these Regulations and is such that can cause or have the potential to cause disturbance to the surrounding community, the Agency shall serve the operator with an abatement notice which may require the operator to—

(*a*) minimize the nuisance ; and/or

(*b*) restrict or prohibit the nuisance ;

Control of Dust and Fugitive Emission.

9.—(1) Where the level of dust and other fugitive emission generated in a construction activity is high, the Agency shall :

(*a*) restrict such activity ;

(*b*) take steps to reduce the impact of such activity ; or

(*c*) issue a Stop Work Order for such activity.

(2) Every operator shall ensure :

(*a*) minimisation of dust from material handling sources, such as conveyors and bins, by using covers or control equipment (water suppression, bag house and cyclone, etc) ;

(*b*) minimisation of dust from open area sources, including stock piles, by using control measures such as installing enclosures and covers, and increasing the moisture content ;

(*c*) implementation of dust suppression techniques such as application of water or non-toxic chemicals to minimize dust from vehicular movements ;

(*d*) selective removal of potential hazardous air pollutants, such as asbestos, from existing infrastructure prior to demolition ;

(*e*) appropriate management of emissions from mobile sources ; and

(*f*) prohibition of open burning of solid as prescribed in extant Regulations.

Noise Control.

10. Noise generated within the work site shall be within permissible limits as prescribed under the National Environmental (Noise Standards and Control) Regulations, 2009), S.I. No. 35, and as specified in Schedule VII to these Regulations.

Monitoring.

11.—(1) Noise level shall be monitored monthly throughout the construction process or as otherwise authorised by the Agency.

(2) Notwithstanding sub-regulation (1) of this regulation, monitoring shall be carried out whenever there is a change in operation process or equipment that increases noise exposure to the extent that :

(*a*) Additional employees may be subjected to risk at the action level ; or

(*b*) The attenuation provided by hearing protectors being used by employees may be rendered inadequate to meet the requirements of extant regulations.

Avoiding Nuisance.

12.—(1) Every operator shall ensure that construction activities—

(*a*) are not detrimental to environment and human health ;

(*b*) do not prevent, or interfere with third party rightful use of land ; and

(*c*) do not interfere with the use of public space and land ; and

(*d*) shall put in place organizational system for pollution control and shall assign environmental pollution control and prevention duties to an Pollution Control Manager (PCM) with duties described in Schedule IV to these Regulation.

(2) Every operator shall ensure that the site is regularly checked for any waste, evidence of vermin, noise, smell/odour and other emissions near the boundary of the site during different operating conditions and submit a report to the Agency.

(3) Every operator shall ensure that working or receiving deliveries are programmed to minimize nuisance in residential areas.

Hazardous Substances.

13.—(1) Every operator shall ensure that trained personnel carry out appropriate assessment of the contents and quantity of hazardous substances including those in petroleum-based products in building systems and process equipment and remove such prior to decommissioning activities.

(2) Any operator or owner that excavates soils containing hazardous substances shall be responsible for its appropriate disposal and shall ensure comprehensive environmental response as applicable.

(3) Any operator or owner that excavates and spreads soils containing pollutants buried by previous owner shall be responsible for the appropriate clean up and disposal.

(4) An operator or owner shall be responsible for the proper management, transport and disposal of the contaminated soil.

(5) The operator shall check and classify contents of waste containers before re-use, recycling, recovery or disposal of waste.

(6) The operator or owner shall take necessary measures for the disposal of all containers of all hazardous substances as prescribed in extant National Regulations.

(7) The operator shall handle and treat the following as hazardous: Fluorescent tubes, lamp ballasts, old irreparable transformers, cables and other electrical/electronic devices within the buildings containing polychlorinated biphenyls (PCBs), heavy metals, lead paint waste, asbestos, etc.

(8) The use of lead based paints for painting of building structures and/or other infrastructure is hereby prohibited.

Use of Asbestos.

14.—(1) The use of asbestos at construction sites is prohibited.

(2) The operator/facility shall remove all asbestos-containing materials from a structure being demolished or renovated before any activity is carried out that would break up, dislodge or similarly disturb the materials or prevent access to materials for subsequent removal.

(3) Prior to the commencement of any demolition or renovation, the affected structure or part of the structure where the work is to take place must be thoroughly inspected and assessed for the presence of asbestos by person(s) certified by the Agency and other relevant bodies.

(4) The types and quantities of asbestos-containing materials shall be determined by the inspector who shall make recommendations for the need to remove and dispose appropriately, asbestos-containing materials.

(5) Prior to all demolition activities, including those where no asbestos material is present, a notification by the demolishing contractor must be sent to the Agency.

Spent oil.

15. Spent oil shall be disposed off in an environmentally friendly manner as approved by the Agency.

Prevention and Control of Explosion Hazards.

16. Any operator whose activities involve blasting shall do so in accordance with Schedule IX to these Regulations.

Exposure to Radiation.

17. Every operator shall ensure compliance with the radiation exposure limits as set by extant Regulations by all workers that may be exposed to radiation in the course of their duties.

Polluter-Pays-Principle.

18. In the event of an incident resulting in an adverse impact on the environment whether socio-economically or health wise, the facility shall make such report using the format specified in Schedule V to these Regulations and shall be responsible for :

(*a*) the cost of damage assessment, control and clean-up ;
(*b*) remediation ; and
(*c*) reclamation and or restoration.

19. Every Construction facility shall have a sustainable community relations program. Community Relations.

20. An operator of a project shall comply with close-out procedures as outlined in Schedule X to these Regulations. Close-out.

