(2) Equipment for Weather Observation and Hydrological

It will be required to obtain weather and hydrological data for the planning of the rural development programme in the southern states. In order to gather this representative data for the southern provinces, it is planned to conduct weather observations at four locations and hydrological measurements in the four rivers. Weather observations will be made at the Kaunga rea, in the vicinity of the Luangwa Bridge, at Luangwa Boma, and midway between the Kaunga area and Luangwa Boma. The hydrological measurements will be taken in the Luangwa, Zambezi, and Kaunga rivers, and in the small on medium-sized tributary of the Luangwa River. Therefore, four sets of weather observation equipment and hydrological measuring instruments are reuired.

(3) Equipment for Training Program:

The Project will provide education and training programmes for the farmers in th Luangwa District. Blackboards and projectors are required for training aids.

5-4-2 List of Equipment

(1) Equipment Necessary for Agricultural Extension Work:

① Agricultural Equipment:

Table 5-26 Agricultural Equipment

No.	Item	Quantity	Remarks
1	Tractor with seat	2 ea	60 HP
2	Rotary Tiller	2 ea	For ploughing, 4-disc.
3	Power-sprayer	1 ea	For spraying agricultural medicines, 500 liter.
4	Trailer	1 ea	For transportation - 2-ton.
5	Hand-tractor	2 ea	For small lot cultivation - 12.5 HP with rotar
6	Spare Parts	20%	For all equipment

② Equipment for Extension Activities:

Table 5-27 Equipment for Extension Activities

No.	Item	Quantity	Remarks
1	Station Wagon 1,500 cc	1 ea	Off-road type
2	Small Jeep (4-wheel drive)	1 ea	1,300 cc
3	Small Track	1 ea	2 ton
4	Motorcycle	3 ea	Off-road type 125 cc

③ Repair Machinery:

Table 5-28 Repair Machinery

No.	Item	Quantity	Remarks
1	Repair Machinery	1 set	
2	General Tools	1 set	
3	Inspection Appratus	1 set	
4	Chassis Repair Tools	1 set	
5	Engine Repair Tools	1 set	
6	Tire Service Tools	1 set	
7	Framework Tools	1 set	
8	Power Tools	1 set	
9	Electric Service Tools	1 set	
10	Air Tools	1 set	
11	Grease Supply Tools	1 set	
12	Cleaning Tools	1 set	

(2) Equipment for Weather Observation and Hydrological Measurement:

Table 5-29 Equipment for Weather Observation and Hydrological Measurement

No.	Item	Quantity	Remarks
1	Thermoscreen, Weather Bureau No. 2 Type	4 ea	
2	Hydrograph	4 ea	7-day winding
3	Maximum-minimum thermometer	4 ea	Rutherford type, certified unit
4	Self-registering wind guage, Propeller Type	4 set	With transmitter, register, energy saving device, and receiving plate
5	Wind gauge tower, 10 m high	4 ea	With flanges
6	Heliograph	4 ea	Robitch self-registering
7	Underground Thermometer. 3-tube Set	4 ea	10cm, 20cm, 30cm certified unit
8	Self-registering Rain Gauge with Tilting Box	4 ea	
9	Evaporation Pan, 120mm dia.	4 ea	w/vernier scale, certified unit
10	Earthman Type Wet and Dry ygrometer	4 ea	Certified unit
11	Self-registering Water-stage Recorder	12 ea	0.1%, 10 m measuring
12	Current meter, Price	4 ea	

(3) Equipment for Training Programme:

Table 5-30 Equipment for Training Programme

No.	Item	Quantity	Remarks
1	Blackboard	2	
2	Projector	2	Set

CHAPTER 6 PROJECT IMPLEMENTATION PLAN

CHAPTER 6 PROJECT IMPLEMENTATION PLAN

6-1 Project Implementation Schedule

The Department of Agriculture of the Ministry of Agriculture and Water Development is responsible for the administration and execution of the Project. The intake facilities and water conveyance facilities will be built in the high water channel of the Kaunga River. The building permits for those facilities shall be obtained from the Department of Water Affairs and the Department of Architecture of the Ministry of Public Works. The requests for building permits will be applied for by the Department of Agriculture.

For the implementation of the Project, the Department of Agriculture will make a contract with a Japanese consultant company. The consultant company will make the detailed designs of the Project and prepare the contract tender documents, and execute the tender evaluation as a proxy for the Department of Agriculture. The consultant company will supervise the facilities' construction work and will assist the Department of Agriculture in the procurement of equipment.

6-2 The Boundary of Responsibility for the Project

1. Necessary Measures to be Undertaken by the Government of Japan:

   The facilities to be built and the equipment to be procured under the grant aid programme of the Government of Japan are as follows:

   (1) Model Farm:

   1 Intake facilities
   2 Water conveyance facilities
   3 Irrigation channels

4 Distribution Ponds

5 Land consolidation

(2) Operation and Management Office and Experimental Farm:

1 Project Office and Related Facilities:

Operation and Management Office Building, Farmers' Training Center Building, Garage and Repair Shop Building, Storehouse, Lodging, and Power Generating House.

2 Experimental Farm:

Farm development, irrigation facilities, and well.

3 Equipment:

Equipment for agricultural extension activities, and for weather observation and hydrological measurements.

2. Necessary Measures to be Undertaken by the Government of the Republic of Zambia:

Measures necessary to carry out the Project under the grant aid programme of the Government of Japan shall be taken care of by the Government of the Republic of Zambia. The necessary measures are as follows:

(1) To secure land and water rights for the proposed facilities of the Project.

(2) To clear and reclaim the above land as required before the start of construction, if necessary.

(3) To bear commissions to a Japanese foreign exchange bank for the banking services based upon the Banking Arrangement.

(4) To exempt and to take necessary measures for customs clearances at the port of disembarkation for material and equipment intended for the Project.

(5) To accord Japanese nationals, whose services may be required in connection with the supply of products and services under the verified contracts, such assistance as may be necessary for entering the Republic of Zambia and while remaining therein, to perform their work.

(6) To organize the Project Office and to hire the staff.

(7) To secure the annual budget for the Project Office.

(8) To maintain and use properly and effectively the facilities constructed and the equipment purchased under the grant aid.

6-3 Construction Plan

6-3-1 Contract Method

The Project's construction work will be carried out by a Japanese company as the main contractor and Zambian companies as subcontractors.

6-3-2 Area Conditions and Suggestions

(1) The Republic of Zambia is an inland country and does not have a port facility. The material and equipment required for the Project shall be disembarked at a port in a neighboring country. It will then be transported by land over a long distance through the neighboring country. Thus, for the Project's construction work, it is recommended that the least possible amount of construction material and equipment as possible be sent from Japan, and that Zambian material and equipment be used wherever possible.

(2) In Zambia, farming activities begin at the start of the rainy season in November. It will be necessary to complete land consolidation work prior to this time, in order that farmers may commence their farming activities.

(3) There is water in the Kaunga River until approximately two months after the end of the rainy season. Intake facilities are to be constructed in the river. As it will be impossible to do construction work in the river during the rainy season, all such work must be performed during the dry season.

(4) After installation, all Project facilities will be operated and maintained by Zambian personnel. In order to conduct smooth operations and proper maintenance, it will be necessary to provide the Zambian personnel with appropriate guidance and training during the construction period.

6-3-3 Detailed Design and Construction Supervision Plan

For the implementation of the Project, a consultant company shall perform the following services:

(1) Detailed Design

As determined by the basic study, the consultant company will conduct the area survey, make the detailed design, and prepare the tender documents.

(2) Tendering and Contracting:

The consultant company will make the tender announcement, prequalification evaluation, delivery of tender documents, and tender evaluation, and will assist the Government of the Republic of Zambia in contract negotiations with a Japanese contractor.

(3) Construction Supervision:

1 Supervision in Japan:

After contract agreements have been completed, the consultant company will examine and evaluate all documents submitted by the contractor, and will inspect the procured material and equipment.

2 Supervision at the Project Site:

The consultant company will conduct the procedures necessary to start construction work. They will witness local procurement of construction material and equipment, inspect and coordinate the progress of the construction work, and inspect project machinery. The consultant will supervise and give guidance to the contractor on matters pertaining to the test operation of facilities and the completion of construction work, and will perform the construction schedule management quality assurance and cost control, in order to complete the construction work during the period specified in the exchange of notes.

6-3-4 Material and Equipment Procurement Plan

It will be required to use the construction material and equipment that is available in Zambia. That which is not available locally will be shipped from Japan. For material and equipment not available either in Zambia or Japan, it may be procured from a third country. Table 6-1 shows the material and equipment and indicates the names of countries from where they are available.

