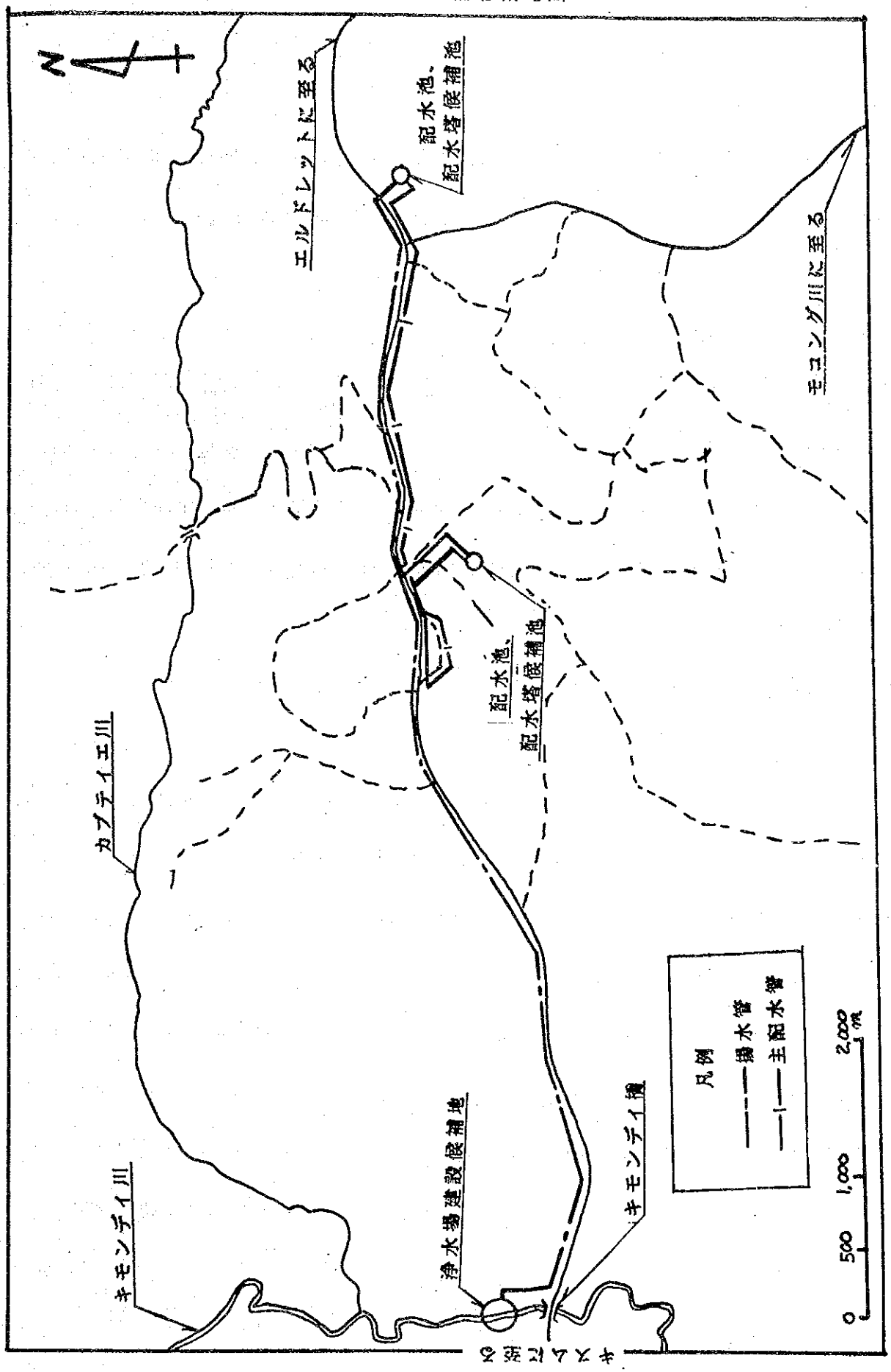
	計量設備 塩素注入設備 注入機 注入配管系統
・混和池	・混和池（将来拡張可能型とする）
・ﾌﾛｯｸ形成池	・ﾌﾛｯｸ形成池
・沈澱池	・沈澱池（ 2池以上） 汚泥引抜設備、横流式
・濾過池	・濾過池、緩速式 調節装置 逆送設備
・浄水池 ・消毒装置 ・ｐＨ調整装置 ・送水ポンプ小屋 ・送水装置 ・逆洗用水槽 ・ｽﾗｯｼﾞ沈澱池	・浄水池、 2池 ・消毒装置 ・ｐＨ調整装置 ・送水ポンプ小屋（将来 拡張可能形態とする） ・送水装置 ・逆洗用水槽 ・ｽﾗｯｼﾞ沈澱池 ・電力設備（変電設備含む） ・電気設備 ・その他付帯設備
（配水管網） 揚水管 主配水管 配水管網 配水塔　：１基 配水池　：１基	（配水管網） ・揚水管 ・主配水管 ・配水塔　：２基 ・配水池　：２基

5－1－5　本計画の目標達成への課題

4－5－2の1に記述したとおり、本計画の目標である配水量増加のためには以下の如き前提条件がある。すなわち、表－4．4に述べた予期される課題を克服することである。これらの課題はいずれも本計画と並行して「ケ」国側が実施すべきことであり、我が国としては「ケ」国側の努力に期待するということである。

予算配分および要員配置について「ケ」国側はIDA基金による公社開発計画を立ててはいるが、給水施設を適切に運営・維持管理する事が取り分け重要であることを「ケ」国側に対し認識させ充分に理解させる必要がある。

図－５．１　配管概略図


N
エルドレットに至る
配水池、
配水塔候補地
モユンダ川に至る
配水池、
配水塔候補地
カプテイエ川
キモンデイ川
浄水場建設候補地
キモンデイ橋
キスムに至る
凡例
送水管
主配水管
0
500
1,000
2,000
m

5－2　提　言

5－2－1　基本設計調査のTOR

1．調査の方針

「ケ」国側から要請されたカプサベット市の給水事情を改善するために同市の給水計画を作成するものであり、同市の給水区域の地形範囲、施設計画地の調査、同市の水行政を管轄している西部地域事務所および現地事務所の運営状況を調査し問題点の把握、給水計画の方針を決める。

