社会開発協力部報告書

No. 07

REPUBLIC OF ZAMBIA

LUSAKA INTERNATIONAL AIRPORT DEVELOPMENT PROJECT

FEASIBILITY STUDY REPORT

DECEMBER 1985

JAPAN INTERNATIONAL COOPERATION AGENCY

REPUBLIC OF ZAMBIA

LUSAKA INTERNATIONAL AIRPORT DEVELOPMENT PROJECT

FEASIBILITY STUDY REPORT

DECEMBER 1985

JAPAN INTERNATIONAL COOPERATION AGENCY

PREFACE

In response to the request of the Government of the Republic of Zambia, the Japanese Government decided to conduct a feasibility study on the Lusaka International Airport Development Project and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Zambia a survey team headed by Mr. Hiroji Fukuoka, Japan Airport Consultants, Inc., from January to March, 1985.

The team had discussions on the Project with the officials concerned of the Government of the Republic of Zambia and conducted a field survey. After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of the Republic of Zambia for their close cooperation extended to the team.

December, 1985

Keisuke Arita

Keisuke Arita
President
Japan International Cooperation Agency

JAPAN AIRPORT CONSULTANTS, INC.

No.18 Mori Bldg. 3-13,
Toranomon 2-chome, Minato-ku,
Tokyo 105, Japan.

Telephone : 03(504)5411
Cable : AIRPORTCONSULTS TOKYO
Telex : 02723 4V240JAC (J JAPAN)

December 1985

Mr. Keisuke Arita
President
Japan International Cooperation Agency
Tokyo, Japan

Dear Sir,

LETTER OF TRANSMITTAL

We have pleasure in submitting to you herewith final report of the Feasibility Study on the Lusaka International Airport Development Project in the Republic of Zambia, which was made during the period from January to December 1985 to examine the technical and economic feasibility of the Lusaka International Airport Development Project as well as to contribute to the optimum planning of the Airport to cater for wide-body aircraft being operated lately.

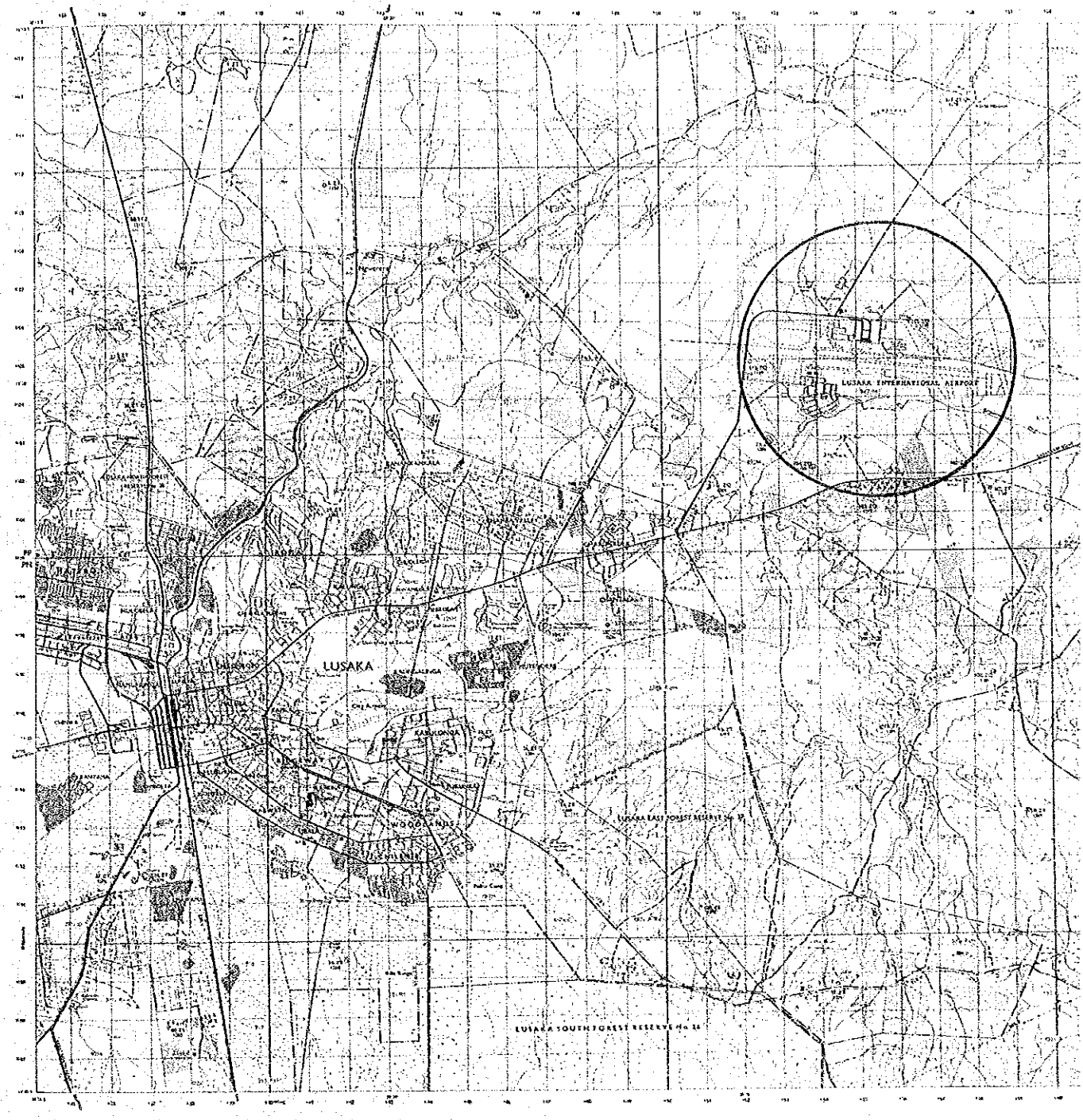
The final report was prepared based on the draft final report, duly reflecting the official comments of the Zambian Government thereon.

We wish to take this opportunity of expressing our sincere gratitude to the officials concerned of your Agency, Advisory Committee, as well as the Embassy of Japan in Zambia, and last but not least to those of the Government of the Republic of Zambia for the kind assistance and cooperation extended to us throughout the period of the Study.

Yours faithfully,

Hiroji Fukuoka

Hiroji Fukuoka
Project Director
Japan Airport Consultants, Inc.



