

RESTRICTED

REPORT
OF
THE STUDY
ON
THE TRACK, TELECOMMUNICATION AND SIGNALLING
IMPROVEMENT PROJECT
IN
THE SOCIALIST REPUBLIC OF THE UNION OF BURMA

FEBRUARY 1987

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PREFACE

In response to the request of the Government of the Socialist Republic of the Union of Burma, the Japanese Government decided to conduct a survey on the Track, Telecommunication and Signalling Improvement Project and entrusted the survey to the Japan International Cooperation Agency (JICA).

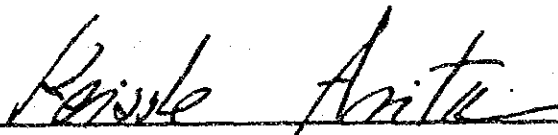
JICA sent to Burma a survey team headed by Mr. Tatsuya Ishihara of the Japan Railway Technical Service from January to March 1986, and from July to September 1986.

The team exchanged views with the officials concerned of the Government of the Socialist Republic of the Union of Burma including officials from the Burma Railways Corporation and conducted field surveys. 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 Socialist Republic of the Union of Burma for their close cooperation extended to the team.

February 1987



Keisuke Arita

President

Japan International
Cooperation Agency

February 1987

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

Dear Sir,

LETTER OF TRANSMITTAL

We have the pleasure of submitting to you herewith the final report on the Track, Telecommunication and Signalling Improvement Project of the Main Lines in the Socialist Republic of the Union of Burma (SRUB).

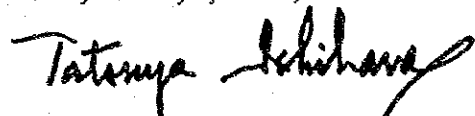
The Study was conducted during the period from January 1986 to February 1987, including the field surveys carried out twice, firstly from January to March 1986 and secondly from July to September 1986.

In the Study, the long-term modernization programme for track, telecommunication and signalling on the four main lines of the Burma Railways Corporation was formulated, and, based on this programme, feasibility study of the short-term improvement project on the Mandalay Line was conducted.

We hope that the study will serve as an access to the future implementation of the Project and accordingly contribute to the nationwide development of SRUB through the improvement of railway transport.

We wish to express our sincere gratitude to the officials of your agency, Advisory Committee, the Embassy of Japan in Burma, as well as to those concerned in the government of SRUB, for the kind assistance and cooperation they extended to the Study Team.

Very truly yours,



Tatsuya Ishihara
President

Japan Railway Technical Service

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**LONG-TERM MODERNIZATION
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CHAPTER 1 INTRODUCTION

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CHAPTER I INTRODUCTION

1-1 Study Background

The Burma Railways Corporation (hereinafter referred to as BRC), now operating 3,154 route Km of lines, has a long history since its start in 1877. During this period of more than 100 years, BRC has been playing an essential role as a major means of transport in Burma. Its recent shares in total domestic traffic by state owned transport organizations account for 63 percent in passenger-mile and 45 percent in ton-mile, showing the predominant position of the railway.

Under this situation, BRC has been promoting introduction of new rolling stock and track improvement on some sections, based on its fourth 4-year improvement plan (1982 - 1985). Despite such efforts, most of the ground facilities are becoming deteriorated with the passage of time. The result has been rather low efficiency in their use because maintenance and supply of parts have not been sufficient, and many facilities have been in use since the start of BRC. This has caused habitual train delays on most lines, and the railway can not fully make use of its inherent advantageous characteristics, namely high speed, safety, and capacity for mass transport.

These problems have become a main factor affecting the dependability of railway transport, and recent railway traffic has not shown a large growth. It is anticipated, however, that the railway demand will further increase because of such factors as promotion of domestic resource development, encouragement of local industries, and expansion of agricultural and industrial production.

Accordingly, it is considered an urgent necessity to improve tracks, telecommunication and signalling facilities on main lines, in order to restore the inherent functions of the railway. Further, from the long-range standpoint, BRC should be enabled to perform the key tasks of further enhancing safety and efficiency in transport and establishing a modernized railway system that can fully meet future demands.

The Study is carried out to establish a long-term modernization programme for tracks, telecommunications and signalling on the four main lines to be urgently improved (Rangoon-Mandalay (620 km), Pegu-Martaban (203 km), Rangoon-Prome (259 km), and Myohaung JC-Myitkyina (547 km)), and

also to establish a short-term improvement project to which the highest priority is to be assigned, and conduct its feasibility study, in accordance with the Scope of Work agreed upon between Japan International Cooperation Agency (hereinafter referred to as JICA) and the Government of the Socialist Republic of the Union of Burma (hereinafter referred to as GSRUB) in August, 1985.

1-2 Objective of the Study

The Study is carried out to establish a long-term modernization programme for tracks, telecommunications and signalling on BRC main lines up to the year 2005/06 with particular attention to national economic, industrial, living and cultural development.

This programme includes the establishment of a phased programme with due consideration to implementation priority and the selection of the objectives of short-term improvement project and its feasibility study.

The scope of the Study and the aims of the facility improvement are as below.