2．調査の内容

調査に含まれる項目は以下のとおりである。

(1) 建設対象施設･設備･規模･範囲の策定
(2) 構造物の適性調査（設備を設置する場所が、設備の耐久性の見地から構造的に適当か否かの調査）
(3) 対象施設･設備の基本設計調査（計画・敷地の平板測量・高低測量・路線測量調査）
(4) 現地要員の維持管理能力の把握
(5) 完了引渡し時の訓練計画の策定（訓練期間、内容はメーカーに一任するのではなく、整備内容と維持管理要員の能力に応じた訓練計画を策定する。なお、訓練はメーカーの技術者によって行なうものとする。）
(6) 給水地域拡張後における下水道未整備地域に対する環境影響調査

3．留意点

(1) 取水口は渇水期の流量低下に対処するため取水堰の設置
(2) 取水堰に吐砂口の設置
(3) 導水施設は重力式（自然流下方式）の検討
(4) 将来拡張に対処可能な施設
(5) 導水管の支持方法
(6) 浄水場敷地の洪水水位
(7) 着水井沈澱池等は２池とし、清掃作業による断水の回避可能な施設
(8) 沈澱池の表面積を大きくとる
(9) 既設設備の運転方法（現地要員の技術能力に適した方法）
(10) 配水塔・配水池の設置場所
(11)使用資機材の現地調達

5－2－2　実施期間

現地調査	30日間
国内調査	60日間（前10、後50）

5－2－3　団員構成（案）

（現地）	上水道施設計画	×	1	30日間（総括を兼ねる）
	浄水施設設計	×	1	30日間（建築電気および設備を兼ねる）
	配管設計	×	1	15日間
	土木	×	1	30日間（測量をかねる：平面、高低、路線）
	積算	×	1	15日間
	環境影響調査員	×	1	15日間
（国内）	上水道施設計画	×	1	60日間（総括を兼ねる）
	浄水施設設計	×	1	60日間
	配管設計	×	1	15日間
	土木	×	1	30日間
	浄水場機械	×	1	60日間（建築設備を兼ねる）
	浄水場電気	×	1	60日間（建築電気を兼ねる。）
	積算	×	1	20日間
	環境影響調査員	×	1	15日間

次調査団員は、5－2－1の2に示された調査の経験を有するとともに、ス国側の実施機関と議論し、指導できる能力が必要である。

資料編

資料－1

調査団員構成

担当分野	氏　名	所　属　先
総　括	藤田　雅史	国際協力事業団無償資金協力調査部 基本設計調査第一課課長代理
給水計画	松枝　修治	厚生省生活衛生局水道環境部計画課 計画第二係長
給水施設設計／ 運営維持管理計画	大野　和雄	(財) 日本国際協力システム
配管施設設計	土屋　雅俊	(財) 日本国際協力システム

資料－2

面談者リスト

水資源省 (MINISTRY OF WATER DEVELOPMENT)

MR. S.M.MBOMVA	PERMANENT SECRETARY
MR. S.K.KIBUNJA	DEPUTY DIRECTOR OF (PLANNING DESIGN)WATER DEVELOPMENT
MR. P.N.MACHIRI	DEPUTY DIRECTOR OF (IMPLEMENTATION)WATER DEVELOPMENT
MR. L.M.MUSHOKA	DEPUTY DIRECTOR OF (O & M)WATER DEVELOPMENT

水道訓練所(KENYA WATER INSTITUTE)

MS. J.W.MAINA	PRINCIPAL
MR. L.J.OGUTO	DEPUTY PRINCIPAL
MR. E.K.MUIRURI	REGISTER

水資源公団(NATIONAL WATER CONSERVATION AND PIPELINE CORPORATION)

MR. H.K.A.ROTICH	MANAGING DIRECTOR
MR. M.M.MAHAMUD	CHIEF DEVELOPMENT SERVICE MANAGER
MR. MUKUI	ASSISTANT HAED DESIGN DIVISION, CHIEF ENGINEER
MR. KELENGWE	REGIONAL MANAGER, WESTERN
MR. E.O.MOKENYE	REGIONAL OFFICE, KISUMU
MR. W. SIMON	SCHEME MANAGER, KAPSABET
MR. M. WIIYAKULLULLAH	WATER SUPPLY OPERATER, KAPSABET

ナンデイ県知事 (DISTRICT COMMISIONER)

MR. FRANCIS S.K. BAYAH

ナンデイ県立病院 (DISTRICT HOSPITAL)

DR. A.M.MWALUGONGO
DR. K.KOSKEY

ケニア電力 (KENYA POWER & LIGHTING CORPORATION)

MR. E.I.INYEGA	COMMERCIAL ENGINEER, ELDOLET
MR. J.S.WAFULA	DESIGN ENGINEER, ELDOLET

大蔵省

MR. C.L.SHAKABA	UNDER SECRETARY, OFFICE OF THE VICE-PRESIDENT AND MINISTRY OF FINANCE
MR. GICHERU	DEPUTY DIRECTOR, OFFICE OF EXTERNAL RESORCES,MINISTRY OF FINANCE