PART III—PERMIT

21. Procedures for application for permits or licences or revocation of such permits when it has already been issued, are contained in the National Environmental (Permitting and Licensing System) Regulations, 2009, S.I. 29. Permit.

PART IV—ENFORCEMENT

22.—(1) An enforcement notice shall be served if the Agency is of the opinion that an operator has contravened, is contravening or is likely to contravene any condition of the permit. Enforcement Notices.

(2) An enforcement notice shall—

(*a*) specify the matters constituting the contravention or the matters making it likely that the contravention will arise, as the case may be ;

(*b*) specify steps that must be taken to remedy the contravention or to remedy the matters making it likely that the contravention will arise, as the case may be ; and

(*c*) specify the period within which those steps must be taken.

(3) Sub-regulation 2 of this regulation shall apply whether or not the particular manner of operating the facility in question, is regulated by or contravenes a condition of the permit.

23. Every facility shall be given equal treatment without preference as far as inspection and enforcement of relevant laws are concerned. Equity.

24.—(1) Failure to comply with the notice issued pursuant to regulation 22 of these Regulations within the specified period, a second notice shall be served. Enforcement Notice Reminder.

(2) Failure to comply with the second notice (reminder) within the specified time limit will lead to the issuance of a suspension notice or any other punitive action as may be necessary.

Mode of Delivery.

25. Enforcement notice shall be delivered by hand, registered post/courier, electronic transmission, or posted at the facility/registered premises of the organization.

Suspension Notice.

26.—(1) Where a suspension notice has been served under these Regulations, the permit shall, on the service of such notice; cease to have effect as stated in the notice.

(2) The Agency may withdraw a suspension notice after verification of compliance.

(3) Notwithstanding the provisions of these Regulations, the Agency shall, where the violation of the terms of an enforcement notice persists, enter and seal such facility to compel compliance.

PART V—OFFENCES

Offences.

27.—(1) It is an offence for an operator or owner of a project to—

(*a*) fail to comply with or contravene a condition of a permit ;

(*b*) fail to comply with the requirements of an enforcement notice, or a closure notice under these Regulations ;

(*c*) fail without reasonable excuse, to comply with any requirement imposed by a notice served by the Agency.

(2) It shall be an offence for an owner or operator of a project to make a statement which is known to be false or misleading particularly, where the statement is made—

(*a*) in purported compliance with a requirement to furnish any information imposed by or under any provision of these Regulations ;

(*b*) for the purpose of obtaining a permit for the facility for variation, transfer or surrender of a permit ;

(*c*) to intentionally make a false entry in any record pertaining to the permit ; or

(*d*) with intent to deceive, forge or use a document issued or authorized or be issued under a condition of the permit.

(3) It shall be an offence to make a statement or have in possession a document that is likely to mislead or deceive the Agency.

(4) It shall be an offence if an operator fails to :

(*a*) take reasonable measures to remove or otherwise treat and dispose of any effluent to minimize adverse effects ;

(*b*) take measures required by the Agency after unauthorized release of effluent ;

(*c*) remediate the environment to the standard prescribed by the Agency; (furnish all information to the inspector) ;

(*d*) remove equipment containing materials causing release into the environment from a place when requested by the inspector ;

(*e*) produce document(s) when requested by the inspector ;

(*f*) comply with guidelines with respect to the handling, storing and transport of any effluent ; and

(*g*) ensure the use of Personnel Protective Equipment(PPE) while handling, storing, treating, or disposing of effluent .

(5) It shall be an offence if an operator :

(*a*) handles effluent in a manner which causes adverse effect to human health and the environment ;

(*b*) knowingly obstructs the inspectors from performing their duties ;

(*c*) dismisses, suspends or sanctions employee (s) who report contravention of the NESREA Act ;

(*d*) imposes penalty on any employee who reports cases of contravention of these Regulations.

(*e*) transports any effluent and sludge which are not covered by a manifest ;

(*f*) transports effluent and sludge which are not completely enclosed, covered and secured ;

(*g*) transports effluent without prior authorization from the Agency ;

(*h*) transports sludge in bulk without prior authorization from the Agency.

(6) It shall be an offence if an operator of a project fails to—

(*a*) file annual report on effluent and sludge discharges ;

(*b*) maintain books or record of effluent and sludge discharges ;

(*c*) Submit records or receipt of removal of effluent and sludge within the time frame prescribed by these Regulations.

(7) No operator shall—

(*a*) release effluent and sludge into the environment in excess of permissible level ;

(*b*) fail to report release of effluent and sludge into the environment in excess of permissible level as contained in these Regulations ;

(*c*) fail to take reasonable measures to prevent, reduce or remedy the adverse effect of effluent and sludge on the environment.

PART VI—PENALTIES

Penalties.

28.—(1) Any person who violates the provisions of regulation 27 of these Regulations commits an offence and shall on conviction, be liable to a fine not exceeding ₦200,000 or to imprisonment for a term not exceeding six months and an additional fine of ₦5,000.00 for every day the offence subsists.

(2) Where an offence under Regulation 27 of this regulation is committed by a body corporate, it shall on conviction, be liable to a fine not exceeding ₦5,000,000 and an additional fine of ₦50,000 for every day the offence subsists.

PART VII—INTERPRETATIONS

Interpretations.

29. In these Regulations unless the context otherwise requires—

"*Agency*" means the National Environmental Standards and Regulations Enforcement Agency (NESREA).

"*Asbestos*" means naturally occurring silicate mineral with long thin fibrous crystals.

"*Asbestos containing materials*" means materials containing asbestos including insulation, roofing tiles, roofing sheets, pipes, etc.

"*Assessment*" means any method used to measure, calculate, predict or estimate the level of a relevant pollutant.