PROJECT SITE LOCATION MAP

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

A/C	Aircraft
AFL	Airfield Lighting
AFTN	Aeronautical Fixed Telecommunication Network
A/G	Air to Ground
AIS	Aeronautical Information Services
ALS	Approach Lighting System
AMS	Aeronautical Mobile Service
A/P	Apron
APP	Approach Control Office or Approach Control
ASR	Automatic Send and Receive Teletypewriter
ASR	Airport Surveillance Radar
ATIS	Automatic Terminal Information Service
ATMS	Automated Teletype Message Switching System
B	Brick
BP	British Petroleum
BS	British Standard
B/S	Brick Structure
CBR	California Bearing Ratio
CCR	Constant Current Regulator
CCU	Communication Control Unit
CGO	Cargo
CIF	Cost, Insurance and Freight
CIP	Commercial Important Person
CSO	Central Statistical Office

DCA	Department of Civil Aviation
DME	Distance Measuring Equipment
DPS	Data Processing System
EEC	European Economic Community
EIRR	Economic Internal Rate of Return
EPS	Electric Pipe Shaft
EQ	Equipment
ER	Extended Range
FIC	Flight Information Centre
FIRR	Financial Internal Rate of Return
GDP	Gross Domestic Products
HF	High Frequency
HIL	High Intensity Light
HIRL	High Intensity Runway Edge Light
ICAO	International Civil Aviation Organization
INDECO	Industrial Development Corporation
ILS	Instrument Landing System
JICA	Japan International Cooperation Agency
LCN	Load Classification Number
LLZ	Localizer
LO	Locator

LOM	Compass Locator at Outer Marker of ILS
LTF	Landline Telephone
LTT	Landline Teletypewriter
MAS	Manual Al Simplex
MDF	Main Distribution Frame
MLS	Microwave Landing System
NDB	Non-directional Radio Beacon
NPV	Net Present Value
OECD	Organization of Economic Cooperation and Development
OPEC	Organization of Petroleum Exporting Coutries
PAPI	Precision Approach Path Indicator
PAX	Passenger
PBB	Passenger Boarding Bridge
PPI	Plan Position Indicator
PSR	Primary Surveillance Radar
PTA	Preferential Trade Area
RC	Reinforced Concrete
RCAG	Remote Centre Air to Ground Communication
RCASO	Regional Civil Aviation Security Officer
RCC	Rescue Co-ordination Centre
RO	Receive Only Teletypewriter
RTF	Radiotelephone
RTT	Radioteletypewriter

RVR	Runway Visual Range
RWY	Runway
RWCL	Runway Centre Line Lights
RWYL	Runway Edge Lights
RX	Receiver
S	Steel
SALS	Simplified Approach Lighting System
SADCC	Southern African Development Coordination Conference
SATCC	Southern African Transport and Communications Commission
SATCO	Senior Air Traffic Control Officer
SELCAL	Selective Calling System (of Air to Ground Communication)
SIWL	Single Isolated Wheel Load
SSR	Secondary Surveillance Radar
STN	Station
SUPV	Supervisor
TAR	Terminal Area Surveillance Radar
TAZARA	Tanzania-Zambia Railway Authority
TNDP	Third National Development Plan
TRDPS	Terminal Radar Data Processing System
TTY	Teletypewriter
TWY	Taxiway
TX	Transmitter
TRCV	Transceiver
UNIP	United National Independence Party

UPS	Uninterruptible Power Supply System
VDF	VHF Direction Finding Station
VHF	Very High Frequency
VIP	Very Important Person
VOR	VHF Omnidirectional Radio Range
WDI	Wind Direction Indicator
WX	Weather
ZIMCO	Zambia Industrial Mining Corporation Ltd.
ZR	Zambia Railway Limited

CONCLUSION AND SUMMARY

CONCLUSION AND SUMMARY

CONCLUSION

1. No significant technical difficulty is anticipated in the implementation of the Project.

2. The Project is economically feasible since the economic internal rate of return is 12.5%, while the social discount rate of Zambia is understood to be 12%.

3. The financial internal rate of return shows a negative value for the entire Project and a positive value of 2.3% for Phase I of the Project. It is concluded that the entire Project is not financially feasible under the current airport tariff structure if the Airport is to be run on a self-supporting accounting principle. It is recommended that Phase I of the Project be implemented by a foreign soft loan and the Government's own financing, and that a decision on the implementation of the Phase II improvement be made after a careful review of the actual demand at the Airport at an appropriate timing.

SUMMARY

1. Objective and Scope of the Study

The objectives of the Feasibility Study are:

i) to examine the technical and economic feasibility of the Lusaka International Airport Development Project as well as to contribute to the optimum planning of the Project to cater for wide-body aircraft having been introduced lately; and

ii) to pursue technology transfer to the Zambian Government personnel in the course of the Study.

2. Necessity of Development

The development of Lusaka International Airport is urgently needed for the following reasons:

i) It would be difficult to secure air safety if the Airport was to be operated with the present airfield and air navigation facilities;

ii) It would be hard to maintain a service level of international standard if the terminal facilities were to remain as is; and

iii) The Airport is indispensable as the gateway to landlocked Zambia.

3. Air Transport Demand Forecast

Forecast is made for a period of 20 years between 1990 and 2010 at intervals of every 5 years based on the regression analysis by using as explanatory variables the economic indicators affecting air transport demand, with the results as shown in Table S-1.

Table S-1 Summary of Air Transport Demand Forecast at Lusaka International Airport

Item of Forecast		(1984)	1990	1995	2000	2005	2010
Passenger ('000)	Int'l	(247)	356	483	656	827	1,042
	Domestic	(143)	204	274	369	465	586
	Total	(390)	560	757	1,025	1,292	1,628
Freight ('000 t)	Int'l	(11.2)	16.6	23.0	31.8	43.2	58.4
	Domestic	(0.6)	0.9	1.2	1.7	2.3	3.1
	Total	(11.8)	17.5	24.2	33.5	45.5	61.5
Aircraft Movements	Int'l	(5,796)	3,912	4,934	6,254	7,398	8,784
	Domestic	(5,910)	4,844	6,272	8,316	10,388	13,132
	Total	(11,706)	8,756	11,206	14,570	17,786	21,916

4. Facility Requirements

Facility requirements are analysed taking into consideration the standard and recommended practices of ICAO, based on the type of critical aircraft, longest flight stage length, estimated peak hour traffic, simulated flight schedule, etc. that are developed from the air transport demand forecast for 2000 and 2010, with the results as shown in Table S-2.

Table S-2 Summary of Facility Requirements

Facility		Phase I (Design Year 2000)	Phase II (Design Year 2010)
Airfield Facilities	Runway Length	4,000 m	4,000 m
	Taxiway System	Partial Parallel	Full Parallel
	Aircraft Stand	15	19
Terminal Area Facilities	Passenger Terminal (sq.m)	13,000	19,500
	Cargo Terminal (sq.m)	6,400	8,800
	Car Parking Lot	230	350
	Catering Facility (sq.m)	1,800	2,700
Air Nav. Facilities	Radio Navaids	CAT-I ILS	MLS
	Radar	Primary/Secondary	With DPS

5. Facility Improvement Plan

The design years of the Lusaka International Airport Development Project are set at 2000 and 2010 for the proposed improvement stages of Phase I and Phase II respectively. Table S-3 presents the summary of the improvement measures for Phase I and Phase II of the Project.

Table S-3 Summary of Improvement Measures

Facility	Phase I (Design Year 2000)	Phase II (Design Year 2010)
Runway	Overlay and replace cracked concrete slabs	Overlay and replace cracked concrete slabs, if any
Taxiway	Overlay and extend for new VIP apron	Overlay,extend parallel and construct rapid exit
Apron	Replace cracked slabs and expand main apron	Expand main apron and replace cracked concrete slabs, if any
Passenger Terminal	Install baggage claim conveyor, etc.	Install passenger boarding bridges, etc.
Cargo Terminal	Renew exising building, etc.	Expand building
Radio Navaids	Renew equipment, building and cables of ILS, etc.	Introduce MLS, etc.
Radar	Install primary and secondary radar, etc.	Install bright display, etc.