カカメガ浄水場

MR. D.O.SILIPA　　SCEME MANAGER

日本大使館

有安一等書記官

ＪＩＣＡケニア事務所

森本所長

牧野所員

ＪＩＣＡ専門家

藤田　眞（水資源省）

資料－３

日　程　表

月　　日	行　　程	日　　程
８月３１日（月）	成田発13:00 JAL407 フランクフルト着18:00	移動日
９月　１日（火）	フランクフルト発23:15 LH574	移動日
２日（水）	ナイロビ着8:20	ＪＩＣＡケニア事務所打合わせ 日本大使館表敬、打合わせ 水資源省表敬 ＮＷＣＰＣ表敬、無償資金協力説明
３日（木）	ナイロビ	ＮＷＣＰＣ打合わせ、Ｉ／Ｒ説明 Ｑ／Ｎ回収 ＫＷＩ調査
４日（金）	ナイロビ→カプサベット移動	ナンデイ県知事表敬 県立病院、製茶工場、ミルク工場視察 水質簡易測定
５日（土）	カプサベット	モコング、キモンデイ川、既設浄水場 取水堰調査及び水質簡易測定
６日（日）	カプサベット 藤田団長　合流	モコング、キモンデイ川、既設浄水場 調査及び団内打合わせ
７日（月）	カプサベット→ナイロビ移動	ナンデイ県知事表敬 市内給水状況調査 ケニア電力エルドレット事務所聴取
８日（火）	ナイロビ	ＮＷＣＰＣと協議 Ｑ／Ｎ回収
９日（水）	ナイロビ	ＮＷＣＰＣとミニッツ内容を協議 ミニッツ作成
１０日（木）	ナイロビ 官団員出国 藤田団長 松枝団員→パリ	ＮＷＣＰＣとミニッツ署名 日本大使館、ＪＩＣＡケニア事務所 に報告
１１日（金）	ナイロビ	ＮＷＣＰＣにて聴取 資料整理
１２日（土）	ナイロビ→カプサベット →キスム　移動	ＮＷＣＰＣカプサベット・スキーム 事務所 資料収集 キモンデイ川 候補地調査
１３日（日）	キスム	資料整理
１４日（月）	キスム→ナイロビ　移動	ＮＷＣＰＣ西部地域事務所聴取 カカメガ浄水場 調査

１５日（火）	ナイロビ	資料整理
１６日（水）	ナイロビ	ＮＷＣＰＣにて資料収集、聴取 ＳＯＫにて資料収集
１７日（木）	ナイロビ→　　出国 23:30 AF453	日本大使館、ＪＩＣＡケニア事務所 調査報告
１８日（金）	→パリ着 08:05	移動日
１９日（土）	パリ→　16:10 AF276	移動日
２０日（日）	→成田着 10:55	帰　国

資料4　協議議事録

MINUTES OF DISCUSSIONS
THE PRELIMINARY STUDY ON THE PROJECT FOR REHABILITATION AND EXTENSION OF KAPSABET WATER SUPPLY SYSTEM IN THE REPUBLIC OF KENYA

In response to a request from the Government of the Republic of Kenya, the Government of Japan decided to conduct a Preliminary Study on the Project for the Rehabilitation and Extension of Kapsabet Water Supply System in the Republic of Kenya and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Kenya a study team headed by Mr. Masashi Fujita, Deputy Director, First Basic Design Study Division, Grant Aid Study and Design Department, JICA, from September 2 to 17, 1992.

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

As a result of the discussions and field survey, both parties confirmed the main items described on the attached sheets. On the condition that Government of Japan approves the implementation of a Basic Design Study on the Project, JICA will prepare a further study, including dispatch of a survey team.

Nairobi, September 10, 1992

Mr. Masashi FUJITA
Leader
Preliminary Study Team
JICA

Engineer H.K.A. Rotich
Managing Director
National Water Conservation
and Pipeline Corporation

ATTACHMENT

1. Name of the Project
The name of the Project shall be changed as " the Project for Extension of the Kapsabet Water Supply System in the Repubilc of Kenya" (hereinafter referred to as "the Project").

2. Objective
The objective of the Project is to construct the water supply system for improvement of the water supply situation in Kapsabet Town.

3. Project site
The proposed sites of the Project are located in the Kapsabet municipality area. The location map of the sites is shown in ANNEX I. The team recommended that further study is necessary for the service area covered by the Project.

4. Executing agency
The executing agency of the Project is the National Water Conservation and Pipeline Corporation, a parastetal under the Ministry of Water Development, which bears overall responsibilities for the administration and execution of the Project. The organization chart of the Project is shown in ANNEX II.

5. Items requested by the Kenyan side
After discussions with the Preliminary Study team, the following main items have been requested by the Kenyan side.
1) Construction of intake facility
-Intake structure *
-Screen **
-Primary sedimentation tank **
-Pump house *
-Pumping equipment **
-Sump pit *
2) Construction of one water treatment plant
-Operation building *
-Chemical dosing system **
-Mixing chamber **
-Flocculation chamber **
-Sedimentation **
-Filters **
-Disinfection **
-pH Adjustment **
-Clear water reservoir **
-Pump house *
-Pumping equipment **
-Back washing tank **
-Sludge lagoon **

3) Construction of distribution network
-Rising pipeline *
-Main distribution pipeline *
-Elevated tanks, 2 Nos. **
-Reservoir tanks, 2 Nos. **

Note:
* Capacity ca. 7,000 cubic m/day, target year 2012
** Capacity ca. 5,000 cubic m/day, target year 2002

However, final components of the Project and their capacity may differ from the above items, if it is found necessary after further study in Japan.

6. Environmental Protection
Both sides agreed that collaboration with the on-going Kapsabet Sewerage Project should be carefully studied in formulation of the Project from a viewpoint of environmental protection.

7. Japan's Grant Aid System
1) The National Water Conservation and Pipeline Corporation has understood the system of Japan's Grant Aid explained by the team.
2) The Government of the Republic of Kenya will take the necessary measures described in ANNEX III for smooth implementation of the Project, on the condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