The equipment specified in the Japanese Government's grant aid program that is required to be procured from Japan is listed in Table 6-1 and Table 6-2 as follows:

Table 6-1

Construction Materials:		
The Republic of Zambia	Japan	Third Country
Sand Gravel Cement Asbestos Cement Pipes Reinforcing Bars Wood Concrete Blocks Slate Paint Tiles	Perforated Culvert Gate Valves Air-relief Valves Mozaic Tiles Steel Doors Steel Sanitary Equipment Polyvinyl Chloride Generators Distribution Panels Electric Wire Lighting Fixtures Sprinkler Units Submersible Pump Electric Powered Pumps	Gate Pipes
Construction Equipment:		
Concrete Mixers Crane Bulldozer	Grader Vibrators Dump Trucks	

Table 6-2

Agricultural Equipment:	
Tractor with Seat Rotary Tiller Powered Sprayer Hand Tractor Spare Parts	Trailer
Extension Work Equipment:	
Station Wagon Motorcycle	4-wheel Drive Jeep (Small)
Observation & Measuring Equipment:	
Weather Observation Equipment Hydrological Measuring Apparatus	
Training Equipment:	
Blackboard Projector	
Repair Machinery:	
1 Set	

6-3-5 The Project Schedule

The Project schedule shall include the following:

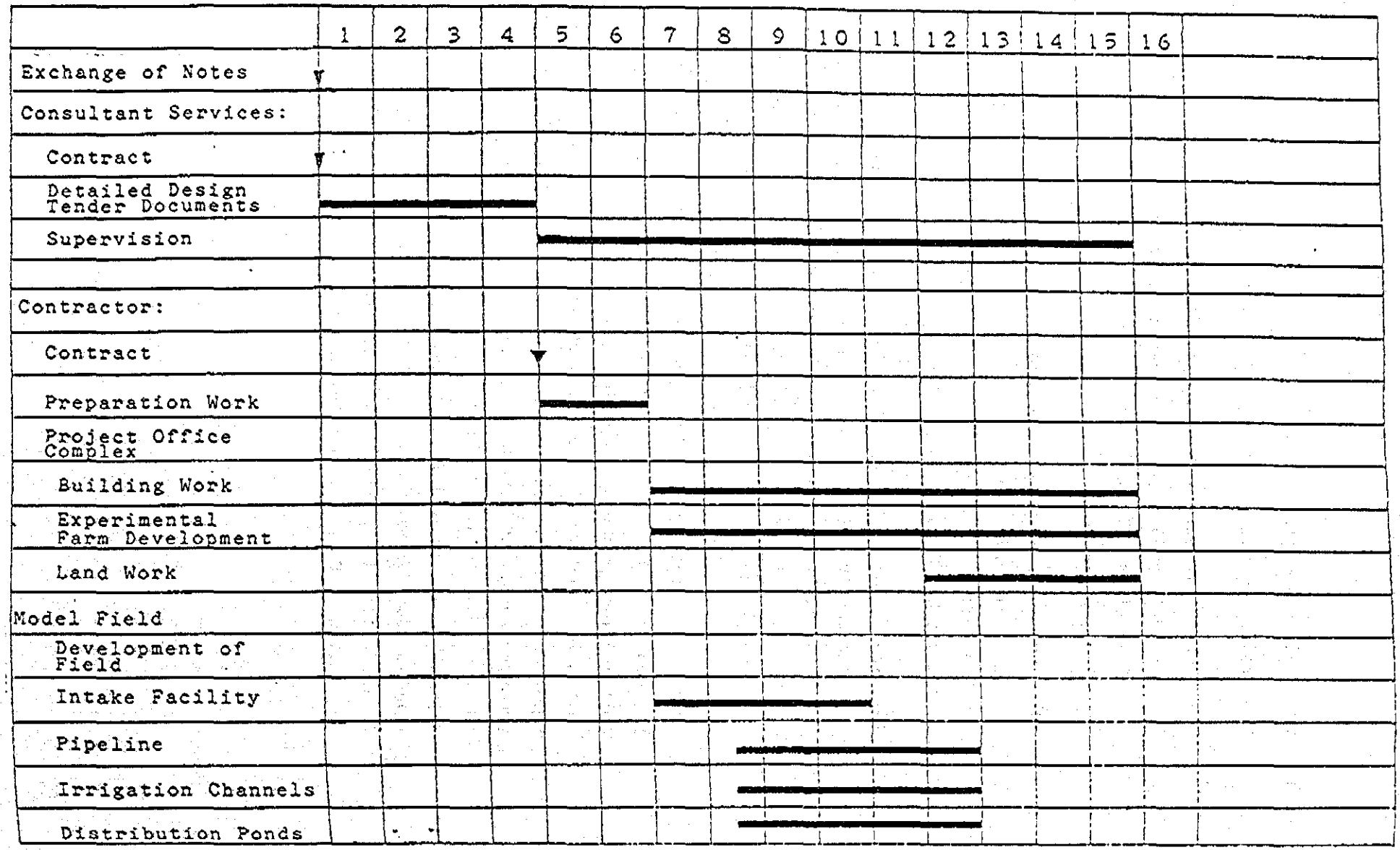
(1) The Government of the Republic of Zambia and the Government of Japan will sign the Exchange of Notes that describes the objectives and scope of the cooperation, and the amount of the grant aid.

(2) The Government of the Republic of Zambia will make an agreement with an authorized Japanese foreign exchange bank to handle grant aid funds as specified in the Exchange of Notes based on the Banking Arrangement.

(3) The Government of the Republic of Zambia will make contract agreements with a Japanese consultant firm and with a contractor to build the necessary Project facilities and to procure the required equipment to realize the objectives of the Project as specified in the Exchange of Notes.

After the agreement of the Exchange of Notes, the Project will proceed with the steps of taking the site survey, doing the detailed design work, preparing tender documents and tendering, commencing construction of Project facilities, and in procuring equipment. The inspection of the completed facilities and of the procured equipment will be performed within a period of 11 months as specified in the Exchange of Notes. The schedule for the implementation of the Project is shown in Table 6-3. The total construction period will be eleven months. It will start in April, after the rainy season ends, and will be completed during the following February when the rainy season begins.

Table 6-3 Project Implementation Plan



CHAPTER 7 OPERATION AND MAINTENANCE PLAN

CHAPTER 7 OPERATIONS AND MAINTENANCE PLAN

7-1 Operations and Maintenance System

A manager plus twelve or thirteen personnel will operate and maintain the facilities of the Project Office and Experimental Farm. It is planned to assign personnel in the fields of extension work, irrigation facilities, dry field planting, agricultural machinery, machinery operating, and machinery repair. It is planned to send Japanese experts and Japanese Overseas Cooperation Volunteers having experience in the above fields under the technical assistants programme. It is believed that the above mentioned personnel and volunteers will be able to operate and manage the Project facilities satisfactorily. As for the Model Farm, the intake facilities, water conveyance facilities, irrigation channels, and distribution ponds will be operated and managed by the farmers' committee.

Therefore, the Project Office personnel shall supervise and guide the farmers in matters concerning the organization and rules of the farmers' committee that is in charge of the operation and maintenance of the facilities.

7-2 Operations and Maintenance Costs

The estimate cost a 210,570 kw, one year for operation and maintenance.

(1)	Operation office	92,085 kw
	Personnel expenditures	67,200 kw
	Maintenance expenditures for office	12,000 kw
	Fuel cost of vehicle	12,885 kw
(2)	Experimental Farm	118,485 kw
	Employee expenditures	25,200 kw
	Running cost of pump	35,320 kw
	Running cost of agricultural machinery	57,965 kw
	Total	kw 210,570

Operations and Maintenance Cost
Personnel expenditures

Manager	$1{,}000^{kw} \times 12^{Mon.}$	= 12,000
Charge staff	$700^{kw} \times 4^{M.} \times 12^{Mon.}$	= 33,600
Office staff	$500^{kw} \times 12^{Mon.}$	= 6,000
Secretary	$350^{kw} \times 12^{Mon.}$	= 4,200
Operator	$350^{kw} \times 12^{Mon.}$	= 4,200
Drawing staff	$300^{kw} \times 12^{Mon.}$	= 3,600
Ripair staff	$300^{kw} \times 12^{Mon.}$	= 3,600
	Total	67,200

Fuel Cost

Vehicle

4-Wheel Drive Jeep (Small)

$30^{km/day} \times 22^{day} \times 12^{Mon.} \div 6^{km/l} = 1320^{l}$

Station wagon

$60^{km/day} \times 22^{day} \times 12^{Mon.} \div 8^{km/l} = 1980^{l}$

Motorcycle 3 ea

$10^{km/day} \times 22^{day} \times 12^{Mon.} \div 15^{km/l} = 538^{l}$

$(1320^{l} + 1980^{l} + 528^{l}) \times 1.10 \times 3.06^{kw} = 12{,}885^{kw}$

Office Maintenance Expenditures

$1{,}000^{kw/Mon.} \times 12^{Mon.} = 12{,}000^{kw}$

Employee expenditures

Farmers	$6^{M.}$	$250^{kw} \times 6^{M.} \times 12^{Mon.}$	= 18,000kw
Irrigation Maintenance	$2^{M.}$	$300^{kw} \times 2^{M.} \times 12^{Mon.}$	= 7,200kw
			25,200kw

Running Cost of Pump

Compresee pump	$1{,}686^{l} \times 1.1 \times 3.06^{kw/l}$	= 5,675kw
Under water pump	$13{,}750^{l} \times 1.1 \times 1.96^{kw/l}$	= 29,645kw
		35,320kw

Agricultural Machinery

Tractor with seat

$17{,}193^{l} \times 1.10 \times 3.06^{kw/l} = 57{,}871^{kw}$

Hand Tractor

$28^{l} \times 1.10 \times 3.06^{kw/l} = 94^{kw}$

$57{,}965^{kw}$

CHAPTER 8 THE PROJECT EVALUATION

CHAPTER 8 THE PROJECT EVALUATION

8-1 Benefits of the Project

Farming in Zambia is conducted by traditional methods and is completely reliant upon uncontrollable weather conditions. In the southern provinces, the annual rainfall is slight and its pattern is not uniform. The agricultural output in the area is not stable; almost every year, due to irregular rainfall patterns, the crops sustain drought damage. The purpose of the Project is to establish irrigation farming in the area by installing a low cost irrigation system which will be operated and maintened by locally available skills, and to make the area an outpost for irrigation farming extension activities in the southern provinces. This will be done by establishing an experimental farm, developing experimental crops, demonstrating irrigation farming, and educating and training the farmers.

