添付資料

添付資料１　　協議議事録

Minutes of Discussions
on the Preliminary Study on the Project for Improvement of Embu Water Supply and Sanitation In the Republic of Kenya

In response to a request from the Government of the Republic of Kenya (hereinafter referred to as "Kenya"), the Government of Japan decided to conduct a Preliminary Study on the Project for Improvement of Embu Water Supply and Sanitation (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Kenya the Preliminary Study Team (hereinafter referred to as "the Team"), which is headed by Hiroyuki KINOMOTO, Director, Project Management Division III, Grant Aid and Loan Support Department, JICA, and is scheduled to stay in the country from August 5th , 2008 to August 30th , 2008.

The Team held discussions with the officials concerned of the Government of Kenya and conducted a field survey at the study area.

As a result of discussions and field survey, the Team and the Government of Kenya confirmed the main items described in the attached sheets.

Nairobi, August 26th, 2008

木野本 浩之

Mr. Hiroyuki KINOMOTO
Leader
Preliminary Study Team
Japan International Cooperation Agency

Eng. David Stower, CBS,
Permanent Secretary
Ministry of Water and Irrigation
The Republic of Kenya

Mr. Samuel Njenga Muchai
Chief Executive Officer
Tana Water Services Board
The Republic of Kenya

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the water supply condition in Embu City and its surrounding areas through the construction of water supply facilities.

2. Project Sites

The project site, according to the current request, is Embu city and the surrounding areas, as shown in Annex-1.

3. Responsible and Implementing Agency

3-1 The Responsible Agency is the Ministry of Water and Irrigation (hereinafter referred to as "MoWI").

3-2 The Implementing Agency is the Tana Water Services Board (hereinafter referred to as "TWSB") and Embu Water and Sanitation Company (hereinafter referred to as "EWASCO"). TWSB is in charge of coordinating the Project and EWASCO is in charge of operation and maintenance of the facilities to be constructed under the Project.

3-3 The organization chart of the implementing agency is shown in Annex-2A and 2B.

4. Items requested by the Government of Kenya

As the result of discussions, the Team and the Kenyan side confirmed the requested components were focused only on the water supply sector, as shown in Annex-3. JICA will assess the appropriateness of the request and will report the findings to the Government of Japan.

During the discussions, the Kenyan side requested to include sewerage component as well as water supply in the Project. However, the Team responded that it is difficult due to the size of the Project. The Team also recommended the Kenyan side to seek the other possible resources for improvement of sewerage.

5. Japan's Grant Aid Scheme

5-1 The Kenyan side understood the Japan's Grant Aid Scheme explained by the Team, as described in Annex-4.

5-2 The Kenyan side will take the necessary measures, as described in Annex-5 for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented.

5-3 JICA will report to the Kenyan side if there are any other undertakings based on the result of this study.

6. Schedule of the Study

6-1. Consultant members of the Team will make additional in-depth studies related to the Project in Kenya until August 30th, 2008.

6-2. As a result of the Preliminary Study, if the Project is found feasible by the Government of Japan, JICA will send the Basic Design Study Team.

6-3. The Team explained that implementation of Preliminary Study and Basic Design Study is not a commitment of the Project to be implemented.

7. Other Relevant Issues

7-1. Priority of the Project

The Kenyan side explained that provision of safe water supply is one of the top priority projects based on the Goals for 2012 of the 1st Interim Plan (2012) of the Vision 2030 and that Embu city is most prioritized city among over 200 urban centers.

7-2. Scope of the Project

The Team and the Kenyan side agreed that the target year for the Project will be set as the year 2015 and, therefore, water supply facilities for the Project will be planned so as to meet the water demand in 2015 as shown in Annex-6. However, both sides confirmed that the water demand should be examined in detail through the Basic Design Study.

7-3. Expansion of Water Supply Facilities to Unserved Areas

The Team requested to the Kenyan side to expand necessary water distribution network in order that residents in the areas has access to safe and stable water.

The Kenyan side agreed to expand water supply facilities such as water distribution network, kiosk, etc to the unserved areas to obtain the service ratio of 100% of Embu Central and 80% in part of Nemburi and Gachoka in the service areas by the year 2015.

7-4. New Water Supply Facilities Constructed by the Kenyan Side

The Kenyan side explained that they are constructing water supply facilities (intake, raw water main and water treatment plant having a treatment capacity of 10,000m^3/day) and will complete it by January, 2009.

7-5. Location of Intake

The Kenyan side proposed three points of the new intake which are located upstream of existing Mukango intake as shown in Annex-1. Based on site survey, the Team concluded that upper two of the proposed points (No.1 and 2) are inappropriate for the intake on the view of difficulties in construction, future O&M and environmental conservation of forest and wildlife reserve area, and lower one (No.3) is a possible site. In addition, the Team proposed improvement of existing Mukango intake as one of alternative (No.4). The Team and the Kenyan side confirmed that the Basic Design study team will compare No.3 and 4 in view of the technical and economical viability.

7-6. Specific Undertakings by the Kenyan Side

The Team requested to the Kenyan side to allocate necessary budget and to abide by the following undertakings in addition to major understandings described in Annex-5.

(1) Additional land acquisition to construct facilities beside Mukango Water Treatment Plant and Kangaru Water Treatment Plant

(2) Demolition of existing water treatment facilities in Kangaru Water Treatment Plant to construct new water storage tank

(3) Installation of water distribution pipelines of which materials will be supplied by the

Project

(4) Construction of water supply pipeline network

The Kenyan side understood and accepted.

7-7. Operation and Maintenance of the Facilities

The Kenyan side explained that proposed water intake and water supply facilities will belong to TWSB and EWASCO will be in charge of operation and maintenance (hereinafter referred to as "O&M"). The Team will propose necessary operation and maintenance plan based on the result of the Basic Design Study. The Kenyan side agreed to take any necessary measures and to allocate necessary budget to operate and maintain the facilities in response to Japanese proposal. In addition, the Kenyan side promised to secure necessary personnel for the O&M of facilities to be constructed by the completion of the Project.

7-8. Necessary Acquisition of Water Right

The Kenyan side promised to apply for additional water right (3,100m^3/day including allowance) for the Project, and to get approval from Water Resources Management Authorities within 2 months.

7-9. Environmental and Social Considerations

The Team explained that the Kenyan side should observe the requirement of the laws and regulations on environmental and social considerations and also JICA Guidelines for Environmental and Social Considerations before the implementation of the Project. The Kenyan side promised to obtain necessary approval and/or agreement with organization concerned and stakeholders, if the project is implemented.

7-10. Soft Component and Technical Assistance Program

(1) The Kenyan side requested the technical assistance as soft components of the Project which includes operation and maintenance of newly constructed facilities. The Team promised to convey the requests to Japan.

(2) The Kenyan side promised to take any necessary countermeasures to reduce Non Revenue Water (hereinafter referred to as "NRW") utilizing experiences from Japanese technical cooperation project.

7-11. Title of the Project

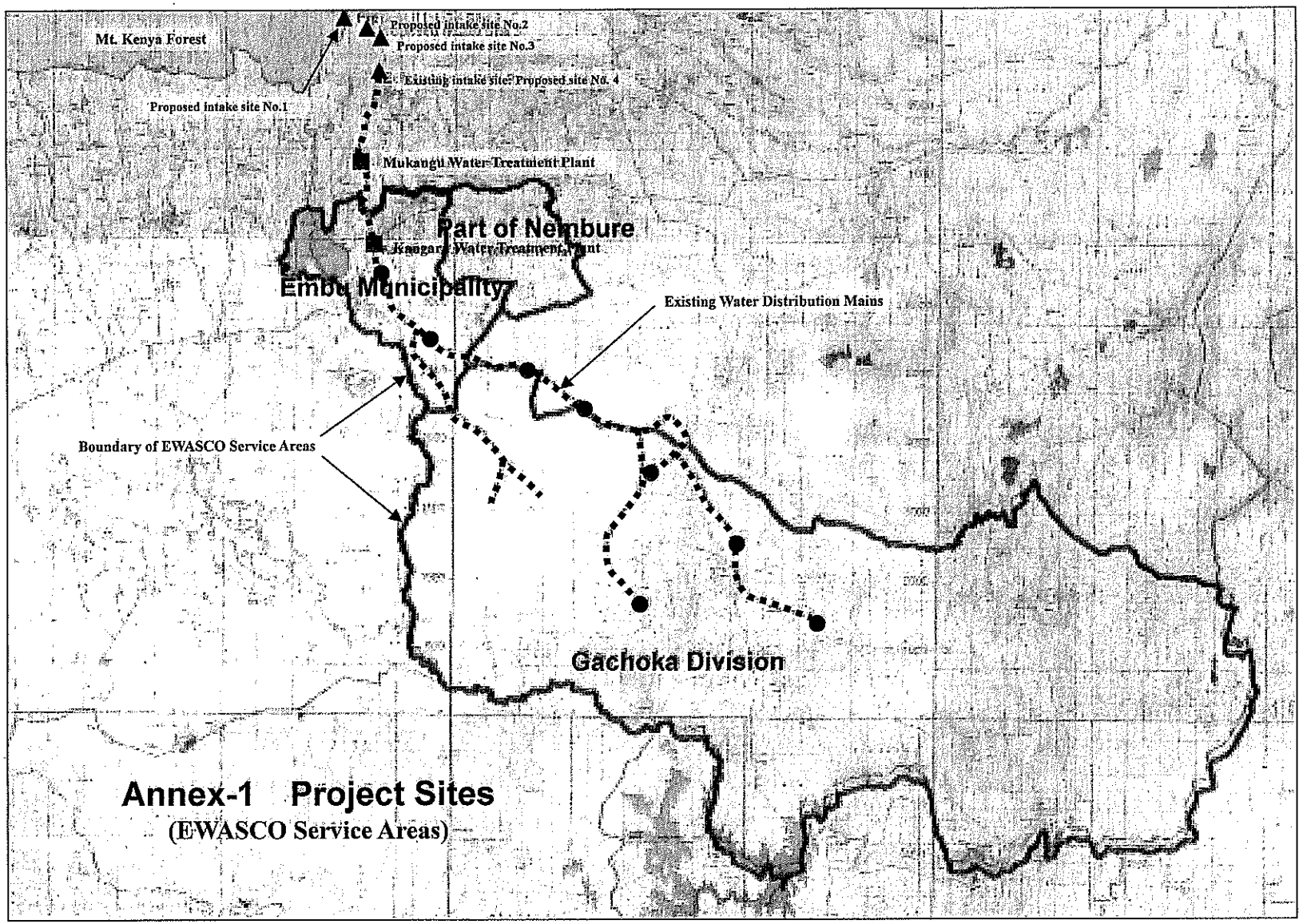
Because of the change of requested components, the Team and the Kenyan side agreed that the name of the Project can be changed as "the Project for Improvement of Water Supply System in Embu and the Surrounding Areas".

7-12. Tax Exemption

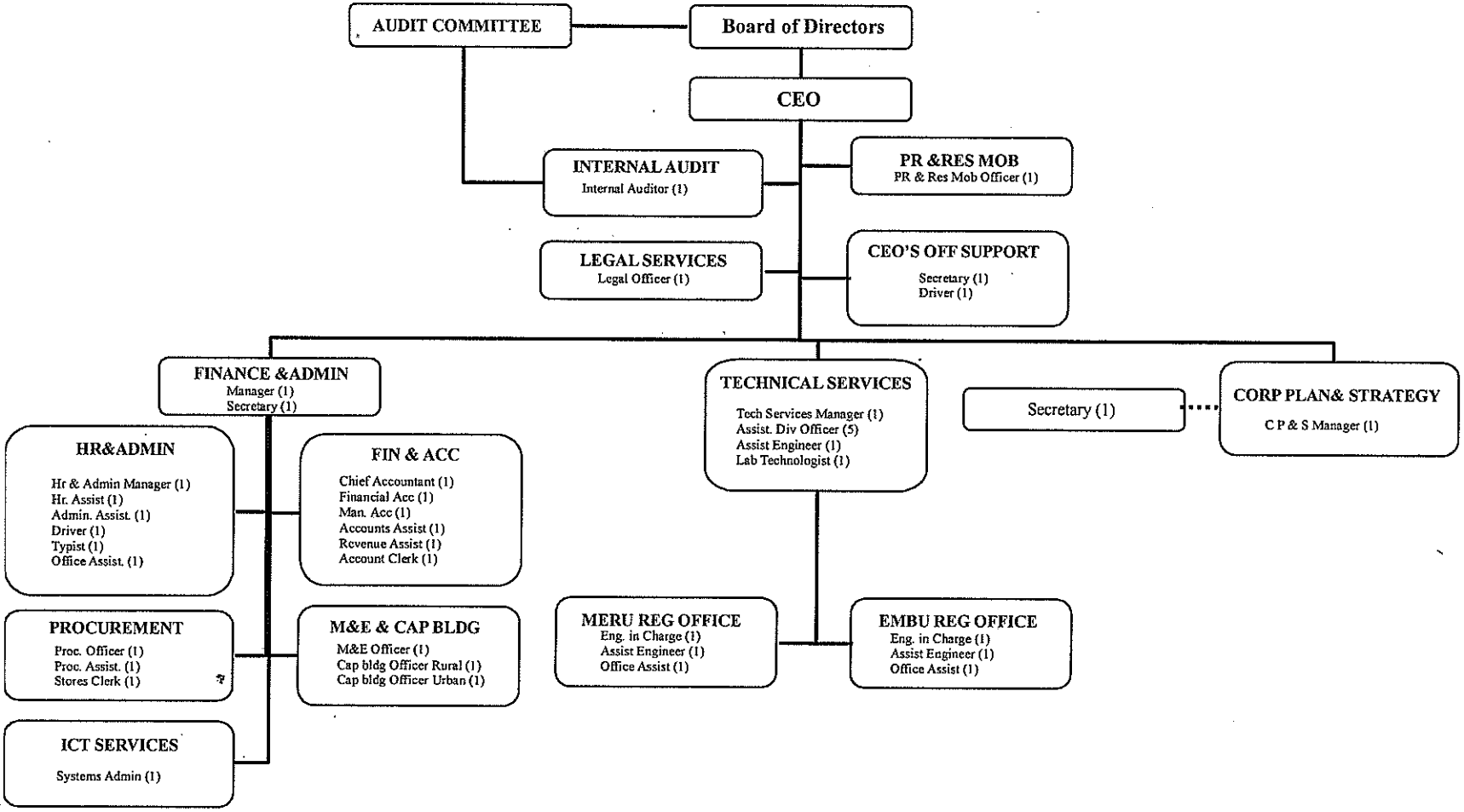
The Kenyan side shall take necessary measures to exempt Japanese nationals who will be engaged in the Project from all duties and related fiscal charges which may be imposed in Kenya with respect to the import and local procurement of equipment and services supplied under the verified contract.