"*BAT*" means Best Available Technology—Is a term applied with regulations on limiting pollutant discharges with regard to the abatement strategy. It is also the best economically achievable technology that reduces negative impacts on the environment.

"*Blasting*" means the process of breaking rock or ores into smaller fragments by the detonation of explosive compounds buried under the rocks or ores.

"*Bund wall*" means a secondary containment area constructed to prevent escape of pollutants from contaminating the soil characteristics.

"*Close-out*" means decommissioning activities in the end of a construction project.

"*DG/CEO*" means the Director General/Chief Executive Officer of the National Environmental Standards and Regulations Enforcement Agency.

"*Duty of Care*" means the legal duty of everybody who has control of waste to ensure that it is managed safely and transferred only to somebody authorized to take it or duty to dispose of waste carefully.

"*Environment*" includes water, air or land and means the sum of all external conditions affecting the life, development and survival of an organism.

"*Facility*" means physical set-up or equipment for construction activities

"*Fugitive emission*" means air pollutants that may not be readily obvious.

"*hazardous substance*" means element, compound, mixture, solution which because of its quantity/concentration, physical or chemical infectious characteristics, may—

(*a*) cause or significantly contribute to an increase in mortality, or incapacitating reversible illness or ;

(*b*) pose substantial hazards to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed ; and

(*c*) exhibit the following characteristics — ignitability, corrosivity, reactivity and toxicity.

"*Hazardous waste*" means any waste or combination of waste that exhibits ignitable, corrosive, reactive, toxic characteristics and poses a substantial danger, now or in the future to human, animals or plants life which therefore cannot be handled or disposed of without special precaution.

"*Inspector*" means an official of the Agency designated to ensure compliance with the guidelines, standards and regulations.

"*In-situ*" means in place or on the spot.

"*Level*" means the concentration of a relevant pollutant.

"*manifest*" means a document containing detailed information of the waste generated from source to final disposal for monitoring purposes.

"*Minister*" means the Honourable Minister of Environment.

"*Muisance*" means unfavourable or environmentally deleterious impact condition.

"*Operator*" means person or body corporate who is owning, developing, executing, using or managing a construction project or any combination of these.

"*Overburden*" means soil removed in order to access an ore or mineral body e.g. surface soil, vegetation.

"*Permissible*" means allowable or acceptable by law or rules.

"*Regulator*" means the Agency or its authorized officers.

"*Spent oil*" means oil that has been used and of no further use or value.

"*Storm water*" means surface run-off that results from rain.

"*Transportation*" means conveyance or haulage of construction materials or construction waste.

"*Treatment*" means an act of subjecting the effluent to physical, chemical or biological action, other than dilution, in order to reduce or eliminate deleterious substances.

"*Water body*" means ocean, marine, estuarine, wetlands, rivers, dams, lakes, ponds, mine pits.

SCHEDULE I *Regulations* 4 (1)

BEST PRACTICES

(*a*) All run off or storm water generated at construction site shall be characterised before final discharge.

(*b*) Every construction site shall install—

(*i*) anti-pollution equipment for the detoxification of liquid and solid wastes ;

(*ii*) efficient effluent treatment plant based on the Best Practicable Technology (BPT) ; and

(*iii*) containment equipment for spills in case of accidental discharge.

(*c*) Every operator shall adopt in-situ waste reduction and pollution prevention technology.

(*d*) An unusual or accidental discharge of waste from a construction site shall be reported to the nearest office of the Agency within 24 hours of the discharge. (*See* report format in Schedule V).

(*e*) There shall be appropriate bund walls around tank farms for containment in case of accidental discharges.

(*f*) Every construction site shall be screened from its environment.

SCHEDULE II *Regulation* 4 (3) (*g*) ; 5

GUIDE TEMPLATE FOR EMERGENCY PROCEDURES IN CONSTRUCTION INDUSTRY

STEP 1—ESTABLISH A PLANNING TEAM

There must be an individual or group in charge of developing the emergency management plan.

1. Form the Team.
2. Establish Authority.
3. Issue a Mission Statement.
4. Establish a Schedule and Budget.

STEP 2—ANALYZE CAPABILITIES AND HAZARDS

This step entails gathering information about current capabilities and about possible hazards and emergencies, and then conducting a vulnerability analysis to determine the operator's capabilities for handling emergencies.

1. Where Do You Stand Right Now ?
2. Meet with Outside Groups.
3. Identify Codes and Regulations.
4. Identify Critical Products, Services and Operations.

5. Identify Internal Resources and Capabilities.
6. Identify External Resources.
7. Do an Insurance Review.
8. Conduct a Vulnerability Analysis.
9. List Potential Emergencies
10. Estimate Probability.
11. Assess the Potential Human Impact.
12. Assess the Potential Business Impact.
13. Assess the Potential Property Impact.
14. Assess Internal and External Resources.

STEP 3—DEVELOP THE PLAN

1. Emergency planning must become part of the corporate culture.

2. Look for opportunities to build awareness; educate and train personnel ; to test procedures; to involve all levels of management, all departments and the community in the planning process; and to make emergency management part of what personnel do on a day-to-day basis.

3. Plan Components.
4. The Development Process.

STEP 4—IMPLEMENT THE PLAN

1. Implementation means more than simply exercising the plan during an emergency. It means acting on recommendations made during the vulnerability analysis, integrating the plan into company operations, training employees and evaluating the plan.