The direct benefits derived from the Project are listed herewith:

(1) Farm production will be increased by use of the Project's irrigation facilities for supplemental irrigation during the rainy season.

(2) Water intake will be possible for two months after the ending of the rainy season, even during years of light rain. Irrigation will prevent crop blight and harvesting will be possible during drought years.

(3) During normal rainfall years, maize, a staple food, can be harvested by the end of the rainy season. After the rainy season it will be possible to plant vegetables and fruit trees, using irrigation water, for two months after the end of the rainy season.

(4) The purpose of the experimental farm is to determine what crops are suitable for growing in the area. The farm output will be increased by planting appropriate crops.

(5) Test cropping on the experimental farm will determine what new types of crops can be planted and grown in the area. The nutritional levels and cash incomes of farmers will be increased by planting a variety of crops.

(6) The stable and/or increased yield of farm products resulting from diversified cropping will bring new wealth to the area, thereby improving the living standards of the farmers.

In addition to the above, the following secondary benefits will be brought to the southern provinces:

(7) The farmers' understanding and concern for the necessity of irrigation facilities will be broadened.

(8) The model field with its low cost irrigation system that can be operated and maintained by local skills will encourage farmers in other areas to build irrigation systems in their own communities.

8-2 Justification of the Project

As mentioned in the previous chapter, the Project will bring direct benefits to the Project area and secondary benefits to other areas in the southern provinces where crops often sustain drought damage. The Project will form the base for research activities for determining suitable crops, including the introduction of new crops, for the area. The Project will also be the base from where irrigation farming extension activities, and for the training of farmers at the Farmers' training Center. The Project area will be the model for the Rural Development Programme that will aid in bringing stable and, most probably, increased agricultural output to areas of southern provinces. Based on the above evaluations, it will be most meaningful to proceed with the Project and to carry out the work with grant aid from the Government of Japan.

CHAPTER 9 CONCLUSION AND RECOMMENDATIONS

CHAPTER 9 CONCLUSION AND RECOMMENDATIONS

9-1 Conclusion

The Project's benefits will not only bring about increased and stabilized farming production and economic improvement to the Project area, but it will also develop the farmers' understanding and concern for the irrigation farming methods thereby possibly extending irrigation farming methods in the southern provinces. Consequently, the Project will contribute to increasing and stabilizing the agricultural output of Zambia thereby bringing about the economic development of the country. As a conclusion, the Project will have numerous beneficial effects on the country.

9-2 Recommendations

(1) After the rainy season, the river water in the Project area dries up. Irrigation water is available from the river during the rainy season, but becomes scarce two months after the ending of the rainy season. During a normal rainfall year, the yield of maize will be increased by supplemental irrigation during the rainy season. In a light rain year, the irrigation will prevent blight of the maize crop thereby enabling a normal harvest. However, in a year of an abnormal rainfall pattern (with the occurrence of once in 5-year probability), i.e., the rainy season ends in the middle of January, it will be impossible to irrigate maize with a sufficient amount of water until its final growing stage. Small-scale irrigation will not be able to guarantee normal maize production.

During a normal rainfall year, the amount of intake water will gradually decrease by the third month after the commencement of the rainy season. In the latter half of the dry season, no irrigation water can be anticipated. Under this condition, it will be necessary to utilize the

irrigation water efficiently by determining the best irrigation method to use and to control the water intake from the river. This is especially true for years having only light rain or abnormal rainfall patterns.

(2) The soil in the Kaunga River is sandy and its water retention capacity is not high. During the rainy season it is possible to apply furrow irrigation to the soil. However, in the dry season, irrigation water may not reach remote ends of the furrows. It is recommended, therefore, to conduct land improvement by adding to it organic fertilizers and loam soil. By doing so, the land's water retention capacity will increase, thus enchancing the effects of the irrigation.

(3) During the dry season, no water will be in the irrigation water supply pipeline. Under this condition, some birds and small animals tend to make their nests in the dry pipes. The nests may cause unexpected trouble when the pipeline again carries irrigation water. The prevent this, it will be necessary to inspect and maintain the pipeline even in the dry season.

APPENDICES

APPENDICES

1. Members of Study Team
2. Schedule of the Study Team
3. List of Interviewed Personnel
4. Minutes of Discussions
5. List of the Data Collected in Zambia
6. Basic Relating Data

APPENDIX 1 MEMBERS OF THE STUDY TEAM

1 Basic Design Study Team

S. Iwamoto	Team Leader	Director, the First Survey and Research Department, the Japanese Institute of Irrigation and Drainage
Y. Teranishi	Coordinator	The First Basic Design Study Section, Grant Aid Planning Study Department, Japan International Cooperation Agency
Y. Itoh	Irrigation/Drainage Engineer	Pacific Consultants International
A. Kikawada	Civil Engineer	Pacific Consultants International
Y. Fujiwara	Irrigation/Drainage Engineer	Pacific Consultants International

2 Draft Final Report to Explain Study Team

K. Katsurai	Team Leader	Agricultural Development Specialist, Japan International Cooperation Agency
Y. Itoh	Irrigation/Drainage Engineer	Pacific Consultants International

APPENDIX 2 SCHEDULE OF THE STUDY TEAM

1 Schedule of Basic Design Team

April 5	Sunday	Left Narita for Zambia
April 7	Tuesday	Arrived Lusaka, the Republic of Zambia. Paid a courtesty visit upon the Japanese Embassy in Zambia and the JICA Zambia Office, and held a meeting with the officials of the Embassy and the JICA office.
April 8	Wednesday	Paid a courtesy visit upon the Ministry of Agriculture and Water Development, and held a meeting with officials of the Department of Agriculture.
April 9	Thursday	Team leader and coordinator visited Kaunga area, then attended a meeting at the Luangwa District Office.
April 10	Friday	Y. Itoh and two others went to Kaunga are and conducted an area survey.
April 11	Saturday	The above three members continued the area survey.
April 12	Sunday	Held a discussion amongst the study team.
April 13	Monday	Paid a courtesy visit upon the Permanent Secretary of Lusaka Provincial Office.
April 14	Tuesday	Held a meeting with JICA office personnel. Paid a courtesy visit upon the Ministry of Agriculture and Water Department. The Minutes of Discussions on the Project was signed.
April 15	Wednesday	Held discussions with personnel of a surveying company and a boring company. Team leader and coordinator left Zambia.

April 16	Thursday	Three members moved to Kaunga area. Conducted a leveling survey between the water intake point and the planned model field area.
April 17	Friday	Conducted a route survey of the planned water supply pipeline. Conducted the area survey in the planned model field area.
April 18	Saturday	Surveyed wells located in the model field area. Collected relevant data for the Project at Luangwa District Office and Chitope Camp Office.
April 19	Sunday	Surveyed wells in the neighboring areas of the model field. Conducted soil survey in the model.
April 20	Monday	Conducted soil survey in the model field area.
April 21	Tuesday	Explained the survey results to the officials of the Department of Agriculture at the Project site.
April 22	Wednesday	Paid a courtesy visit upon the Luangwa District Governor. Held a discussion with officials of the District Agricultural Office. Held an area meeting with personnel of a boring company. One team member moved to Lusaka.
April 23	Thursday	Conducted soil survey in the planned experimental farm area. Selected a site for test pumping. Collected necessary data at the Ministry of Work and Supply and the Department of Central Statistics. Requested a local contractor to provide a construction cost estimate.