7-13. Overlapping with Other Project

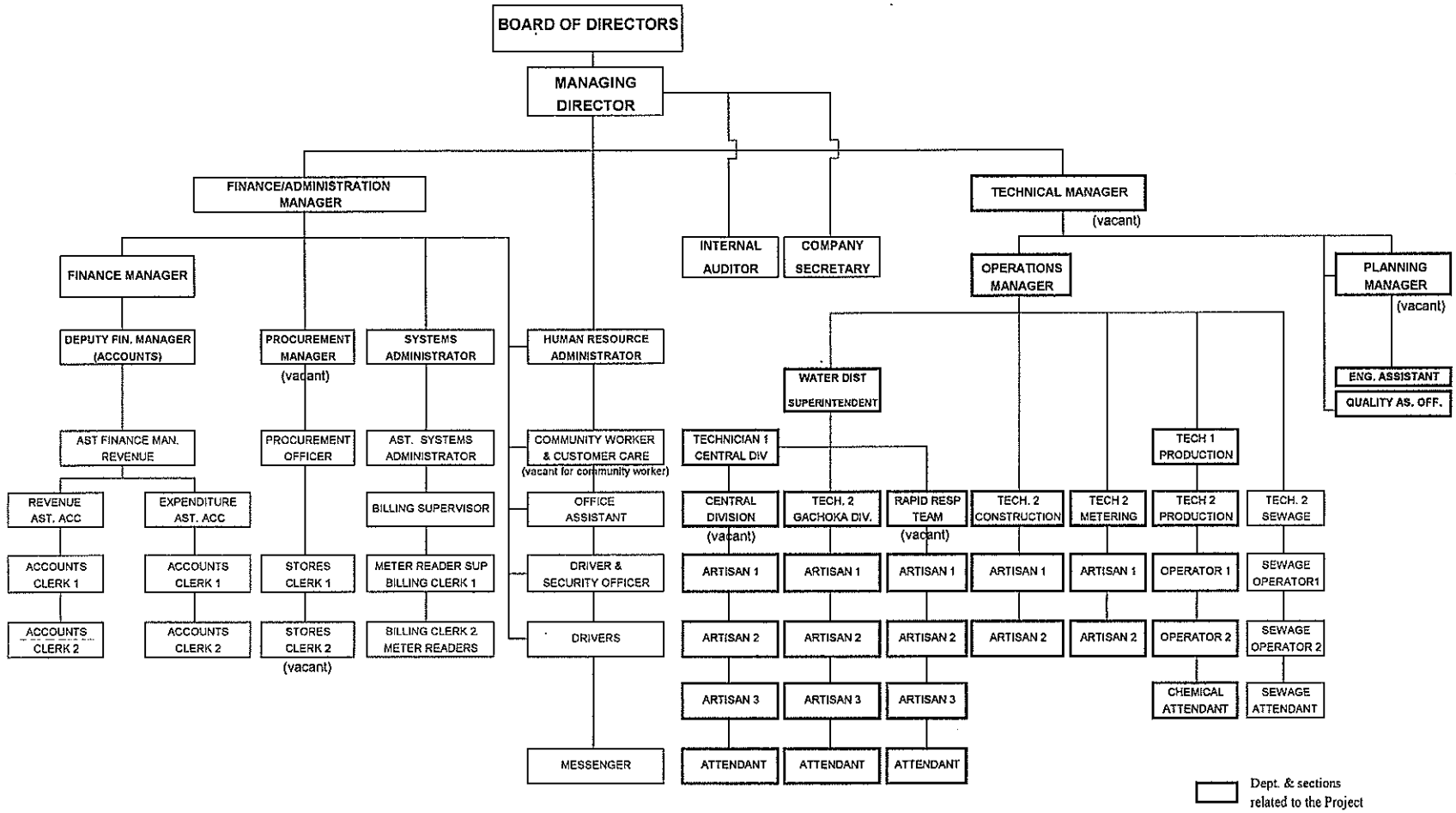
The Kenyan side explained that this project would not be overlapped with any other project extended by the other donor agencies, NGO and Kenyan official organization.



Annex-1 Project Sites
(EWASCO Service Areas)



Annex-2A Organization Chart of Tana Water Services Board (TWSB)



Annex-2B Organization Chart of Embu Water and Sanitation Co., Ltd (EWASCO)

Annex-3 Items requested by the Government of Kenya

No.	Component	Specification	Priority		
			A	B	C
1	**Construction of new water supply facilities**				
1-1	**New intake facilities**				
(1)	Intake weir		○		
(2)	Intake pit		○		
(3)	Water conveyor pipeline	L=9km, dia.400mm	○		
1-2	**New Mukangu water treatment plant**	11,000m^3/day			
(1)	Master flow meter (for raw water and treated water)	1 no. each, mechanical type	○		
(2)	Water treatment facilities consisting of the following: ➢ Mixing basin, coagulation basin, flocculation basin, sedimentation basin, rapid sand filter, clear water reservoir, back washing facility, chemical dosing equipment, sludge treatment facility		○		
(3)	Associated buildings consisting of the following:.				
	➢ Administration building				○
	➢ Filter house		○		
	➢ Chemical dosing house and store		○		
1-3	**Water transmission and distribution facilities**				
(1)	Water transmission pipeline	L=6km, dia.315mm	○		
(2)	Water storage tank	9,000m^3 (3,000m^3 at Mukangu, 6,000m^3 at Kangaru)	○		
(3)	Break pressure tank and/or pressure reducing valves		○		
2	**Procurement of equipment**				
(1)	Water distribution pipeline material including fittings and valves	L=35km, dia.100 to 250mm	○		
(2)	Water quality laboratory equipment				
	➢ Jar tester	1 set		○	
	➢ Spectrophotometer with accessories	1 set		○	
	➢ Incubator	1 set		○	
	➢ Refrigerator	1 set		○	
	➢ Facility for bacterial analysis kit with tray, UV-device and reagent, etc.	1 set		○	
	➢ Autoclave	1 set		○	
	➢ Distilled water facility	1 set		○	
	➢ General apparatus for water quality analysis (filtration device, titration device, etc.)	1 lot		○	

No.	Component	Specification	Priority		
			A	B	C
(3)	Equipment for O&M				
	➢ Small truck	1 no., 3 tons payload			○
	➢ Meter calibrating equipment with meter testing bench	1 set	○		
	➢ Flow meter for district meter area (DMA)	10 nos., mechanical type			○
	➢ Ultra-sonic flow meter	1 set, portable type	○		
	➢ Transceiver	1 set		○	
3	**Soft Component**				
	➢ Technical guidance for operation and maintenance of Mukangu Water Treatment Plant		○		
	➢ Technical guidance for water quality control		○		

Note: Priority category - A = High, B = Medium, C = Low

Japan's Grant Aid Scheme

The Grant Aid Program provides a recipient country 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 the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedure

1) Japan's Grant Aid Program is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA send a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study 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 signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;
b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;
c) confirmation of items agreed on by both parties concerning the basic concept of the Project;

d) preparation of a basic design of the Project; and
e) estimation of costs of the Project.

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

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

2) Selection of Consultants
For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participates the Study and prepares a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country, in order to maintain the technical consistency between the Basic Design and Detailed Design as well as to avoid any undue delay caused by the selection of a new consulting firm.

3. Japan's Grant Aid Scheme
1) Exchange of Notes (E/N)
Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.
However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

3) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"
The Government of the recipient country or its designated authority will conclude contracts

denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability of Japanese taxpayers.

5) Undertakings required to the Government of the recipient country

a) to secure a lot of land necessary for the construction of the Project and to clear the site;
b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;
c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;
d) to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;
f) to ensure that the facilities constructed and products purchased under the Grant Aid be maintained and used properly and effectively for the Project; and
g) to bear all the expenses, other than those covered by the Grant Aid, necessary for the Project.

6) "Proper Use"

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

7) "Re-export"

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

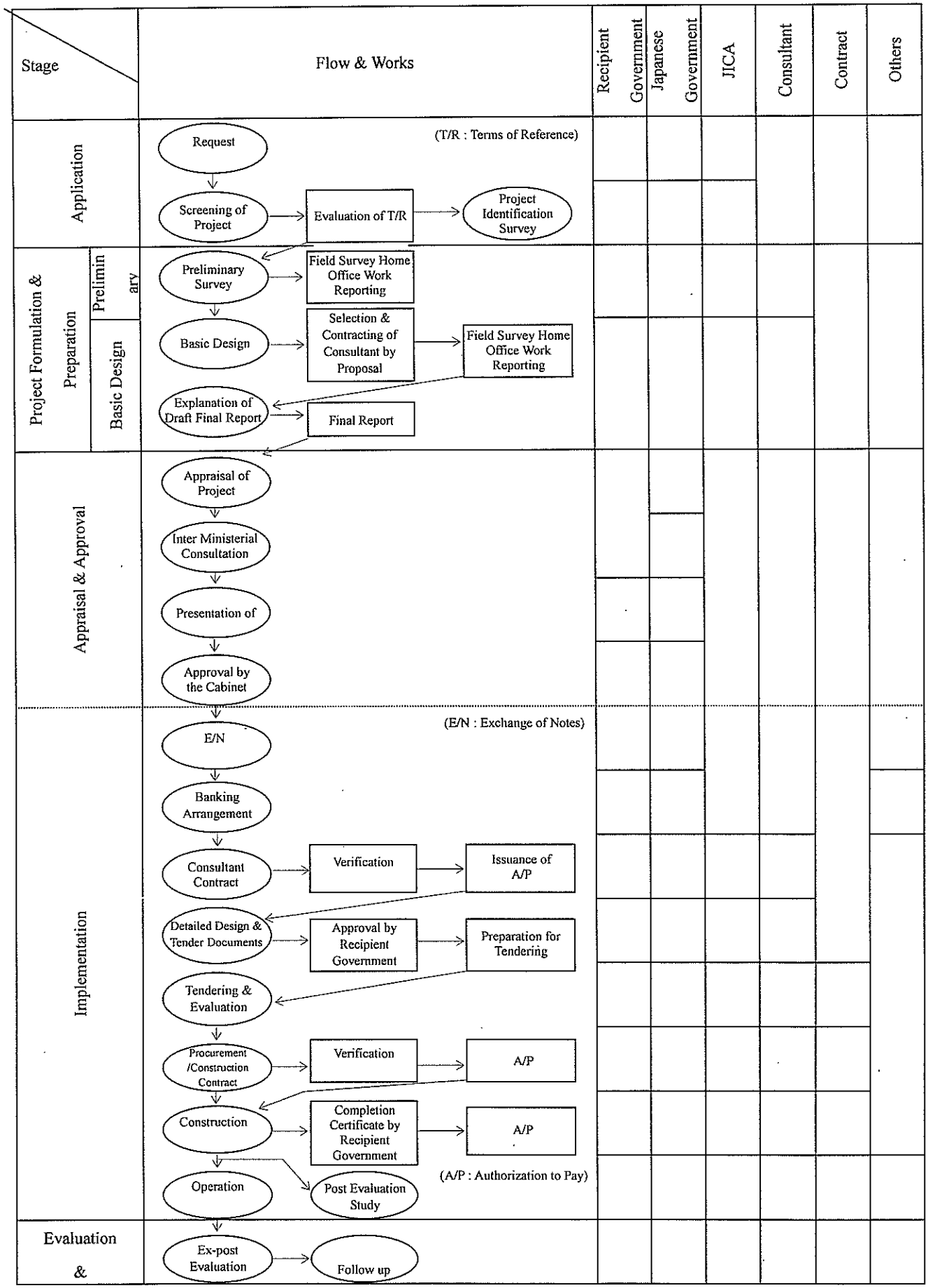
8) Banking Arrangement (B/A)

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

9) Authorization to Pay (A/P)

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

FLOW CHART OF JAPAN's GRANT AID PROCEDURES



Annex-5

Major Undertakings to be taken by Each Governments

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		●
3	To construct gates and fences in and around the site		●
4	To bear the following commissions to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
5	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan the recipient	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	(●)	(●)
6	To accord Japanese nationals, whose service may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
7	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		●
8	To maintain and use properly and effectively the facilities contracted and equipment provided under the Grant		●
9	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

B/A : Banking Arrangement
A/P : Authorization to Pay

WATER DEMAND - Actual (2008) and Estimate (2010 & 2015)

YEAR	2008					2010					2015 (Target Year)				
CONSUMER TYPE	Served Ratio (%)	Pop. in Sevice Area	Served Pop.	LCD	m3/day	Served Ratio (%)	Pop. in Sevice Area	Served Pop.	LCD	m3/day	Served Ratio (%)	Pop. in Sevice Area	Served Pop.	LCD	m3/day
A. Domestic Use															
DOMESTIC: HIGH INCOME	45	18,922	8,515	150	1,277	70	19,571	13,699	150	2,055	100	21,292	21,292	150	3,194
DOMESTIC: MEDIUM INCOME	45	22,584	10,163	100	1,016	70	23,358	16,351	100	1,635	100	25,413	25,413	100	2,541
DOMESTIC: LOW INCOME	45	19,532	8,789	55	483	70	20,202	14,141	55	778	100	21,979	21,979	55	1,209
DOMESTIC: RURAL	15	60,933	9,140	48	439	30	64,408	19,322	48	927	80	71,742	57,394	48	2,755
WATER KIOSKS	0	17,148	0	25	0	30	18,781	5,634	25	141	80	21,043	16,834	25	421
SUB-TOTAL [A] (m3/day)	26%	139,119	**36,607**		**3,216**	47%	146,320	**69,148**		**5,536**	89%	161,468	**142,911**		**10,120**
B. Hospital & School															
EMBU HOSPITAL (BEDS)		660		200	132		671		200	134		683		200	137
DISPENSARIES		18		5,000	90		18		5,000	92		19		5,000	93
OUT-PATIENTS		710		20	14		722		20	14		734		20	15
BOARDING SCHOOLS: STUDENTS		3,508		50	175		3,568		50	178		3,628		50	181
PRIMARY SCHOOL: STUDENTS		20,038		25	501		20,379		25	509		20,725		25	518
SUB-TOTAL [B] (m3/day)					**913**					**928**					**944**
C. Large Users															
INDUSTRIAL (ACTUAL)					130					134					141
COMMERCIAL (ACTUAL)					400					414					435
LOCAL AUTHORITIES					40					41					44
GOK INSTITUTIONS (ACTUAL)					250					259					272
OTHERS (ACTUAL)					1,000					1,034					1,088
SUB-TOTAL [C] (m3/day)					**1,820**					**1,882**					**1,980**
D. Livestock															
CATTLE		32,035		80	2,563		32,676		80	2,614		33,329		80	2,666
GOATS/SHEEP		57,080		15	856		61,076		15	916		65,351		15	980
PIGS		110		15	2		112		15	2		114		15	2
DONKEYS		600		20	12		612		20	12		624		20	12
RABBITS		3,325		1	2		3,392		1	2		3,459		1	2
POULTRY		109,625		1	55		111,818		1	56		114,054		1	57
SUB-TOTAL [D] (m3/day)					3,489					3,602					3,720
Provided thru water supply system (%)	0				**0**	10				**360**	20				**744**
SUB-TOTAL [A]+[B]+[C]+[D] (m3/day)					**5,948**					**8,707**					**13,787**
EFFECTIVE RATIO (%)	*55*					*60*					*65*				
DEMAND ESTIMATED (m3/day)					*10,815*					*14,511*					*21,211*

NOTES

1. Population projection is based on 1999 census and Kenya Bureau of Statistices growth rate of 1.7% pa in Embu and 2.3% for Gachoka.
2. Data for domestic high, medium and low income is A % of total urban population based on actual consumption. The applied % are 31% for high, 37% for medium and 32% for low income.
3. Data for domestic animal is current and as provided for by GOK Livestock Offices and per capita consumption and growth rate 2% for cattle and 7% for cattle and 7% for goats/sleep was as provided by the same office.
4. Data for schools is current and as provided by district education office. Water demand projection assumed the rate is is equal to 1.7% pa, equivalent to population growth rate.
5. Water demand industrial, commercial, local authorities, GOK institutions and others and others was assumed to be 1.7% equal to Embu Population growth rate.
6. Per capita consumption is assumed according to the actual consumption.