2. Integrate the Plan into Company Operations.
3. Conduct Training, Drills and Exercises.

SCHEDULE III *Regulation* 3 (3) (*c*)

GUIDELINES FOR PREPARING ENVIRONMENTAL MANAGEMENT PLAN (EMP)

An Environmental Management Plan (EMP) describes the process that an organization will follow to maximize its compliance and minimize harm to the environment. This plan also helps an organization map its progress towards achieving continual improvements, regardless of the organization's situation and all environmental plans shall include the following elements—

- Policy ;
- Planning ;
- Implementation and Operation ;
- Checking and Corrective Action ;
- Management Review and Commitment.

POLICY

Policy statements are important to an organisation because they help anchor the organisation on a core set of beliefs. These environmental guiding principles will enable all members of an organisation to focus on the same objective. They provide an opportunity for outside interests to understand the operation of the organisation. The policy should be focused, concise and easy to read. The environmental policy should address the following :

- Compliance with legal requirements and voluntary commitments ;
- Minimising waste and preventing pollution ;
- Continual improvement in environmental performance, including areas not subject to regulations ;
- Sharing information on environmental performance with the community.

PLANNING

The planning should define the organisation's environmental footprints and set goals. Goals and objectives should be focused on maximising their positive impacts on the environment. When evaluating, the following elements should be considered :

- Impacts on the environment through its activities, products and services ;
- Legal requirements associated with protecting the environment ;
- Meaningful and focused environmental objectives and targets.

IMPLEMENTATION AND OPERATION

Implementation and operation should define the activities that the organisation will perform to meet its environmental objectives and targets. The EMP should identify activity each person is responsible for, ensure completion and set targets for each of the identified activities. In addition, this area should specify employee training, communication and outreach activities that are necessary to ensure successful implementation of the plan.

CHECKING AND CORRECTIVE ACTION

The EMP should describe the process that will be followed to verify proper implementation and how problems will be corrected in a timely manner. Routine evaluation and continual improvement to the process is necessary to make sure that the plan successfully leads towards the completion of environmental objectives and targets.

MANAGEMENT REVIEW AND COMMITMENT TO IMPROVEMENT

Routine management review and support are a necessary and meaningful tools for the organization. Theseshould identify the routine management evaluations that will be conducted to ensure that the plan is appropriately implemented to meet its environmental objectives.

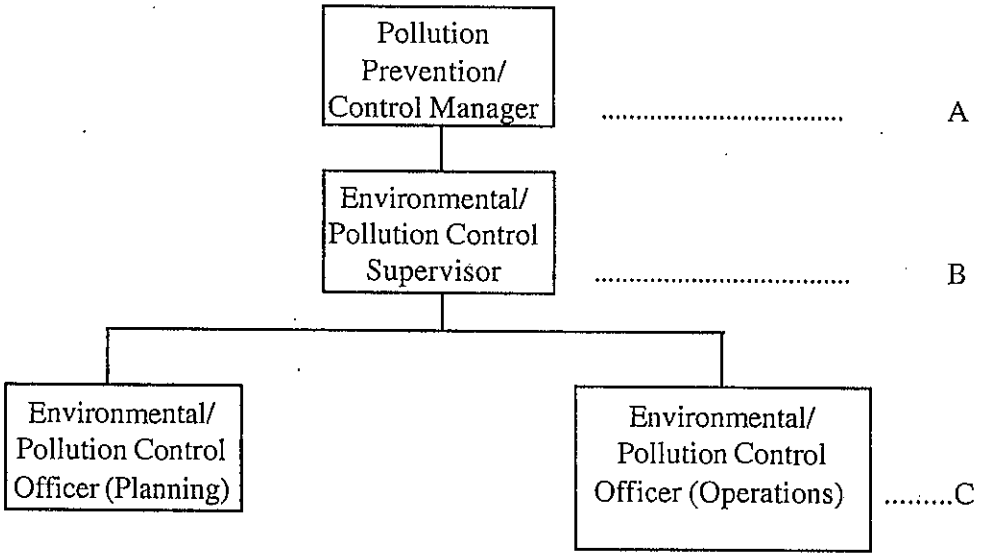
SCHEDULE IV *Regulation* 12(*d*)

ORGANISATIONAL SYSTEM AND THE FUNCTIONS OF POLLUTION CONTROL MANAGER(S)

Each Construction facility shall be mandated by the Agency to have an organizational system that will carryout Internal Environmental Auditing of the facility as well as liaise with NESREA and other Government Authorities.

The Organizational system shall have Environmental/Pollution Control Manager, Environmental/Pollution Control Supervisor and Environmental/ Pollution Control Officers with relevant scientific background as minimum qualification. These shall be certified by the Agency.

ORGANIZATION FOR POLLUTION PREVENTION



FUNCTIONS :

A— Manages the pollution prevention and control issues of the facility.
B— Supervises and directs the Environmental/Pollution Control Officers (only applicable in facilities where large amount of smoke and sewage is generated).
C— Deals with technical matters like inspection of the facility and raw materials.

Note— C depends on the size of the facility; for a large facility there shall be PCM for Air, Land and Water.

SPECIFIC DUTIES OF THE POLLUTION PREVENTION AND CONTROL MANAGER (PCM)

The specific duties of the PCMs are—

- To ensure that the responsibilities are very clear for all the staff involved in pollution prevention and control ;
- To ensure that daily pollution prevention and control practices are complied with ; and
- To maintain smooth and proper environmental and safety communications within the facility and the regulatory authorities as well as the host community.

CONCRETE POLICIES CONCERNING POLLUTION CONTROL

1. Management of pollution at facilities and site—

- improvement and operation of effective Environmental Management System (EMS) modeled after ISO.14001.
- Communication with NESREA's headquarters.
- Ability to know when a system is malfunctioning.
- Documentation of the environmental management procedure and control of the records and documents.
- Co-operation with interested parties such as other related companies regulations.