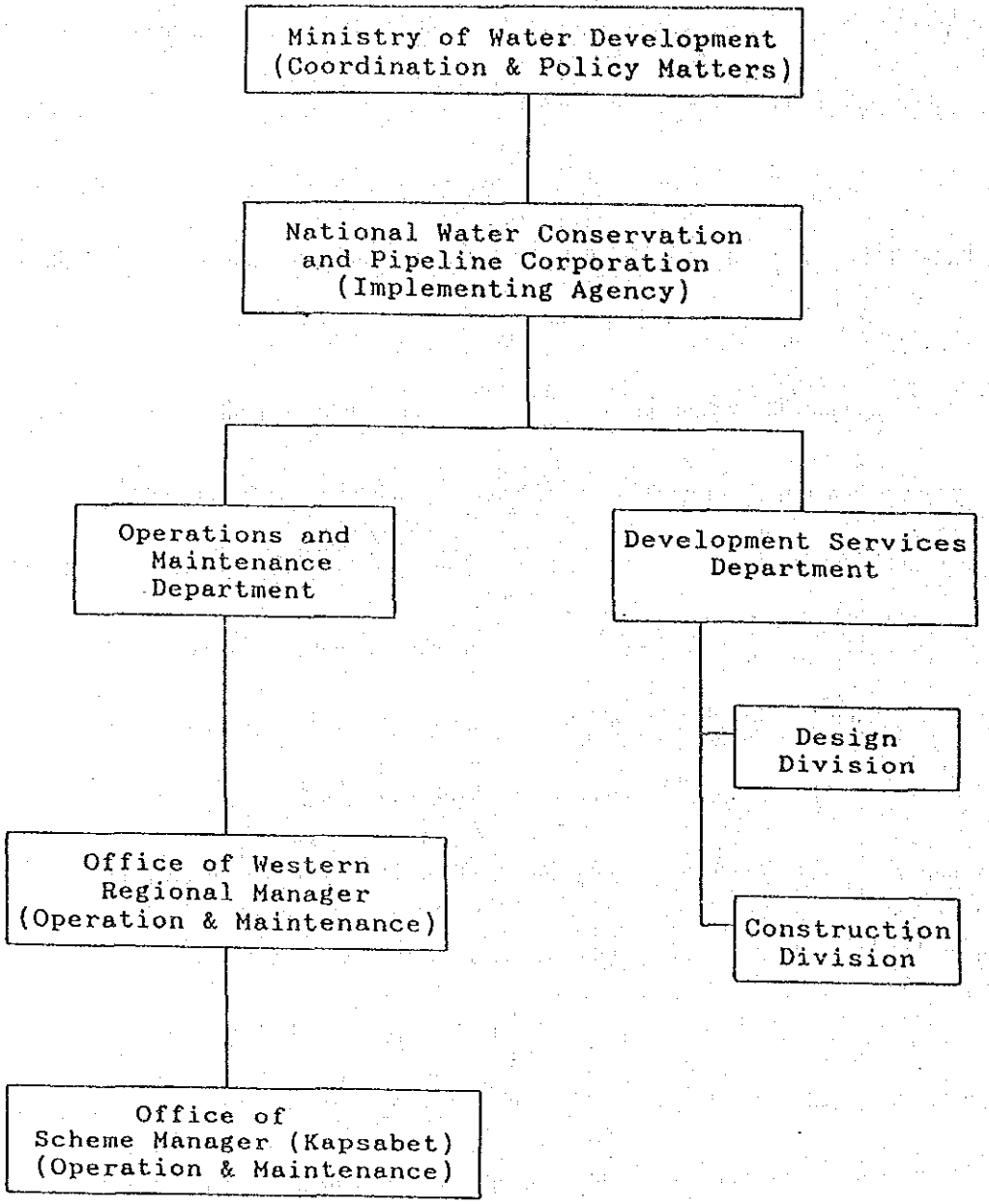
8. The Scope of Cooperation
The scope of cooperation to be covered by the scheme of Japan's Grant Aid will be studied and clarified by a basic design study to be carried out by JICA, after the feasibility of the Project is confirmed by the Government of Japan.

9. The Scope of Works of Basic Design Study
The scope of works of the basic design study will include;
1) Technical survey,
2) Management and financial appraisal,
3) Basic design of facilities and equipment for the Project,
4) Implementation plan of the Project, and
5) Evaluation of the Project.

LOCATION MAP OF THE PROPOSED PROJECT SITES

ANNEX II.

Organization Chart of the Project



ANNEX III.

NECESSARY MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE REPUBLIC OF KENYA ON CONDITION THAT JAPAN'S GRANT AID ASSISTANCE IS EXTENDED

1. To provide data and information necessary for the Project

2. To secure land for the sites for the Project

3. To clear, level and reclaim the site prior to commencement of the construction

4. To construct access roads to the sites prior to commencement of the construction

5. To provide facilities for distribution of electricity and other incidental facilities such as gate and fence in and around the sites

6. To bear the commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement

7. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment brought for the Project at the port of disembarkation in Kenya

8. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts, such facilities as may be necessary for their entry into Kenya and stay therein for the performance of their work

9. To assign the necessary staff for operation and maintenance of the facilities constructed and equipment purchased under the Grant Aid

10. To maintain and use properly and effectively the facilities constructed and equipment purchased under the Grant Aid

11. To bear all the expenses other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment

資料5　ケニヤ国からの回答

THE PROJECT FOR THE EXPANSION OF KAPSABET WATER SUPPLY

1. PLAN OF MAINTENANCE AND OPERATION OF THE PROJECT

As noted in the proposal attached to your letter under reference, we do agree that maintenance and operation of water supply facilities consist mainly of an operation of the purification plant, water examination, check and repair of pipe network and maintenance of equipment. In order to achieve the above stated requirements, appropriate staffing and adequate funds for the operation and maintenance is a pre-requisite.

(a) Policy for operation and maintenance

This Corporation is a body corporate established under the state Corporations Act (Cap 446), of the laws of Kenya, with a prime function to develop and manage water supply projects.

The Corporation is required to levy charges for the services it provides and use such money for the operation and maintenance of water supply projects.

The Corporation has five Regional offices, each headed by a Regional Manager, which carry out the day to day running of the water supply projects. Kapsabet water supply falls under Western Region whose headquarters is at Kisumu.

In line with its financial requirements,Corporation prepares centrally the recurrent budget which includes the cost of operation and maintenance of water supplies, after each Region submits their requirements for each fiscal year (1st July-30th June) The various components of the operation and maintenance is paid for as follows:-

(i) Electricity - The bills are paid at the headquarters.

(ii) Telephone - The bills are paid at the headquarters.

(iii) Chemicals - Procured by method of tendering. Each water supply scheme collects the chemicals directly from the suppliers but payment is effected at the Regional headquarters.

(iv) Salaries - Paid by the headquarters.

(v) Others - The cost of running and maintenance vehicles, repairs of pipe network, repairs of equipment and other incidental expenses are paid for by the Regional Manager directly from cash

availed by the headquarters for the said purposes. The requirements for such cost is prepared by the Regional Manager and provided for in the recurrent budget.

Repair for major breakdowns are carried out by the Regional office with the assistance of the headquarters.

The above policy on the operation and maintenance of water supply is employed for all projects falling under this Corporation and has been found to work well. The following example for Kapsabet water supply will expound this.