添付資料 2　　要請書

MINISTRY OF WATER AND IRRIGATION

Telegrams: "MAJI" Nairobi
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Fax: 2727622
When replying please quote;

PERMANENT SECRETARY
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P.O. BOX 49720
NAIROBI,

Ref. No: MWI/OFTA/12/12 VOL. XIV/ (132)

Date: 2nd October 2007

Resident Representative
JICA Kenya Office
P. O. Box 50572 - 00200
NAIROBI

IMPROVEMENT OF EMBU WATER SUPPLY AND SANITATION

Please refer to your letter Ref. TC – 19 – 221 (JG) dated 26th September 2007 on the above subject.

The Ministry of Water and Irrigation is very glad to note that the Government of Japan has been considering our application on Embu. The Government of Kenya appreciates any assistance that the people of Japan will extend to the improvement of water supply and sanitation in Embu.

Consequently, this Ministry has no objection to the proposed JICA Preliminary Study focussing on improvement of water supply. We will be willing to support the Team as much as possible to realise its objective.

ENG. P. O. MANGITI
FOR: PERMANENT SECRETARY

9月17日提出のもの
訂正版ポール

Application form for the Japan's Grant Aid Scheme

1. **Date** : June 2006 (Revised in Sept 2007) ✓
2. **Project Title** : Improvement of Embu Water supply and Sanitation.
3. **Sector** :Physical Infrastructure Sector/Water and Sewerage Sub-sector

4. **Background of the Request**

(1) **Relation between the project and the national development plan**

(Name of the national development plan and the position of the proposed sector in the plan.

- Name of National Development Plan : The 9th National Development Plan 2002-2008 (Ministry of Planning GOK)
- Position of the proposed sector in the Plan : High Priority

The 9th National Development Plan (2002-2008) list Embu Town as one of the principal towns, being the Provincial Headquarters of Eastern province. The present population of Embu Municipality is estimated at 88,000 and together with its environs is at 124,000. The JICA aftercare study (1998) gave a projected population of 92,241 by 2010. The current water supply system is very old, having started in 1949. There has been efforts to improve the water supply over the years, the most notable being in 2006 when a source on the Rupingazi river was identified, bringing the water production to the current 10,000m3/day. The current demand situation is a water deficit of more than 8,000m3/day and is expected to grow to more than 14,000/day by 2015 if the same trend continues. In line with the current National Development plan, the National Poverty Reduction Plan (1999-2015) proposes among others the rehabilitation of 700 existing water supplies a cross the country to optimize production capacity by the year 2015. a major constraint in the implementation of the plan is inadequate financial resources from the Government, hence the need to approach development partners for critically required funding to achieve the desired objectives which will cumulatively ensure improved services delivery and poverty eradication, while endeavouring to meet the millennium development goals of 2015. Embu is among the Water supplies identified under these plans, hence the Ministry of Water and Irrigation (MW& I) has ranked it highly to benefit from Donor assistance, especially now that implementation will learn from the experience of Meru water supply rehabilitated under Japan's Grant Aid scheme. The ministry has already implemented institutional change in line with the Water Act, 2002 in the water services provision and Embu Water and Sanitation Company has been licenses to provide water supply and sewerage services for Embu Municipality.

Availability of safe water to the Community has been identified by the Government of Kenya as the most important in the Economic Recovery strategy (ERS). Therefore, this is placed highly in the Government Agenda for Economic Recovery.

(2) **Relations between the project and the Sector development plan**
(Name of the Sector development plan and the position of the proposed project in the plan)

- Name of sector development plan : **The after care Study on the National Water Master Plan in the Republic of Kenya (1998, JICA)**
- Position of the proposed project in the plan : **High Priority**

The strategic plan for Tana Water Services Board, the implementation Agency, is to provide effective, efficient, reliable economic safe and sustainable water and sanitation facilities to 100% of the people leaving in its area of jurisdiction (Nyeri, Embu, Kirinyaga, Muranga, Maragua, Meru Central, Meru South, Meru North, Mbeere, Tharaka, Kitui and Mwingi Districts) by the year 2010.

Therefore, the proposed project for Embu is in line with the strategic plans of the Tana Water Services Board and by extension the strategy for achieving the millennium Development Goals (MDGS) in the Waters sector.

(3) Current situation of the proposed sector

Rapid increase of population in Kenya has presented an increasingly serious problem of supply of safe water to the people especially in and around urban areas due to inadequate water supply systems. Most of the population lives in rural areas (24 million) while 9 million live in urban areas. Access to safe water is estimated at 68% in urban areas and 49% in rural areas. On the overall both water and sanitation services coverage has been declining in terms of quality and quantity, reliability and access.

A major constraint in the provision of water and sanitation services has been inadequate financial resources for the development and management of the water resources.

The Government of Kenya through the Ministry of Water and Irrigation is implementing far reaching reforms in the water sector. The water sector reforms a re aimed at promoting and facilitating the attainment of the National Water policy objectives through a system of institutional and regulatory measures. These reforms are intended to address the institutional arrangements through the separation of Water Resources Management from Water Services Provision and also to outline separation of policy, Regulation and implementation functions within the sector.

The new institutions in the sector are already operational. There are seven water service boards that have been licensed by the Water Services Regulatory Board to provide efficient, effective and sustainable water and sanitation services. The transfer of Management and operation of water services to the Water service Boards is in accordance with section 113 of Water Act 2002 is gazetted operational nearing completion. The Tana Water Service Board has contracted the Embu Water and Sanitation Company as its agent for provision of water and sanitation services in Embu Municipality in accordance with the requirements of the Water Act 2002. Therefore, there is urgent need for an institutional capacity building for the new company to help improve in its performance in service delivery.

This proposed project has a target for stab le and sustainable improving of environment Sanitation in Embu Town by infrastructure improvement, portable water supply and restoration environmental sanitation to cope with increased population.

(5) Objective of the project/program, including the importance, necessity, and urgency of the project/program in the light of the current situation of the proposed sector.

(i) Objective of the project/Program

Improvement of water supply and sanitation in Embu Town by

(a) Rehabilitation and Extension of the existing water supply facilities
- Rehabilitation of Existing Storage tanks
- Rehabilitation of existing main distribution pipelines.

(b) Construction of new water supply of facilities with a capacity of 14,000m3/day with its source at Rupingazi River at Muthigi (in the unpolluted Mount Kenya Forest) and installation of Equipment.
- Construction of new intake facilities, laying of a 18 kilometres of 315-350-400mm diameter water transmission pipeline.
- Construction of a water treatment plant with a capacity of 14,000m3/day at Mukangu to meet the demand of the years 2015.
- Construction and equipping of new water Testing Laboratory.
- Construction of a new high level back washes of capacity 75 m3

- Construction of new water storage facilities with a combined capacity of 26.000 m3 (a main storage 24,000 m3 at Mukango and 2,000 m3 at Gatituri to serve Mbeti North)
- Construction of break pressure tanks/pressure reducing valves.
- Installation of 25km of water supply pipelines within the target area (mainly Mbeti North and Gachoka South–Kiritiri)-200mm to 315mm diameter pipelines

(c) Institutional Capacity building (soft component) – including training on service provision and operation and maintenance of the water and sewage system.

(c) Rehabilitation and expansion of the existing Sewerage System

- Construction of new sewage treatment works at Don Bosco/Kiritiri of capacity 20,000 m2 /day for 2015 year demand
- Construction of 10 kilometer of 600mm diameter main sewer to the sewerage treatment works.
- Augmentation of sewer reticulation works for the Municipality with sewer diameters ranging between 200mm to 400mm and associated manholes

(ii) Overall goal/medium and long-term objectives.

- Provision of portable water;
- Improvement of health, standard of living and environmental condition;
- Contribution to the economic development of the town in promoting tourism, industry and commerce while reducing poverty levels.

(ii) The importance, necessity, and urgency of the project/program in the light of the current situation of the proposed sector

The water sector aims to provide safe drinking water to as many Kenyans as possible. The poverty Reduction Strategy Paper, which is a guiding tool in the economic development, has twin objectives to achieve growth and poverty reduction. It identifies measure geared toward improved economic performance and priority actions that are to be implemented to reduce poverty among Kenyans.

Water supply

The Government of Kenya is continuing with a rehabilitation and augmentation program for existing water and sewerage schemes under the new institutional arrangements in the water sector. The Tana Water Services Board has the mandate of ensuring the efficient effective economic and sustainable provision of water and sanitations services in its area of jurisdiction of which includes Embu town. The new Embu Water and Sanitation Co. ltd inherited a very old, inefficient and dilapidated system. The Kaspingazi intake was supplying only about 2,500 m^3 /day during the dry weather but the capacity reduced to 50% during wet weather as the water is highly turbid and the treatment works cannot effectively treat the raw water. An additional 1,000 m3/day was purchased in bulk from the Ngandori- Nginda Water Association. The combined volume was 3,500 m^3/day supply against a demand of about 10,000 m3/day. This was not good for a new company on whose management the consumers are expecting improved service delivery. As result of pressure from the Public, the Company borrowed pipes and fittings from a Manufacturing Concern and is now able to produce 10,000m3/day. However, its supply area has been increased to cover neighboring areas which are without supply mains and no water. The current demand is estimated at 18,000m3/day and therefore there is a water deficit of 8,000m3/day. For this reason the Tana Water Services Board is keen on ensuring that the Embu Water supply enabled to deliver the expected water services for Embu Municipality and its expanded supply areas.

Old unserviceable facilities limited development of water infrastructure due to high capital investment required and the rapid population growth in the town owing to rural-urban migration

2. Treatment Works at Mukangu

A new 14,000 m3/day treatment plant is proposed to be constructed at the new site. Full treatment will be provided according to an appropriate design consisting of the following:-

- Raw water master meter
- Rapid Mixing Chamber/ Coagulation Basin
- Flocculation basins
- Sedimentation basins
- Rapid Sand Filters
- Clear water Reservoirs- total capacities of 1.5 days demand (3unit each of 8,000m3).
- Back wash pumps
- Laboratory Building and chemical store
- Chemical dosing equipment

The construction of the waster treatment units can be phased in modular units of at least 8,000 m3/day capacity based on the demand up to ultimate demand. However, looking at the situation on the ground, it is proposed that the entire treatment works be constructed at the same time.

3. Treated water transmission and storage works

- A new 6 km of 315mm diameter uPVC transmission main will be constructed from the clear water reservoir at the treatment works to the existing storage tanks at Kangaru.
- A new 9km branch pipeline of 250mm dia uPVC pipe will be constructed to serve Mbeti North complete with a new 2,000m3 storage tank.
- Rehabilitation of the existing water storage tanks at Kangaru (existing water treatment works) with a combined storage of 2,000m3.
- New 16km of 250mm diameter pipeline from Kangaru storage tanks to serve Gachoka

4. Distribution system

The distribution network in the Town is relatively new due to the constant campaign to invest all the revenue generated. The Company will continue with the support of Government to improve and expand water supply reticulation network, including metering the consumers.

Sewerage system

5. Sewerage System
   - Construction of a 10km, 600mm diameter trunk sewer main
   - Construction of 200-400mm diameter primary and secondary sewer pipelines estimated at 36km
   - Constructions of new sewage treatment works of 20,000 m3 /day capacity.

   The sewage treatment works can be done in modular form allowing for phasing of the works as demand increases.

6. Institutional Capacity building (soft Component).
   - Institutional management capacity
   - Financial
   - Technical

(2) **Rough requests amount**

- Less than US$ 5,000,000
- Between US$ 5,000,000 and US$ 10,000,000

- Over US$ 10,000,000

(3) Benefits/ beneficiaries and expected results of the projects/program

(i) Benefits

- In crease in water supply from 10,000 m^3/day to 24,000 m3 /day. The current acute shortage of water will be solved by the implementation of the project. The Embu Water and sewerage C0. Ltd will have enough water to satisfy the demand in the Municipality and environs.
- The Embu Water and Sanitation Co. Ltd through the implementation of the project will be able to provide water of improved quality services to for domestic and industrial use.
- The realization of stable water supply will bring an increase in water consumption and thereby contribute to an increase in revenue
- Improved sanitation hence better health and living stardards.
- Increased girl child education as water is the main cause of low enrolment in schools for girl child, especially in the peri-urban and rural areas

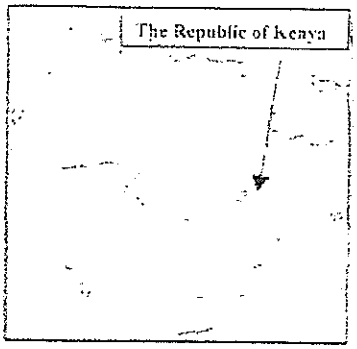
(ii) Beneficiaries

Currently the population of Embu is estimated at 88,000 people out of whom about 30,000 are served by the existing system. Over 90,000 people in the extended service area can be served after the implementation of the project.

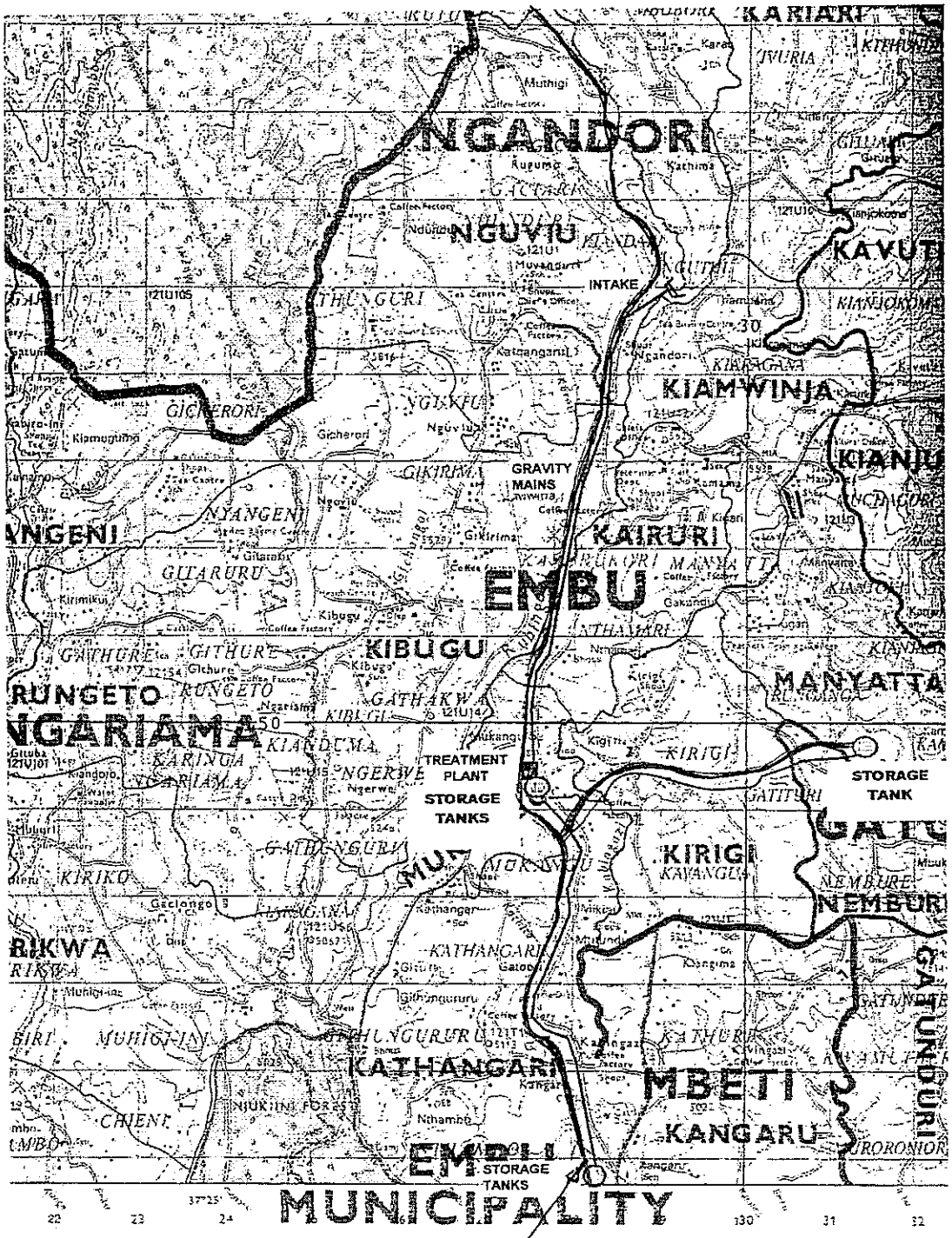
(iii) Expected results of the projects/ program

- As a result of improved water and sanitation services, Embu town will become and attractive destination for many sectors / actors of the economy. Accelerated growth based on tourism and agricultural industry will be realized. The general consumers in the Municipality will enjoy better quality water and sanitation services.
- Technology transfer in the field of water and sewerage will be expected from Japanese Experts to the staff of Embu Water and Sanitation Company (WASCO) as well as related officials of Tana Water Services Board, by implementing this project.
- Environmental conservation by implementation of "best practice" for water and sewerage services.
- The Government of Kenya will be able to extend help to the un-served people by using the little resources to serve other areas.
- Attainment of the Millennium development Goals will be enhanced.
- Improved public health will mean improved economic activity as most of the water related diseases are eliminated or reduced drastically.