(1) Scope of the Study

- 1) Track improvement between Rangoon and Mandalay
- 2) Telecommunications and signalling improvement between Rangoon and Mandalay, Pegu and Martaban, Rangoon and Prome, and Myohaung J.C. and Myitkyina

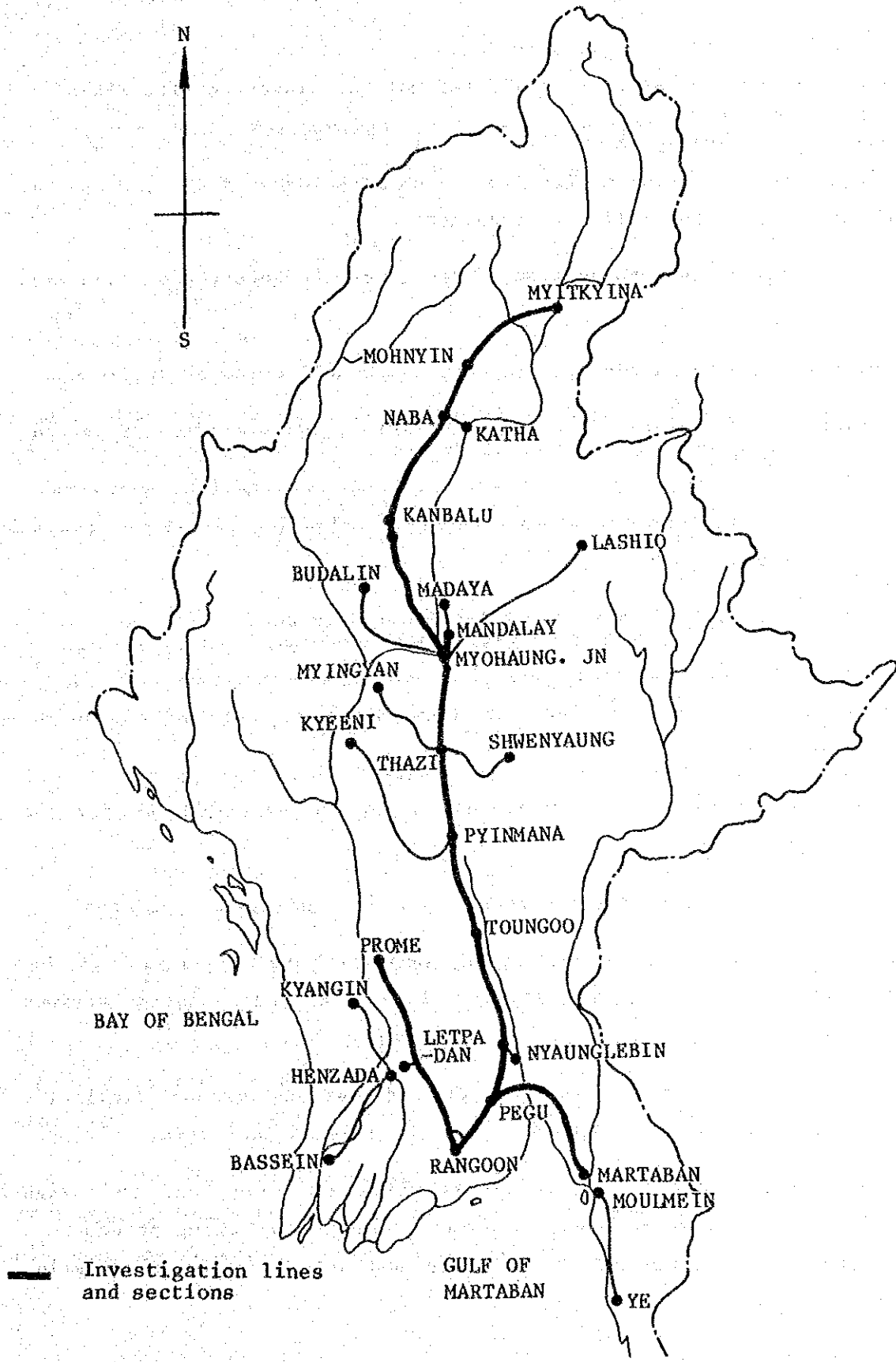
(2) Aims of the Facility Improvement

- 1) To increase train speed
- 2) To enhance safety
- 3) To improve punctuality
- 4) To increase track capacity

(3) Technology Transfer

- 1) Prestressed concrete sleeper (hereinafter referred to as PC sleeper) manufacturing
- 2) Rail welding

Key Map of Burma Railways



1-3 Study Schedule

The Study was carried out through the following five phases.

(1) Phase I Preparation work in Japan

Analysis and evaluation of collected data and investigation method

(2) Phase II Field work

Field work was conducted for two months, from January 15 to March 14, 1986 mainly through the following sequence:

- 1) Presentation, and explanation of the Inception Report and discussion on it
- 2) Discussion with authorities concerned and collection of opinions
- 3) Collection of related data and information, and field investigation
- 4) Discussion on the policies in establishing each facility improvement programme, on premises of the long-term modernization programme, and on the facilities standards
- 5) Preparation and explanation of the Progress Report

(3) Phase III Work in Japan

Work in Japan was carried out from March to July, 1986 in the following sequence:

- 1) To forecast the transport demand up to the year 2005/06 for the selected 4 main lines
- 2) To sum up and grasp the transport, facility and management problems
- 3) To establish the basic policy of modernization programme with due consideration of transport demand, BRC need and related various environments
- 4) To establish the transport plan and various ground facilities improvement plan, and to roughly design the related facilities
- 5) To duly consider the coordination with each plan, and to assign priority to each line and type of construction after making an economic evaluation considering investment scale and deterioration of existing facilities

6) To establish the implementation schedule of each project up to the year 2005/06 and prepare the Draft Report on a long-term modernization programme

(4) Phase IV Work in Burma

Work in Burma was carried out in July, 1986 on the following:

- 1) Presentation and discussion of the Draft Report
- 2) Determination on line(s) or section(s) for the short-term improvement project.

(5) Phase V Work in Japan

The Draft Final Report was prepared, making necessary revisions to reflect the outcome of the discussion in Burma and to keep consistency with the feasibility study of the short-term improvement project.

The report was completed in February 1987 after presentation and discussion of the Draft Final Report in January 1987.

1-4 Outline of the Long-Term Modernization Programme

The long-term modernization programme has been established on the basis of the following conception.

- (1) To clarify the role of each transport mode in Burma and to position the future railway transport
- (2) To restore the inherent functions of the railway that meet the socio-economic framework and rail traffic demand
- (3) To improve facilities based on the future railway transport demand

The scope and scale of the facility improvement of the selected 4 lines are planned after dividing the lines and fields into those to be improved in the immediate future and those to be done in the long term, starting with those which produce high investment effect.