2. Addressing corporate-wide environmental measures—

- Recognition of the business risk relative to the environmental management system.
- Resourse management including maintenance of competent human resources for effective pollution control.

- Establishing a corporate-wide environmental management system including risk information feed-back system.
- Establishing a redundant monitoring, assessment and self-improvement system.
- Establishing a contingency plan and its verification.

SCHEDULE V *Regulation* 18

NATIONAL ENVIRONMENTAL STANDARDS AND REGULATIONS ENFORCEMENT AGENCY (NESREA)

INCIDENT REPORT FORM

This report is to be completed when accidental discharge, occupational illness or incident occurs. If an employee is injured or develops gradually a job-related illness as a result of his/her employment at the facility, he or she must complete and submit the *"Incident Report"*. If the employee is unable to complete the form, the supervisor must complete on his/her behalf.

Incident reporting ensures there is a record on file with the employer. In no way does this waive the employee's right to workers' compensation benefits. If an injury occurs, first aid may be the appropriate treatment.

All accidental discharges/emergencies/accidents should be reported to NESREA within 48 hours.

1. FACILITY :

Name and Address of Facility :.....

.....

.....

.....

No. of Employees :.....

.....

Department where the discharge occurred :.....

.....

Place of the accidental discharge : .....

.....

2. DISCHARGE :

Cause(s) of discharge ;

Did the discharge occur as a result of mechanical/technical/unskilled application? Please specify.

.....

.....

B 610

Was the discharged gaseous, liquid or solid? Please specify.

.....

.....

What was the nature of discharge, sludge, effluent or influent? Please specify.

.....

.....

Into which medium was it discharged i.e. water body, land, or air? Please specify.

.....

.....

- If water body, specify type of water; pond, stream, lake, river etc.

.....

.....

- if land ;

  - Name and location (Geo-reference) of the land where discharge occurred.

.....

.....

.....

.....

  - Ways of disposing of discharge; i.e. burying, burning etc please specify.

.....

.....

Was there any previous accidental discharge of this kind? Yes No

If yes, when ?.....

How ?.....

.....

.....

Who was/were the victim(s) ?.....

.....

SCHEDULE VI *Regulation* 4(4)(*c*)

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT ACCORDING TO HAZARD TYPE

Objective	*Workplace Hazards*	*Suggested PPE*
Eye and Face Protection.	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety glasses with side – shields, protective shades, etc.
Head Protection	Falling objects, inadequate height clearance and overhead power cords.	Plastic helmets with top and side impact protection.
Hearing Protection	Noise, ultra-sound.	Hearing protectors (ear plugs or ear muffs).
Foot Protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids	Safety shoes and boots for protection against moving and falling objects, liquids and chemicals.
Hand Protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc.
Respiratory Protection.	Dust, fogs, fumes, mists, gases, smokes, vapors.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency.	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/Leg Protection.	Extreme temperatures, hazardous materials, biological agents, cutting and laceration.	Insulating clothing, body suits, aprons etc of appropriate materials.

SCHEDULE VII *Regulation* 10

PERMISSIBLE NOISE LIMITS FOR VARIOUS WORKING ENVIRONMENTS		
Location/Activity	*Equivalent level (LA_{eq}, 8h)*	*Maximum LA_{max}, fast*
Heavy Industry (no demand for oral communication)	85 dB(A)	110 dB(A)
Light industry (decreasing demand for oral communication)	50-65 dB(A)	110 dB(A)
Open offices, control rooms, service counters or similar	45-50 dB(A)	—
Individual offices (no disturbing noise)	45-50 dB(A)	—
Classroom lecture halls	35-40 dB(A)	—
Hospitals	30-35 dB(A)	40 dB(A)
Residential Areas within working environment	Day time : 55 dB Night time : 45 dB	

SCHEDULE VIII *Regulation* 8

MINIMUM LIMITS FOR WORKPLACE ILLUMINATION INTENSITY	
Location/Activity	*Light Intensity*
Emergency light	10 lux
Outdoor non working areas	20 lux
Simple Orientation and temporary visits (machine storage, garage, warehouse)	50 lux
Workspace with occasional visual tasks only (corridors, stairways, lobby, elevator, auditorium, etc.)	100 lux
Medium precision work (simple assembly, rough machine works, welding, packing, etc.)	200 lux
Precision work (reading, moderately difficult assembly, sorting, checking, medium bench and machine works, etc), offices	500 lux
High precision work (difficult assembly, sewing, colour inspection, fine sorting, etc),	1,000-3,000 lux

SCHEDULE IX *Regulation* 16

BLASTING GUIDELINES

(1) The disposition and detonation of explosives in the construction industry shall only be carried out by a licensed individual or body corporate.

(2) The operator shall ensure the use of appropriate blasting design and procedure.

(3) A consistent blasting schedule shall be adopted, minimizing blast-time changes.

(4) Specific warning devices and procedures shall be implemented before each blasting activity to alert all workers and third parties in the surrounding areas. Warning procedures shall include traffic limitation along local roadways and railways.

(5) Community awareness and emergency preparedness and response planning shall be undertaken, including control of third party access to blasting areas.

(6) Specific personnel training on explosives handling and safety management shall be conducted.

(7) Blasting sites and post-blast shall be checked by qualified personnel for malfunctions and unexploded blasting agents, prior to resumption of work.

(8) Magazines shall be safely secured and adequate attention shall be given to all explosive-handling phases to prevent theft/improper use.

(9) Operators shall ensure that the disruptions of aquatic life and marine environment are minimal in the course of their construction activities.