April 24	Friday	Two team members moved to Lusaka. Collected necessary data at the National Commission for Development Planning, the Department of Water Affairs, and the Meteorological Department.
April 25	Saturday	Conducted a survey on construction material prices at hardware stores in Lusaka.
April 26	Sunday	Classified collected data.
April 27	Monday	Investigated Mazabuka Experimental Farm.
April 28	Tuesday	Collected necessary data at the Department of Agriculture and Water Development, Ministry of International Trade and Industry, Ministry of Labor, and the Government Publication Bureau.
April 29	Wednesday	Collected ground water and river water samplesin the Kaunga area. Collected necessary data at the Xambia Bureau Standards, Zambia Electric Corporation.
April 30	Thursday	Collected necessary data at the Land Development Service, Government Publication Bureau, and at a local contractor's office. Reported the survey results to the Department of Agriculture and Water Development. Reported the survey results to the Japanese Embassy in Zambia.
May 1	Friday	Left the Republic of Zambia
May 4	Monday	Arrived at Narita, Japan.

2 Schedule of Draft Final Report Team

August 21	Friday	Left Narita for Zambia.
August 23	Sunday	Arrived Lusaka, the Republic Zambia. Reported the Draft Final Report to JICA Experts.
August 24	Monday	Reported to explain the Draft Final Report to the Department of Agriculture and Water Development, the Japanese Embassy in Zambia and JICA office in Zambia.
August 25	Tuesday	A team visited Kaunga area. A meeting at the Lusaka MCC District office.
August 26	Wednesday	Visited Luangawa, Boma, to explain Report to District governor. Went to Lusaka.
August 27	Thursday	Held a meeting with the Ministry of Agriculture, Report and Minutes.
August 28	Friday	The Minutes of Discussions on the Project was signed. Reported the signed of Minutes to the Japanese Embassy in Zambia and JICA in Zambia.
August 29	Satuday	Left the Republic of Zambia
September 1	Tuesday	Arrived at Narita, Japan

APPENDIX 3 LIST OF INTERVIEWED PERSONNEL

1 List of Interviewed Personnel During the Basic Design Study:

Ministry of Agriculture & Water Development

Permanent Secretary	Mr. NEBWE
Deputy Permanent Secretary	Mr. F.C. KAWONGA
Chief Horticultural Officer	Mr. I.C. NKHUNGULU
Chief Land Use Planning Officer	Mr. R.S. MWANZA
From Management Officer	Mr. A.E.T. MWAPE
Irrigation Engineer	Mr. I. AKAYOMBOKWA
Hydrologist	Mr. SHIAMACHOKA
Senior Economist	Mr. A.K. BANDA
Senior Economist	Mr. M.C. SOKO

Lusaka Provincial Office

Permanent Secretary	Mr. D.H. KAONA
Deputy Permanent Secretary	Mr. A. SIMBULA

Luangwa District Governor — Hon. S. NYAMKANDEKA

Luangwa District Office

Executive Secretary	Mr. H.S. MUUMA
Development Secretary	Mr. G.W. SIWELWA
Agricultural Officer	Mr. T.F. MPHANDE
Block Supervisior Chitope	Mr. Z.H. MUDENDA
Camp Officer Kaunga	Mr. P.C. SANDE

Mazabuka Experimental Farm

Execute Officer	Mr. A.T. MITHI
	Mr. R.S. NANGA
Irrigation Engineer	Mr. Angle DAKA

Japanese Embassy in the Republic of Zambia

Ambassador	Mr. M. OHTA
Consulate General	Mr. Y. IMAGAWA
First Secretary	Mr. R. ISHIDA
Second Sectetary	Mr. S. KITAMURA
Attache	Mr. T. MIYAGAWA

JICA Zambia Office

Resident Representative	Mr. H. YAMAGUCHI
Manager	Mr. R. KOJIMA
Coordinator	Mr. H. OHSHIBA

JICA Experts

Advisor, Department of Agriculture, Ministry of Agriculture and Water Development	Mr. K. KATSURAI
Expert, Dry Field Farming Section, Department of Agriculture	Mr. I. KUDOH

2 List of Interviewed Personnel during the Draft Final Report

Ministry of Agriculture & Water Development

Permanent Secretary	Mr. N. Nututu
Director of Agriculture	Mr. M.R. Mulele
Administrative Office	Mr. D.A. Situmbeko
Chief Crop-Husbandry Officer Dept. of Agriculture	Mr. C.W. Lubasi
Chief Landuse Planning Officer	Mr. R.S. Mwanza
Senior Economist (Planning Division)	Mr. A.K. Banda
Farm Management Officer Dept. of Agriculture	Mr. Chilembo
Economist, PD. MAWD	Miss. P.C. Mumba

Lusaka-District

District Governor	Hon. S. Nyamkandeka M.P.
District Political Secretary	Mr. J.S.N. Shitima
Development Secretary	Mr. A.W. Siwelwa
District Youth Chairman	Mr. A.B. Njobvu
District Agriculture Officer	Mr. T.P. Mphande

Lusaka-District (Lusaka)

Member of Central Committee	Hon. Kapulu (MCC)
Land Use Planning Officer	Mr. Zimba Limited
Extension Training Officer	Mr. Mulopo (Mrs)

Ministry of Finance

Aid and Laans Management Section	Mr. O. Chundu

Japanese Embassy in the Republic of Zambia

Charge d'Affaires ad interim (Consulate General)	Mr. Y. Imagawa
First Secretary	Mr. R. Ishida
Second Secretary	Mr. S. Kitamura

JICA Zambia Office

Resident Representative	Mr. K. Tomita
Manager	Mr. R. Kojima

JICA Experts

Experts Dry Field Farming Section, Dept. of Agriculture	Mr. I. Kudoh

Appendix 4 Minutes of Discussions

1 Basic Design Study:

MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY
FOR
THE RURAL DEVELOPMENT PROGRAMME IN KAUNGA AREA
IN
THE REPUBLIC OF ZAMBIA

In response to the request of the Government of the Republic of Zambia, the Government of Japan decided to conduct a basic design study on The Rural Development Programme in Kaunga Area (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA"). JICA sent to the Republic of Zambia the study team headed by Mr. Sota IWAMOTO, Director, the First Survey and Research Department, the Japanese Institute of Irrigation and Drainage, from 5th April to 4th May, 1987.

The team had a series of discussions on the Project with the officials concerned of the Government of the Republic of Zambia headed by Mr. F. C. Kawonga, Deputy Permanent Secretary, Ministry of Agriculture and Water Development and conducted a field survey in Kaunga Area.

As a result of the study, both parties agreed to recommend to their respective Governments that the major points of understanding between them, attached herewith, should be examined towards the realization of the Project.

Lusaka, 14th April 1987

Mr. Sota IWAMOTO
Team Leader,
Basic Design Study Team, JICA

Mr. F. C. Kawonga
Deputy Permanent Secretary
Ministry of Agriculture and
Water Development

ATTACHMENT

1. Both sides reconfirmed the Minutes of Discussions which were mutually agreed and signed on 9th December 1986.

2. The objective of the Project is to establish a model of rural development programme in the southern provinces affected by the drought, aiming at reducing the risk of further drought by furnishing small scale irrigation facilities to expand the cropping season, growing appropriate crops and improving food production.

3. The site of the Project is located in the Kaunga Area, Luangwa District, Lusaka Province.

4. The Project is composed of the followings:
 a. Establishment of the Project Office with an experimental farm;
 b. Development of model small-scale irrigation field.

5. The activities of the Project Office are as follows:
 a. Testing and demonstration of crop cultivation suitable to the Project area in the experimental farm equipped with irrigation facilities;
 b. Guidance and application of irrigated agriculture to the Project area;
 c. Organization of farmers' committee to be in charge of operation and maintenance of the model small-scale irrigation field;
 d. Extension of the model of rural development programme to other areas in the southern provinces affected by the drought.

6. The Department of Agriculture, Ministry of Agriculture and Water Development is responsible for the administration and execution of the Project.

7. The administration and operation of the Project Office is undertaken by the Zambian staff such as director of the Office, irrigation engineer, agronomist, extension officer, etc. appointed by the Department of Agriculture.

8. The study team will convey to the Government of Japan the desire of the Government of the Republic of Zambia that the former takes necessary measures to cooperate by providing the buildings and other items listed in Annex I within the scope of Japanese economic cooperation programme in grant form.

9. The Government of the Republic of Zambia will take necessary measures listed in Annex II on condition that the grant aid would be extended to the Project.

10. The Zambian side expressed to the study team its desire that the Government of Japan is requested to extend the following cooperation for proper operation of the Project in the future.

a. to dispatch experts and Japan Overseas Cooperation Volunteers for the Project, and

b. to train the Zambian personnel in Japan related to the operation and administration of the Project.

ANNEX I

Items requested by the Governments of
the Republic of Zambia for the grant aid

1. Project Office with an experimental farm
 a. Project Office and related facilities (office, conference room, workshop, storehouse, water supply system, accomodation facilities, etc.)
 b. Experimental farm with irrigation facilities
 c. Equipment (agricultural machineries, vehicles, meteorological and hydrographical survey equipments, etc.)