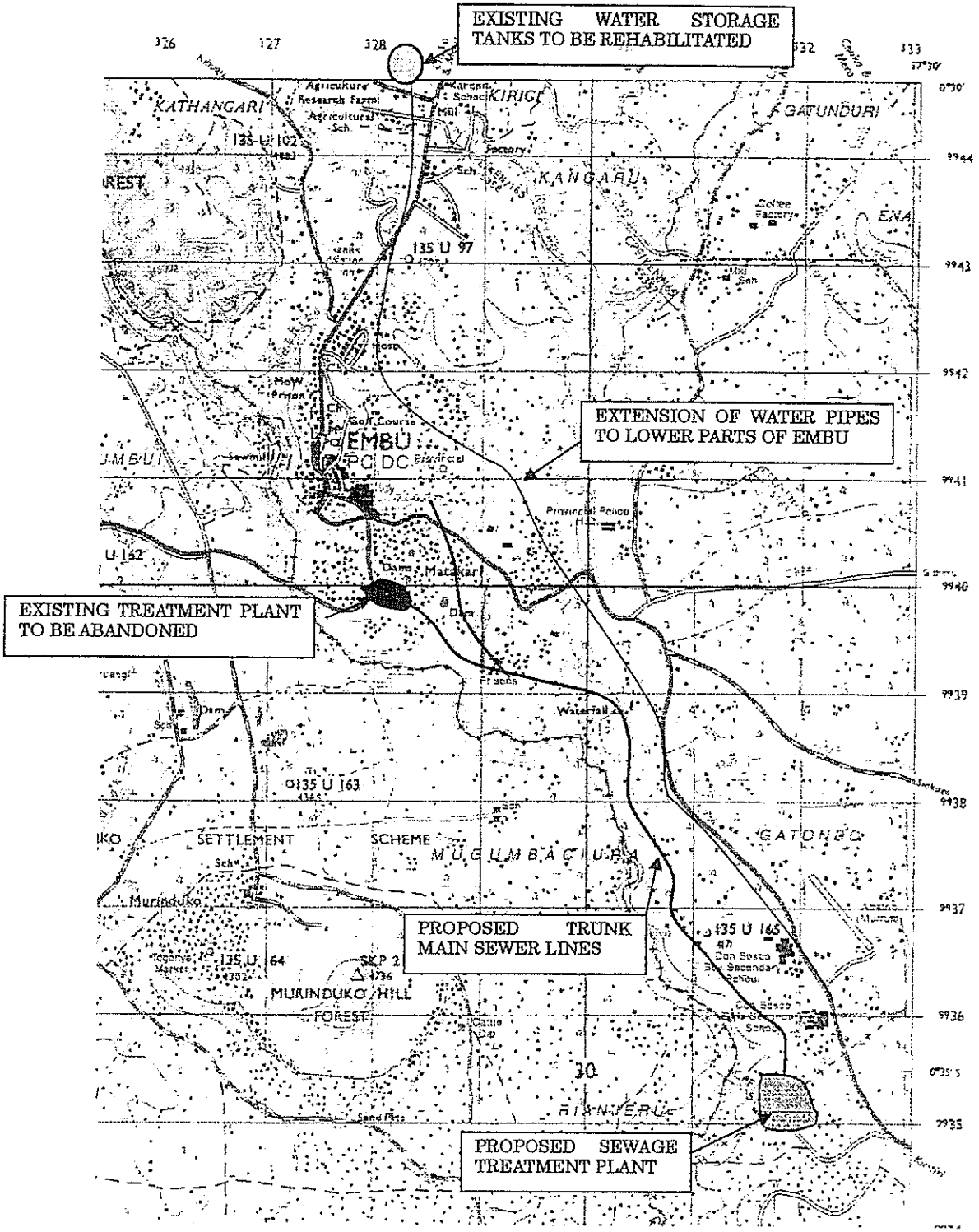
(4) **LOCATION OF EMBU TOWN**



MAP SHOWING THE UPPER PARTS OF THE PROPOSED EMBU WATER SUPPLY



PROPOSED WATER SUPPLY AND SEWERAGE WORKS FOR THE LOWER PARTS OF EMBU



(5) Requested schedule of implementation, and its reason

7. Name of implementing agency

Agency Name:	:Tana Water Services Board
- Person – in – charge	: Mr. S.N. Muchai, Chief Executive Officer
- Address	: Tana Water Services Board
	: P.O. Box 1292 – 10100, Nyeri, Kenya
- Tel	: 061-2032282
- Fax	: 061-2034118
- Email	: tanawatersb@wananchi.com

- Organisation chart : as attached

8. Relation with other assistance schemes of Japan's ODA

(1) Development Study

- The study on the water supply for seven towns in Eastern Province in the Republic of Kenya (1997).
- The study on institutional improvement and Rehabilitation of Water supply systems for 10 local towns in the Republic of Kenya (2001)
- Basic Design Study on Meru Water supply project in the republic of Kenya (2001)

(2) Technical Cooperation (Expert, Training, Equipment) (Expert, Training, Equipment, Facilitates construction)

- A JICA expert in the field of sewerage is dispatched to the Ministry of Water and Irrigation from 2004.
- One Engineer of Meru participated in the JICA training course in the field of water supply management in FY2005.

The improvement of Meru Water supply was implemented through Grant Aid. After completion, JICA dispatched a water supply expert to advice on the improvement of the management capacity of Meru Water and Sewerage Services (MEWASS) and offered 2 month training on water supply management to the Technical Manager of MEWASS as part of Technical Cooperation. As a result of this cooperation the management, operation and maintenance methods have enhanced the performance of MEWASS such that the NRW has gone down from more than 50% in 2003 to about 31% by April 2005 and the revenue base has increased from 25 million in FY 2002/2003 to 37 million in FY 2003/2004. in the same way it is expected that the improvement of Embu Town water and sanitation will be accompanied by similar relationship with other assistance scheme of Japan.

9. Environmental and Social Consideration

(Please fill in the attached screening format) see form filled

10. Request amount of the project

Refer to 12 (1) 4) below – **US$ 9,957,750**

11. Any relevant information of the project from gender perspective

Poor drainage in the houses of inhabitants causes much stress and burden on the housewives in the project area. The implementation of the project will solve those problems.

12. The detailed contents of the project

(1) Facility

(1) Site address: Embu Town (2 hours drive from Nairobi City – North)

(2) **Rational for the selected sites (please specify the priority of the candidate sites)**

- The proposed system is fully by gravity, hence minimizing on the unit cost of water.
- The proposed system is conveniently located to distribute water to most of the target area without pumping.
- Improvement of the Water supply and Sanitation is a priority by the Government and also has a high ranking in the National Water Master Plan (1992).
- The proposed site for the sewage treatment works is screened from the densely populated area of Embu Municipality.
- Sewage is expected to flow by gravity with minor locations connected with pumping if necessary.

(3 **The Number and the Size of the facility**

- New water intake structure, pipeline, treatment works for 14,000m3/day (350-400mm pipeline of 12 km.
- Pipeline form treatment works to Kangaru 350mm-300mm diameter total 6km.
- Water testing laboratory for water quality monitoring.
- Rehabilitation of storage facilities at Kangaru – total 2,000m3 storage)
- Sewer network of 200-400 mm diameter for 36 km
- Trunk main sewer of 600 mm for 8 km.
- Sewage treatment works for 20,000m3/day capacity.

(4 **Cost of construction (cost Break Down)**

Item Description	**KSHS**	**US$**
1 0 NEW WATER SUPPLY SCHEME		
1.1 Intake Weir	2,000,000	28,571
1.2 Raw/Clean Water Gravity Main pipeline	108,000,000	1,542,857
1.3 Transmission pipelines	91,875,000	1,312,500
1.4 Allow 5% for fittings	9,993,750	142,768
Subtotal (1)	**201,875,000**	**2,883,929**
2.0 Water treatment works and distribution		-
2.1 Treatment Works complete with buildings &accessories	150,000,000	2,142,857
2.3 Rehabilitation Works	5,000,000	71,429
Subtotal (2)	**155,000,000**	**2,214,286**
3.0 Sewerage System		-
3.1 Construction of TRUNK sewer lines	70,000,000	1,000,000
3.2 Construction of primary/secondary sewers	157,800,000	2,254,286
3.3 Construction of sewage treatment works	45,000,000	642,857
3.4 Building Works	4,000,000	57,143
Subtotal(3)	**276,800,000**	**3,954,286**
4. 0 Total Construction Works (1+2+3)	**633,675,000**	**9,052,500**
5.0 Sub-total (4), 10% for Institutional capacity building, ,meters, vehicles etc	63,367,500	905,250
6.0 Cost of equipment to be procured and installed in Embu		
Water laboratory Equipment Computers	5,000,000	71,429
Chemical Dozers	3,000,000	42,857
Meters and O& M equipment (including trucks and motorbikes	10,000,000	142,857
Computerization	4,000,000	57,143
Total Requested Grant (1+2+3+4+5+6)	**697,042,500**	**9,957,750**

Note: Exchange rate = Ksh 70 to US$

(5 **Specifications, the numbers and unit prices (if available)**
As appropriate: Kenya, British, European Union, Japan

(6 **Invoice (if available)**

Not applicable

(2) **How to operate and maintain the facility/equipment, including the staff and technical level of the responsible organisation.**

Methods to operate manage and maintain the facilities or equipment

The water supply system implemented under the project will be operated, managed and maintained by the Embu Water and Sanitation Company Ltd. The Government through an inclusive soft component program will implement an institutional capacity building for the company for proper management of the facility. The Tana Water Service Board will be responsible through the Embu Water and Sanitation Company and other key stakeholders of ensuring quality waters services are provided. A prudent Services provision Agreement between the Tana Water Services Board and the Water Company has been agreed and signed by both partiers. Through monitoring and evaluation system, Tana water services Board will ensure that the project sustainability and maximum benefit for future developments are maintained.

The necessary budget to operate and maintain the facility will be obtained from the revenues generated from the water sale and sewerage fees.

Staff and technical level of the responsibility organization

The responsible organization is Tana Water Services Board. The Tana Water services Board will be responsible for monitoring and evaluating the performance of the water service provider and ensure that it delivers the required services. For technical levels of the responsible organization please see the following organization chart for Tana Water Services Board.

The Embu Water and Sanitation Company, which is in its formatives stage, will employ the necessary number of skilled persons at the enquired technical levels to operate the water supply and sewerage system. As a minimum requirement the company have the key personnel: Managing Director, Technical Manager and Commercial Manager

There is a unit of water supply and sewerage operated by almost autonomously in the company. Therefore, every section is able to common and operates independently.

The total staffs including engineer and specialists concerned are as follows.

LIST OF EWASCO STAFF

NO.	NAME	ACADEMIC QUALIFICATION	POSITION
ADMINISTRATION DEPARTMENT			
1.	H.M. Karugendo	B.Sc. M.Sc. (Civil Eng.)	Managing Director
2.	Mary Mugwiria	B. Ed. CPA II	Administrator (Hr)
3.	Margery Muthoni	Dip in Secretarial	Office Assistant
4.	Andrew Muchangi	Dip Environmental Sc.	Customer Care Officer
5.	Rose Mercy Wanjiku	Form IV	Office Messenger
6.	Nancy Karenju	Form IV	Office Messenger
7.	Purity Murugi	Form IV	Office Messenger
8.	Wilson Nguu (Contract)	Grade II	Driver
9.	Gerald Njeru (Contract)	Form IV	Driver
COMMERCIAL DEPARTMENT			
10.	J.N. Njagi	CPA(K)	Commercial Manager
11.	Perminous Nyaga N.	CPA(K)	Internal Auditor
12.	Cheleste K. Kaumbuthu	B.Com./CPA(K)	Accountant
13.	Zabon Njiru	CPA (K)	Senior Acc. Clerk
14.	Godfrey Kirimi	Dip in B. Management	Expenditure Officer
15.	Catherine Njoki Ndwiga	Dip. In Secretarial Studies	Office Assistant
16.	Dennis Rintari	Certificate in (B. Admin)	Customer/Equiry
17.	Christine Muthoni	Cert in Secretarial	Cashier
18.	Eunice Nyaga	Dip. B Management	Stores Clerk
19.	Kennedy Murithi	CPS I	Accounts Clerk
20.	Everlyine Wanja Njiru	CPA II	Account Clerk
21.	James Njagi	Form IV	Meter Reader
22.	Joseph Mutwiri	Form IV	Meter Reader
23.	James Mbuvi	Form IV	Meter Reader
24.	Jeremiah Nyaga	Form IV	Meter Reader
INFORMATION TECHNOLOGY SECTION			
25.	Patric M Ruchoya	B.Sc.(Maths/Com. Sc.)	System Administrator
26.	Josephine Kinyua	Dip.IT	Asst. System Adim
TECHNICAL DEPARTMENT			
27.	Michael Ireri	BSc (Civil Eng.)	Asst. Engineer
28.	Victor Njeru	Craft Cert. in Water	Water Technician
29.	Cyrus Mugendi	Dip. In Water	Water Technician
30.	Joseph Irungu	Cert. in Water	Water Technician
31.	Mark Njeru	Craft Cert. in Plumbing	Artisan
32.	Nephat Muriuki	Grade II	Artisan
33.	Samuel Gitonga	Form IV	Artisan

34.	Samuel N. Mungai	Grade III	Artisan
35.	David Nyaga	Grade II	Artisan
36.	Peter Silas Njeru	Grade III	Artisan
37.	Justin Kithinji	Grade 1	Artisan
38.	Daniel Kivuti	Std. 7	Water Attendant
39.	Hussein Rajab	Std. 7	Water Attendant
40.	Boniface Kinyua	Std 8	Water Attendant
TREATMENT WORKS			
41.	Rita Kabaata	Dip in Water	Water Tech.
42.	Mary Nungari	B.Sc. (Bio Chem)	Lab Tech.
43.	Michael Mucangi	Std. 8	Chemical Attendant
44.	Joseph Waweru	Form IV	Chemical Attendant
45.	Augustine M. Kariuki	Form IV	Chemical Attendant
46.	Benson N. Mugo	Form IV	Water Attendant
SEWAGE SECTION			
47.	Silas Njagi (Contract)	Cert in Sewerage	Sewage Foreman
48.	James Kathendu	Form 4	Asst Sewage Foreman
49.	Njiru M. Mbui	Std. 7	Sewage Attendant
50.	Joseph Njoroge	Std. 7	Sewage Attendant
51.	Samuel Mwaniki	Std. 7	Sewage Attendant

(3) **Preparation and environment of site**

1) **Land secured or to be secured**

To be secured immediately by Tana Water Services Board and the Embu Municipality.