6. Construction Cost Estimate

Construction cost by development phase is estimated as tabulated in Table S-4.

Table S-4 Summary of Construction Cost Estimate

(In 1985 thousand Kwacha*)

Item	Phase I (Design Year 2000	Phase II (Design year 2010	Overall
1. Airfield Facilities	19,883	14,728	34,611
2. Terminal Facilities	33,443	31,958	65,401
3. Air-Nav. Facilities	37,555	10,930	48,485
4. Subtotal	90,991	57,616	148,497
5. Engineering Services	8,180	5,185	13,365
6. Physical Contingency	4,953	3,140	8,093
7. Grand Total	104,014	65,941	169,955

* Exchange rates as of March 1985 : US$1.00 = K2.36 = ¥257

7. Economic Evaluation

The economic internal rate of return has shown a value of 12.5% for the entire Project, and 13.5% for implementation of Phase I of the Project, as a result of the cost-benefit analysis made from the viewpoint of the national economy of Zambia. It is, therefore, concluded that the Project is

economically feasible since the social discount rate of the country is understood to be 12%. The Project would also benefit the country's economy in terms of foreign exchange earnings which are scarce in Zambia.

8. Financial Evaluation

The financial internal rate of return has shown a negative value for the entire Project, and a positive value of 2.3% for the implementation of Phase I, as a result of the financial cost-benefit analysis made on the assumption that the Airport would be administered on a self-supporting accounting principle. It is concluded that the Project is not financially feasible under the current airport tariff structure. As it would be difficult to raise the current tariff level which already ranks among the highest in SADCC countries, it is recommended that Phase I of the Project be implemented by a foreign soft loan and the Government's own financing, and that a decision on the implementation of Phase II be made after a careful review of the actual demand at the Airport at an appropriate timing.

SUMMARY OF STATISTICS

1. National Land Area : 753,000 sq.km
2. Population
   (1) 1980 Census : 5,680 thousand
   (2) Rate of Growth : 3.1% p.a. (1969 - 1980)
3. Gross Domestic Product in 1983
   (1) GDP at Market Prices : 4,205.6 K'million
   (2) Real Annual Growth Rate : 0.4% (1975 - 1983)
   (3) GDP per capita : 674 Kwacha
   (4) Structure of GDP (%)

Agriculture	14
Mining	15
Other Industries	23
Services	48
Total	100

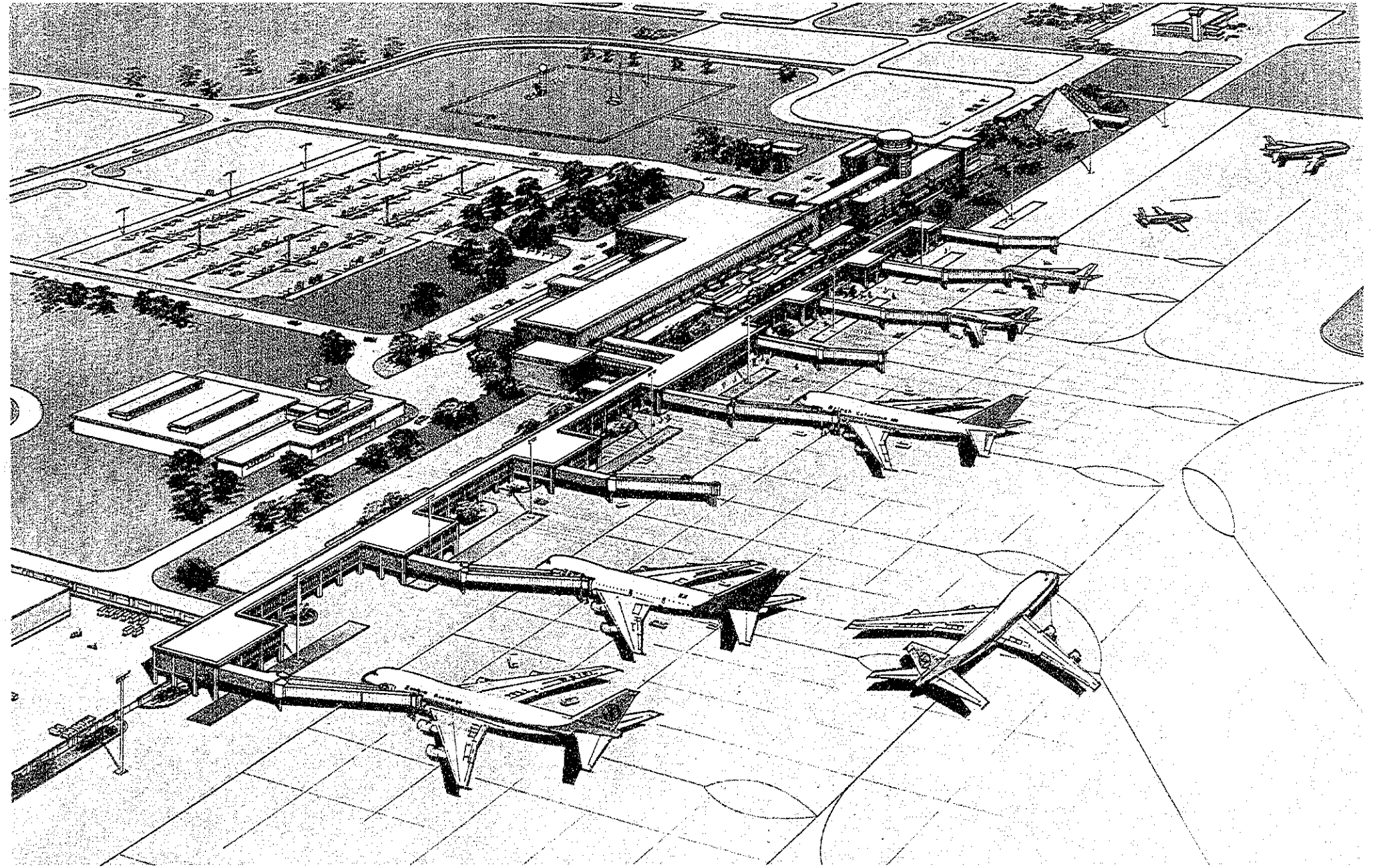
4. Exports and Imports in 1982 (K'million)

Total Exports	950
Total Imports	930
Export Surplus	20

5. Share in Value of Total Merchandise Exports in 1983 (%)

Copper	90
Other Mining Products	6
All Other Exports	4
Total	100

6. Air Transport Demand in Zambia (1983)
   Passengers 549 thousand (embarked and disembarked)
   Freight 8,909 tonnes (loaded and unloaded)
7. Air Transport Demand at Lusaka International Airport (1984)
   Passengers 397 thousand (embarked and disembarked)
   Freight 11,840 tonnes (loaded and unloaded)
8. Rates of Exchange as of March 1985
   US$1.00 = K2.36 = ¥257



BIRD'S-EYE VIEW OF TERMINAL AREA (DESIGN YEAR 2010)

CHAPTER 1

BACKGROUND OF PROJECT

CHAPTER 1 BACKGROUND OF PROJECT

1-1 Introduction

1-1-1 Background

The Republic of Zambia being a landlocked country, air transport has played an important role in her socio-economic development by providing the means of direct and close communication extensively with the countries of the world.