- (4) To fix the target at each stage of the long-term modernization programme which will be finished in 2005/06 and to establish the basic plans of transport, facility and construction.

1) First stage

Restoration of railway's inherent functions by improving train speed and punctuality, and enhancing safety train operation on the line(s) selected.

2) Second stage

Achievement of stable railway transport by improving punctuality and safety on the other lines, except the line(s) selected in the first stage, and also by further improving operation service and increasing track capacity on the line(s) selected in the first stage.

3) Third stage

Establishment of BRC's transport foundation by achieving modernized traffic control.

(5) The line(s) and section(s) of the feasibility study will be selected after an overall economic study, the importance of the line(s) and section(s), and the ratio of operation of the facilities. In conducting economic analysis, the time saving as a result of increased train speed, the saving in rolling stock cost from enhanced train operation efficiency and the saving in train accident and disorder cost from improved safety are taken as the main benefits.

1-5 Study Organization

1-5-1 Members of Advisory Committee

Mr. Masatoshi MATSUNAMI - Leader

Director, Engineering and Planning Division,
Land Transport Engineering Dept.
Regional Transport Bureau Ministry of Transport

Mr. Masao WADA

- Demand Forecast
Senior Officer for International Cooperation
International Cooperation Division
International Transport and Tourism Bureau
Ministry of Transport

Mr. Yoshifumi SUZUKI - Track
Chief, Railway Facilities Division
Land Transport Engineering Dept.
Regional Transport Bureau Ministry of Transport

Mr. Hiroshi KATO - Telecommunication and Signalling
Deputy Assistant to the Director
Railway Facilities Division
Land Transport Engineering Dept.
Regional Transport Bureau Ministry of Transport

1-5-2 Study Team Members

Tatsuya ISHIHARA	Team Leader
Nobuhisa OSADA	Co-leader Basic System and Facility Management Plan
Masahide SHINMYO	Related Development Plan
Osamu OHTSU	Traffic Demand Forecast
Shiro KONDO	Transport and Rolling Stock Plan
Haruki OKUNO	Train Operation Control Plan
Keiji ITOH	Track Plan
Kiyoshi HOSOBUCHI	Telecommunication and Signalling Plan
Tomio WATANABE	Track Design
Sadajiro SANO	Telecommunication and Signalling Design
Hiroyuki ENDO	Cost Estimation and Construction Plan
Yasuo HARA	Economic Analysis and Execution Plan

1-5-3 Counterparts in BRC

Mechanical and Electrical Department

- U Shwe Win - Chief Mechanical and Electrical Engineer
- U Maung Maung Aye - Deputy Chief Electrical Engineer
- U Kyaw Myint - Deputy Chief Mechanical Engineer (Carriage)
- U Win Aung - Deputy Chief Mechanical Engineer (Operating)
- U Tin Hlaing - Divisional Electrical Engineer
- Daw Win Kyi - Assistant Foreman

Civil Engineering Department

- U Htun Thein - Chief Engineer
- U Kyi Nyunt - Deputy Chief Engineer
(Signal and Telecommunication)
- U Thin Tu - Deputy Chief Engineer
(Planning and Administration)
- U Than Myint - Staff Engineer
- U George Bu Mu - Divisional Engineer
(Signal and Telegraph)
- Daw Myint Myint San - Deputy Staff Engineer

Traffic Department

- U Kenneth Shein - Chief Traffic Manager
- U Tin Shwe - Deputy Chief Traffic Manager (Operating)
- U Chan Htun Aung - Deputy Chief Traffic Manager (Passenger)
- U Tin Yee - Divisional Traffic Manager

Accounts Department

- U Kan Tun - Controller of Railway Accounts
- U Maung Maung - Deputy Controller of Railway Accounts
- U Nyan Win - Senior Accounts Officer
- U Maung Maung Lwin - Accounts Officer

1-5-4 Related Organizations

Planning Department (P.D), Ministry of Planning and Finance

- U Kyaw Shein - Additional Director
- U Kyaw Han - Assistant Director

Posts and Telecommunication Corporation (P.T.C.), Ministry of Transport and Communication

- U Pe Than - Deputy General Manager
- U Myint Win - Superintending Engineer
- U Sein Win - Communication Engineer
Grade (I) Microwave Oversea
- U Sein Tun - Communication Engineer
Grade (II) Planning

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CHAPTER 2 SOCIO-ECONOMIC FRAMEWORK

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CHAPTER 2 SOCIO-ECONOMIC FRAMEWORK

2-1 General

The purpose of this chapter confirms the present characteristics of the socio-economic situation in Burma and forecasts her future socio-economic features.

The main contents of this chapter, except this section, are divided broadly into two parts.

The first part, which includes sections 2-2 and 2-3, deals with the present socio-economic characteristics on the whole country as well as the states/divisions related to the Study on the Burma Railways Corporation. The second part, which includes sections 2-5 and 2-6, deals with forecastings of the socio-economic features on the whole country and the states/divisions related to the Study. And, section 2-4 has the role of mediation between the both parts.

(1) Fiscal years forecasted

The basis year for the forecastings is 1985/86, and the forecastings are prepared up to 2005/06. Fiscal years presented in tables are 1985/86, followed by 1993/94, 1997/98 and 2005/06.

Three figures of the standard case and two alternatives are obtained. This is due to some uncertain factors in the international commodities and financial markets and other areas of economic activities.

(2) Forecast method adopted

A balance check method is adopted for the forecastings.

In the case of contradictory data, priority is given to the more comprehensive ones.

2-2 Present Socio-Economic Characteristics on the Whole Country

2-2-1 Demographic Condition

(1) Population

According to the 1983 Census, Burma has a population of 35,314 thousand, and the percentage distribution by age group was 41.5 percent for persons under 15 years of age, 52.5 percent in the 15-59 age group,

and 6.0 percent for the 60 years and above. The labour force was 47.7 percent of the total population.