2) **Levelling, Drainage, availability of electricity, water and Telephone:**

All of utilities are available.

3) **Natural Contrition**

a) Climate

Embu Situated Between 1,200m-2,000m a.s.l, has a climate which is largely dictated by Mt. Kenya, which rises to over 5,000m a.s.l. The Average annual rainfall is about 1,200mm, distributed over tow distinct periods i.e. long rains during March – May and the short rains during November and December. Temperatures vary from 13oC – 18oC in the cold months of June – August and 22oC – 28oC in the hot moths of January and February.

b) Topography

Embu Municipality is located at the eastern slopes of Mt Kenya, Near the equator. The terrain therefore, is typically highland slopes truncated by numerous river and stream valleys.

c)Soils

The soils are typical red volcanic soils derived from the weathering of the Mt. Kenya lava flows.

4) Security Condition

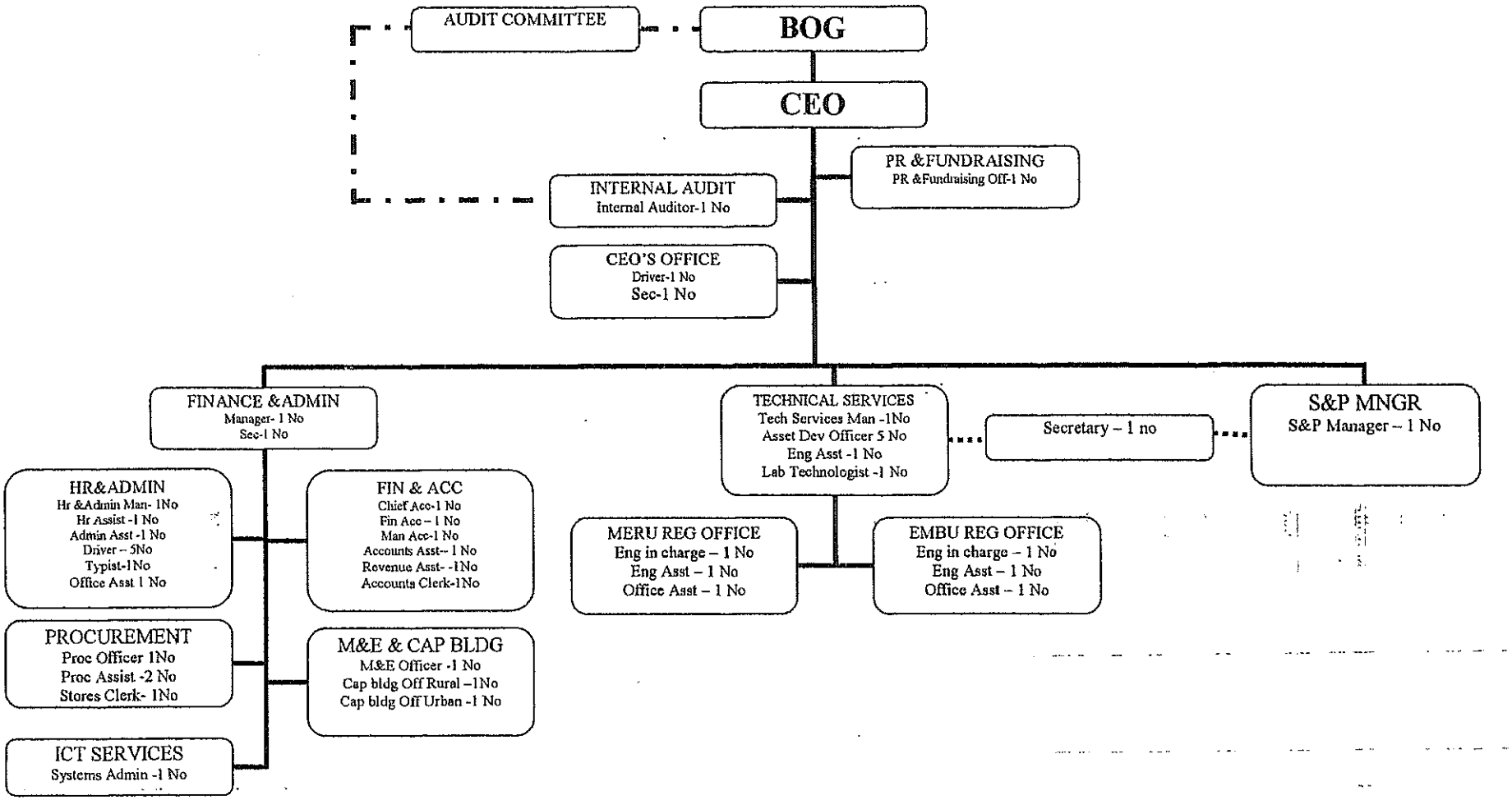
No problems

13. Aid by third countries or international organization in the related field

The aid done by third countries or international organization in the same filed is as follows:

Donors	Project Name	Cost	Outline	Period

Figure 1: Organizational Structure of Tana Water Services Board



別添4
下水関連資料

NEW FILE

Typhoid outbreak looming

JANE MUGAMBI

THE Government has issued an alert of a possible typhoid outbreak in Embu District following an acute water shortage.

Area Public Health Officer, Mrs Peris Nyaga, warned that the water crisis in the municipality could lead to an outbreak of water borne diseases, adding that several patients had been diagnosed with typhoid.

Nyaga said dams and rivers, which supplement piped water, were highly contaminated.

She said the department had issued free water treatment chemicals through community health workers in the municipality.

Nyaga ordered food handlers to acquire medical certificates and the municipal council to clean up the town.

Elsewhere, residents of Kairuri Sub-location protested at water disconnection by the Nginda-Ngandori Water Project officials.

They said the officials, who accused them of using the water for irrigation, were selective. Speaking on their behalf, Mr Peter Joe Nyaga said the project was managed by people from one sub-location and urged the government to intervene.

ILS

MINISTRY OF HEALTH

Telephone: 254 161 30423
Fax: 0161- 30424
Email:medicalofficerembu@yahoo.com

When replying please quote our reference
Ref. No: Ebu/dpho/g.c/voll.II/51

OFFICE OF THE
DISTRICT PUBLIC HEALTH OFFICER
EMBU DISTRICT
P.O. BOX 1905
EMBU

Date: 21/8/2007

EWASCO
P O BOX 2142
EMBU

RE: OVER FLOW OF RAW SEWAGE

It has come to the attention of this office that raw sewage is getting access to Matakari stream, the only source of water for the people living within ShauriYako slums and its environs. You very well know the consequences that follow the consumption of such contaminated water, among them cholera and typhoid. The presence of raw sewage in water is a contravention of section 115 of CAP 242 LOK. To avert this kind of crises you are given three (3) to exhaust the overflowing septic tanks.
Treat this letter as notice served on you.

Thanks

P. NYAGA
DISTRICT PUBLIC HEALTH OFFICER
EMBU

CC. CLERK
E.M.C

MINISTRY OF HEALTH

Telephone: 254 161 30423
Fax: 0161- 30424
Email:mohembu@salpha.co.ke

OFFICE OF THE
DISTRICT PUBLIC HEALTH OFFICER
EMBU DISTRICT
P.O. BOX 1905
EMBU

When replying please quote our reference
Ref. No: DPHO/ST/VOL.II/04/237

Date: 18th September, 2006

The Clerk,
Embu Municipal Council,
P.O. Box 36,
Embu

STATUTORY NOTICE TO ABATE NUISANCE (RAW SEWAGE) WITHIN EMBU MUNICIPALITY

A sanitary inspection carried out by the office on 15th and 18th September 2006 within Embu town and its environs has revealed that raw sewage is being indiscriminately discharged in the environment and particularly in Matakari stream.

In the year 2001, there was an outbreak of typhoid in Embu Municipality which was attributed to poor disposal of raw sewage which ended up being discharged in the same Matakari stream. The 2001 typhoid is still fresh in the minds of Embu Municipality residents since it claimed lives many people.

Under section 116 chapter 242 Laws of Kenya, it is the duty of every local authority to take charge of maintaining the cleanliness of its district.

Therefore, as a matter of urgency you are requested under this notice within a period of at most three (three) hours from time of the service of this statutory notice to abate all the nuisance being caused by discharge of raw sewage to

the environment and take necessary measures to prevent the reoccurrence of the same. The mentioned raw sewage was identified in the following areas:-

i) Septic tanks and Soak pits draining the main Embu bus stop along Shauri yako street - flowing to Matakari stream.
ii) Spring Valley estate - Septic tanks and soak pits serving the Kenya Industrial residential houses.
iii) Embu District Commissioner's office.

Water Co

Failure to abate the nuisance within the stipulated time will lead to legal action taken against you without further notice.

Please treat this matter with the urgency it deserves.

Yours faithfully,

Peris Nyaga (Mrs)
District Public Health Officer
Embu

Cc
The Provincial Medical Officer
Eastern Province,
P.O. Box 273,
Embu (Attn. P. P.H.O)

District Works Officer,
Embu

District Environment Officer (NEMA)
Embu

DISTRICT COMMISSIONER
EMBU.

MINISTRY OF HEALTH

Telephone: 254 161 30423
Fax: 0161- 30424
Email:mohembu@salpha.co.ke

When replying please quote our reference
Ref. No: DPHO/ST/VOLII/04 / 236/06

OFFICE OF THE
DISTRICT PUBLIC HEALTH OFFICER
EMBU DISTRICT
P.O. BOX 1905
EMBU

Date: 4TH September 2006

THE DIRECTOR
WATER AND SEWERAGE COMPANY
EMBU DISTRICT

RE: STATUTORY NOTICE TO UNBLOCK SEWER LINE.

Statutory notice is here by served to you requiring you within a period of at most 24 hrs to unblock the sewer line (main sewer line) at Manjengo Estate near Rupingazi River Bridge.

Note that the sewage is currently flowing into river Rupingazi thus endangering the life the communities who rely on the consumption of Rupingazi River water down stream.

The flow of the raw sewage into the environment amounts to public nuisance contravenes section 118 of public health act cap. 242 laws of Kenya.

Failure to comply with this notice will lead to a legal action taken against you without any further notice.

Yours faithfully,

Evans G Kago
For District Public Healthy Officer
Embu district.

C.C.

Provincial medical officer
Eastern province

District commissioner
Embu

The clerk
Embu Municipal Council

MINISTRY OF HEALTH

Telephone: 254 161 30423
Fax: 0161- 30424
Email:mohembu@salpha.co.ke

When replying please quote our reference
Ref. No: DHO/NO.I/VOL.II/0164

OFFICE OF THE
DISTRICT PUBLIC HEALTH OFFICER
EMBU DISTRICT
P.O. BOX 1905
EMBU

Date: 17th January 2006

EWASCO/PRESS/65/01/06

THE PRESS

PRESS RELEASE ON WATER SHORTAGE WITHIN EMBU MUNICIPALITY AND ITS ENVIRONS

Following an acute water shortage crisis currently being experienced within Embu Municipality and its environs, the Ministry of Health Embu would wish to inform the general public within the municipality that the alternative sources of water which include ponds, dams and rivers being used to supplement the daily water requirements are highly contaminated and therefore, not safe for cooking, drinking and other domestic purposes e.g. washing of utensils, vegetables, fruits and also for bathing.

The Public Health Department has issued free Aqua tabs (chlorine tablets) through the community health workers in Dallas and Shauri Yako Estates for treating raw water obtained from untreated water sources. The community is therefore asked to adhere to simple water treatment methods since consumption of untreated water may result to water borne illness such as typhoid and cholera.

Consequently, food plant proprietors have been advised to ensure adequate potable water storage in their premises and maintain high standards of hygiene. Also all food handlers in the food premises are required to have valid medical certificate.

requested to ensure that solid waste [illegible]
Municipal market, Central Business Area and residential areas which include Dallas and Majengo in particular is properly managed in a sanitary manner.