Schedule X *Regulation* 20

CLOSE-OUT GUIDELINES

At close-out,

(1) All machineries, equipment and make shift buildings including their foundations shall be removed and the sites re-vegetated ;

(2) All excavations shall be back filled.

(3) All scrap materials, chemicals, explosives and hazardous materials shall be disposed of, in a manner that is of an environmentally acceptable standard.

(4) The land surface distorted by construction activities shall be reclaimed after completion of project to a standard that considers the previous and future potential of the area.

(5) Vegetation cover, such as native local plants, overburden, or spoils feasible for sustaining growth should be removed in separate operations and segregated for later use during site reinstatement, and materials to be used for site reinstatement shall be stockpiled and protected from wind, water erosion as well as from contamination.

(6) Every facility shall provide effective short term measures for slope stabilization, sediment control and subsidence control until long term measures for the operational phase can be implemented.

DATED at Abuja this 28th day of April, 2011

MR JOHN ODEY
Honourable Minister,
Federal Ministry of Environment

APPENDIX 12

REDUCTION OF GREENHOUSE GAS

Reduction of Greenhouse Gas

The amount of baseline emissions is estimated with the following steps: The amount of baseline emissions is represented by a combined value of the operating margin (OM) and the build margin (BM).

Step-1 Estimation of operating margin (OM)
Step-2 Estimation of build margin (BM)
Step-3 Estimation of baseline emission factor and combined margin (CM)
Step-4 Estimation of leakage
Step-5 Estimation of emission reductions

In estimations, sufficient data cannot be obtained for dispatch data analysis. The power production from low-cost/must-run power plants is 21.7 percent which means 50 percent or less of the annual total power production of the power grids. Therefore, estimations are performed based on Simple OM from the estimation tree of the operating margin (OM).

(1) Estimation of operating margin (OM)

Records for the last three years (2008, 2009 and 2010) are used as the total power production of national power grid. The purchased power is subtracted as it is, and the power for station service is subtracted from the power production of each power station.

The average of data announced is used for the average combustion characteristic value as Net Calorific Value (NCV).

Table -1 Average Net Calorific value (NCV)

Fuel type	Average Net Calorific Value (NCV)(Mcal/fuel t)	CO_2 Emission Factor (tCO_2/fuel t)
Natural gas (NG)	11,717	2.733
Diesel (light oil)	8,670	2.659

*source: IEA

1) Amount of emissions from natural gas (NG) thermal power

Amount of CO_2 emissions from gas thermal power plant per unit (tCO_2/MWh)

=Gas consumption per unit (gas t/MWh)×CO_2 emission factor per unit of gas (tCO_2/gas t)

CO_2 emission factor (tCO_2/gas t) per unit of gas

=Average NCV of gas (M cal/gas t)×IPCC emission factor of gas (tCO_2/GJ)

×Oxidization coefficient of gas×Conversion factor from joule of calorie

＝11,717×0.056×0.995×0.004186=2.733(tCO_2/gas t)

Where, IPCC emission factor of gas=0.056 tCO_2/GJ

Oxidization coefficient of gas=99.5%

Conversion factor from joule to calorie=$4.186*10^{-3}$

(IPCC: Intergovernmental Panel on Climate Change)

Therefore, the default value of 2.733(tCO_2/gas t) is applied as CO_2 emission factor per unit of gas.

Thermal efficiency of gas (%)

= NCV of gas (M cal/gas t)/Theoretical calorific value of gas (M cal/gas t)

=11,717÷13,019=0.9

Therefore, Annual amount of emissions (tCO_2/y)

=2.733×Annual fuel consumption (M fuel t/year)÷Thermal efficiency of gas (%)

2) Amount of emissions from diesel (light oil) thermal power

IPCC emission factor of diesel=0.074 tCO_2/GJ

Oxidization coefficient of gas=99%

Conversion factor from joule to calorie=$4.186 * 10^{-3}$

Therefore, default value of 2.659 (tCO_2/fuel t) is applied as CO_2 emission factor per unit of diesel oil.

Thermal efficiency of diesel (%)

= NCV of diesel (M cal/fuel t)/Theoretical calorific value of diesel (M cal/fuel t)

=8,670÷9,126=0.95

Annual amount of emissions (tCO_2/y)

=2.659×Annual fuel consumption (M fuel t/year)÷Thermal efficiency of diesel (%)

3) Estimation of average operating margin (OM)

Average operating margin OM (EF_{OMy}) (tCO_2/MWh)

=Total amount of emissions ($ktCO_2$)÷Total power production (GWh)

Table -2 Average operating margin (OM)

	2008	2009	2010
Annual Power Production (GWh)	13,866*	13,429*	17,604*
Amount of CO_2 emissions ($ktCO_2$/MWh)	16,046	13,222	20,170
OM (tCO_2/MWh)	1.157	0.985	1.145
Average OM (tCO_2/MWh)	1.096		

*source: PHCN
*source: Table 8-11 Records of Thermal and Hydro power generation from 2008 to 2010

(2) Estimation of build margin (BM)

As for build margin (BM) estimation, BM is calculated in advance based on the latest information on power plants already constructed, because one period is applied due to generator's prolongation period of about seven years and there is much room for improvement of transmission loss in national power grid of Nigeria.

For power plants subjected to estimation, one of the following two options, whichever having a larger total annual power production, must be selected:

(a) Power production of five power plants recently constructed

(b) Power plants that account for 20 percent of the power production of the power grid out of power plants recently constructed and added to the power grid

As of 2010, the power production of five power plants recently constructed is 1,214GWh, and that accounts for 7 percent of the power production of the power grid, out of power plants recently constructed and added to the power grid, is 17,604GWh. Therefore, the build margin (BM) is calculated based on the value of (b).