2. Irrigation and drainage facilities
 a. Intake facilities
 b. Irrigation water conveyance system
 c. Drainage system
 d. Regulation ponds
 e. Land consolidation

ANNEX II

Necessary measures to be undertaken by the Government of the Republic of Zambia

1. To secure the lands and water rights for the proposed facilities of the Project.

2. To clear and reclaim the above lands as required before start of the construction, if necessary.

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

4. To exempt and to take necessary measures for custom clearance of the materials and equipment brought for the Project at the port of disembarkation.

5. 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 the Republic of Zambia and stay therein for the performance of their work.

6. To organize the Project Office and to secure the Project staffs.

7. To secure the annual budget for the Project Office.

8. To maintain and use properly and effectively the facilities constructed and equipment purchased under the grant aid.

9. To bear all the expenses other than those to be borne by the grant aid necessary for construction of facilities as well as for transportation and installation of the equipment.

2 Draft Final Report

MINUTES OF DISCUSSIONS
ON
THE DRAFT FINAL REPORT OF THE BASIC DESIGN STUDY
FOR
THE RURAL DEVELOPMENT PROGRAMME IN KAUNGA AREA
IN
THE REPUBLIC OF ZAMBIA

The Government of Japan has sent, through the Japan International Cooperation Agency (JICA), a Basic Design Study Team to the Republic of Zambia from 21st August to 1st September, 1987 for the purpose of presenting and explaining the Draft Final Report of the Basic Design Study for the Rural Development Programme in Kaunga Area.

After a series of discussions between the Basic Design Study Team and the authorities concerned of the Republic of Zambia, both sides confirmed the following results attached herewith (ATTACHMENT).

Lusaka, 28th August 1987

Mr. Koichiro Katsurai
Team Leader,
Basic Design Study Team, JICA

Mr. N. Mukutu
Permanent Secretary,
Ministry of Agriculture and
Water Development

(ATTACHMENT)

(1) Both parties agreed to reconfirm the Minutes of Discussions which was mutually signed on 14th April 1987.

(2) The party of the Republic of Zambia has agreed in principle to the basic design proposed in the Draft Report and appropriate alterations agreed by both parties in the course of discussions will be in the Final Report.

(3) The party of the Republic of Zambia has accepted Japan's grant aid system and the arrangement to be taken by the Republic of Zambia for realization of the project, such as:

1. To secure the lands and water rights for the proposed facilities of the Project.
2. To secure the annual budget for the Project.

(4) The Final Report (10 copies in English) will be submitted to the Republic of Zambia by the end of October 1987.

N.M.

Appendix 5 List of the Data Collected in Zambia

① Social-Economic Condition

No.	Title	Authority
1.	Third National Development Plan 1979-1983.	National Commission for Development Planning.
2.	Economic Review 1986 and Annual Plan 1987.	National Commission for Development Planning.
3.	Lusaka Province:Provincial Development Plan 1987-1991.	Provincial Planning Unit Lusaka Province.
4.	Country Profile Zambia 1985.	Central Statistical Office.
5.	Monthly Digest of Statistics May/August 1986.	Central Statistical Office.
6.	Financial Statistic of Government Sector 1978-1979-1980.	Central Statistical Office.
7.	Balance of Payments Statistics.	Central Statistical Office.
8.	Selected Socio-Economic Indicators.	Central Statistical Office. National Commission for Development Planning.
9.	Population Projections for Zambia,1969-1999.	Central Statistical Office.
10.	1980 Census of Population and Housing Volume I General Population and Migration Table.	Central Statistical Office.
11.	1980 Population and Housing Census of Zambia. (Analytical Report Volume III.)	Central Statistical Office.
12.	1980 Population and Housing Census of Zambia. (Analytical Report Volume IV.)	Central Statistical Office.
13.	Report of the Tariff Commission of Inquiry. Vol. I September 1986.	His Excelency Dr.K.D.Kaunda President of Republic of Zambia.
14.	Report of the Tariff Commission of Inquiry. Vol. II September 1986.	His Excelency Dr.K.D.Kaunda President of Republic of Zambia.
15.	Summary of the Rport and main Recommendation of the Tariff Commission of Inquiry.	The Government Printer.
16.	Educational Statistics 1980.	Ministry of Education and Culture.Planning Unit.
17.	Index of Industrial Production. (Revisions and extensions of the 1969 series.)	Central Statistical Office.
18.	Census of Industrial Production,1980.	Central Statistical Office.
19.	Annual Statement of External Trade Volume I 1979.	Central Statistical Office.
20.	Annual Statement of External Trade Volume II 1979.	Central Statistical Office.

21. A Workshop Report on National Account October 1980.	Central Statistical Office.
22. Manpower Survey in the Mining Sector 1980.	Central Statistical Office.
23. Manpower Survey in the Private Manufacturing Sector.	Central Statistical Office.
24. Report of Employment and Earnings 1979.	Central Statistical Office.
25. Transport Statistics 1975.	Central Statistical Office.
26. Price Index of Building Material March 1977.	Central Statistical Office.
27. ZESCO Annual Report 1983/1984.	ZESCO.

② Agriculture

No.	Title	Authority
1.	Water Consumption for Irrigation in Zambia.	Ministry of Rural Development Department of Water Affairs Hydrological Branch.
2.	Food and Nutrition study in Luangwa District, July 1985.	Eva-Charlotte Ekstrom B.Sc Swedish University of Agricultural Sciences.
3.	A Blueprint for Agricultural Development in Lusaka Province.	Provincial Planning Unit Lusaka Province.
4.	Agricultural and Pastoral Production 1977 - 78.	Central Statistical Office.
5.	Agricultural and Pastoral Production 1976 - 77.	Central Statistical Office.
6.	Quarterly Agricultural Staistics Bulletin July - September 1985.	Statisticx Section Planning Divison Ministry of Agriculture and Water Development.
7.	District Seminar PhaseII to Inprove Agriculture Performance in Zambia.	P.K.Moola. W.Chinjavata, C.A.Lutangu. A.Lukumba. (Department of Agriculture)
8.	Agricultural Production Target Memo for Lusaka Province.	Produced by the Office of the Hon.MCC for Lusaka Province.
9.	Design of Conservation Systems for Erosion Control.	Department of Agriculture Land Use Branch.
10.	Furrow Irrigation.	R.Ferdosian, Irrigation Engineer.
11.	Agricultural Base-Line Data for Planning.	NCDP and The University of Zambia P.D.Ncube.
12.	Tour Report.	Hon.Gen.G.K.Chinkuli Minister of Agriculture and Water Development.
13.	Production Potential.	—
14.	Technical and Engineering Data.	—

③ Construction

No.	Title	Authority
1.	General Specification Interim Metric Edition.	Ministry of Works and Supply. Buildings Department
2.	General Conditions of Contract for Works.	Ministry of Works and Supply. Buildings Department
3.	Maheba Junio Secondary School.	Ministry of Works and Supply. Buildings Department
4.	Portland Cement, Normal and High Early Strength.	Zambian Standards Institute.
5.	Asbestos-Cement, Flat Sheets and Slates Semi and Fully Compressed.	Zambian Standards Institute.
6.	Precast Concrete and Sand-Cement Blocks.	Zambian Standards Institute.
7.	Asbestos-Cement Insulating Boards.	Zambian Standards Institute.
8.	Asbestos-Cement Drain and Sewer Pipes.	Zambian Standards Institute.
9.	Asbestos-Cement Pressure Pipes.	Zambian Standards Institute.
10.	Cement Concrete Bricks.	Zambian Standards Institute.
11.	Asbestos-Cement Pressure Pipes.	Zambian Standards Institute.
12.	Asbestos-Cement Pressure Pipes.	Zambian Standards Institute.
13.	Code of Practice Electrical Safety Code.	Zambian Standards Institute.
14.	Code of Basic Data for the Design of Buildings Loading Dead and Imposed Loads.	Zambian Standards Institute.
15.	Zambia Enterprise Number 1. 1985.	—

④ Laws of Zambian

No.	Title	Authority
1.	Water : Chapter 312 of the Laws of Zambia	Printed and Publisher by the Government Printer Lusaka
2.	Local Government : Chapter 480 of the Laws of Zambia	Printed and Publisher by the Government Printer Lusaka
3.	Employment : Chapter 512 of the Laws of Zambia	Printed and Publisher by the Government Printer Lusaka
4.	Public Health : Chapter 535 of the Laws of Zambia	Printed and Publisher by the Government Printer Lusaka
5.	Roads and Road Traffic : Chapter 766 of the Laws of Zambia	Printed and Publisher by the Government Printer Lusaka
6.	Electricity : Chapter 811 of the Laws of Zambia	Printed and Publisher by the Government Printer Lusaka
7.	Architects and Quantity Surveyour : Chapter 825 of the Laws of Zambia	Printed and Publisher by the Government Printer Lusaka
8.	Government Gazette	Published by Authority