The annual growth rate of the population was 2.02 percent between 1973 and 1983. Present annual growth rates are approximately 2.0 percent and seem to be in a slight declining trend from year to year.

Total population in 1985/86 is estimated at 37,115 thousand. The government estimates an average annual growth rate of 1.96 percent during the 5th Four Year Plan period, and to grow by 40,113 thousand in the mid-1989/90.

(2) Labour force

Such a slight declining growth rate of the population can be attributed to the declining birth rate. As a result, the percentage distribution of persons in the 15-59 year group is increasing. According to the Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions of the Socialist Republic of the Union of Burma (hereinafter referred to as the "Report"), annual growth rates of population by age group between 1974/75 and 1985/86 was 0.93 percent for under 15 years of age, 2.68 percent for 15-59 years, and 3.07 percent for 60 years and above.

For this reason, the annual growth rate of labour force is higher than that of the population, and the Guidelines for the Fifth Four Year Plan adopted at the Fifth Party Congress estimates the annual growth rate of labour force in the 5th Four Year Plan period at 2.5 percent.

(3) Active labour force

The active labour force is estimated at 15,130 thousand persons in 1985/86. It consists of 40.8 percent of the total population, and 72.0 percent of the 15-59 year age group.

Agriculture is the dominant economic activity in Burma, and the majority of the active labour force (63.3 percent) engages in agricultural activities. It is followed by 9.7 percent for trade, 8.5 percent for processing and manufacturing and 3.8 percent for administration.

By the institutional sector, 89.3 percent of the active labour force engages in the co-operative and private sectors, and only 10.7 percent in the state sector. (See Table 2.2.1)

Table 2.2.1 Percentage Distribution of the Estimated Active Labour Force by Economic Sector, 1985/86

	(%)		
	State Sector	Co-operative and Private Sectors	Total
Agriculture	0.5	62.7	63.3
Livestock and Fishery	0.1	1.2	1.3
Forestry	0.6	0.6	1.2
Mining	0.5	0.1	0.6
Processing and Manufacturing	1.2	7.3	8.5
Power	0.1	0.0	0.1
Construction	1.1	0.5	1.6
Transport and Communications	0.8	2.5	3.3
Social Services	1.7	0.6	2.3
Administration	3.6	0.2	3.8
Trade	0.5	9.3	9.7
Workers n.e.s.	-	4.2	4.2
Total	10.7	89.3	100.0

Source: Report to the Pyithu Hluttaw 1986/87, Ministry of Planning and Finance

(4) Concentration and dispersion of population

There is no concentration of population in Burma. The share of urban population is approximately 24.0 percent of the total population, and the residual lives in the rural areas according to the 1983 Census. The growth rate of the urban population is rather slow.

Annual growth rates of population in the populous towns between 1973 and 1983 are as follows:

Rangoon (2,459) 2.01 percent, Mandalay (533) 2.46 percent, Moulmein (220) 2.49 percent, Pegu (150) 1.99 percent, Bassein (144) 1.35 percent, Taunggyi (108) 3.71 percent, Sittwe (108) 1.85 percent, and Monywa (107) 2.70 percent.

Note: Figures in parentheses indicate the population in 1983.

Unit of population is one thousand.

2-2-2 Land Utilization

Land utilization is largely affected by topography, weather condition and other physical environments. And, land utilization pattern has had basically very little change in recent decades.

The percentage distribution of land utilization in 1985/86 is as follows: Net areas sown 12.2 percent, fallow land 2.7 percent, culturable waste land 12.6 percent, reserved forests 14.9 percent, other forest areas 32.7 percent, and other lands 24.9 percent. The net areas sown increased at an annual rate of 0.47 percent in the recent eight years.

2-2-3 Present Situation of the National Economy

(1) Performance of economic development

The economic growth rose in the 3rd Four Year Plan period and thereafter, compared with up to the 2nd Four Year Plan period.

Gross domestic product (GDP) at 1969/70 constant producers' prices increased only by 2.0 percent per annum in the period 1970/71 to 1973/74, and by 4.7 percent per annum in the 2nd Four Year Plan period.

In the 3rd Four Year Plan period, the annual growth rates accelerated by 6.5 percent, due to a series of reforms intended to reorient economic policies in a more open and pragmatic fashion. These economic policies maintained during the 4th Four Year Plan period ended in March 1986. The annual growth rates are recorded by 5.5 percent, despite unfavourable international economic environments. Table 2.2.2 shows their performance since 1970/71.

Main causes of this performance are explained as follows:

- a) The imports could increase at a high pace during 1976/77 and the 3rd Four Year Plan period, due to increases of foreign loans and grants receipt and exports based on the reoriented economic policies.
- b) The increasing imports pulled up the import ability for capital goods. It contributed to grow the domestic investments (gross domestic fixed capital formation).
- c) The increasing investments expanded GDP with short time lags.
- d) However, increasings of foreign loans and grants receipt collided against a wall for various international economic reasons, and higher

Table 2.2.2 Performance of Gross Domestic Product = Gross Domestic Expenditure (Whole Country)