Table -3 Five Power Stations Constructed Recently (as of 2011)

Name of Power Station	Power plant capacity (MW)	Annual power production (GWh)
Olorunsogo PS (thermal power)	225	270
Ajaokuta PS (thermal power)	55	266
Sapele PS (thermal power)	1,020	514
Calabar PS (thermal power)	6.6	32
Gurara HPS(hydropower)	30	132
Total	1,336.6	1,214

*source: PHCN

BM (EF_{OMy}) (tCO_2/MWh)

=Total amount of emissions ($ktCO_2$)÷Total power production (GWh)

Table -4 Build Margin (BM)

	2008	2009	2010
Annual Power Production(GWh)	4,262*	4,179*	5,004*
Amount of CO_2 emissions($ktCO_2$/MWh)	3,209	2,644	4,034
BM (tCO_2/MWh)	0.753	0.633	0.806
Average BM(tCO_2/MWh)	0.731		

*source: PHCN
*source: Table 8-11 Situation of Thermal and Hydro power generation from 2008 to 2010

(3) Estimation of baseline emission factor and combined margin (CM)

The baseline emission factor (EF) is calculated as a combined margin (CM) of the operating margin (OM) and the build margin (BM).

$CM=EF(tCO_2/Mwh)=w_{OM}\times EF_{BM}+w_{BM}\times EF_{OM\,y}$

$w_{OM}=w_{BM}=0.5$ is recommended for this estimation by ACM(Approved Consolidated Methodology) in IPCC.

Therefore, $EF(tCO_2/Mwh)=0.5\times1.096+0.5\times0.731=0.913$

(4) Estimation of leakage

Leakage in rehabilitation work and operation periods of JHPS is not taken into consideration.

(5) Estimation of emission reductions

This Project is equivalent to replacing the power supplied from power plants using fossil fuel to the power grid with the power by hydropower generation at JHPS (using renewable energy).

ER=BE－PE－L

ER: Greenhouse gas emission reductions by the Project

BE: Amount of baseline emissions

PE: Amount of emissions from the Project (assumed to be 0 because of hydropower power generation)

L: Leakage (0)

Therefore, ER=BE

Amount of baseline emissions (BE)

=Baseline emission factor (EF)×Generated power from the Project (EG)

The power generated from the Project (EG) equals the sum of received power at grid stations, which is taking into consideration the power transmission loss in power grid with respect to JHPS power production (that is, the Station service and the transmission loss of power grid are deducted).

E_{BG}: Total JHPS power production (MWh)

TDL_b: Transmission loss in power grid (7.4%) + Station service at JHPS (0.16%) =7.56%

Amount of power received (E_{ER}) at grid stations= Power generated from the project (EG)

$$= (1\text{-}TDL_b)\times E_{BG}$$

Therefore, the estimated emission reductions are obtained from the following multiplication:

$$ER = BE = EF * EG = 0.913\times(1 - TDL_b)\times E_{BG} = 0.844E_{BG}$$

8.2.5 Summary of the Ex-ante Estimation of Emission Reductions

The emission reductions of the Project are deemed to be equal to the baseline emission because the Project itself does not produce any other emission. The expected reduction of CO2 of each option is shown in Table -5.The details of calculation are shown in Appendix-9.

Table -5 Estimation of Emission Reduction

	Electric energy contributing to emissions reduction (GWh/year)	Baseline emissions (tCO_2/year)	Project emissions (tCO_2/year)	Leakage (tCO_2/year)	Total emission reductions (tCO_2/year)
No.4 Generator Reduction in emission	226	191,000	0	0	191,000

APPENDIX 13

TOOLS AND EQUIPMENT FOR SITE WORK

Tools and Equipment for Site Work

The turbine axle which connects with generator and a middle turbine calls a water turbine will be detached under renewing the insulation of the Unit 4 Generator. Existing main parts such as a stator coil, a rotor coil, a spider and bearing will be disassembled. Bearing supporting the generator, both iron core and several coils carrying an electric current, radiator for coolers will be replaced due to aged deterioration and re-assembled. The central axes and gaps will be adjusted so as to start the full scale operation electrically and mechanically. Table 3-4-4 shows the necessary tools. The Nigerian side needs to complete procurement prior to beginning the construction, however, tools and equipment cannot obtain the project under Japan's Grand Aid Scheme.

Table 3-4-4 Test Apparatus and Maintenance Tools

No.	Item	Specification	Q'ty
A	**Special lifting devices and stands**		
1	Wire rope	φ60、21m	4 lot
2	Stands to support the rotor	600×600×1000	10 sets
3	Stand		1 lot
4	Hanger		1 lot
5	Wire rope		1 lot
6	Bolt		1 lot
7	Others	Bolt, Washer, etc.	1 lot
B	**General lifting devices and stands**		
1	Sling wire	φ8、3m	6 sets
2	Nylon sling	50mm、4m	1 lot
3	Chain block	15t,10t,5t,3t,1t,0.5t	8 sets
4	Shackle	15t,10t,5t,2t,14mm	8 sets
5	Others	Bolt, Sling protector, etc.	1 lot
C	**Scaffolding, work platform and protection of floor & components**		
1	Combination type scaffolding	900×1800×600	48 sets
2	Pipe type scaffolding	2B×5500mm	1 lot
3	Pipe type scaffolding	2B×3000mm	1 lot
4	Wooden floor plate	25×200×3600	1 lot
5	Ladder	1200mm,1800mm, 2100mm, 2700mm	1 lot