In 1990 the breakdown of expenditure for Kapsabet water supply was as follows:

1.	Electricity	- Kshs	252,500.00
2.	Chemicals		
	(i) Alum	- Kshs	213,600.00
	(ii) Soda ash	- Kshs	22,000.00
	(iii) T.C.L.	- Kshs	31,000.00
3.	Salaries	- Kshs	600,000.00
4.	Maintenance	- Kshs	152,000.00
5.	Fuel	- Kshs	50,000.00
6.	Others expenses	- Kshs	205,000.00
	Total	Kshs	1,371,280.00

In the same year the revenue raised from the sale of water was Kshs 400,810.00. The low level of revenue realised is due to the project's old age and hence work under capacity. This has resulted in the project being subsidised from the Corporation's other sources of revenue. If the project is realised the above situation on revenue is expected to improve and the project to operate profitably.

(b) Staffing of the project

Under IDA funding, the Corporation is undertaking a Corporate Development Plan to be ready by March 1993 whose main objectives shall be-

(i) To review the operation of water sector and make recommendations to improve the performance.

(ii) To formulate a 5 year Corporate Plan for the Corporation which among other things will identify necessary organisational and manpower changes and in developing its capability and competence.

(iii) To develop for the Corporation a robust Corporate Planning and budgeting process and capability.

(iv) To conduct water tariff study to review the efficiency and affectiveness of the present tariff structure (The tariff will be reviewed every year).

The above not withstanding, your proposal for the structure of staff on the above project is acceptable to us and provision will be made for the same.

(c) System of water rate collection

At present, 90% of the consumers in Kapsabet are metered while the rest pay a constant rate for water consumed (the constant rate for domestic consumers is Kshs 30.00 per month).

Consumer meters are read once a month after which bills are prepared and sent to the consumer either by hand or post. The consumer's pay the bills at our scheme office or to our bank account.

The whole process takes about one month in which case the consumer pays for water consumed in the previous month. Those who default in payment are usually disconnected until the payments are effected. The ratio of the amount billed against the amount realised is currently 71%. The main defaulter is the public hospital. However, considering the serious effects of disconnecting this consumer, a modality has been worked out where private consumers would be disconnected without affecting the patients.

2. PROGRESS ON KAPSABET SEWERAGE SYSTEM

The sewerage system involves the construction of sewage treatment works consisting of waste stabilization ponds to cater for the sewage through put of 1000m^3/day and 18km of sewer network. The project will cater for the sewerage needs of the entire urban area about 4km^2 up to the year 1995. It is worth noting that the proposed "project for the extension of Kapsabet water supply system" will cover an area of 25km^2 most of which will continue to be served by septic tanks and other forms of waste disposal.

At present the average physical progress on the sewer network is 93.9% while that of the ponds is 55.41% giving an average of 75.8% overall progress.

Though the contract for the execution of the works is still in force there has been insignificant physical progress for some time due to some technical issues which are now being sorted out by the employer together with the Engineer.

The earlier date of compensation was 30th November 1992. The project is now expected to be completed by mid 1993.

3. LAND SPACE FOR THE PROJECT

The following are the steps taken to acquire land by the Government for the purpose of Public amenities in accordance with the land acquisition act.

(A) Preliminary notice

The client (in this case the National Water Conservation and Pipeline Corporation) writes to the Minister for Lands and Housing indicating his intention to carry out the activities of the project, stating its benefits to the public, and giving details of the land to be acquired if necessary.

(B) Notice of acquisition

(i) Where the minister is satisfied that any land is required for the purpose of a public body, he so certifies to the commissioner to acquire the land compulsorily.

(ii) On receiving a direction as above the commissioner shall cause a notice that the Government intends to acquire the land, to be published in the (official) Kenya Gazette and shall serve a copy of notice on every person who appears to him to be interested in the land. Service of notice is by one of the following methods:-

(a) Delivery to the person personally

(b) Sending by registered post to the last known address in Kenya.

(c) In case the whereabouts is not known, the notice is served to the occupier of the land or affixed to a prominent part of the land.

(d) For a corporate body or society, the notice is served to the secretary or a director.

The commissioner may cause the land which is to acquired to be marked out (if this has not already been done) and shall cause a plan of the land to be prepared.

(c) Inquiry as to compensation

The commissioner shall appoint a date, not earlier than 30 days after the publication of the intention to acquire, for the holding of an inquiry for the hearing of claims to the land by persons interested in the land and shall:

(i) Cause notice of the enquiry to be published in the Gazette (official) at least 15 days before the enquiry.

(ii) Serve a copy of the notice on every person who appears to him to be interested in the land.

The notice of enquiry shall call upon the persons interested in the land to derive to the commissioner not later than the date of the enquiry a written claim to the compensation.

At the enquiry the commissioner shall-

(a) Make full enquiry to determine who are the persons interested in the land.

(b) Make full inquiry into the value of the land.

(c) Determine, what compensation is payable to each of the persons whom he has determined to be interested in the land.

NB: The public body for those purpose the land is to acquired, and every person interested in the land, is entitled to be heard, to produce evidence and to call and question witness at an enquiry.

(d) Award of compensation

Upon the conclusion of the enquiry the commissioner shall prepare a written award in which he shall make separate award of compensation to each person whom he has determined to be interested in the land.

(e) Notice of award

On making an award, the commissioner shall serve on each person whom he has determined to be interested in the land a notice of award and offer of compensation.

(f) Offer of compensation

Payment of the compensation shall be made as soon as practicable.

NB: In case of urgency, the minister may direct the commissioner to take possession of UNCULTIVATED or PASTURE or ARABLE land upon the expiration of 30 days from the date of publication of the notice of intention to acquire, and on expiration of that time the commissioner, not withstanding that no award has been made, shall take possession of land and the title shall be vest in the Government.

(g) Formal taking possession and vesting

After award has been made, the commissioner shall take possession of the land by serving on every person, who has been determined to be interested in the land, a notice that on a specific day, which shall not be later than 6 days after the award has been made, possession of land and the title shall be vest in the Government.

(h) Principles on which compensation is to be determined

(i) The value of the land at the time of publication of the notice of intention to acquire.

(ii) Damages sustained or likely to be sustained by persons interested at the time of commissioner's taking possession of the land.

(iii) Damages sustained or likely to be sustained by reason of acquisition injuriously affecting his other property or his actual earnings.

(iv) Reasonable expenses incidental to the change of the residence or place of business resulting from the acquisition.

(v) Damages genuinely resulting from diminution of the profits of the land between the date of the notice of intention to acquire the land and the date the commissioner takes possession of the land.

(vi) Addition of 15% of the market value to the amount of compensation by way of compensation to the disturbance.