⑤ Maps

No.	Title	Authority
1.	Map Catalogue	Survey Department
2.	Welding Symbols	Zambian Standards Institute
3.	Metric Road Map	Ministry of works and supply roads Department
4.	Population Growth, Absolute Growth, Relative Growth	Central Statisical office
5.	Provinces and Districts	Survey Department
6.	Soil Map	Survey Department
7.	Zambia Electricity Generation and Transmission	Survey Department
8.	Land Use Compiled by Jurgen Schultz	Ministry of Rural Development
9.	Maps S = 1:250,000	Survey Department
10.	Maps S = 1:50,000	Survey Department

⑧ Others

No.	Title	Authority
1.	East Africa in the Nineteenth and Twentieth Centuries	John D. Anderson
2.	East Africa Physical Regional and Human	E. W. Young. B. H. Hottran
3.	Africa the Gospel Belongs to Us	
4.	The Press in Zambia	Francis P. Kasoma
5.	Zambia Telephone Directory	Posts and Telecommunications Corporation

⑦ Drawings

No.	Title	Authority
1.	Organization of Ministry of Agriculture and Water Development	Ministry of works and Supply
2.	Organization of Department of Agriculture	Ministry of works and Supply
3.	Drawings of Low Cost Housh (Type 315)	Ministry of works and Supply
4.	Drawings of Medium Cost Housh (Type 315)	Ministry of works and Supply
5.	Drawings of High Cost Housh (Type 325)	Ministry of works and Supply
6.	Drawings of School and Office	Ministry of works and Supply

Appendix 6 Basic Relating Data

Table A-1 Population by Province and Avrrage Annual Growth Rate.

	Population				Average Annual growth rate (%)		
	1980	1974	1969	1963	1969-1980	1969-1974	1963-1969
Total	5,661,801	4,677,000	4,056,995	3,490,170	3.1	2.9	2.5
Central	511,905	397,000	358,655	309,407	3.3	2.1	2.5
Copperkelt	1,251,178	1,046,000	816,309	543,465	3.9	5.1	7.0
Eastern	650,902	570,000	509,515	479,866	2.3	2.3	1.0
Luapula	420,966	321,000	335,584	537,018	1.9	- 0.9	- 1.0
Lusake	691,054	522,000	353,975	195,757	6.3	8.1	10.4
Northern	674,750	584,000	545,096	563,995	2.0	1.4	- 0.6
North-Western	302,668	242,000	231,733	211,189	2.4	0.8	1.6
Southern	671,923	534,000	496,041	466,327	3.0	1.5	1.0
Western	486,455	460,000	410,087	632,480	1.6	2.3	2.1

(Source):Monthly Digest of Statistics May/August, 1986.

Table A-2 Population in Large Urban Area.

	Population				Average Annual growth rate (%)		
	1980	1974	1969	1963	1969-1980	1969-1974	1963-1969
Lusaka	535,830	401,000	262,425	123,146	6.8	8.9	13.4
Ndola	281,315	229,000	159,786	92,691	5.3	7.4	9.5
Kitwe	266,286	251,000	199,793	123,027	4.2	4.6	8.4
Kabwe	136,006	99,000	65,974	39,522	7.3	8.4	8.9
Mufulira	135,535	136,000	107,802	80,609	3.0	4.7	5.0
Chingola	130,875	134,000	103,292	59,517	3.2	5.3	9.6
Luanshya	110,907	121,000	96,282	75,332	2.9	4.6	4.2
Livingston	83,275	58,000	45,243	33,026	4.3	5.0	5.4
Chililabombwe	54,737	56,000	44,862	34,165	3.0	4.7	4.6
Kalulushi	52,148	41,000	32,272	21,303	5.7	4.7	7.2
Total	2,258,520	1,663,000	1,192,116	715,020	6.7	6.9	8.9
Percentage	39.9	35.6	29.4	20.5			

(Source):Monthly Digest of Statistics May/August, 1986.

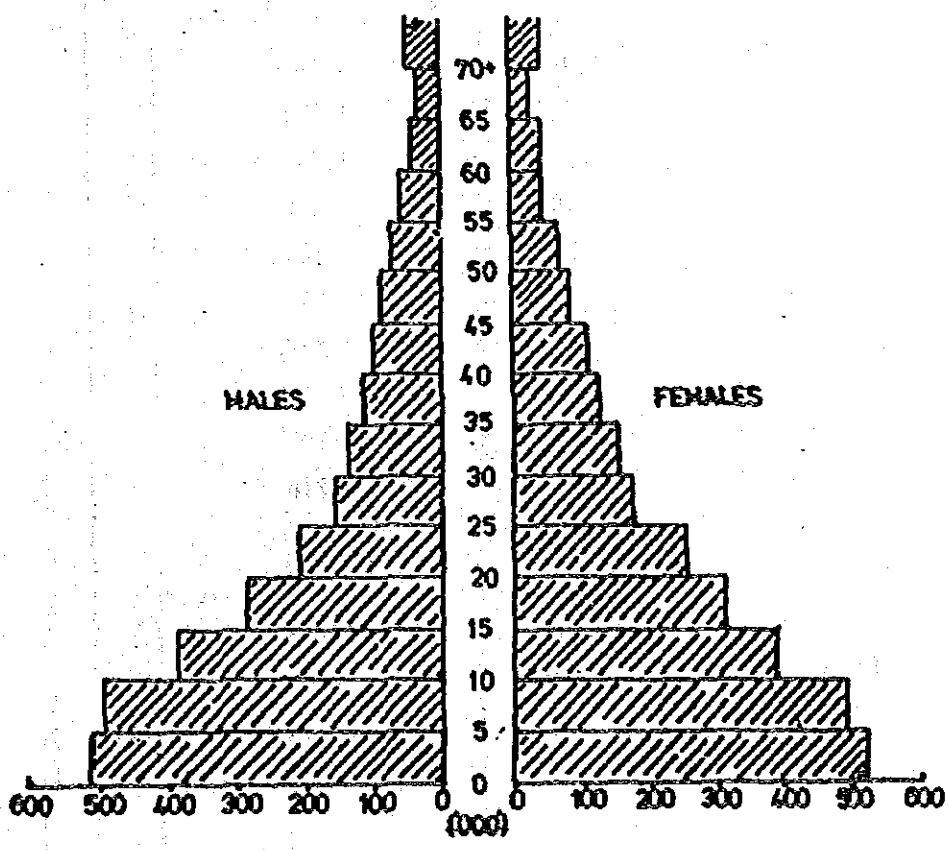
Table A - 3 Population by Age and Sex 1980 ('000')

Age Group	Male	Female	Total
< 1	100	101	201
1 - 4	408	411	819
5 - 9	491	493	984
10 - 14	384	384	768
15 - 19	285	308	593
20 - 24	214	260	474
25 - 29	158	179	337
30 - 34	133	159	292
35 - 39	108	130	238
40 - 44	100	113	213
45 - 49	92	85	177
50 - 54	75	70	145
55 - 59	53	45	98
60 - 64	47	45	92
65 - 69	35	27	62
70 +	50	45	95
Not Stated	37	36	73
Total	2,770	2,891	5,661

(Source) : Country Profile September 1986

Fig.A－1 POPULATION PYRAMID

Total Zambia — 1980



[Source]: Country Profile Septeaber, 1986.

Table A－4 Population Projections 1985 and 1990

Age Group	1985	1990
0 － 4	1,307	1,602
5 － 9	1,080	1,291
10 － 14	930	1,082
15 － 19	768	916
20 － 24	578	734
25 － 29	437	544
30 － 34	345	427
35 － 39	285	347
40 － 44	243	291
45 － 49	198	218
50 － 54	159	178
55 － 59	126	142
60 － 64	93	106
65 ＋	176	195
Total	6,725	8,073

(Source) : Country Profile September 1986

Table A – 5 Total Gross Domestic Product 1977-1986.

(Million kw)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
At Current Prices	1,986	2,251	2,660	3,064	3,485	3,595	4,181	4,931	7,048.6	12,097.9
At 1977 Prices	1,986	1,998	1,937	1,996	2,119	2,059	2,018	2,001.7	2,041.4	2,052.2

Table A – 6 Growth Rate GDP 1977-1986.

(%)

	1977-1978	'78-'79	'79-'80	'80-'81	'81-'82	'82-'83	'83-'84	'84-'85	'85-'86
At Current Prices	13.3	18.2	15.2	13.7	3.21	16.3	17.9	42.9	71.6
At 1977 Prices	0.6	3.1	3.0	6.2	-2.8	-2.0	-0.3	1.5	0.5

[Source]: Country Profile September 1986.
Economic Review 1986 and Annual Plan 1987.