	Annual Growth Rates at 1969/70 Price (%)				Percentage Distribution (GDP=100.0)				GDP at Current Prices		Percentage Distribution
	1970/71 to 1973/74		1974/75 to 1981/82		1969/70	1973/74	1977/78	1981/82	1985/86	1985/86	1985/86
	to	to	to	to					(million Kyat)	at Current	Price
Goods of which:											
Agriculture	1.7	4.5	7.7	5.7	51.7	51.0	50.6	53.0	53.4	35275.1	61.1
Processing and Manufacturing	2.7	3.6	8.5	4.7	27.2	28.0	26.8	28.9	28.1	22434.4	38.9
Services of which:	-0.4	7.1	5.3	6.1	10.7	9.7	10.7	10.2	10.4	5735.0	9.9
Transportation	3.5	5.8	6.8	5.8	23.0	24.4	25.4	25.6	26.0	8449.1	14.6
Trade	-1.3	3.1	7.8	6.1	5.9	5.1	4.8	5.1	5.2	1986.9	3.4
	1.4	4.0	3.4	4.5	25.3	24.6	24.0	21.3	20.6	14008.4	24.3
Gross Domestic Product	2.0	4.7	6.5	5.5	100.0	100.0	100.0	100.0	100.0	57732.6	100.0
Consumption	0.7	4.6	5.5	6.1	90.5	89.1	88.7	85.4	87.4	49838.6	86.3
Gross Domestic Fixed Capital Formation	-9.5	16.6	14.4	2.3	11.6	7.2	11.0	14.7	13.0	9782.3	16.9
Increase in Inventories	-	-	-	-	1.6	2.2	0.3	2.5	-0.2	-192.6	-0.3
Exports (FOB)	-1.7	3.4	9.9	5.7	5.4	4.6	4.4	4.8	4.9	3234.2	5.6
Imports (CIF)	-22.1	14.5	21.6	-4.2	-9.0	-3.1	-4.4	-7.4	-5.1	4929.9	-8.5
Gross Domestic Expenditure	2.0	4.7	6.5	5.5	100.0	100.0	100.0	100.0	100.0	57732.6	100.0

Source : Report to the Pyizhu Hluttaw 1986/87, Ministry of Planning and Finance

increasing rates of export volume slowed down in the 4th Four Year Plan period.

In its latter half, a declining of export prices was added on, although the export volume continued to increase at certain rates.

e) For those factors, the investment ratio to GDP declined slightly in the 4th Four Year Plan period compared with the 3rd Four Year Plan period.

(2) Present characteristics of the national economy

Per capita GDP at 1985/86 prices is Kyat 1,555.5, and GDP at per active labour force is Kyat 3,815.8 in 1985/86. Those figures are in a low level compared with the ASEAN countries.

Following are present characteristics of the Burmese economy.

1) Balance of payments

Net exports at current prices in terms of national accounts are continuing deficits. This deficit ratio corresponds to 2.9 percent of GDP in 1985/86. One of the causes is due to the deterioration of terms of trade in recent years. As a result, Burma is financing her deficits with official foreign loans and grants through various channels.

Such strained balance of payments is bringing on a decline of merchandise imports at real terms in the 4th Four Year Plan period.

2) Investment

The investment ratio recovered in the 3rd Four Year Plan period compared with the 2nd Four Year Plan and 1970/71 to 1973/74 periods. This recovering investment ratio is maintained in the 4th Four Year Plan period in general.

The investment ratio in 1985/86 is 16.9 percent at 1985/86 prices. This is a low level compared with some ASEAN countries where around 25 percent of GDP is seen in recent years. Specially, the investment ratio in the period 1970/71 to 1977/78 was kept at a low level to correspond to the value of the consumption of fixed capital.

The marginal output capital co-efficient, which is defined as an incremental increase of GDP with a one year-lag of investment in each year, is approximately 0.315 at 1985/86 constant prices during the 3rd and 4th Four Year Plan periods.

3) Economic activities by sector

A characteristic of economic activities by sector is a higher growth in the goods sector in the 3rd and 4th Four Year Plan periods. The higher growth in the goods sector has brought on a relative high growth in transportation.

In the goods sector, higher growth is achieved in the power, mining, and livestock and fishery sectors.

Processing and manufacturing achieves a slight higher growth than the average of goods sector under under-utilized production capacities.

The agriculture sector has also recorded remarkable progress. While the expansion of gross sown acreages is growing at an annual rate of slightly over 1.3 percent, the diversification of sown crops advances and the agricultural productivity per acre has risen at an annual rate of slightly over 4.7 percent in the recent eight years. Production of newly developing crops such as maize, wheat and sunflower has shown a large expansion, and of paddy, pulses and cotton has also risen.

Production of transport services at 1969/70 constant prices grew at an average annual rate of 7.1 percent in the 3rd Four Year Plan period and followed by 5.6 percent in the 4th Four Year Plan period. The transport activity in Burma has a relatively low share in the national economy compared with other South-East Asian countries. The percentage distribution of transportation to the total value of production at current producers' prices is 3.4 percent in 1985/86, while such shares were 4.6 percent for Thailand in 1975 and 5.6 percent for Indonesia in 1980 according to the input-output tables of each countries.

As a result of these economic activities, percentage distribution in 1985/86 of GDP at current producers' prices are as follows: goods sector 61.1 percent, services sector 14.6 percent, and trade sector 24.3 percent. These figures by more detailed economic activity are 38.9 percent for agriculture, 9.9 percent for processing and manufacturing, and 3.4 percent for transportation sectors.

4) Prices and price structure

Since the 3rd Four Plan period, the rising rates of price show a slow down.

GDP deflators rose by 13.8 percent per annum in the 2nd Four Year Plan period, followed by 3.0 percent in the 3rd Four Year Plan period, and by 2.2 percent in the 4th Four Year Plan period.

Table 2.2.3 shows the rising rates of selected deflators by plan period since 1970/71. As seen in Table 2.2.3, the 2nd Four Year Plan period recorded a rapid price rise except services. However, the 3rd and 4th Four Year Plan periods could maintain a relative price stability in general, although some prices like exports, services and imports rose in the 3rd Four Year Plan period. Another characteristic was a declining trend of export prices in terms of national accounts in the 4th Four Year Plan period, specially in its latter half.