On average the time required to complete the land acquisition exercise is as follows.

1.	Preliminary notice	- 7 days
2.	Notice of acquisition	- 8 days
3.	Inquiry to the compensation	- 30 days
4.	Award of compensation and notice of award	- 30 days
5.	Offer of compensation and taking possession	- 25 days
	Total period	90 days

Time = 3 months

資料6 質問表一覧

QUESTIONNAIRE

With regard to the Project for the Rehabilitation and Expansion of Kapsabet Water Supply in the Republic of Kenya, please provide us the in information.

I. Data of related projects

1. The Kenya's Sixth National Development Plan which was described at page 16 in the application form.

2. The Master Plan (M/P) which was described at page 15 in the application form.

3. Is the M/P an official plan?

4. Is there priority of plan to the project which has been requested to the Japan's grant aid except the M/P above mentioned? If yes, please provide the detail.

5. Is the feasibility study (F/S) which was described in the application form an official study?

6. Are numbers in the F/S acceptable? Please provide other data, if you have them.

7. Development target and attainment of potable water of NWCPC.

8. Detail and progress condition of a development plan for Kapsabet town.

9. Present condition of sewerage treatment plant in Kapsabet town.

~~10. Others.~~

II. Data about the implementing agency

1. Change of number of the staff by position, budget and revenue and expenditure of NWCPC for the past 5 years.

2. Breakdown of the working expenses of NWCPC for the past 5 years.

3. Change of breakdown of the maintenance expenses of NWCPC for the past 5 years.

4. Change of collecting system of water rate and its record of performance of NWCPC for past 5 years.

~~5. Others~~

III. Data of existing water supply facilities in Kapsabet town.

1. Official name of the water treatment plant.
2. Breakdown of cost estimates attached to the application form for the project.
3. The organizational chart of the plant.
4. Change of number of the staff by positions, budget and revenue and expenditure of the plant for the past 5 years.
5. At present, is the number of staff sufficient for the task?
6. If no, please describe the name of position and reasons.
7. At present, is the budget of expenses sufficient?
8. If no, please describe the items and reasons.
9. Solution in case of insufficiency of the budget.
10. Classification and ability of staff for maintenance.
11. Is the maintenance system adequate? If no, please describe the reasons.
12. Change of the current price of produced water for the past 5 years.
13. Number of staff and budget to be increased for the project.
14. Change of breakdown of working expenses for the past 5 years.
15. Change of breakdown of maintenance expenses for the past 5 years.
16. Design capacity of the existing plant.
17. As built plan of the existing plant and intake.
18. Change of amount of raw water, distribution and supply for the past 5 years.
19. Change of ratio of leakage for past 5 years.
20. Results of repair of leakage for past 5 years.
21. Structure of the water tariff for the past 10 years.
22. Change of collecting system of water rate and its record of performance for the past 5 years.
23. Change of number of served facilities such as habitation,

factories, public buildings, office buildings, schools, public faucets etc. for the past 10 years.

24. Average payment of water rate per month of an ordinary household.

    a. Ratio of the amount above mentioned to their income.
    b. Is the amount above mentioned proper? If no, Please describe the reasons.

25. Treatment of people who cannot pay for the water.

26. Change of revenue ratio, (total annual revenue water amount/ total annual distributed water) x100, for the past 5 years.

27. Solution of improvement of the revenue ratio.

28. Change of water tariff for past 10 years.

29. Plan of raising the water rates in the future.

30. Names of malfunctioning facilities.

31. Reasons of the malfunctioning.

32. History of the repair for the facilities.

33. Results of the repair.

    a. easy
    b. difficult
    c. impossible

34. Reasons in case of above mentioned (b) or (c).

35. Procurement of spare parts.

    a. easy
    b. difficult
    c. impossible

36. Reasons in case of above mentioned (b) or (c).

37. Procurement of chemicals.

    a. easy
    b. difficult
    c. impossible

38. Reasons in case of (b) or (c) above mentioned.

39. Analysis of raw water, distributed water and tap water for past 10 year.

40. How do people obtain water in case shortage?

41. Change of ratio of mater pervasion past the 10 years.

~~42. Others.~~

IV. Concerning scope of the project.

1. Topographical maps of Nandi district and Kapsabet town with contour line.

2. Map of water supply network plan for Kapsabet town.

3. Reasons of urgency for the project according to the application form.

4. Are numbers concerning population in the F/S acceptable? Please provide other data, if you have.

5. Change and basis of number of forecast beneficiaries from 1994 to 2012.

6. Change and basis of amount of forecast distribution from 1994 to 2012.

7. Basis of the calculation for the forecast population in the application form.

8. Map of Kapsabet town by kind of area such as habitation, industry, commerce etc..

9. Are the consumption amount of water supply by use in the application form acceptable? Please provide other data, if you have.

10. Is electric power available for the extension of the plant? If yes, please submit the evidence.

~~11. Others~~

V. Expansion plan of the plant.

1. Please point the site.

2. Concrete procedure of procurement for the land of the project.

3. Evidences for the prevention of any trouble between people and the government for the procurement.

4. Monthly flow data of the Kimondi river at the gauging station for the past 20 years.

5. Rain fall data of the above station for the past 20 years.

6. Maximum rain fall quantity per hour.

~~7. Others.~~

IX. Distribution network.

1. The existing distribution network drawings.

2. Scope of work done by Japan's grant aid.

3. Is there any foreign assistant for the plan? If yes, please provide the detail.

~~4.~~ Others.

X. Local market.

1. Is there any local construction industry which can carry out the project? If yes , please provide its name and record of performance.

2. Is there any local civil industry which can carry out the project? If yes, please provide its name and record of performance.

3. Is there any local electrical work industry which can carry out the project? If yes, please provide its name and record of performance.

4. Is there any local plumbing industry which can carry out the project? If yes, please provide its name and record of performance.

5. Is there any local supplier which can carry out the project? If yes, please provide its name and record of performance.

6. Please list up heavy equipment for the project which is difficult or impossible to obtain, and describe the reasons.

7. Please list up major material for the project which is difficult or impossible to obtain, and describe the reasons.

8. Please list up facility/device for the project which is difficult or impossible to obtain, and describe the reasons.

9. Please list up plumbing/ piping material for the project which is difficult or impossible to obtain, and describe the reasons.