Lusaka International Airport was established in 1967, and its facilities are physically aged and outdated, failing to cope with the recent increase and qualitative evolution of air transport demand caused by the introduction of wide-body aircraft. The passenger terminal building in particular is beginning to show apparent inadequacy.

Under the circumstances, the Government of the Republic of Zambia has given a preferred priority to the Lusaka International Airport Development Project in order to cater for wide-body aircraft. In response to the request of the Government of Zambia to conduct a feasibility study for the Project, the Japan International Cooperation Agency (hereinafter referred to as JICA) sent a survey team to Zambia from January to March in 1985 to conduct a field survey for the Feasibility Study based on the Scope of Work which had been agreed upon between the Ministry of

Power, Transport and Communications of the Zambian Government and the JICA.

1-1-2 Objective and Scope of the Study

The objectives of the Feasibility Study are:

1) to examine the technical and economic feasibility of the Lusaka International Airport Development Project as well as to contribute to the optimum planning of the Project to cater for wide-body aircraft having been introduced lately; and
2) to pursue technology transfer to Zambian Government personnel in the course of the Study.

The Study will comprise the following items:

1) Collection and analysis of relevant data and information;
2) Air transport demand forecast;
3) Evaluation of existing facilities;
4) Facility requirement analysis;
5) Airport facility planning;
6) Construction schedule;
7) Construction cost estimate;
8) Economic analysis;
9) Financial analysis; and
10) Project implementation programme.

Airport facilities are classified in the Study as shown in Table 1-1, and the supplemental materials on this chapter are complied in Appendix A.

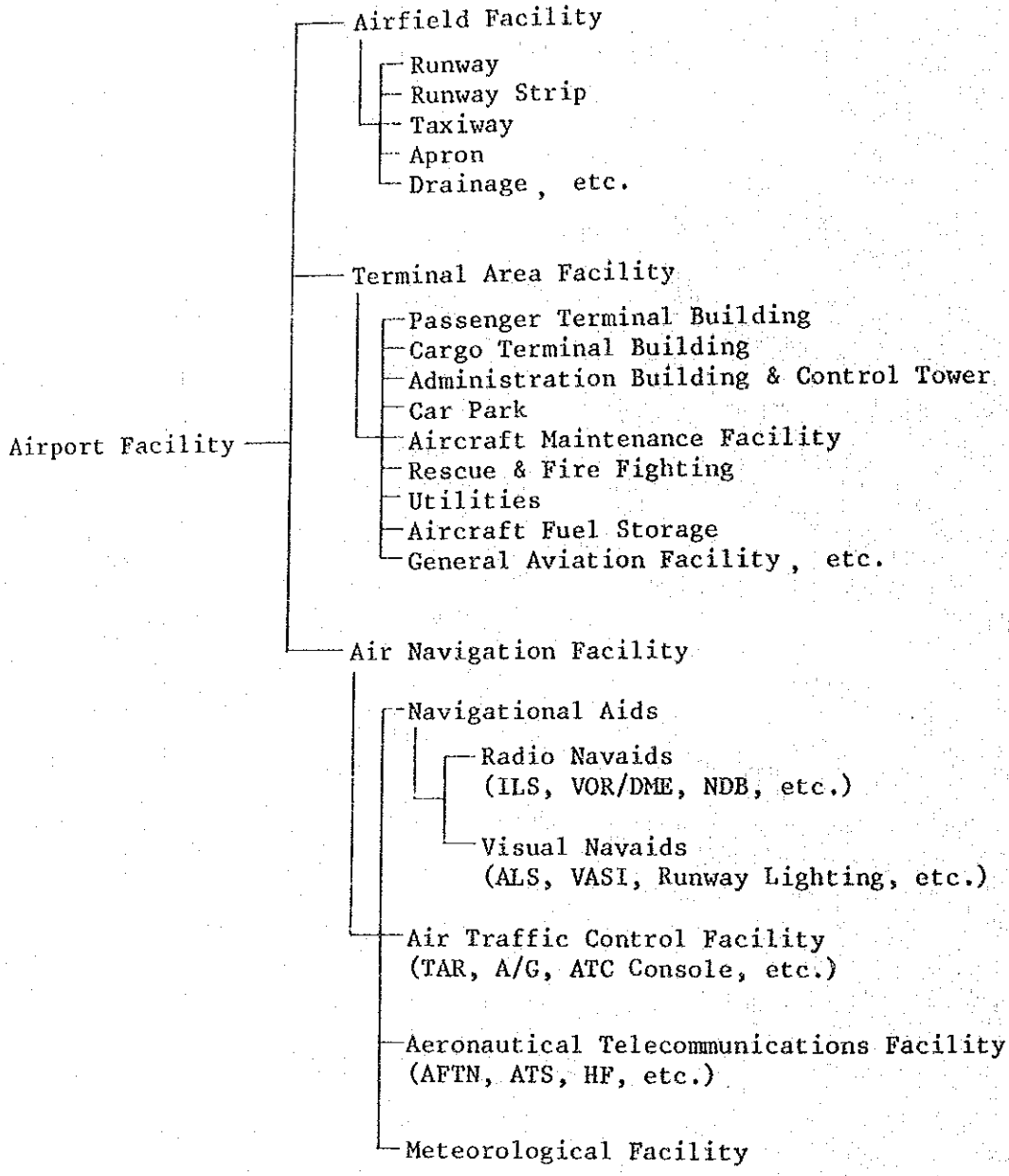


Table 1-1 Classification of Airport Facility

1-2 Socio-economic Situation

1-2-1 Geographical Situation

The Republic of Zambia is bordered by as many as 8 countries of southern Africa, namely Zaire and Tanzania in the north, Malawi and Mozambique in the east, Zimbabwe, Botswana and Namibia in the south, and Angola in the west. It lies between 8-18 degrees south latitude, and between 22-34 degrees east longitude, and forms a centre of southern Africa geographically as shown in Fig. 1-1.

Zambia covers an area of about 753,000 sq.km, and generally lies on the Great Central African plateau with an average altitude ranging between 1,000 and 1,300 metres. However, the land rises to a height of about 2,000 metres above sea-level in the east, particularly the Mucinga Escarpment, and broad depressions 600 metres in height are to be found along the Zambezi River and the Kafue River in the west, and the Luangwa River in the east.

The Zambezi and its tributary streams spread over the southern and western parts of the country. However, inland water transport is not available except for some part of the western region because of a lot of deep gorges along the rivers. There exist the Victoria Falls, one of the greatest tourist attractions in the country, and the Lake Kariba, one of the biggest man-made lakes in the world on the Zambezi River.