Table 2.2.3 Annual Rising Rates of Selected Deflators

	1970/71 to 1973/74	1974/75 to 1977/88	1978/79 to 1981/82	1982/83 to 1985/86
(GDP Deflators)				
Goods	8.3	16.2	2.7	2.5
of which:				
Agriculture	11.5	16.7	3.0	2.7
Processing and Manufacturing	4.9	16.5	1.4	3.1
Services	1.3	2.1	7.5	0.8
of which:				
Transport	1.6	5.5	7.5	1.3
Trade	10.2	16.5	1.7	2.3
GDP	7.2	13.8	3.0	2.2
(GDE Deflators)				
Consumption	7.0	14.3	2.1	2.8
Gross Fixed Capital Formation	10.2	15.3	7.6	0.8
Exports	17.5	12.2	8.9	-6.7
Imports	14.9	20.6	5.3	1.0
(Value of Production Deflators)				
Value of Production	8.2	13.9	2.6	2.3

Source: Report to the Pyithu Hluttaw 1986/87, Ministry of Planning and Finance

Those developments brought on a structural change of prices. As shown in Table 2.2.2, the percentage distribution by GDP composing item changed on a broad range. The percentage distribution of goods to GDP in 1985/86, for example, is 61.1 percent at 1985/86 prices as against 53.4 percent at 1969/70 constant prices. Therefore, the economic structure can be grasped with different views by the price valuation basis.

Main structural change of prices is as follows:

- a) The rising rates of service prices were moderate, while those of goods were higher than services, in general, in the domestic economic activity.
- b) The rising rates of investment goods were higher than consumer goods, except the 4th Four Year Plan period.
- c) The export prices declined in the 4th Four Year Plan period. This brought on a deterioration of the terms of trade.

5) Productivity by economic activity

Table 2.2.4 shows a productivity differential, which is calculated by using the "Report", in 1985/86 at 1969/70 constant prices as well as at 1985/86 prices. (Figures of GDP per active labour force are Kyat 3,815.8 at 1985/86 prices as against Kyat 1,366.5 at 1969/70 constant prices.)

As shown in Table 2.2.4, the productivity by economic activity is higher in trade and secondary industries than primary industries (agriculture, livestock, fishery and forestry). By institutional sector, the productivity in state sector is higher than cooperative and private sectors.

To be mentioned in this field, the productivity differential at 1985/86 prices is in a narrow range than at 1969/70 constant prices, reflecting the structural change of prices since 1969/70 to 1985/86.

Table 2.2.4 GDP per Active Labour Force in 1985/86

	(GDP=100)			
	at 1969/709			at 1985/86
	Constant prices			Prices
State sector	Cooperative and private sectors	All sectors	All sectors	
Agriculture, Livestock, Fishery and Forestry	76	56	56	73
Processing and Manufacturing	474	66	123	117
Other Goods	309	114	257	145
(Other Goods, except Power)	225	114	194	128
Transportation and Communications	328	134	179	115
Other Services	285	100	195	105
Trade	2,096	119	212	249
GDP	366	68	100	100

Note: Calculated by $\frac{\text{GDP by sector/Active labour forces by sector}}{\text{GDP/Active labour forces}}$

Source: Report to the Pyithu Hluttaw 1986/87, Ministry of Planning and Finance

2-3 Present Socio-Economic Characteristics on the Related States/Divisions

The related states/divisions (hereinafter referred to as "divisions") concerning the Study on Track, Telecommunications and Signalling Improvement of the Burma Railways Corporation consist of ten divisions (including four states).

Each railway line relates directly or indirectly to divisions shown in Table 2.3.1 and Fig. 2.3.1.

Following are present socio-economic characteristics by related division.

Table 2.3.1 Classification by Direct and Indirect Related State/Division

Name of Lines	Direct Related Divisions	Indirect Related Divisions
Rangoon-Mandalay Line	Rangoon, Pegu and Mandalay	Irrawaddy, Karen, Magwe, Shan and Sagaing
Pegu-Martaban Line	Pegu and Mon	Karen
Rangoon-Prome Line	Rangoon and Pegu	Irrawaddy and Magwe
Myohang-Myitkyina Line	Mandalay, Sagaing and Kachin	