Yours faithfully,

Peris Nyaga (Mrs)
District Public Health Officer
Embu

Cc
The Permanent Secretary,
Ministry of Health,
P.O. Box 30016,
Nairobi (Attn. CPHO(K)

The Provincial Medical officer
Embu (Attn. PPHO)

District Commissioner
Embu

The Clerk,
Embu County Council

The Manager,
Water and Sanitation Corporation – Embu

The District Water Officer
Embu

添付資料３　　詳細協議議事録

詳細協議議事録　08.8.6

調 査 内 容	水資源省への調査内容（IC/R）説明
協　議　日	2008 年 8 月 6 日（水）
協 議 時 間	8:30～9:30
協 議 場 所	水資源省
出　席　者	[水資源省] ・ Eng. Mr. Lawrence N. Simitu： Director of Water Services Department ・ Eng. Mr. Peter O. Mangiti Head of Donor Coordination Department ・ Mr. I. G. Kimani Japan Desk Officer
	[調査団] 武内、吉竹、小野里、奥澤

［予備調査団］

調査団より、水資源省に対して、IC/R に従って本調査の目的、調査の位置付け、調査内容、調査日程、ミニッツでの協議事項等について説明した。また、要請コンポーネントのうち、下水道については、ケニア側が上水道に絞ることで合意したことを受けて、削除されることになると説明した。

[水資源省]

- 近年、環境問題はケニア国内でも問題になっており、下水道整備は重要な課題となっている。本プロジェクトでは、上水道が整備されることにより、下水量も増加することから、下水道を要請コンポーネントから除外することについては残念である。
- 日本の無償資金プロジェクトとして規模が大きくなりすぎるということであれば、仕方がない。今後、引き続き支援をお願いするために、何らかの形で、将来につながるような文言をミニッツに残してもらいたい。

以上

詳細協議議事録　08.8.7-1

調 査 内 容	他ドナーの援助動向
協　議　日	2008 年 8 月 7 日（木）
協 議 時 間	9:00～10:00
協 議 場 所	World Bank 事務所
出　席　者	[World Bank] ・ Eng. Mr. James Nguuri Karuiru： Consultant (Urban/Local Govt./Water/Transport)
	[調査団] 武内、奥澤 [水資源省] I. G. Kimani：Japan Desk Officer

[水資源省]

水資源省より、World Bank 担当者に対して、予備調査の概要説明・目的、今回の面談の目的について説明を行った。

[調査団]

- 今回の訪問の目的は、日本の無償資金協力で実施を検討している「エンブ市上下水道整備計画」に関して予備調査を実施しているが、他の援助機関の水セクターの活動を調査し、重複がないかどうかを確認することである。
- World Bank のケニアでの水セクターにおける、一般的な活動状況及びエンブ市に係るプロジェクトがあれば説明願いたい。

[World Bank：WB]

- WB は、1992 年～1998 年にかけて、第 3 次ナイロビ上水道整備プロジェクト、第 2 次モンバサ上水道整備プロジェクトを実施した。
- また、2004 年～2007 年に、ナイロビ上下水道事業体再構築プロジェクトを実施した。内容は、ナイロビ市が所有する Athi WSB 傘下の WSP である Nairobi City Water and Sewerage Company（NWSC）職員の能力向上（CD）、事務所整備、監査、財務指導等である。
- 水サービス委員会（WSB）は、本年 6 月、7WSB から 8WSB の体制に変更となった。Tana WSB の一部と Athi WSB の一部が合併し、Tana-Athi WSB が新たに創設されたためである。その結果、Athi WSB は、その管轄範囲のほとんどがナイロビ市となった。
- WB プロジェクトのうち、「エンブ上下水道整備計画」と重複するプロジェクトはない。
- 今後の WB が援助する上下水道プロジェクトとしては、以下のとおりである。
  - プロジェクト名：Water and Sanitation Service Improvement Project (Wassip)
  - コンポーネント：
    ① Athi WSB 傘下の WSP である NWSC の既存上下水道施設リハビリ・拡張及び

組織強化のための機材整備・活動支援
（事業費：US$71,500,000）

② Coast WSB の既存上下水道施設リハビリ・拡張及び組織強化のための機材整備・活動支援
（事業費：US$45,000,000）

③ Lake Victoria North WSB の既存上下水道施設リハビリ・拡張及び組織強化のための機材整備・活動支援
（事業費：US$42,500,000）

- 実施期間：2008 年 9 月～2013 年 9 月（5 年間）
- 総事業費：US$159,000,000（約 172 億円）
- 資金形態：Credit（40 年間、支払猶予期間 10 年）

[調査団]
Wassip の EIA 調査状況について教えてほしい。

[World Bank：WB]
- Wassip は、上述のように、「ケ」国の 3 つの上下水サービス機構が管轄するサービス区域の上水供給及び下水道施設等衛生環境改善を目的とした巨大プロジェクトで、カバーする地域も広い。
- すでに第一段階の政策レベルあるいは概略設計段階の計画について、環境社会配慮面からは、EIA 調査や非自発的住民移転の活動計画(Resettlement Plan)、ならびに北部ビクトリア湖周辺に住む先住民族（Sengwer 族）の対策などが、検討されてきた。
- 今回は具体的実施段階に入り、EIA 調査や Resettlement Plan について、より詳細な具体的なものが要求される。世銀では、9 月以降にコンサルタントの入札を行う予定である。

以上

詳細協議議事録　08.8.7-2

調 査 内 容	他ドナーの援助動向
協　議　日	2008 年 8 月 7 日（木）
協 議 時 間	11:00～12:30
協 議 場 所	水資源省内、GTZ 事務所
出　席　者	[GTZ] ・ Mr. Andre Lammerding： Water Sector Reform Programme Component Leader - Water sector regulation and pro-poor financing
	[調査団] 武内、奥澤 [水資源省] I. G. Kimani：Japan Desk Officer

［水資源省］

水資源省より、GTZ 担当者に対して、予備調査の概要説明・目的、今回の面談の目的について説明があった。

[調査団]

- 今回の訪問の目的は、日本の無償資金協力で実施を検討している「エンブ市上下水道整備計画」に関して予備調査を実施しているが、他の援助機関の水セクターの活動を調査し、重複がないかどうかを確認することである。
- GTZ のケニアでの水セクターにおける、一般的な活動状況及びエンブ市に係るプロジェクトがあれば説明願いたい。

[GTZ]

- ドナー会議を定期的に行っているが、Water Technical Group でドナー間の重複がないように、Donor Matrix を作成している。それを電子ファイルで提供する。
- GTZ の支援内容は、キャパシティ・ディベロップメントが主体である。一方、KfW は、施設整備支援が主体。
- GTZ は、セクターリフォームや SWAP（Sector-wide approach to Planning）の支援を行っている。
- Water Services Trust Fund（WSTF、他に poverty fund とも呼ばれている）を通じた都市部及び地方貧困層への上水道及び衛生施設整備支援も行っている。
- GTZ が EWASCO に対して行った支援としては、以下がある。
    - 公社のキャパシティ・ディベロップメント
    - コンピュータシステム導入による請求・会計システムの改善
    - コンピュータ機器及びソフトの供与
    - 資産の文書化
- 上下水道施設整備に関しては、エンブ市において重複するプロジェクトはない。

以上

詳細協議議事録　08.8.8

調 査 内 容	実施機関（TWSB 及び EWASCO）との協議（第 1 回） 調査内容（IC/R）の説明
協　議　日	2008 年 8 月 8 日（金）
協 議 時 間	09:00～10:30
協 議 場 所	タナ水サービス委員会事務所
出　席　者	[Tana Water Services Board：TWSB] ・ Mr. Samuel Njenga Mucha： Chief Executive Officer ・ Mr. T. W. Kibaki Planning and Strategy Manager ・ Mr. Miruri District Management Officer of Embu [Embu Water & Sanitation Co., Ltd.：EWASCO] ・ Eng. Mr. H. M. Karugendo Managing Director of EWASCO
	[調査団] 武内、吉竹、小野里、奥澤 [JOCV] 松久保：TWSB 水質管理

[調査団]

- コンサルタント団員より、インセプション・レポートに従って、予備調査の目的、実施スケジュール、団員構成、現地詳細日程、調査項目、必要な資料等を説明した。
- 調査団側から、下記事項についての回答を TWSB 及び EWASCO に要請した。
  ① 最新の 8WSB を示した図面（Tana WSB の一部と Athi WSB の一部が合併し、Tana-Athi WSB が 2008 年 6 月に設立され、7WSB から 8WSB になった）
  ② Tana WSB－EWASCO－Municipal Council の関係
  ③ EWASCO が TWSB に定期的に提出している Performance Report
  ④ EWASCO が作成したエンブ市上下水道整備計画
  ⑤ 計画・設計について協議できる担当者の紹介
  ⑥ 環境社会配慮の担当者の紹介
  ⑦ 質問票の未回答項目への回答

[TWSB/EWASCO]

- ①について：
  8WSB に変更後の最新の各 WSB 所掌境界を示した図面を一両日中に提出する。
- ②について：
  EWASCO は、水法（Water Act-2002）に基づいて 2004 年にエンブ市によって設立さ

れ、2005 年 7 月より事業を開始した。EWASCO は、エンブ市（Municipal Council）の完全所有である。EWASCO 設立前、上下水道施設は、エンブ市の所有であった。水法では、施設の所有権は WSB にあることになっているが、エンブ市から TWSB への所有権の移管は現在協議段階である。

- ③について：早急に提供する。
- ④について：早急に提供する。
- ⑤について：

  EWASCO の Managing Director である Mr. Karugendo が最も内容を知っており、彼と協議してほしい。
- ⑥について：

  現在、EWASCO が依頼してスコーピングを行っているコンサルタントを紹介する。
- ⑦について：早急に回答する。

以上

詳細協議議事録　08.8.12-1

調 査 内 容	実施機関（TWSB 及び EWASCO）との協議（第 2 回） 要請内容の確認
協　議　日	2008 年 8 月 12 日（日）
協 議 時 間	15:00～16:30
協 議 場 所	EWASCO 事務所
出　席　者	[Tana Water Services Board：TWSB] ・ Mr. T. W. Kibaki Planning and Strategy Manager [Embu Water & Sanitation Co., Ltd.：EWASCO] ・ Eng. Mr. H. M. Karugendo Managing Director of EWASCO
	[調査団] 武内、吉竹

[調査団]

- 要請内容（2007 年 9 月修正版）について、各項目の要請理由とその詳細について確認した。

(a) Rehabilitation and Extension of the existing water supply facilities
既存配水タンクのリハビリと既存配水本管のリハビリが要請されているが､詳細がわからない。これらの詳細な内容、必要な理由を示すこと。

(b) Construction of new water supply facilities with a capacity of 14,000m^3/day with its source at Rupingazi River at Muthigi (in the unpolluted Mount Kenya Forest) and installation of equipment.

① 水源を Muthigi（ケニア山森林内）に設置しなくてはならない理由は、何か？
② 送水管 18km の根拠は何か？
③ 2015 年の水需要の根拠及び浄水場の規模 14,000m^3/日の根拠を示すこと。
④ 水質試験所の設置場所及び必要な機材リストを示すこと。
⑤ 逆洗浄水用のタンクは、浄水場の付帯設備ではないか？
⑥ 配水池容量 26,000m^3 は、日最大給水量の１日分になっていないか？　一般的に 12 時間分であり、１日分は過大である。ケニアの他の無償プロジェクトでも 12 時間分が採用されており、12 時間分を採用すべきではないか？
⑦ 減圧タンク/減圧弁が必要な理由
⑧ 配水管 25km を図面上で示すこと。

(c) Institutional Capacity building (soft component) – including training on service provision and operation and maintenance of the water and sewage works.
ソフト・コンポーネントとしては、以下を想定しているが、どのように考えるか？

- 浄水場の運転・維持管理支援
- 水質管理支援

(d) Rehabilitation and expansion of the existing Sewerage System
下水道ポーションは、ケニア側が除外することに合意しており、削除すべきである。

[TWSB/EWASCO]
(a)について
了解した。

(b)－①について
TWSB が策定した”Water and Sewerage Master Plan”（2006 年 11 月）で、新規の水源はケニア山森林内と規定している。これに従ってもらいたい。理由は、将来、エンブ市北側が開発され都市化とともに水源の汚染が発生し、水源として適さなくなるからである。

(b)－②について
新規水源地点から要請浄水場地点が 12km、同浄水場から配水池予定地である、Kangaru 配水場までが 6km で、合計 18km となる。

(b)－③について
了解した。

(b)－④について
水質試験所は、要請浄水場内としたい。また、必要な水質試験機材については、リストを提出する。

(b)－⑤について
了解した。浄水場の付帯施設とする。

(b)－⑥について
12 時間分で了解した。水需要量から計算しなおす。

(b)－⑦について
配水池からの配水は、自然流下方式であるが、高低差が 50m を超える箇所に減圧タンクか減圧弁を設置する必要がある。

(b)－⑧について
配水本管の位置を図面に表示する。

(c)について
了解した。そのような内容でよいと思う。

(d)について
下水道ポーションを削除することについては、残念だが仕方ない。今後も支援をお願いしたいので、ミニッツに下水道について要請があったことは明記してもらいたい。

以上

詳細協議議事録　08.8.12-2

調 査 内 容	土地関連法及び用地確保
協　議　日	2008 年 8 月 12 日（木）
協 議 時 間	16:00～16:30
協 議 場 所	EWASCO 事務所
出　席　者	[土地省土地計画局エンブ県担当：DPP] ・ Ms. Joyce K. Kariuki： District Physical Planner (Embu), Urban & Regional Planning Division, Physical Planning Department, Ministry of Lands
	[調査団] 奥澤

[調査団]

- 「ケ」国の土地利用及び土地所有に関する法規制の概要を知りたい。エンブ県及び当州での環境社会配慮の実施状況について。説明願いたい。

[DPP]

(1) 土地に関する法令は、ナイロビの政府刊行物センターで入手できるが、その他に下記のケニア国立法律情報審議会（National Council for Law Reporting）のウエブサイトでもアクセスできる。

http://www.kenyalaw.org

(2) 導水・配水管路の地下通過利用に関する法令

土地の用益権として、Wayleave と Easement がある。前者は、電線、上下水管路、光ファイバー等の管路を他人の土地の地上、地表、あるいは地下を通過利用するもので、有限時間の借地権に相当し、登記する必要がなく、補償費用は原則として要らない。後者は永久的借地権で登記が必要である。一般的に補償は有料で、必要で手続きも多くかかる。

「ケ」国、とくに地方では人口密度が低くインフラ整備が遅れており、上水や電気などの基礎インフラが整備されると土地の付加価値も高くなるので、自分の土地を管路が通過しても反対するケースは少ない。エンブ県でも同様である。

(3) エンブ市開発計画の資料入手

出発前に Plan のハードコピーを入手したが、地図が添付されていなかった。地図を入手したい。

同女史もコアメンバーとして、計画策定に関わったので、原資料を持っている。電子ファイルで 2005 年策定の”Embu Municipality Local Physical Development Plan (Long Term), 2001-2030” (Municipal Council of Embu & Ministry of Lands and Housing, Provincial Physical Planning Team)のドキュメントと関連地図（power point）を入手した。

(4) ベーレ県の開発計画

現地入り後、給水対象地域が Mbeere District Gachoka Division を含むことが判明したので、ベーレ県の開発計画を同女史より、紹介を受けた Ms. Muthoni より Mbeere District Development Plan1997-2002 を入手した。

以上

詳細協議議事録　08.8.13-1

調 査 内 容	対象地域の環境規制、EIA の動向
協　議　日	2008 年 8 月 13 日（木）
協 議 時 間	13:00～14:30
協 議 場 所	NEMA Eastern Province 事務所
出　席　者	[NEMA] ・ Mr. Isaiah N. Kyengo： Provincial Director of Environment, P.O.Box 748, Embu,
	[調査団] 奥澤 [ローカルコンサルタント] John, EIA Consultant

[環境管理庁 Eastern Province　管轄]

予備調査での環境社会配慮調査の趣旨を説明し、現地での環境社会配慮に関する EIA の状況や規制、主要な環境問題について、ヒアリングを行った。

担当者は、昨年 JICA 研修生として、札幌に都市環境分野の研修を受け、日本に良い印象を有していると感じられた。

[調査団]

- エンブ県及び当州での環境社会配慮の実施状況について。説明願いたい。

[NEMAEP]

(1) 「ケ」国での環境に係る法規制、体制整備の状況について

- 1999 年の環境・調整法がベースとなっている。これに基づき、環境影響評価・環境監査、水質、廃棄物、オゾン層破壊物質削減、生物多様性保全などの規則（Regulations）が制定されている。大気汚染と騒音振動に規制は現在検討段階にある。
- 環境影響評価については、2002 年の環境 EIA ガイドライン（ドラフト）、2003 年の環境影響評価・環境監査規則-などにより、法規制と体制整備が進められている。

(2) NEMA の組織・体制

- NEMA は新しい組織で、2003 年に発足した新しい組織で、まだ人員も不足している。
- 環境管理行政の実施機関として、各州に局長 1 名、各県に部長 1 名が配置されている。スタッフ数が限られているので、雑用を含めて一人でこなしている。
- NEMA の組織：6 つ部(Department)がある－Finance & Administration, Directorate, Compliance & Enforcement, Planning & Research, Legal Services, Environmental Education, Information & Publication があり、さらに Sub-Department として Marine & Freshwater Conservation がある。