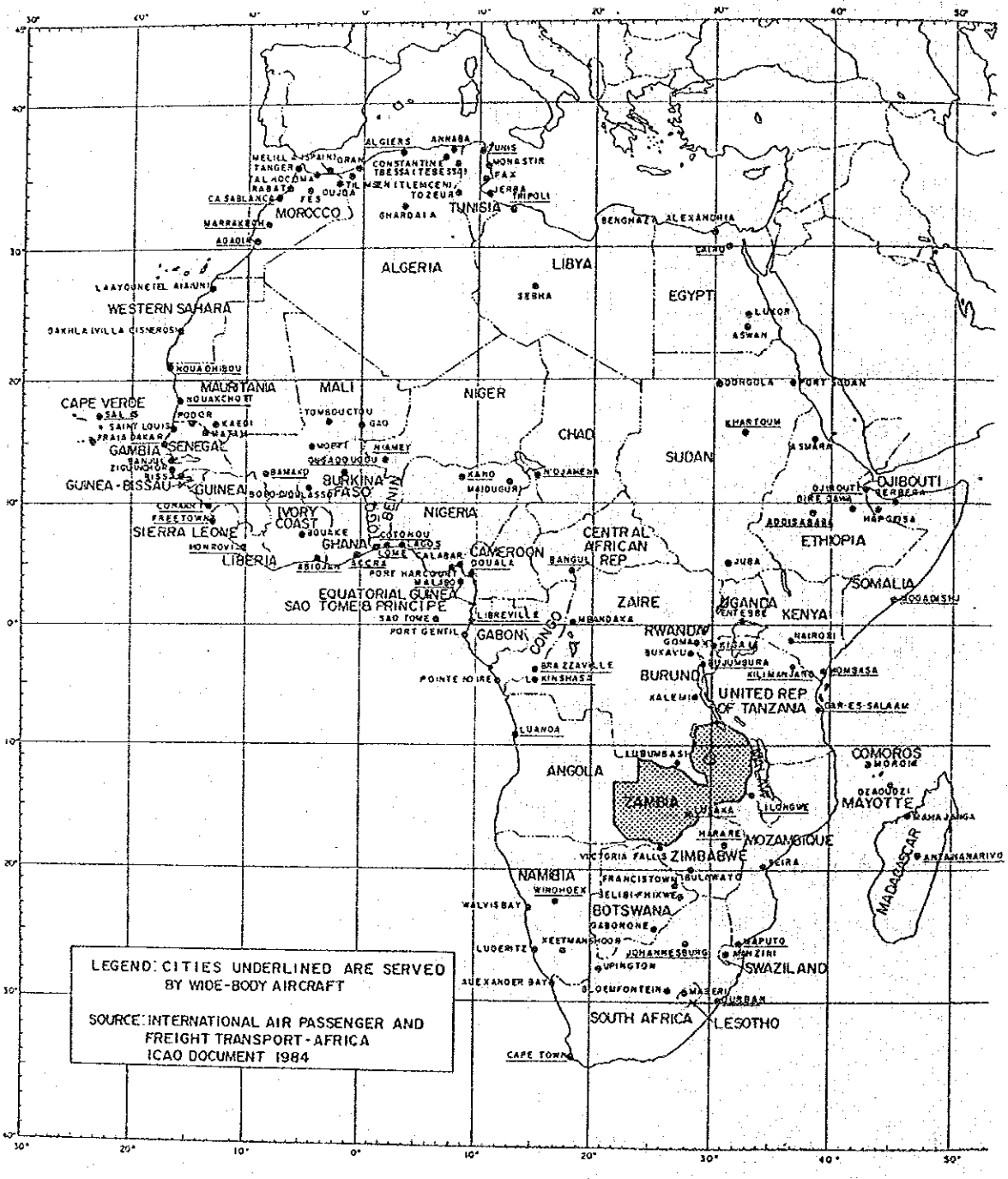


Fig. 1-1 Location Map of Zambia

The climate of Zambia is divided into three distinct seasons: a warm, wet season stretching from November through April, a cool, dry season from May to August, and a hot, dry season during September and October. There are few occasions in which the highest temperature exceeds 30 degrees centigrade, and the congenial climate is generally enjoyed throughout the year as shown in Table 1-2.

Table 1-2 Annual Climate in Lusaka Region

Month		1	2	3	4	5	6	7	8	9	10	11	12
Temperature	Average	20.6	20.5	20.3	19.7	17.5	15.3	15.6	18.0	21.4	24.0	22.6	21.1
(Centigrade)	Highest	25.9	25.9	26.1	26.3	24.7	22.8	22.9	25.5	28.9	31.1	28.7	26.5
	Lowest	17.2	17.1	16.3	14.9	12.3	10.1	9.6	11.7	14.7	17.8	17.8	17.2
Average Humidity (%)		81	84	77	72	70	67	55	47	44	41	63	78
Precipitation (mm)		218	196	106	21	4	0.3	0	0.3	0.5	15	91	186

Source: Meteorological Department of Zambia

1-2-2 Social Situation

(1) General

On October 24, 1964, Zambia became an independent republic within the Commonwealth after the collapse of the Federation of Rhodesia and Nyasaland, and the United National Independence Party (UNIP) has never since lost its electoral supremacy under the leadership of Dr. Kenneth Kaunda, the country's first

president. With the political stability of the country as a background, the President Kaunda displays a strong leadership among the southern and eastern African countries.

Administratively Zambia is divided into nine provinces as shown in Fig. 1-2, and the Zambian people consists of 73 tribes, the major ones being the Tonga in the Southern Province, the Nyanja in the Eastern Province, the Bemba in the Copperbelt Province, the Lunda in Luapula and North Western Provinces, and the Lozi in the Western Province. Although each tribe speaks its own dialect under the chief system, English is used as the official language, and the Government is endeavouring to promote national unity under the slogan, "One Zambia, One Nation".

Most tribes still believe in traditional religion, but Christianity is believed in urban areas, and Hindunism and Islam are dominant in Asian and Arabian immigrants.