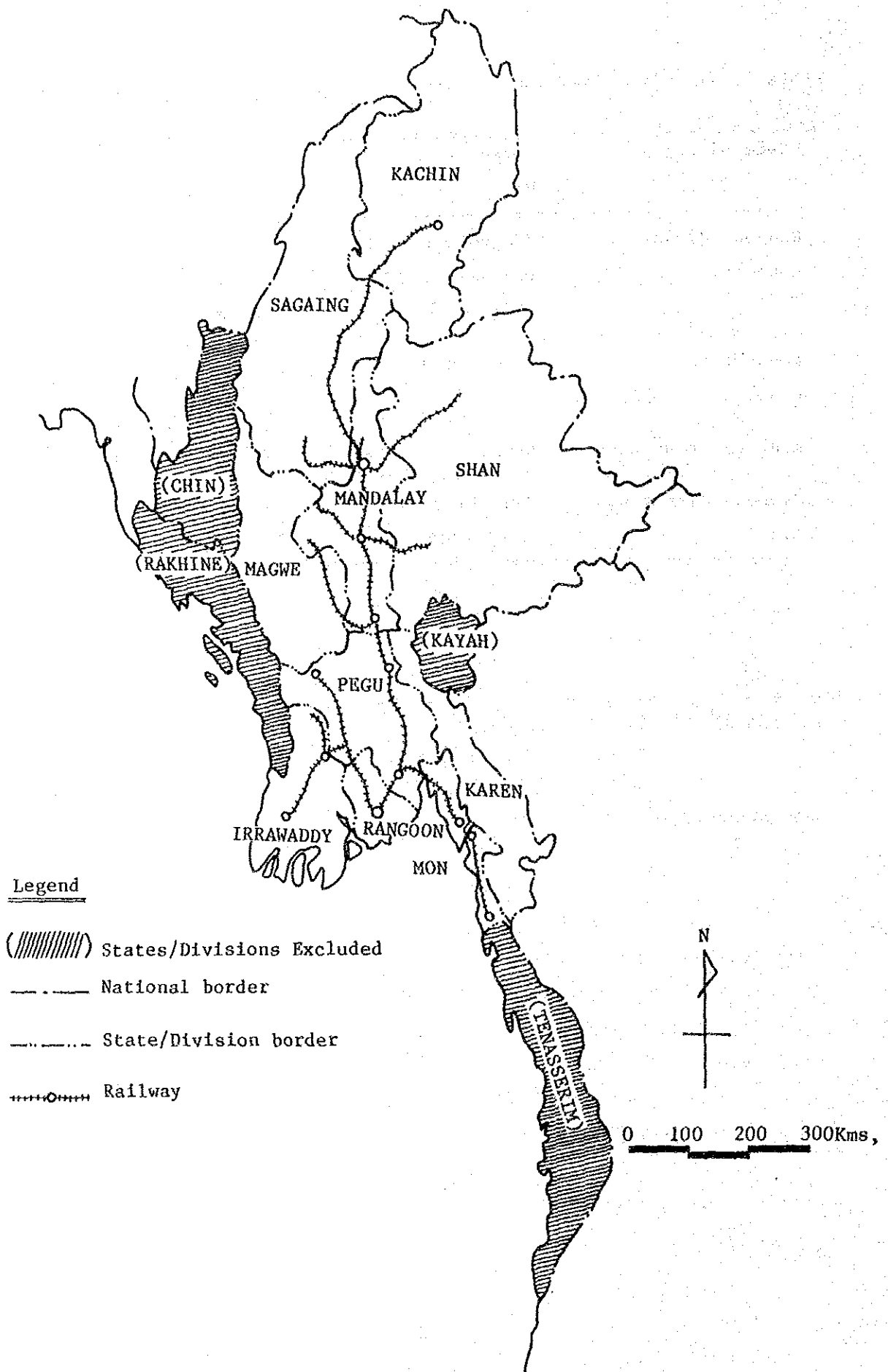


Fig. 2.3.1 States/Divisions Related to the Study

2-3-1 Main Socio-Economic Characteristics by Divisional Group

The related divisions are divided into four groups.

The first consists of Pegu, Irrawaddy and Mon, belonging to the lower Burma. The second is the divisional group of Mandalay, Magwe and Sagaing, belonging to the middle and upper Burma. The third is Rangoon division, and the fourth is the surrounding states such as Kachin, Shan and Karen.

Of this grouping, Sagaing and Mon have also some characteristics of the fourth group in a few socio-economic fields.

(1) Population and land utilization

Table 2.3.2 shows the population density and the land utilization by state/division.

Table 2.3.2 Population Density and Land Utilization by State/Division

	Population Density (Persons per square meter)	Ratio of Net Areas Sown to the Total (%)	Ratio of Culturable Land to the Total (%)
Rangoon	391	53.8	66.6
Pegu	96	25.7	35.7
Mandalay	124	29.1	41.3
Irrawaddy	142	42.9	56.0
Magwe	72	19.0	28.6
Sagaing	41	13.1	20.3
Kachin	10	1.8	25.6
Shan	24	3.7	22.5
Karen	35	7.3	13.9
Mon	137	29.1	41.3
Others	27	5.3	24.2

Note: (1) Population density: based on 1983 Census.

(2) Land utilization: based on 1984/85 provisional figures.

Source: 1983 Population Census and Documents supplied by the Planning Department.

The population density is higher in the first group compared with the second group. Rangoon has the highest population density, while the fourth group is the lowest.

In the land utilization, net areas sown occupy more than 40 percent of their total land in Rangoon and Irrawaddy in the first group, and followed by the other divisions belonging to the first and second groups, which are between 13 and 29 percent. The fourth group stays in a low level of less than 10 percent.

In the cultivable land, which includes net areas sown, fallow land and cultivable waste land, divisions of the first group, Rangoon and Mandalay occupy more than 35 percent of their total land in 1984/85, as against less than 30 percent for others.

(2) Economic structure

The dominant economic activity in the first and second groups except Mon is agriculture, and its composition shares to gross regional product* are estimated at 44 percent through 52 percent in 1985/86, as against 32 percent through 38 percent in the fourth group. The composition share in Mon is estimated to belong to rather the fourth group.

In services and trade, Rangoon occupies a higher composition share to its gross regional product, while the first and second groups are estimated to have lower share. Their shares in the fourth group are estimated to be rather higher than the first and second groups, due to a lower economic activity level in the goods sector.

Those data will be shown in Table 2.6.4 of the latter section.

(3) Differential of per capita GRP

Per capita gross regional product is the highest in Rangoon, and its relative level is estimated to be more than 1.5 times the average of the whole country in 1985/86.

Pegu and Irrawaddy are estimated to be around 1.1 times the average, against around the average levels for the second group. The levels of the Fourth group and Mon are estimated to be around 59 percent through 77 percent of the average. (See Table 2.6.6 in the latter section.)

* Gross regional product (GRP) is defined as the gross value added originating from the territorial sphere of the state/division defined.

2-3-2 Main Characteristics by State/Division

(1) Rangoon division

Rangoon division has 38 townships. Its total population was 3,974 thousand in the 1983 Census and the annual growth rate was 2.22 percent between 1973 and 1983. The population of Rangoon town area occupied 2,459 thousand in 1983, and the annual growth rate was 2.01 percent between recent two Census years.

A demographic characteristic is that the population in the central Rangoon town has a declining trend. According to the 1983 Census, the population of 5 townships in the central areas declined and that of 3 townships was under 1.0 percent of growth rates per annum between the two Census period.

Rangoon town is the capital of Burma and also the business centre. The division has an economic structure with a large percentage distribution of trade and various service sectors. Those shares to the whole country are estimated to be approximately 33 percent for trade and 28 percent for various services except transportation. Some projects in social services like hospitals and sport facilities construction are implemented. In transportation sector, an expansion project of the international airport is in progress.