10. Please list up a prohibition of any equipment, devices, appliances, materials and others which will be supplied by Japan side to be diverted to the project.

~~11. Others.~~

XI. Construction.

1. Boring date of the planning area.

2. Regulation for an accomplishment of the project.

3. Local cost estimate date of construction, civil work, earth work, plumbing, electrical work and others.

4. Name of port of discharge for import.

5. A route from the port to the site.

~~6. Others.~~

XII. Others.

1. Standard of potable water.

2. Present condition of Taveta Lumi project done by Japan's grant aid.

3. Was technique transferred to counterparts (C/P) during above mentioned project? Please describe concrete performance, if yes.

4. Are the C/P still in the section? Please provide the effect of the transfer, if yes.

5. Exchange rate of US dollar for the past ten years.

6. Average of monthly income per family,

7. Breakdown and calculation based from natural and social increasing population for the past 10 years.

8. In case of social increasing population by development program, contents of the program ex. name of district, kind of development.

9. Planning for population growth control.

10. Kind of water source for uncovered area.

11. Ratio o non-revenue and revenue in water supply.

12. Main contents of non-revenue water.

~~13. Others.~~

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30. KAPSABET SEWERAGE PROJECT
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33. PRELIMINALY DESIGN REPORT ON KAPSABET-KAPLAMAI-MESWO
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40. KAPASABET TOWN RETICULATION PLAN
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WATER SUPPLY SYSTEM OF THREE PROVINCIAL TOWNS NWCPC
42. NANDI DISTRICT DEVELOP PLAN 1989-1993

資料－８

１ 一般概況

１－１ 地　勢

ケニア共和国は、アフリカ大陸の東部、赤道を挟んで北緯 5° ～南緯12° の間に位置し、東はインド洋、ソマリア、南はタンザニア、西はウガンダ、北はエチオピアに接している。国土面積は582千平方キロメーターあり、日本の約 1.5倍である。

国土を南北にアフリカ大地溝帯（グレイト・リフト・バレー）が貫いており、断層陥没帯で、その幅は34Km～60Km、総延長 1万Kmにも及んでいる。地形は大地溝帯の影響を受け起伏に富んでおり、ケニア山の標高は5199mで、タンザニ におけるアフリカ一高いキリマンジャロ山（標高5895m）に次いで高い。首都であるナイロビは内陸部で、標高1700mに位置する。

１－２ 気　候

ケニア共和国は変化に富んだ地形であり、標高と緯度により気候は全く異なりグレート・リフト・バレーがある高原地帯では標高約1,700mでサバンナ地帯のため年間平均気温は20° C と非常に過ごし易い。

雨期と乾期がはっきりしており、雨期は 3月末～ 6月が大雨期で、10月～12月が小雨期であり、それ以外は乾期となる。年間の降雨量は1,000mm である。しかし、480Km に及ぶインド洋に面した海岸地帯はモンスーンの影響による高温多湿な熱帯性気候であり、年間の平均気温は26° C と高温多湿である。ソマリア、エチオピアに面した北部は半砂漠の乾燥地帯であり、年間降雨量は200mm 以下である。

１－３ 人　口

ケニア共和国の総人口は 2,400万人（1990年度）であり人口増加率は高く、3.8% を示し総人口の98％はアフリカ人であり、50部族で構成され主な部族はキクユ族、カンバ族、トゥルカナ族、メルー族、マサイ族、ソマリ族である。

首都ナイロビの人口は、1985年度において116.2万人であり、都市部における人口増加が著しい現象となっている．

平均寿命：　男　57才、　女　61才

１－４ インフラストラクチュアー

１）上下水道

首都ナイロビでは上下水道が完備され、衛生状態も悪くないが、地方では住民の生活は貧しく、完備が遅れており、衛生状態も悪い。このため、ケニア政府は第６次国家開発計画（1989年～1993年）の地域格差の是正を主要計画目標とし、地方の民政安定及び産業の振興のための上下水道の整備を推進している。

この一環としてナイロビ以外の都市部では、日本をはじめとして、イタリア、スウェーデン、フィンランド等の第三国援助により、着々と整備されてきた．

2）住　　宅

地方における干ばつ等のため、都市部への人口集中が進展し、特に首都ナイロビにおいて人口の膨張が進行している。この人口増加は住宅の深刻な供給不足をもたらし、インフレとあいまって、土地価格、建設価格の上昇、建設資材の不足等を招いている。

このためケニア政府は、全ての家族に住宅を供給すると言う住宅整備計画を、第６次国家開発計画に織り込み、推進しようとしている。

3）交　　通

：　道　路　　主要都市間を結ぶ舗装道路

：　鉄　道　　モンバサ～ナイロビ～マラバを結び１日２便運行

：　空　港　　国際空港　　ジョモ・ケニヤッタ空港

国内便　　ケニア航空

ナイロビ～モンバサを１日６～８便運行

ナイロビ～キスム　　１日５～６便運行

：　都市交通　　主要都市間を長距離バスが運行している。

2　社会、経済状況

2－1　一般概況

1）1963年に英国保護領より独立し、初代大統領ケニヤッタの親西欧主義の下、自由経済解放政策を運営し、比較的着実な経済発展を成し遂げてきたが、オイルショック直後から景気の後退が見られ、世銀、ＩＭＦ指導の構造調整策の実施後も際だった成果は見られず、経済成長率にも鈍化の兆しが出てきている。

貿易収支、財政収支の赤字も年毎に拡大傾向にあり、金融、財政面での外国からの支援が引き続求められている。又、昨年（1991年）は約20％の物価上昇が記録される等の市民生活に不安な影を落としている。主要経済指標を表－資８．１、　主要産業別を表－８．２に示す。

2）国家財政

：　財政政策

政府財政支出を抑え、民間主導経済への移行を目的として、構造調整政策を実施中である。特に公共部門の縮小、民営化、受益者負担制度の導入による保健、医療、教育分野での改革により財政赤字の削減に取り組んでいるが、輸入の急増などにより貿易赤字の拡大も見られる。

：　政府財政

政府は財政赤字の縮小を唱え、歳出の縮小政策を取っているが、急速に改善される見通しはない。政府としては、今後、ＩＭＦ、世銀等の国際機関と協調の上、構造調整資金の借入による産基盤の整備、生産構造の改革による経済活性化を財政再建の基本政策としている。また、近年、観光業のめざましい発展により、観光収入は農産物輸出による外貨獲得高を越え順調に延びてきており、財政赤字改善の一方策として期待が寄せられている。