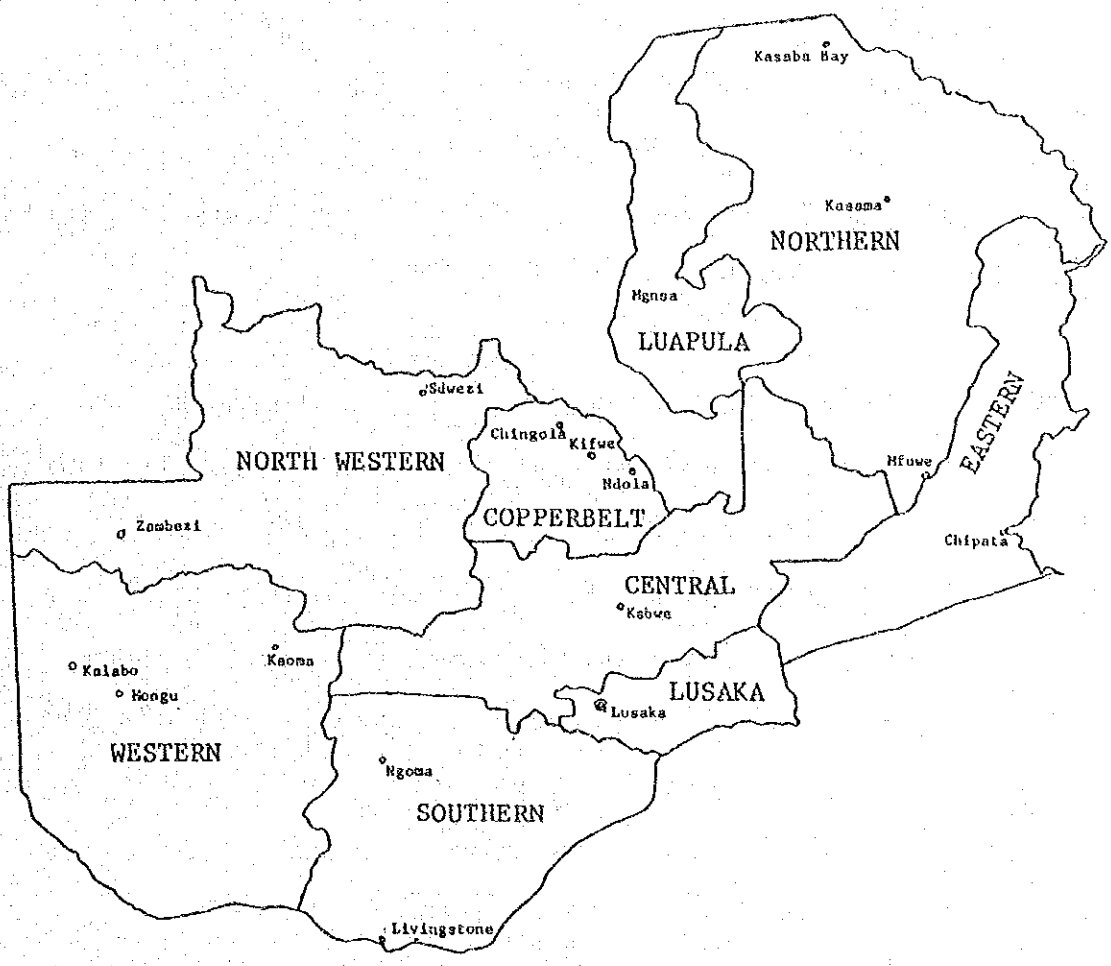


Fig. 1-2 Adminstrative Division

(2) Population

The population of Zambia was 5,680 thousand according to the 1980 census, and with the annual growth rate of 3.1%, recorded about 40% increase since the 1969 census. The high rate of population growth of the country is considered attributable to constant fertility and declining mortality, with immigration not being an important factor. Among the 9 provinces of Zambia, Lusaka Province with the capital city of Lusaka recorded the highest rate of increase of 6.3%

since 1969, followed by Copperbelt, Central and Southern Provinces, and these 4 "old line of rail" provinces accounted for 55% of Zambia's population in 1980.

Urbanization has been remarkable in Zambia as are the cases in most developing countries. The urban population increased at the annual growth rate of 6.7% for the period 1969 - 1980, accounting for 43% in the total population in 1980. The share of Copperbelt Province in the total urban population declined from 62% in the 1969 census to 47% in the 1980 census due to significant shifting of population towards urban areas in other provinces as shown in Table 1-3. This tendency could be explained by the following factors:

1) the natural increase of population in urban areas;
2) the migration from rural areas to urban areas; and
3) the emergence of new urban areas.

Table 1-3 Percentage Distribution of Urban Population in Provinces, 1969 and 1980

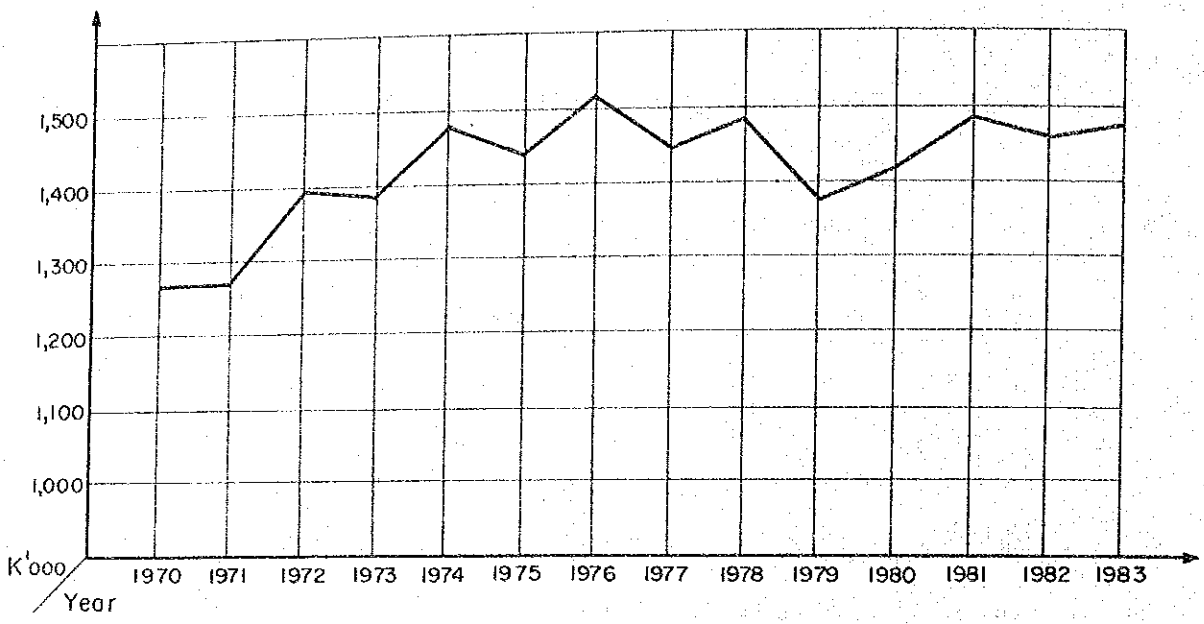
Province	1969 Census	1980 Census
Central	5.6	7.5
Copperbelt	62.4	47.1
Eastern	1.1	2.4
Luapula	0.6	2.7
Lusaka	23.0	23.7
Northern	1.2	4.8
North-Western	0.0	1.6
Southern	5.3	7.6
Western	0.8	2.6
Total Zambia	100.0	100.0

Source: Preliminary Report on 1980 Census of Population and Housing, Central Statistical Office, 1981

1-2-3 National Economy

(1) Economic Growth

The Zambian economy grew steadily at an annual growth rate of 3% in real terms until 1975 as shown in Fig. 1-3, and Zambia had been one of the most prosperous countries in Sub-Sahara Africa. Mining was the basis of this prosperity, supported by high standard of world copper prices.



Source: Central Statistical Office

Fig. 1-3 Historical Trend of GDP in Zambia
(In 1970 Constant Prices)

Copper production accounted for 30% of Gross Domestic Product in current prices, 50% of the Government revenue and 95% of the export, and allowed the investment in public services and supported the domestic consumption. However, in 1975, the copper price dropped drastically due to the recession of the world economy caused by the oil crisis, and concurrently due to the overproduction of copper. As a result, the export of copper was reduced by half, and the share of copper production fell to 13% both in Gross Domestic Product and in the Government revenue.

In spite of the recovery in current terms during the period of 1979 - 1980, the copper price has not returned to the 1974 price level in real terms, and

this can be explained by the fact that the purchasing power of the copper exports has declined to the price level of commodities exported by industrial countries since 1975. Due to the interaction of low copper prices and high import prices caused by international inflation, the shortage of foreign exchange has become a serious problem, resulting in the suppression of domestic consumption and the under-utilization of the capacity in manufacturing dependent on imports.