Table A – 7 Mineral Production in Zambia, 1970 - 1984

		Copper		Cobalt		Zinc		Lead		Coal	Other
Year	Total Value (K'000)	Qty '000' Tonnes	Value (K'000)	Qty Tonnes	Value (K'000)	Qty '000' Tonnes	Value (K'000)	Qty '000' Tonnes	Value (K'000)	Qty '000' Tonnes	Value (K'000)	Value (K'000)
1970	673,308	683.3	648,020	2,052	4,522	53.5	10,302	27.3	5,159	623.2	1,228	4,277
1972	514,562	698.0	479,816	2,055	6,899	55.9	13,695	25.9	4,653	936.5	1,887	7,612
1974	936,204	702.1	876,664	1,964	9,461	58.3	26,375	24.5	8,027	809.5	7,930	7,747
1976	687,224	712.9	633,660	1,620	10,762	37.1	17,176	13.5	3,032	762.0	12,031	10,563
1978	642,685	655.6	557,408	1,560	35,342	42.5	17,160	12.7	5,534	615.1	15,902	11,339
1980	1,178,603	609.5	955,359	3,309	141,734	32.7	16,777	10.0	6,098	579.1	17,527	41,108
1981	959,948	560.6	781,463	2,569	91,774	33.3	23,537	9.9	5,371	507.3	16,988	40,815
1982	861,301	584.4	716,820	2,444	45,258	39.2	27,630	14.6	6,017	603.9	22,346	37,036
1983	1,250,730	576.1	1,076,617	2,407	34,825	37.8	36,239	14.8	6,332	452.8	17,802	78,917
1984	1,526,625	523.3	1,224,724	3,472	123,061	29.2	49,395	8.8	5,923	510.6	27,930	94,592

Note: Qty is Quantity

[Source]: Country Profile September 1986.

Table A – 8 Contribution of Copper Industry to Gross Domestic Product and Export, 1969–1984.

Year	Gross Domestic Product at Current Prices (K'mill)	Contribution to Gross Domestic Product (K'mill)	%	Govern-ment Revenue (K'mill)	Contribution to Govern-ment Revenue (K'mill)	%	Value of Domestic (1) Exports f.o.b. (K'mill)	Copper and Value of Exports (K'mill)	Cobalt Contribution to Exports %
1969	1,314	637	48	400	235	59	754	729	97
1970	1,279	462	36	432	251	58	710	688	97
1971	1,181	268	23	309	114	37	480	454	93
1972	1,338	317	24	315	56	18	536	499	93
1973	1,591	506	32	385	108	28	739	703	95
1974	1,893	607	32	647	339	52	900	847	94
1975	1,583	204	13	448	59	13	518	479	93
1976	1,872	330	18	443	12	3	749	705	94
1977	1,986	223	11	499	–	–	706	661	94
1978	2,251	272	12	550	–	–	685	634	93
1979	2,660	456	17	595	–	–	1,087	1,027	94
1980	3,064	490	16	768	42	5	1,020	960	94
1981	3,485	473	14	820	11	1	930	875	94
1982	3,595	382	11	840	–	–	945	881	93
1983	4,181	619	15	957	42	4	1,048	959	92
1984	4,733	651	14				1,188	1,051	88

(1) Merchandise – export totals, as resulting from trade returns

[Source]: Country Profile September 1986.

Table A – 9 INDEX NUMBERS OF CONSUMER PRICES IN URBAN AREAS HIGH INCOME GROUP: NEW SERIES 1975 = 100

	All Items	Food, Beverages and Tobacco	Clothing, Footwear and Accessories	Rent, Fuel and Lighting	Furniture, Furnishings and Household Goods	Medical Care and Health Services	Transport and Communications	Recreation, Entertainment and Education	Other Goods and Services
Weights	1,000	360	98	195	79	15	137	63	53
1971	74.5	68.3	68.5	88.7	73.3	81.0	67.4	81.5	85.9
1972	78.7	74.6	75.1	90.1	79.6	86.0	68.0	83.9	88.8
1973	84.6	80.1	82.6	93.1	86.4	89.8	79.8	88.0	91.8
1974	92.2	89.8	91.5	95.8	93.9	94.2	89.5	95.6	95.4
1975	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1976	116.1	122.9	118.5	104.5	117.1	109.1	117.9	110.7	109.6
1977	136.8	141.9	148.1	105.8	150.0	126.7	149.9	125.7	142.1
1978	152.6	162.2	176.0	107.7	180.9	135.5	156.3	149.2	167.4
1979	169.8	172.8	212.7	113.7	204.2	144.4	181.6	182.3	189.1
1980	189.4	195.7	237.8	125.2	216.7	171.5	209.6	199.0	201.5
1981	209.1	228.6	255.9	127.8	260.8	187.3	219.1	216.0	213.0
1982	236.7	274.0	277.9	132.2	300.8	197.3	249.1	227.4	251.3
1983	278.6	328.0	315.1	144.2	382.1	230.2	296.5	268.8	313.1
1984	336.8	383.0	363.7	195.1	466.9	259.2	337.1	333.4	373.6
1985	455.0	521.6	524.1	212.4	683.1	320.7	470.4	425.5	512.5
1986 January	604.7	705.9	653.6	265.9	1,022.2	434.4	684.6	620.1	711.7
February	620.4	716.5	679.7	266.7	1,065.1	462.2	733.9	628.2	730.9
March	639.8	747.5	720.9	266.7	1,087.6	477.8	773.6	630.0	734.5
April	652.5	755.3	736.2	267.2	1,137.7	294.2	801.7	647.4	763.7
May	662.5	774.4	760.3	268.3	1,192.9	528.7	796.2	642.4	788.6
June	683.9	816.2	778.4	268.8	1,239.9	531.3	798.9	654.2	804.9
July	696.0	823.1	808.5	269.1	1,279.8	550.0	819.5	674.7	834.1

[Source]: Monthly Digest of Statistics May/August, 1986.

Table A – 10 INDEX NUMBERS OF CONSUMER PAICES IN URBAN AREAS LOW INCOME GROUP: NEW SERI

	All Items	Food, Beverages and Tobacco	Clothing and Footwear	Rent, Fuel and Lighting	Furniture and Household Goods	All Other Goods and Services
Weights	1,000	680	99	106	44	71
1971	75.1	73.7	72.9	85.9	75.3	75.5
1972	78.9	77.2	78.9	88.2	81.3	79.6
1973	84.0	82.6	84.6	91.6	87.3	83.3
1974	90.8	89.8	92.0	95.1	92.9	91.0
1975	100.0	100.0	100.0	100.0	100.0	100.0
1976	118.8	122.5	116.4	101.4	120.4	111.5
1977	142.3	144.8	144.8	109.4	159.0	138.0
1978	165.6	169.4	193.4	115.9	187.5	149.7
1979	181.4	184.5	226.6	119.4	213.1	163.6
1980	202.9	211.1	244.2	123.4	226.6	178.3
1981	231.3	242.7	260.7	134.2	285.5	187.2
1982	260.2	276.6	285.9	138.7	328.5	213.1
1983	311.2	333.8	317.0	152.2	460.4	261.4
1984	373.5	395.8	364.0	201.0	600.2	308.4
1985	513.3	540.0	321.1	252.6	760.7	453.3
1986 January	682.9	712.8	650.8	317.2	1,468.9	642.9
February ..	708.2	722.8	673.6	319.7	1,601.1	653.2
March	730.7	767.0	723.7	319.7	1,624.6	661.5
April	738.2	769.8	733.5	320.7	1,662.8	712.7
May	758.7	791.2	771.8	323.2	1,730.4	717.5
June	779.9	816.2	793.3	323.9	1,796.5	734.8
July	794.9	825.4	836.9	342.8	1,896.4	757.3

[Source]: Monthly Digest of Statistics May/August, 1986.

Table A – 11 Value of Imports by Commodity Groups, 1965-1982
(K'000')

Year	Total Value	Food Beverages and Tobacco	Crude Material Oils and Fats	Mineral Fuels	Chemicals	Manufactured Goods	Machinery and Equipment	Others
1965	210,742	19,336	4,960	20,600	20,154	75,708	69,590	396
1970	340,711	31,626	9,733	35,184	26,021	105,337	131,716	1,094
1971	390,282	49,610	12,145	32,235	31,688	112,043	160,115	1,448
1972	402,471	38,388	11,850	26,523	33,041	123,295	168,009	1,365
1973	346,867	25,317	9,743	33,285	35,136	102,722	138,911	1,753
1974	506,636	44,931	17,133	61,095	48,445	166,427	165,795	2,809
1975	597,611	36,765	18,979	81,115	77,293	168,909	211,300	3,250
1976	468,748	26,590	17,882	72,616	68,184	115,785	166,904	783
1977	529,970	29,551	17,915	81,010	58,928	137,116	205,102	347
1978	494,835	32,289	16,194	86,978	65,042	116,137	175,793	402
1979	593,640	39,119	20,983	106,363	79,128	145,464	201,162	1,422
1980*	876,686	39,625	19,491	198,284	108,260	207,914	302,340	722
1981*	924,444	51,973	24,242	202,439	126,302	203,088	314,444	1,954
1982*	929,997	50,409	22,867	193,106	148,947	192,734	320,996	938