- 権限委譲：開発案件の環境認可の要請件数が増加し、中央で審査するには時間と手間がかかり担当者の負担が大きい。また、審査の遅れの原因になっている。このため、2008 年 9 月より、環境予備評価に相当するプロジェクトレポートの審査は、中央でなく、各州の局長に委任される予定である。

(3) 開発プロジェクトの環境認可

二つの段階がある。

① 環境予備評価に相当する「プロジェクトレポート（Project Report, PR）」で認可される場合

② Full EIA レポートが要求される本 EIA 調査（EIA Study Report）が要求される場合

管轄区域である東州 Eastern Province で審査した PR は約 200 件に上る。このうち、PR で認可されずに、本格的 EIA 調査まで必要になったのは、約 20 件で、開発内容にもよるが、PR の約 2 割に相当する。本格的 EIA 調査まで行った案件は工業開発(セメント、鉄鋼や不動産、インフラ整備などがある。案件は、地域的にはナイロビ首都圏に隣接して急発展している Machakos 県のものが多い。

(4) その他

NEMA 本部の EIA 担当として、Mr.Ouma を紹介された。

以上

詳細協議議事録　08.8.13-2

調 査 内 容	メルー市調査 メルー市上下水道信託会社（MEWASS）との協議
協　議　日	2008 年 8 月 13 日（水）
協 議 時 間	09:00～11:00
協 議 場 所	MEWASS 事務所
出　席　者	[Meru Water and Sewerage Services：MEWASS] ・ Mr. Stanley N. Mbae General Manager ・ Mr. George N. Karanja Technical Manager
	[調査団] 武内、吉竹、小野里、奥澤

[調査団]

- メルー市上下水道信託会社（MEWASS）の水道事業について、以下の点について質問した。
  - (a) 会社形態
  - (b) 事業基本データ
  - (c) O&M 体制
  - (d) UFW チームの活動状況
  - (e) 新規顧客の獲得状況
  - (f) 施設の状況
  - (g) 配水管敷設実績
  - (h) 下水道整備状況
  - (i) 財務状況

[MEWASS]

- MEWASS より以下の説明があった。
  - (a) 会社形態

    MEWASS は、2001 年 7 月、Trustee Law（永久譲渡）第 164 条のもとに登録された。メルー市の上下水道は、MEWASS 以前は、上水道施設が MWI 所有、下水道施設はメルー市が所有者であった。現在、施設の所有権は、水法に従って、TWSB に移管されている。MEWASS が実際に事業を開始したのは、2002 年 7 月である。
  - (b) 事業基本データは、以下のとおりである。
    - ◆ 給水人口：51,000 人（2005/06 年度）
    - ◆ 給水率：65%
    - ◆ 給水量：5,400m^3/日（106LCD、実使用水量 78LCD）
    - ◆ 有収率：74%
    - ◆ 無収水率：26%（2007 年 6 月）

(c) O&M 体制

- 職員数：70 名
- O&M 要員：43 名（このうち 4 名は、UFW Control Unit として活動）

(d) UFW チームの活動状況

- UFW Control Unit：4 名/チーム
- 現在は UFW 率が 20%台に低下してきたので、頻繁に行っていない。
- 午前 8 時～9 時に各ゾーンの配水池のマスターメータをチェックし、各ゾーンへの配水量に異常がないかどうか確認している。異常があったゾーンについて、漏水調査を実施している。漏水位置を正確に把握するため相関式漏水探知機が必要である。
- 漏水調査機器は、以下のとおりである。
  - ポータブル超音波流量計：1 台
  - 音聴棒：5 台
  - 鉄管探査機：1 台

(e) 新規顧客の獲得状況

- 2004 年 3 月：2,313 件（実績）
- 2006 年 6 月：4,700 件（計画）
- 2008 年 8 月：5,500 件

以上

詳細協議議事録　08.8.19-1

調 査 内 容	ガンドレ・ギンダ水利用者組合との協議
協　議　日	2008 年 8 月 19 日（火）
協 議 時 間	10:00～11:00
協 議 場 所	ガンドレ・ギンダ水利用者組合事務所
出　席　者	[Ngadre-Nginda Water Consumers Association：NNWCA] ・ Mr. Ephantus Mugera Manager of NNWCA ・ Mr. G. K. Mbogoh Finance Controller/Internal Auditor [Embu Water & Sanitation Co., Ltd.：EWASCO] ・ Eng. Mr. H. M. Karugendo Managing Director of EWASCO
	[調査団] 武内、吉竹

[調査団]

- NNWCA の給水事業（給水区域及び給水量等）について教えてもらいたい。

[NNWCA]

- NNWCA は、2004 年 2 月に設立された。TWSB の WSP の一つである。
- 配水先は、ガンドレ・ギンダ及びガトリ・サウス村（Location と呼ばれている）である。配水量は、10,000m^3/日、契約者数は 4,000 件（給水人口：約 50,000 人）である。
- 水利権（water permit）は、25,000m^3/日（1978 年～2005 年）を確保している。
- 現在、施設拡張を計画している。F/S 段階にある。拡張規模は、10,000m^3/日である。
- スタッフ数は、40 人。４箇所のセンターがある。
- 公共水栓では、2ksh/20 ﾘｯﾄﾙで販売している。
- Embu District では、他に NGagaka が WSP として水道事業を行っている。他の地域は、TWSB との SPA なしに水道事業を行っている。

以上

詳細協議議事録　08.8.19-2

調 査 内 容	水質分析の要請に関する確認他
協　議　日	2008 年 8 月 19 日（火）
協 議 時 間	14:00～15:00
協 議 場 所	KANNGARU 浄水場内分析室
出　席　者	[Embu Water & Sanitation Co., Ltd.：EWASCO] Mary Nungari QUALITU AS.OFF.
	[調査団] 小野里

[調査団]

- 水質分析に関する以下の点について確認および情報を入手した。
  - (a) EWASCO の水質分析室でリクエストする機材は何か。
  - (b) ルピンカジ水源の水質データのブレークダウンデータの入手
  - (c) EWASCO の水質分析室の隣にある Ministry of water and irrigation の水質分析室の状況の確認
  - (d) その他

(a)について

EWASCO から以下の水質分析用機材を本プロジェクトの要請項目に含めてほしいとの要望があった。

- ジャーテスター　1 式
- 分光光度計および付属品一式　1 式
- インキュベータ　1 式
- 冷蔵庫　1 式
- 簡易微生物分析キット. (紫外線装置、試薬、他)　1 式
- オートクレーブ　1 式
- 蒸留装置　1 式
- 一般水質分析装置　(SS 測定他)　1 式

(b)について

2007 年度の EWASCO 水質分析内で実施された全ソフトデータを入手した。

質問票で EWASCO が回答した水質データは、ソフトデータを解析した結果間違っていること確認した。調査団でまとめなおしたデータは、本文表 2-4-4 に示した。

2007 年度は、原水と処理水の水温、濁度、pH、残留塩素を 1 日に数回実施していることを確認した。

(c)について

Ministry of water and irrigation の水質分析室は、現在 MKEPP（MOUNT KENYA EAST PILOT PROJECT）と称するプロジェクトを IFAD（International fund for Agricultural development）と実施しており、以下の分析機材保有している。

- 微生物分析機器一式（オートクレーブ、インキュベータ、培地、ピペット他）
- pH メータ
- 濁度計
- 冷蔵庫
- 蒸留装置（未使用）
- 分光光度計（未使用）

EWASCO は、本分析室に費用を支払って必要時に分析を委託している。費用は、微生物分析は 1 検体につき Ksh2,000、pH、濁度等は 1 検体につき Ksh1,000。

(d)について

EWASCO分析室の強いリクエストとして、BOD測定等の下水関連の分析装置が上がった。

今回は水道関連のプロジェクトであること、さらに下水の水質管理に関する体系的な計画が行われた中で必要な分析機材を準備する必要があること、等を説明し提案を取り下げた。

EWASCO が実験機材の購入に利用している主な代理店リストを下表に示す。

代理店リスト（EWASCO 分析担当者から入手）

No	店名	住所	電話/FAX	E-MAIL
1	PY-REX EAST AFRICA	PHILADELPHIA HOUSE TOM MBOYA STREET, NAIROBI	234-20-229-005 (Mobil:0722-256767)	py_lexeastafrica@yahoo.com
2	Aquatic Industry Ltd.	UAP PARK OPPOSITE UPPER HILL SECOUNDRY SCHOOL, NAIROBI	234-20-272-9405112	
3	ESTEC	OFF UHURU HIGHWAY NEXT TO PLESSY HOUSE; ABOVE PELICAN SIGNS, NAIROBI	254-20-537-709	info@esteckenya.com

以上

詳細協議議事録　08.8.21-1

調 査 内 容	実施機関（TWSB 及び EWASCO）との協議（第 3 回） 技術協議
協　議　日	2008 年 8 月 21 日（木）
協 議 時 間	09:00～11:00
協 議 場 所	EWASCO 事務所
出　席　者	[Tana Water Services Board：TWSB] ・ Mr. T. W. Kibaki Planning and Strategy Manager [Embu Water & Sanitation Co., Ltd.：EWASCO] ・ Eng. Mr. H. M. Karugendo Managing Director of EWASCO ・ Eng. Mr. Michael Kiio Ireri Superintendent of Water Distribution
	[調査団] 木野本団長、池浦、武内、吉竹、小野里、奥澤

[調査団]

- 木野本団長より、ナイロビでの水灌漑省との以下の協議内容について、TWSB 及び EWASCO に説明した。

  協議では、日本側が上水道と下水道の両方に協力することは、規模が大きくなりすぎることから、上水道施設整備に絞ったものにすることで合意を得た。

[TWSB & EWASCO]

- 下水道整備をどの Fund で実施するにしても、ケニア政府に下水道整備の重要性を認識してもらうことが重要である。
- 本計画で上水道整備のみを実施した場合、下水道整備の必要性が高まることを強調したい。

[調査団]

以下の点について確認及び質問した。

- 水需要量は、21,000m^3/日とする。
- 配水池容量は、9,000m^3 とする。
- 取水地点については、本格調査において、各候補地点の施工の難易、工事費、環境問題等を総合的に判断し、最適な地点を選定することとする。
- 水需要量が 21,000m^3/日に増加することから、現在、取得済みの水利権量（water permit と称している）20,000m^3/日では足らない。タナ流域を管理する水資源管理庁（Water Resources Management Authority）に追加の水利権を取得する必要がある。詳細な手続き及び行程を確認してもらいたい。
- 既存取水施設が本計画の取水地点に選定された場合、同取水地点から Mukangu 浄水場

までの導水管（6km）については、私有地を通る可能性がある。その場合、どのような手続きが必要か？

- 本計画実施後、新規施設の維持管理が必要となり、新規にスタッフを雇用する必要がある。10 人は、新規に雇用する必要があろう。
- EIA の Proponent（提案者）は誰になるか？

[TWSB & EWASCO]

- WRMA のエンブ支所から許可をもらう。詳細な手続き方法を確認する。
- 追加の水利権量の取得手続きを早急に開始する。取得には、最大でも 2 ヶ月以内で可能と考える。
- 既存の導水管は、6km のうち 3km が私有地に敷設されている。住民とは Wayleave（通行権）扱いで合意書を交わしている。
- Wayleave の場合、公共目的に使用するのであれば、住民に補償する必要はない。ただし、cash crop（換金作物）がある場合は、補償する必要がある。
- Easement（地役権）の場合は、住民に補償する必要が生じる。
- 新規スタッフの雇用については、了解した。
- EIA の Proponent は、EWASCO である。

以上

詳細協議議事録　08.8.21-2

調 査 内 容	森林保護地域の開発
協　議　日	2008 年 8 月 21 日（木）
協 議 時 間	13:00～14:30
協 議 場 所	KFS（ケニア森林保全機構）Embu 事務所
出　席　者	[KFS] ・ Ms. Joyce Nthuku： Assistant District Forest Officer, Embu District, Kenya Forest Reserve, Ministry of Wildlife and Forest
	[調査団] 奥澤

取水候補地点 No.1 が位置するケニア山森林保全地域（Kenya Forest Reserve）での開発認可についてヒアリングを行った。

[調査団]

- ケニア山森林保全地域の状況と Embu District に位置するルピンガジ川の取水地点での取水堰設置にあたっての注意点を聞きたい。

[KFS]

同地域は森林保全地域であり、国指定の野生生物保護地域に指定されている（National Wildlife Reserve）。したがって、開発には、森林保全地域の事前調査が必要になる。手順は、以下のとおりである。

EWASCO→WRMA（水資源管理庁）→Director（KFS）→District Forest Officer→Director（KFS）→WRMA→　EWASCO

現在のガンドレギンダ水利組合の取水堰付近には､象の足跡や樹木にこすり跡が見られたように､明らかに象の生息域となっている。このため、象を含む野生生物の生態調査がまず必要であり、これらは事業が水資源関連なので、水資源管理庁(WRMA)のエンブ支所に開発申請する。WRMA は KFS の局長に申請を行い、その指示に基づき、森林保全機構のエンブ支所が調査を行う。その結果は、この逆のルートで EWASCO に伝えられることになる。これをもとにプロジェクトレポートを作成し、NEMA に環境認可を申請することになる。

以上

詳細協議議事録　08.8.22

調 査 内 容	Embu District の中期計画
協　議　日	2008 年 8 月 22 日（金）
協 議 時 間	10:30～11:00
協 議 場 所	Embu District Officer 事務所
出　席　者	[DDO] ・ Mr. Muraya Norman： Embu District Development Officer
	[調査団] 奥澤

[調査団]

エンブ県（Embu District）の開発計画(District Development Plan)の策定状況を確認したい。

[DDO]

① 最新の開発計画（2008-2012）は現在作成中で、12 月に完成予定である。BD 調査団にその旨を伝える。

② 2002 年版の開発計画書があるので、提供したい。

[調査団]

①について：BD 調査団にその旨伝える。

②について：Embu District Development Plan 2002-2008　を入手。

以上

詳細協議議事録　08.8.23

調 査 内 容	メルー市調査 MEWASS との協議
協　議　日	2008 年 8 月 23 日（土）
協 議 時 間	09:00～10:00
協 議 場 所	MEWASS 事務所
出　席　者	[Meru Water & Sewerage Services：MEWASS] ・ Mr. George N. Karanja Technical Manager
	[調査団] 木野本、池浦、武内、吉竹

[調査団]

- MEWASS は、現在、無収水率が 26%と小さい値を達成しているが、成功の理由は何か？

[MEWASS]

- MEWASS は、2002 年 7 月に設立された。その後、日本の無償資金協力プロジェクトがスタートし、並行して、熟練工（Artisan）の雇用や、水灌漑省からスタッフを派遣してもらい、要員の補強を図った。
- 設立当初、無収水率は 76%と高かった。スタッフは、無収水という概念さえ知らなかった。現在（2007 年 6 月）は、26%と向上している。
- 漏水が多いため、給水量は不足していた。
- 漏水が高い理由は、管材料の品質及び高水圧が主である。
- 管材料については、PVC 管の Class E（16bar）に統一し、業者から納入される管材の品質について厳正にチェックしている。
- 高水圧への対応としては、減圧弁の順次設置を進めており、8～9bar（水頭 80～90m）を 4bar（40m）に下げるよう努力している。現在、35 箇所に設置済みであるが、全ゾーンに設置するには、後 100 個必要である。近年、鋼材の価格が高騰し、現在では昨年価格の 2 倍程度になっており、負担が大きくなっている。
- また、現在、午前 8 時～9 時に各ゾーンの配水池のマスターメータをチェックし、各ゾーンへの配水量に異常がないかどうか確認している。
- 無償プロジェクトに関連して、スタッフが JICA の集団研修を受けたことにより能力が向上した。
- スタッフの訓練については、定期的にモニタリングを行っている。
- 需要者は、家庭内の漏水も MEWASS 側の責任と考え、水道料金額が高いことに対しての不満が多かった。それに対して、キャンペーンを行い、理解してもらうよう努めた。
- MEWASS の給水区域には、コミュニティ給水が多く存在し、顧客獲得のためにキャンペーンを行った。各コミュニティを訪問し、水質の違いを実演（顕微鏡で微生物などの有害物の存在を見てもらった）し、MEWASS が供給する水が安全であることを理解