Since 1975, the Zambian economy has stagnated with an annual real growth rate of only 0.4%, and the per capita GDP was 674 Kwacha in 1983, still being 80% of the 1975 level. As stated above, this is explained by the fact that the structure of the economy has changed: the share of mining has declined, and the tertiary sector comprising transport and other services has increased its share, while agriculture and manufacturing have shown upward tendency as shown in Table 1-4.

Table 1-4 Structure of Production in Zambia
(Percent of current GDP, period averages)

	1970-74	1975-79	1980-82	1983
Agriculture	12	15	14	14
Mining	30	15	14	15
Other Industry	21	25	24	23
Services	37	45	48	48
GDP, Market Prices	100	100	100	100

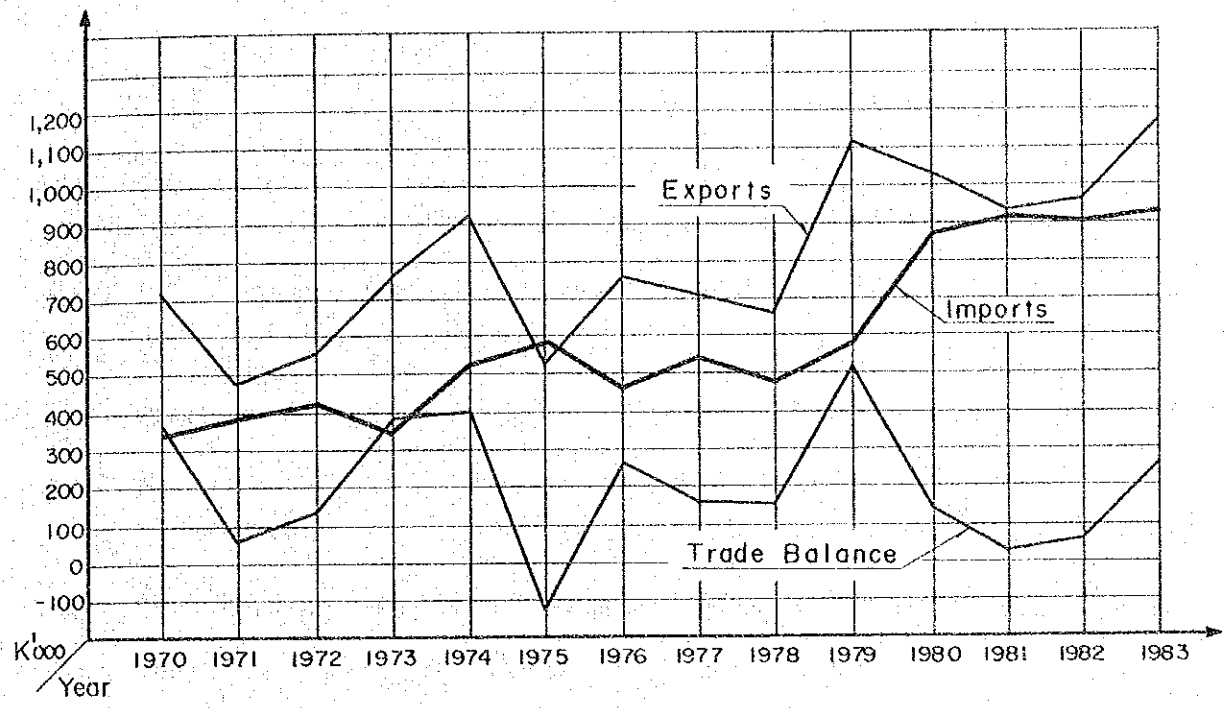
Source: Central Statistical Office

(2) Imports and Exports

The trade balance of Zambia had recorded surpluses till 1974, but showed a deficit in 1975 due to the sudden drop of the copper price as shown in Fig. 1-4. During the period 1976 - 1980, it showed some recovery caused by the nominal rise of the copper price, but again has deteriorated since 1981 along with the decline of the copper price.

Concerning exports, copper accounted for about 95% of the total exports in the past, which showed the strong dependence on copper of the Zambian economy as shown in Table 1-5. European countries accounted for 62% of the total exports, in which EEC accounted for 32%, Sterling area including the United Kingdom 22% and the other European countries 8% respectively, showing its strong relation with the Zambian economy.

As to imports, the share of machinery and manufactures decreased steadily, while chemicals and electricity and mineral fuels doubled their shares. European countries accounted for 67% in the total imports, in which Sterling area including the United Kingdom accounted for 45%.



Source: Central Statistical Office

Fig. 1-4 Total Export and Import in Zambia
(million Kwacha)

Table 1-5 Exports of Selected Commodities and Their Share in Total Exports

	1970	1974	1978	1980	1982
	Exports in Thousands of Tons				
Copper	684	673	589	622	570
Zinc	50	50	35	31	34
Lead	22	19	7	9	10
Cobalt	2	2	2	2	2
Tobacco	4	5	2	3	n.a.
Maize	-	111	61	-	-
	Share in Value of Total Merchandise Exports (%)				
Copper	95	93	91	85	90
Other Mining Products	3	4	6	11	6
All Other Exports	2	3	3	4	4
	100	100	100	100	100

Source: Central Statistical Office

(3) Agriculture

It is estimated that there is about 9 million hectares of cultivable land, only 16% of which is utilized at present. However, agricultural production has been seriously affected by weather conditions, because of underdevelopment of irrigation facilities. Maize is not only the main staple food of Zambians but the main agricultural crop. It was exported until 1978, but thereafter it has been imported from neighbouring countries due to the shortage of production for domestic consumption. There are some exported products such as tobacco, coffee, beef, though still small in value. Recently vegetables and fruit are exported by air to European markets in winter when there are shortages of such products.

Agriculture is placed in the centre of the Government's strategy for economic recovery and restructuring because of sufficient resources of land and water, as well as of labour.

(4) Mining

As mentioned above, mining has been a leading sector in Zambia's economic development, accounting for 95% of the total exports, 16% of GDP and 15% of the total paid employment. Zambian copper is ranked fifth in the world copper production, and accounts for about

90% of the Zambia's total exports value. Cobalt, the main by-product of copper, is ranked second to Zaire in the world reserves, accounting for 5% of the total exports value of Zambia.

The other minerals produced in Zambia are coal, lead, zinc, and other precious metals, although their production has not increased recently. It is estimated that the present levels of mining production will be maintained only for another 15 - 20 years due to the limitation of economically exploitable ore reserves and with no major new ore bodies in sight. However, mining is expected to play a prominent role as the principal earner of foreign exchange which is indispensable for the restructuring of the Zambian economy.

(5) Manufacturing

Zambia has developed an industrial strategy of promoting import-substituted manufacturing in order to emerge from a monocultural economy heavily dependent on copper. The manufacturing sector is divided into two sectors, the private sector and the Government sector, the latter being vested in the parastatal companies under the overall umbrella of ZIMCO (Zambia Industrial Mining Corporation Ltd.), and managed through INDECO (Industrial Development Corporation), a holding company. In 1968, INDECO financed major

foreign companies with governmental fund, and holds 36 companies concentrated in food and beverage, and textiles and chemicals sectors.

Manufacturing stagnated for the period 1975 - 1980 due to the depression of the Zambian economy caused by the decline of copper price and the deterioration of the trade balance. Although chemical and metal products industries scaled down the production being heavily dependent on imported inputs, the sectors which could utilize domestic materials such as textiles, non-metalic mineral products and beverages increased their production.