6	Others	Safety tool protection（Net etc.）	1 lot
D	**Common for assembly work**		
a	**Container**		
1	Cargo Contain	2.4×2.4×6	3 units
2	Tool box	3 units / container	9units
b	**Hand tools (1)**		
1	Handy tool box	500mm×250mm×100mm	14 sets
2	Single open end spanner	13,17,19,24,30,36	84 sets
3	Double open end spanner	17-19,19-24,24-30mm	70 sets
4	Ratchet spanner	17mm,19mm	28 sets
5	Screw driver	+, - 200mm、+30mm	42 sets
6	Hammer		28 sets
7	Gap gauge (feeler gauge)	0.03-1.0mm set × 150mm	14 sets
8	Others	Measuring tape, Convex, etc.	1 lot
c	**Hand tools (2)**		
1	Single open end spanner	8,10,46,55,65,75mm	36 sets
2	Ratchet handle	12.7mm、25,4mm	10 sets
3	Socket of ratchet spanner	13,17,19,24,30,36、mm	24 sets
4	Socket for impact wrench	13,17,19,24,30,36 、 46,55,65,75,85,95,105,115mm	25 sets
5	Hammer	5,10 lb	8 sets
6	Plastic hammer	1,5 lb	10 sets
7	Copper head hammer	3,5 lb	6 sets
8	Cutter type	Bolt cutter, Wire cutter	6 sets
9	Tap type	M5,6,8,10,12,16,20,24,30,36	1 lot
10	Others	Wire stripper, etc.	1 lot
d	**Air (pneumatic), Hydraulic and Electric tools**		
1	Electric cord reel	100V、200V	18 units
2	Air impact reel	M20,30,48	14 units
3	Electric disc grinder	100,150mm	10 units
4	Electric hand drill		3 units
5	Reamer drill		15 sets
6	Electric pipe cuter (saw)		4 units
7	Spare blade saw		8 units
8	High speed cutting machine		1 set

9	Journal jack	50,100,250kN	24 sets
10	Hydraulic jack (ram)	30kN(200mm),50kN(200mm)	18 sets
11	Others	Drill bit, etc.	1 lot
e	**Gauges, instrument and electrical test equipment**		
1	Outside micrometer	0-25,25-50mm	8 sets
2	Stainless straight scale	300,600mm	9 sets
3	Torque wrench	0-45,200-1400Nm	10 sets
4	Pressure gauge with joint	0-5MPa	8 sets
5	Others	Cable, ammeter, etc.	1 lot
f	**Welding tools and material**		
1	Welding machine (Tig & Arc)	300A	2 sets
2	Welding machine (Gas)		8 sets
3	Welding rad, etc.		1 lot
4	Cable		1 lot
5	Gas		1 lot
6	Safety tool protection		1 lot
7	Others	Hose, etc.	1 lot
g	**Piping work**		
1	Pipe wrench	45,90,125mm	6 sets
2	Reducer	50A-40A, etc.	1 lot
3	Stop valve	1B, 2B, etc.	1 lot
4	Air stop valve	3/4B, etc.	1 lot
5	Others	Copper pipe, etc.	1 lot
h	**Other facilities, equipment & tools**		
1	Bucket		13pcs
2	Dust container		10 pcs
3	Electric cleaner		4 sets
4	Floodlight		1 lot
5	Others	Working table, etc.	1 lot
j	**Common safety goods**		
1	Safety mask		60 pcs
2	Protect gloves		240 pairs
3	Safety shoes		1 lot
4	Safety helmet (hard hat)		1 lot
5	Safety suit		1 lot

6	Ear plug		200 pairs
7	Safety goggles		60 sets
8	Safety belt		15 sets
9	Others	Shoes cover, etc.	1 lot
k	**Common consumable material**		
1	Bolt		1 lot
2	Liner		1 lot
3	Others	Marker pen, etc.	1 lot
E	**Maintenance of lower bearing bracket**		
1	Scraper		6 sets
2	Oil stone		25 sets
3	Others	Rain coat, etc.	1 lot
F	**Maintenance of rotor**		
1	Impact hammering jig	5 lb	2 units
2	Electric soldering iron	Large	2 units
3	Aluminum jack	25t	20 sets
4	Center hole cylinder	50t	2 sets
5	Others	Nut, sheet, etc.	1 lot
G	**Modification of rotor rim support <welding work>**		
1	Gas heating burner		1 pc
2	Gas	Argon, Acetylene, Oxygen, Carbone Dioxide	13 bottles
3	Grinder	Electric, Air	4 sets
4	DC welding machine	800A	1 set
5	Liquid penetrant test kit		1 lot
6	Jack	500kg	4 sets
7	Others	Welding rod, etc.	1 lot
H	**Work on the stator frame, and stacking stator core punching**		
m	**Stator**		
1	Jig to match split faces		2 sets
2	I beam	200mm×5.5m	3 sets
3	Others	Oil stone, Wooden block, etc.	1 lot
n	**Core stacking work**		
1	Hammer		6 pcs

2	Welding rod	3.2φ	40kg
3	Gauge		3 pcs
4	Others	Bolt & nut, Pipe, etc.	1 lot
J	**Stator winding work**		
1	Rope stand		18 sets
2	Electrical cleaner		4 units
3	Balance	20kg、2kg	4 units
4	Sling wire		8 pcs
5	Nylon sling		4 pcs
6	Pressed board	1.6,0.8t×900×1800	20 sheets
7	Others	Screwdriver, hammer, etc.	1 lot
L	**Utilities**		
1	Cable	Various type	1 lot
2	Ground wire	Various type	1 lot
3	terminals	Various type	1 lot