表－資８．１　主要経済指標

	１９８７年	１９８８年	１９８９年
経常収支　（百万ﾄﾞﾙ）	-407	-403	-604
貿易収支　（百万ﾄﾞﾙ）	-641	-813	-1,218
輸出額　（百万ﾄﾞﾙ）	790	952	1,202
輸入額　（百万ﾄﾞﾙ）	1,431	1,765	2,420
外貨準備高　（百万ﾄﾞﾙ）	155	185	231
対外債務残高　（百万ﾄﾞﾙ）	5,950	5,996	N.A.
ＧＤＰ　（百万ﾄﾞﾙ）	4,685	5,394	6,155
実質ＧＤＰ成長率	4.9%	5.2%	5.0%
一人当りＧＮＰ　（ﾄﾞﾙ）	340	370	360
消費者物価上昇率	6.8%	10.9%	10.4%
失業率	N.A.	N.A.	N.A.

出典：国際協力事業団　「国別援助実施指針」　1992年度版

表－資８．２　主要産業別シェア

	農　業	鉱工業	ｻｰﾋﾞｽ業
産業別GDP構成比　(1989)	31.0%	20.0%	49.0%
産業別成長率　(1989)	-3.9%	3.6%	3.2%
産業別戸用(1985～89平均)	81.0%	6.8%	12.1%

出典：国際協力事業団　「国別援助実施指針」　1992年度版

：　金融政策

金融政策では、通貨供給量の調節、金利政策の改善、通貨・資本市場の整備を骨子とし、特にインフレ抑制のため通貨供給量はＧＤＰの成長率に見合った11.1%としている。

中央銀行は、流動性比率、信用抑制、公定歩合、市場操作を通じて供給量、国内信用量をコントロールする計画である。

1990年／1991年度　国家予算を表－資８．３に示す。

表－８．３

歳　入　項　目	90/91 年度 (百万KSh)	比　率 (%)
1 税収入	2,097.92	85.3
2 企業収入等	360.66	14.7
歳　入　合　計	2,458.58	100.00

歳　出　項　目	90/91 年度 (百万KSh)	比　率 (%)
1 国防	300.20	7.6
2 農林水産	264.16	6.7
3 鉱工業･建設業	95.15	2.4
4 エネルギー	38.96	1.0
5 運輸・通信	153.82	3.9
6 教育	702.51	17.8
7 保健	187.08	4.7
8 社会保障･住宅	122.32	3.1
9 債務返済	1,324.60	33.6
10 その他	757.83	19.2
歳　出　合　計	3,946.63	100.0

出典　国際協力事業団　「国別援助実施指針」　1992年度

注：ａ）歳出合計3,996.63に修正

　　ｂ）%表示を修正

３）国際収支

主要輸出作物であるコーヒー、紅茶の国際市場の悪化、原油価格の上昇、輸出指向構造調整策による原材料輸入の増加により、国際収支は赤字基調にある。

援助国からの資金援助等公的資金の流入増加によりかろうじて収支の均衡を保っている。

：　経常収支

1986年以降輸出の伸びが落ち込んだが、これは農産物のコーヒーと紅茶の国際価格の傾向の低迷が原因である。一方、石油燃料、産業機械等の輸入が86年以降増加し、輸入超過の傾向は近年ますます強くなっている。

この結果、貿易収支の赤字は1986年には604百万ドルに達するまでになっている。

：　対外債務残高

アメリカ、イギリス、旧西ドイツ等による債務帳消しにより、1989年に一時減少した債務支払も1990年には再び上昇し、 659百万ケニア・シリングとなった。

累積債務は1990年において、3,419百万ケニア・シリングに達している。その50％以上が2国間債務であり、我が国は 428百万ケニア・シリングで12.5％を占めている。

２－２　国際協力の現状

１）ケニア国は、独立以来、親西欧外交、自由資本主義経済政策を国策として、アフリカの中では比較的着実な経済発展を遂げている。外交面では非同盟を基本としているが、旧宗主国の英国を初めとする西側諸国との関係は緊密である。ＤＡＣ諸国による援助では、1989年度純額で620.58百万ドル（二国間ＯＤＡ）の供与となっている。供与額は近年増加の傾向にあり、サハラ以南アフリカでは、タンザニアに次いで第２の援助受取国となっている。国別援助受取国では、86年以降日本が英国を抜いてトップ・ドナーとなった。

1991年11月パリにおいて開催された対ケニア援助国会議において主要援助国は、ケニア国での汚職の横行、民主化への取り組みの遅れ、人権抑圧、経済構造調整の遅れなどを理由に新規援助の凍結を決定したが、現在実施中のプロジェクトについてはこれまで通り援助を継続するとの考えで各援助国間の合意に至っている。

しかし公共部門の改革に進展が見られれば新規援助（Ｂ／Ｐサポート）を再開する方針をとる米国、世銀と次回のＣＧ会議までは新規援助はコミットしないとする北欧諸国（スエーデン、デンマーク、オランダ）の間に対応の相違がみられる。

国際機関は純支出額で351.78百万ドルのＯＤＡ供与を行っており、このうち貸付が72.7％を占めている。主要援助機関はＩＤＡ、ＥＤＦであり、供与額は近年増加傾向にある。

２）我が国はケニア国がサブサハラ 45ヶ国中心的国家であり、独立以来自由主義経済体制をとり、我が国と緊密な友好関係を有していること等から、サブサハラ１位の援助受取国となっている。

特に、食料不足の解消と主要産業である農業の多角化による基盤強化を目的とした食料農業分野、各種伝染病に対処するための研究の促進を目的とした保健・医療分野、林業分野、水供給分野等の生活基盤分野を中心に、運輸、交通、通信等の基盤インフラ整備、構造調整支援を通じた産業振興・輸出振興等も対象として、同国の幅広い経済・社会開発ニーズに応じた援助を推進している。

1991年 2月には、環境分野における我が国の経済協力のあり方について全般的な政策対話を行いつつ、具体的な案件の発掘に努めることを目的として環境ミッションを派遣し、環境行政や野生動物保護、森林保全、造成の分野での協力を検討している。