* Preliminary

(Source) : Country Profile September, 1986

Table A – 12 EXPORTS OF PRINCIPAL COMMODITIES

	Copper		Zinc		Lead		Cobalt		Tobacco		Maize		Timber
	'000 Tonne	K'm	Tonne	K'000	Tonne	K'000	Tonne	K'000	Tonne	K'000	Tonne	K'00	K'000
1973	670	698.3	31,115	16,666	130,013	5,421	1,145	6,862	3,048	4,758	50,066	2,643	5
1974	673.4	838.5	50,227	25,162	18,776	7,159	1,894	7,926	4,872	5,758	111,213	7,632	—
1975	641.2	672.0	41,244	20,346	9,376	3,668	1,361	7,066	5,337	6,969	16,621	1,424	36
1976	745.7	698.6	36,169	26,552	14,768	4,431	3,312	15,939	4,596	5,093	8,808	518	—
1977	666.6	644.9	36,470	17,920	11,673	3,705	1,692	16,226	3,425	5,783	25,606	3,517	—
1978	869.3	897.2	35,437	17,630	6,649	3,277	1,793	34,679	1,610	3,481	61,008	7,830	—
1979	651.8	897.3	43,064	27,678	8,465	6,079	3,060	139,891	1,631	2,577	—	—	—
1980*	691.1	972.4	31,781	19,597	8,769	6,528	2,059	674,92	2,517	3,716	—	—	—
1981*	551.8	838.6	31,530	22,853	8,283	5,132	2,211	38,979	1,231	4,025	—	—	—
1982*	606.6	855.4	32,992	25,002	9,088	4,687	2,451	25,879	853	1,565	—	—	—
1983*	550.6	930.3	36,845	34,698	12,307	6,866	3,122	28,768	1,571	3,760	—	—	—
1984*	530.3	1,031.2	32,113	31,569	8,513	6,547	2,336	89,587	1,519	5,033	—	—	—
1985*	474.5	6,258.5	20,064	53,189	5,122	7,400	1,924	23,867	1,218	7,233	—	—	—
1986* January	31.1	96.8	403	1,278	201	478	552	6,417	69	538	—	—	—
February	39.2	152.9	1,311	5,995	220	590	291	3,038	—	—	—	—	—
March ...	38.6	175.0	1,625	7,303	564	1,635	—	—	—	—	—	—	—
April ...	34.5	177.1	1,486	7,887	183	477	414	2,122	—	—	—	—	—
May ...	34.7	226.2	680	3,262	191	606	549	5,430	75	458	—	—	—
June ...	44.4	273.2	2,343	10,650	562	2,237	244	2,962	—	—	—	—	—

*Preliminary.

(Source) : Monthly Digest of Statistics May/August, 1986

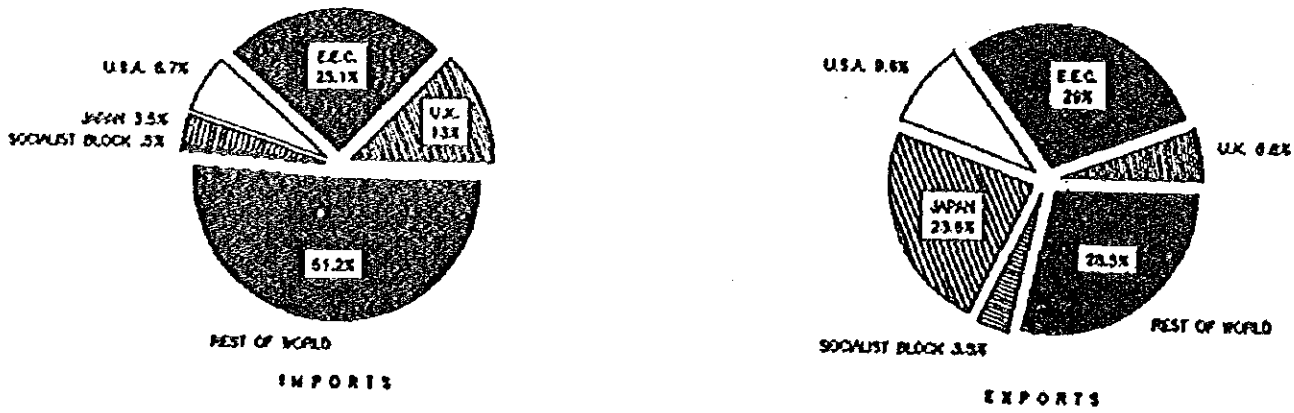
Table A – 13 Foreign Trade 1970-84 (K'000)

Year	Total Exports	Total Imports	Export Surplus
1970	714,964	340,711	374,253
1971	485,177	399,284	85,895
1972	541,564	402,471	139,093
1973	741,955	346,867	395,089
1974	905,091	506,636	398,455
1975	521,049	597,611	-76,562
1976	751,850	468,748	283,102
1977	708,016	529,970	178,046
1978	686,808	492,605	194,203
1979	1,090,006	593,640	496,366
1980*	1,023,276	876,686	146,590
1981*	936,496	924,444	12,052
1982*	950,456	929,997	20,459
1983*	1,045,545	893,174	152,371
1984*	1,188,098	1,107,866	80,232

* Preliminary

(Source) : Monthly Digest of Statistics May/August. 1986

Fig. A – 2 EXTERNAL TRADE BY REGION
1984 (Estimates)



(Source) : Country Profile September. 1986

Table A – 14 Bilateral Aid Agreement signed during 1986

Aid donor	Amount in Kwacha	Type
FINNIDA	56,131,000	Grant
SIDA	58,786,000	Grant
CIDA	16,960,000	3,250,000 Loan 13,710,000 Grant
JAPAN	3,172,000	Grant
DANNIDA	9,303,000	Loan
NETHERLANDS	7,601,000	Grant
IRELAND	4,395,000	Grant
BELGIUM	3,201,000	Grant
ITALY	10,800,000	Loan
USAID	6,717,000	6,000,000 Loan 717,000 Grant
KFW	14,762,000	Loan
NORAD	31,848,000	Grant
GTZ	900,000	Grant
UK	5,000,000	Loan
GOSSNAR MISSION	354,000	Grant
TOTAL	229,930,000	

[Source]: Economic Review 1986 and Annual Plan 1987.

Table A – 15 Multilateral Aid Agreement signed during 1986

Agency	Amount in Kwacha	Type
IBRD	125,833,000	Loan
EEC	49,492,000	18,628,000 Loan 30,864,000 Grant
ADB/ADF	10,800,000	Loan
ADB	7,850,000	Loan
IDA	13,400,000	Loan
UNDP	6,718,000	Loan
IFAD	3,600,000	Loan
UNICEF	312,000	Grant
INTERNATIONAL REFERENCE CENTRE	223,000	Grant
TOTAL	218,228,000	

(Source): Economic Review 1986 and Annual Plan 1987.

Table A - 18 Exchange Rate during 1986

			Kwacha				Kwacha
1986	July	9	7.58	1987	January	5	12.74
		14	7.94			19	13.89
		21	4.94			26	14.60
		28	5.99				
					February	23	8.85
	August	6	4.91				
		11	5.25		March	16	8.73
		18	5.65			23	8.65
		25	6.15			30	14.60
	September	1	6.73		April	6	16.67
		8	6.87			13	18.35
		15	5.54				
		22	6.25				
		29	6.97				
	October	6	7.49				
		13	8.13				
		20	9.17				
		27	10.10				
	November	3	11.24				
		10	12.05				
		17	13.25				
		24	14.39				
	December	2	14.93				
		8	11.83				
		15	11.70				
		22	12.27				
		29	12.50				

(Soource) : Bank of Zambia

Table A – 17 PLANNED GOVERNMENT EXPENDITURE (K'000)

PROGRAMME	1987 ANNUAL PLAN TOTAL	% DISTRIBUTION	PERSONAL EMOLUMENTS	FOREIGN FUNDING	LOANS & INVESTMENT	DISCRET RESOURCES	DISCRET AS % PROGRAMME TOTAL
A: AGRICULTURE FORESTRY AND FISHERIES	598,392	100.00	83,421	234,191	0	298,780	100.00
1. Administration	154,005	26.16	2,699	121,187	0	32,119	10.75
2. Area Development	6,006	1.01	0	0	0	6,006	2.01
3. Crop & Livestock Production	9,919	1.65	0	0	0	9,919	3.32
4. Agric. Extension & Inform. Serv.	131,148	21.99	24,927	11,030	0	95,191	31.86
5. Land Use Services	16,074	2.70	0	0	0	16,074	5.38
6. Agricultural Research	54,352	9.11	4,803	21,643	0	27,906	9.34
7. Veterinary Services	101.187	17.02	14,206	33,560	0	53,721	17.98
8. Agricutural Education	22,743	3.81	3,809	6,176	0	12,758	4.27
9. Input Supply & Marketing	35,012	5.87	2,840	32,171	0	1	.00
10. Agriculture Credit	0	0.00	0	0	0	0	0.00
11. Forestry Development	36,104	6.05	6,898	1,151	0	28,055	9.39
12. Fisheries Development	27,542	4.62	3,239	7,273	0	17,030	5.70

(Source) : Economic Review 1986 and Annual Plan 1987