The manufacturing sector is considered to play a vital role in the diversification of the Zambian economy by shifting its emphasis towards non-traditional exports and import-competing manufactures.

(6) Tourism

Zambia is bestowed with abundant tourism resources of high growth potentiality, such as the Victoria Falls, the biggest fall in the world in terms of water surge, and Kafue and Luanga National Parks with good game viewing and bird watching possibilities as shown in Fig. 1-5. Lusaka, the capital city, is the 'pivotal' point of tourist traffic to Zambia.

The number of tourist arrivals in Zambia increased more than two-folds during 1975 - 1983 as shown in Table 1-6, 85% of tourists came from African countries, while 10% from European countries in 1983. Although 86% of African tourists came by road, most European tourists visited by air.

Tourism is a net foreign exchange earner as shown in Table 1-7 and is a labour-intensive industry with high employment multipliers. It also has strong linkages with other sectors of the economy, utilizing domestically-supplied foodstuff, furnishings, and handcrafts. Thus, the tourism sector could contribute significantly to the diversification of the Zambian economy.

Table 1-6 Tourist Arrivals in Zambia

(persons)

1975	1976	1977	1978	1979	1980	1981	1982	1983
51,680	56,165	49,106	53,327	53,885	86,931	146,649	118,627	122,051

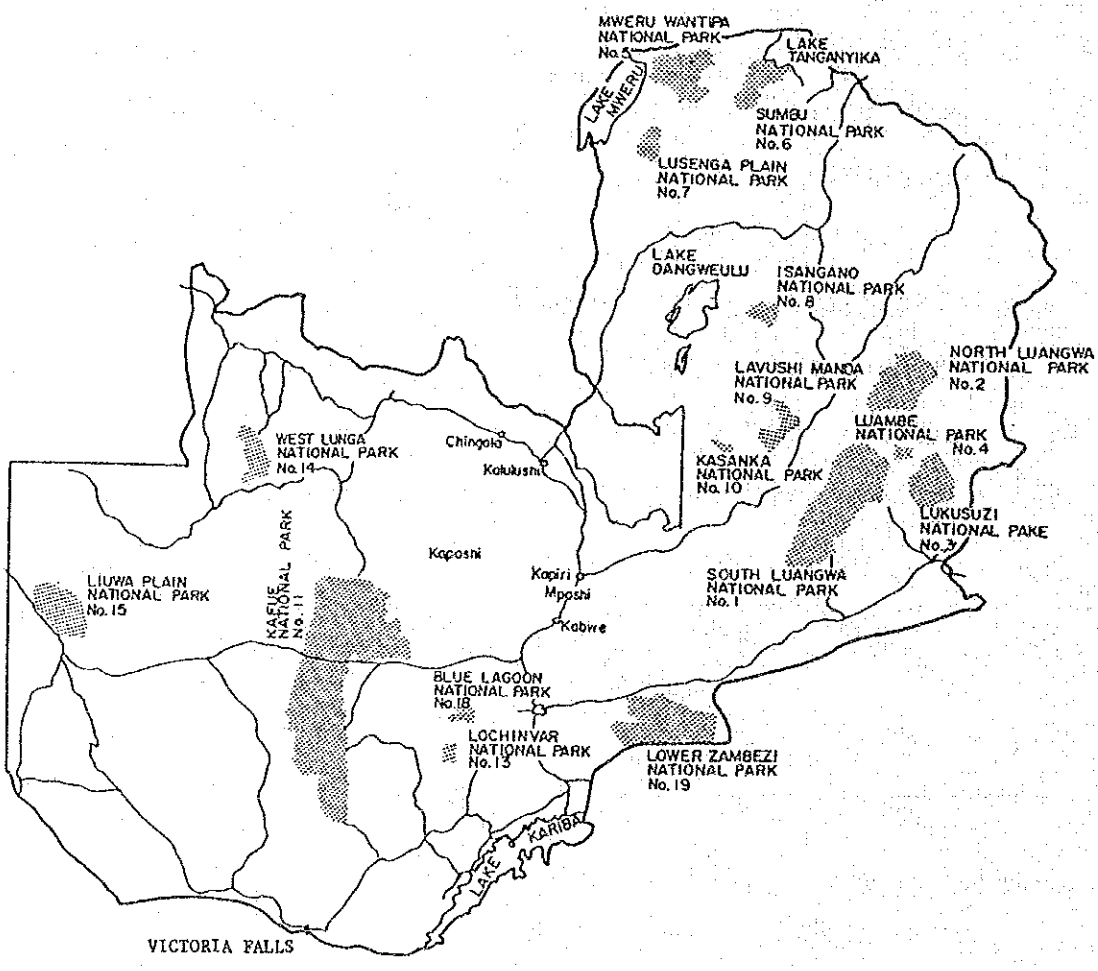
Source: Zambia National Tourist Board

Table 1-7 Foreign Exchange Earnings and Domestic Earnings from Tourism

(K'million)

Earnings	1980	1981	1982
Foreign Exchange Earnings	24.4	39.5	53.3
Domestic Earnings	16.1	19.5	26.5

Source: Central Statistical Office



Source: "Discover Zambia Holiday Travel Guide"

Fig. 1-5 Tourism Resources in Zambia

1-2-4 International Relations

Being a landlocked country, Zambia recognizes the importance of her international relations especially with neighbouring countries, and has played a leading role in SADCC and PTA as described below.

(1) SADCC : Southern African Development Co-ordination Conference

SADCC was established in 1979 originally by the "Five Front-line States" of Zambia, Tanzania, Mozambique, Angola and Botswana with a view to promoting regional economic co-operation, and now comprises a total of 9 states including the newly joined states of Zimbabwe, Malawi, Lesotho and Swaziland. It aims at freeing the member states from the strong relationship with South Africa by strengthening economic co-operation among the member states. In 1980 SADCC created the Southern African Transport and Communications Commission (SATCC), noting that "without the establishment of an adequate regional transport and communications system, other areas of co-operation become impractical".

At the Lusaka Conference of SADCC held in February 1984, 112 capital investment projects on transport and communications amounting to US$2,894 million were presented, and financing was fully secured for 29

projects and partly secured for 14 projects. Civil aviation-related projects amounted to US$100 million or 3.5% of the total projects cost.

(2) PTA : Preferential Trade Area for Eastern and Southern States

PTA was established in 1981 with its headquarters at Lusaka, aiming at promotion of development and cooperation in economic activities in general within the eastern and southern African region, and eventually at forming a Common Market or Economic Community in the region. It comprises 15 states, namely Zambia, Les Comores, Djibouti, Ethiopia, Kenya, Malawi, Mauritius, Somalia, Uganda, Zimbabwe, Lesotho, Swaziland, Burundi Rwanda and Tanzania as of July 1985.

In order for PTA to be effective, the Agreement urges the member states to implement the following measures:

1) Removal of tariff barriers on specified commodities;
2) Establishment of appropriate payment procedure;
3) Promotion of cooperation in transport and communications in order to accelerate trades;
4) Settlement of conditions in restricting re-export;
5) Simplification and integration of trading documents; and