してもらった。

- 給水区域は、2004 年度の 31km^2 から 2006 年度で 38km^2 に拡大した。それに伴い、顧客数は、約 4,000 軒から 5,500 軒に増加した。

以上

詳細協議議事録　08.8.25

調 査 内 容	EIA の実施状況
協　議　日	2008 年 8 月 25 日（月）
協 議 時 間	15:30～11:00
協 議 場 所	国家環境管理庁（NEMA）本部
出　席　者	[NEMA] ・ Mr. Zephawia O.Ouma：Senior EIA Officer, ・ Mr. Martin Shimba：Senior EIA Officer
	[調査団] 奥澤

[プロジェクトレポート及び EIA 調査レポートの受理・審査状況]

NEMA 本部では事前に局長のアポを取ったが、多忙のため会えず、急遽 EIA 審査室を訪問した。両氏とも多忙であったが、合間に対応してくれた。ただし、十分なヒアリングはできなかった。

(1)　「ケ」国での EIA に係る実施状況

2002 年以降、プロジェクトレポートの審査件数約 4500 件、Full EIA 調査レポートの審査件数は約 500 件で、プロジェクトレポートの約 1 割が EIA 調査の対象になっている。

具体的には、年度別件数（プロジェクトレポート受理）は以下のとおりである。

西暦（年）	2002	2003	2004	2005	2006	2007	2008
件数	100	100	200	900	1100	1400	1500

事業分野では、交通網整備、住宅地開発や上下水・電力等の基礎インフラの割合が多い。

(2)　EIA 室の状況

スタッフ 10 人程度で、部屋内の棚にプロジェクトレポート及び本格的 EIA 調査レポートが番号順にファイルされていた。

(3)　Kapsabet の環境認可書

環境認可書のコピーを見せたところ、これはプロジェクトレポート段階の認可ではなく、本格的 EIA に基づく認可である。コピーの右横にある Application Reference No. PR1238 とあるのは、間違いで、本来 EIA と記入すべきであったとのことであった。

Kapsabet の EIA 調査レポートには、レポートへのパブリックコメントや公聴会の開催の記録がなかったが、本部で確認したところ、官報や新聞広告などの写しは保管しているとのことであった。

(4)　「ケ」国の非自発的住民移転に関する方針

ドナーの非自発的住民移転方針(Resettlement Policy)に対応して、「ケ」国としての

Resettlement Policy ついて検討し始めている。Kenya Power というコンサルが作成しているはずである。その後、Ouma 氏と連絡できず、入手できず。

(5)　EIA 調査レポートの事例

Ouma 氏多忙のため、紹介された NEMA 内にある図書室で、EIA 調査レポートの事例をチェックした。

・ 同氏は、昨年約 9 ヶ月間、兵庫県庁に環境リスクアセスメントの研修員として滞在しているとのこと。

以上

詳細協議議事録　08.8.26

調 査 内 容	事業所排水の水質基準
協　議　日	2008 年 8 月 26 日（火）
協 議 時 間	9:30～10:00
協 議 場 所	NEMAHQ 事務所
出　席　者	[NEMA] ・ Mr. Peter Njuguna Watoro： District Environment Officer, NEMA Head Office Water Quality Unit,
	[調査団] 奥澤

[調査団]
水質に関する排水基準、環境基準について確認したい。

[NEMA]
2006 年に制定された The Environment Management and Co-ordination (Water Quality) Regulations, 2006 において、用水基準(家庭用水、工業用水、農業用水等)が定められ、また、工場や事業所排水の放流基準が設定されている。
なお、全般的に水質、大気などの排出基準、環境基準の策定とその対処策、マニュアル等については、EU の資金援助でプロジェクトが進行中である。

[調査団]
すでに、規則を入手しているが、公共水域に直接放流する場合(公共下水道に放流する場合以外)に、公共下水道の普及率が低い（地方では 10%台）現状を考えると、放流基準が BOD30ppm, SS30ppm というのは、各工場、事業所は排水の二次処理施設を設置しなければならず、かなり厳しいのでないか。

[NEMA]
安全な水の供給不足と公共水域保全の問題を解決するにはやむを得ない。しかし、二次処理施設の設備投資資金が確保できない中小企業などには、その都度、相談依頼があれば、対応策をアドバイスしている。

以上

詳細協議議事録　08.8.27

調 査 内 容	実施機関（EWASCO）との協議 技術協議
協　議　日	2008 年 8 月 27 日（水）
協 議 時 間	15:00～17:00
協 議 場 所	EWASCO 事務所
出　席　者	[Embu Water & Sanitation Co., Ltd.：EWASCO] ・ Eng. Mr. H. M. Karugendo Managing Director of EWASCO ・ Eng. Mr. Michael Kiio Ireri Superintendent of Water Distribution
	[調査団] 武内、小野里

調査団より、EWASCO に対し浄水施設設計に関する以下の質問をした。

(1) 建設中の浄水施設の設計に関し
(2) 要請の新ムカンゴ浄水施設の設置スペースに関し
(3) その他

(1) 建設中のムカンゴ浄水施設の設計に関し

調査団と EWASCO で質疑応答が行われ、EWASCO に関し以下の現状を把握した。

- EWASCO が提出した建設中のムカンゴ浄水場の配置図は、実際の距離を GPS 等で測定したところ間違っており、実際の距離は図面上の距離より小さい。
- 計算書や AS BUILT DRAWING 等はない
- 浄水施設から発生する排水、汚泥に関する具体的な処理計画はない。

(2) 要請の新ムカンゴ浄水施設スペースに関し

調査団と EWASCO で質疑応答が行われ、EWASCO に関し以下の現状を把握した。

- EWASCO が既に取得している 70M×55M のスペースの根拠は、計画浄水施設の設計計算を基に決められているのではなく、隣の建設中浄水場とほぼ同等のスペースをイメージして決められている。
- 要請浄水施設から排出される排水処理施設のスペースを考えると 70M×55M のスペースには設置不可能である。更に、建設中の浄水施設用排水処理施設のスペースも必要と考える。

(3) その他

- 新ムカンゴ浄水施設建設にあたり 50kVA 程度の電気供給は可能である。

以上

詳細協議議事録　08.8.28

調 査 内 容	EIA
協　議　日	2008 年 8 月 28 日（金）
協 議 時 間	16:00 ～17:00
協 議 場 所	EWASCO 事務所
出　席　者	[TWSB] ・ Mr. T. W. Kibaki, Planning and Strategy Manager, Tana Water Service Board [EWASCO] ・ Mr. H. M. Karugendo： Managing Director of EWASCO
	[調査団] 武内、奥澤

[調査団]

現地調査前の時点では、JICA 環境社会配慮ガイドラインに基づく環境予備評価(IEE)のスコーピング、悪い影響の緩和策等について、ステークホルダーミーティングを開催して、コメントを求める予定であったが､計画の変更や浄水場用地の確保などの必要性があきらかになったため、エンブ市滞在の最終時期にあたり、事業主体である TWSB 及び EWASCO 関係者と、あらためて以下の点について説明あるいは確認を行った（下記、英文参照)。

① 既存浄水場施設の環境監査及び新規上水供給施設の環境認可、
② M/M 協議の結果、上水供給計画の対象地域や内容の一部が変更されたので、あらためて EIA コンサルタントに委託する TOR を修正・追加する必要性、浄水場の用地確保等の環境認可の前提条件、
③ またすでに説明したが、JICA 環境社会配慮ガイドラインの主旨、
④ 環境認可を早めるための対応。下記、英文参照

なお、新浄水供給施設の EIATOR については、TOR 自体が未作成の可能性もあったが、EWASCO 側の説明により、すでに一部 TOR が作成済みとの前提で協議した。

[EWASCO]

環境認可の前提条件である用地確保、水利権確保、汚泥処分対応などは、早急に検討し、その後、環境認可の手続きを進めたい。ただし、その場では、予算措置等具体的対応策は言及しなかった。

(参考資料)

EIA matters of the Project for Improvement of Water Supply in Embu and its surrounding areas (memo for discussion)

August 28th, 2008

JICA Preliminary Study Team (Environmental and Social Considerations)

1. Existing situation with respect to EIA matters

(1) In case of construction of Mukangu Water Treatment and water intake, was it required to conduct EIA study (either Project Report or full EIA) by NEMA and did TWSB/EWASCO get environmental license from NEMA?

(2) To clarify contents of the present TOR for Embu Water Supply Projects (before JICA Preliminary Study Team dispatched).

2. Proponent and lead agency with respect to EIA approval (licence)

(1) Tana Water Service Board or EWASCO

(2) Ministry of Water and Irrigation

3. Project area

(1) Project area is not same as the water service area. It is necessary to includes all the administrative jurisdiction in view of both natural and social conditions, and considering direct and indirect impacts.

(2) District level: Embu District and Mbeere District

(3) Embu District: Manyatta division, Embu Munucipality (Central), Nembere Division

(4) Mbeere District: Gachoka Division, Siakago Division

4. Project component (major activities)

(1) Construction and operation of water intake from Rupingazi river.
   1) No.3 (upstream of existing Mukangu intake)
   2) No.4 (existing Mukangu intake as an alternative)

(2) Construction and operation of water treatment plant and related facilities including sludge drying bed and water analysis laboratory at Mukangu.

(3) Construction and operation of water storage reservoir at Kangaru

(4) Construction and operation of water pipelines including conveyance, transmission and distribution main and branches for kiosk and individual house connection etc.

(5) Construction and operation of pressure breaking tank and pressure reducing valves

(6) Construction and operation of water kiosks, standing pipes, water meters etc.

5. Classification of the Project phase

(1) Planning stage

(2) Construction stage

(3) Operation stage

6. To comply with relevant environmental legislations and guidelines

(1) Environmental Management and Coordination Act, 1999
(2) Environmental (Impact Assessment and Audit) Regulations, 2003
(3) Environmental Impact Assessment Guidelines and Administrative Procedures (Draft, 2002.11)
(4) Relevant laws such as Land Act, Land Acquisition Act etc.
(5) JICA Guidelines for Environmental and Social Considerations, 2004
(Especially in Appendix 1 Requirements of the Recipient Governments)

7. Major expected environmental impact items due to the Project

(1) Planning stage
1) Securing lands for water supply and related facilities - land acquisition, involuntary resettlement, Wayleave, Easement etc.)
2) Change of land and resources use: additional water right

(2) Construction stage
1) Procurement of construction materials
2) Earth moving and construction work: air and water pollutants, noise and vibration etc.
3) Wastewater and solid waste generation from worker's camp
4) Health problems: a) Infectious diseases, b) risk of contracting HIV/AIDS due to immoral practice of workers and prostitute

(3) Operation stage
1) Sludge disposal
2) Wastewater treatment and sludge disposal: comply with water quality standards, 2006

8. Necessary revision of the present TOR

Due to change of the project plan, contents of the present TOR are necessary to change in some points.

9. Requirement of TOR and PR/EIA Study in view of JICA guidelines for Environmental and Social Considerations (ref. 6 - 5))

(1) To understand the concept, conditions and requirement of JICA Guidelines
(2) Information disclosure from initial stage (from initial stage)
(3) Public Participation from initial stage (holding the stakeholder meeting and collect public opinion etc.)
(4) Comply with Water quality standard, 2006
(5) To secure land for facilities and pipelines etc. through appropriate procedure and compensation to affected people and to get license, agreement, registration titles etc. (copies of documents are necessary to be submitted to JICA for evidence)

10. To move forward with EIA approval procedure

◆ Please refer to procedure of environmental approval.

- In view of other case such as Kapsabet WS project (Rehabilitation and Augmentation), Embu Water supply project is expected to undergo full EIA Study.
- To get license from NEMA in earlier stage, it is necessary to make efforts for better Project Report in more detail and beyond the requested level.

以上

詳細協議議事録　08.8.29-1

調 査 内 容	環境認可と EIATOR
協　議　日	2008 年 8 月 29 日（金）
協 議 時 間	11:00～11:30
協 議 場 所	EWASCO 事務所
出　席　者	[EWASCO] ・ Mr. H. M. Karugendo： Managing Director of EWASCO [EIA Consultant] ・ Mr. John Ireri, Managing Consultant, Environment & Development Associates (EDAK)
	[調査団] 奥澤

[協議内容]

- 9 月 28 日(木)夕刻、TWSB 及び EWASCO 担当者と協議した以下の内容について、EWASCO 担当者同席のもとに、EIA コンサルタントに説明し、理解を得た。
  ① 既存浄水場施設の環境監査及び新規上水供給施設の環境認可、
  ② M/M 協議の結果、上水供給計画の対象地域や内容の一部が変更されたので、あらためて EIA コンサルタントに委託する TOR を修正・追加する必要性、浄水場の用地確保等の環境認可の前提条件、
  ③ またすでに説明したが、JICA 環境社会配慮ガイドラインの主旨、
  ④ 環境認可を早めるための対応。

- 詳細協議議事録 08.8.29(用地確保と環境認可)の英文部分を参照。

- 協議終了後、EIA コンサルタントから EWASCO から委託されている環境認可関連業務の TOR の内容を入手した。この TOR をあらためてよく読むと、新たな上水供給施設の環境影響評価調査（プロジェクトレポートの作成）は、TOR に含まれていない。EWASCO 側で誤解しているか、EWASCO の説明を信じれば作成時が 1 年前（コンサルタント募集は昨年 4 月）なので、その後 EIA の TOR が作成された可能性もある。今後、さらに確認が必要である。

以上

詳細協議議事録　08.8.29-2

調 査 内 容	上水汚泥処分等
協　議　日	2008 年 8 月 29 日（金）
協 議 時 間	11:00～11:30
協 議 場 所	エンブ市役所
出　席　者	[MCE] ・ Mr. Mogoi： Town Engineer, The Municipality Council of Embu
	[調査団] 奥澤 Eng. H. M. Karugendo, Managing Director of EWASCO

浄水場汚泥の処分について、以下調査した。

[調査団]

Mukangu 浄水場で発生し、天日乾燥処理の汚泥の最終処分地として、エンブ市のゴミ埋立地（Gatondo 地区）の利用のための条件を伺いたい。

[MCE]

Mukangu 浄水場は、Manyatta 郡で所管が異なるが、汚泥の無害であることが証明できれば、適当な手続きを経て、受け入れる可能性はある。

[調査団]

エンブ市のゴミ埋立地を視察したが､本来混入してはいけない注射針等の医療廃棄物も混入が見られた。また、オープンダンピングであり、廃棄物の野焼き、ラッグピッカーなどが入り込んでいる。これらは、廃棄物管理規則（2006 年）の規制に十分対応していないのでないか。

[MCE]

その状況は、十分把握していないが困った問題である。今後、担当部門で対応方法を検討する。

以上