In processing and manufacturing, many factories and establishments for production of personal- and household-use commodities, together with other type of factories, are located here. An oil refinery is also located in the east suburban area.

Agriculture is active in the suburban area and paddy is the dominant product in this sector. However, the percentage distribution of this sector to the whole country is estimated to be around 5.5 percent in 1985/86. In livestock, the production of duck and fowl meat has a large share. In forestry, some teak saw mills are located here.

(2) Pegu division

Pegu division has 28 townships. Its population was 3,800 thousand in the 1983 Census and the annual growth rate was 1.80 percent between 1973 and 1983.

The division is divided into two regions by the Pegu Mountains, and the Rangoon-Mandalay line of BRC runs through the east region, while the Rangoon-Prome line is in the west region. The population is divided into

approximately 55 percent for the east region and 45 percent for the west region, according to the 1983 Population Census.

The economic activity is also divided into de facto two regions. The centre of the east region is Pegu town, which is the capital of the division, and the centre of the west region is Prome, which is a regional business centre.

In economic activities, agriculture is estimated to occupy nearly 50 percent of its gross regional product and to produce around 15 percent of the national total in 1985/86. Paddy is a major item, and oil seeds like groundnut, sesamum and sunflower are ranked next. Sugar cane is produced in the north part of the east region. The North Nawin Dam, which is expected to irrigate around 100 thousand acres in Prome area, has completed its pilot stage. And the South Nawin Dam project commenced construction in 1985/86.

In livestock and fishery estimated to occupy approximately one eighth of the national total, the production of duck and fowl meat and pork occupy large shares. With Magwe and Irrawaddy, Pegu was also an implementing area of the Burma Livestock Project.

Forestry is one of the main producing divisions in the country. The East Pegu Yoma Project was implemented in the 3rd and 4th Four Year Plan periods.

In processing and manufacturing, a few large machinery and equipment producing factories are located along the Irrawaddy river basin area of the division. In the west region, a textile mill and pottery plant were established in recent years, while some sugar mills, alcohol, canning and tapioca factories are established in the east region. To supply electric energy to large industrial factories, a natural gas turbine power station, including its extension, was constructed in Prome area.

(3) Mandalay division

Mandalay division has 29 townships. Its population was 4,581 thousand in the 1983 Census and the annual growth rate was 2.25 percent between 1973 and 1983.

In agriculture, the division is estimated to produce 15.3 percent of total value of production of the country in 1985/86. Main crops having high percentage distribution to the whole country are products for edible oil such as sesamum and groundnut, commercial crops such as sugar cane,

tobacco and cotton and pulses. Paddy is not the main crop in the division, because the division is located in the dry zone.

The Sedawgyi Dam project, with some electric power generation, is nearly completed. The project will irrigate around 100 thousand acres of the land. Kinda Multipurpose Dam project in Myttha area is also being implemented. In livestock, the division has a major position in mutton. Production of fresh milk and beef is not small in its share.

In Yazin located in the most southern region, projects for a complex of the research and study institutes for the primary industries are implemented.

In mining, the division is producing various non-metallic minerals, gem stone and steel billet (steel billet is classified in the mining sector).

Reflecting an active commercial crops production, the division has many food and beverages processing factories and establishments. The division has also relatively high shares in production of construction materials and industrial raw materials to the whole country. Within the recent few years, sugar mills, food canning, textile, marble and brick factories commenced their operation. An extension work of beverage and distillatory factory is in progress.

Mandalay town is the trade centre of Central Burma and had a population of 532 thousand in 1983. Therefore, trade is active in the division compared with the other divisions except Rangoon division.

(4) Irrawaddy division

Irrawaddy division has 26 townships. Its population was 4,991 thousand in the 1983 Census and the annual growth rate was 1.85 percent between 1973 and 1983. Irrawaddy is the most populous division in the country at present.

The division relates indirectly with the Rangoon-Mandalay line in its south-eastern region, and with the Rangoon-Prome line in its east half.

In the economic activities, agriculture is dominant. The gross value added (net output) from agriculture is estimated to occupy nearly a half of its gross regional product, and around 19 percent in the composition share to the whole country. Main crop is paddy, and oil seeds such as groundnut, sesamum and sunflower are ranked next.

The Lower Burma Paddy Land Development projects and Flood Protection projects are being implemented in the division.

In livestock, poultry (duck and fowl meat) and pork occupy a relatively high share. In forestry, an equipment improvement project is implemented in its south-western region.

In processing and manufacturing, cement, sheet glass, jute products, plywood and some other goods are been produced, apart from rice in several large-scale rice mills. Of those, Kyangin Cement mill completed its extension work in 1985/86, and its production capacity is expected to increase by 480 thousand tons per annum.

In electric power, two natural gas turbine projects are implemented along the Irrawaddy river basin.

(5) Magwe division

Magwe division has 25 townships. Its population was 3,286 thousand in the 1983 Census, and the annual growth rate was 2.09 percent between 1973 and 1983.

The division relates indirectly to the Rangoon-Mandalay line through a branch line, and Rangoon-Prome line.

A characteristic in Magwe is in relatively active mining, processing and manufacturing.

The division produces more than 90 percent of the crude oil and more than 50 percent of the natural gas of the whole country in 1985/86.

Two oil refineries are located in Mann and Chauk along the Irrawaddy river basin. Three fertilizer plants are located in Sale, Kyunchang and Kyawswa. The newest plant located in Kyawswa, having 600 metric ton capacity, completed in 1984/85, and the operating plants in Sale and Kyunchang have capacities of 465 metric tons and 207 metric tons per annum. A cement factory, located in the southern region, produced approximately 36 percent of the national total in 1984/85. A heavy industries factory is located in Malun near Mann. A cigarette factory, located in the northern region, is producing around a half of the total production. A ceramic glassware factory in Chauk is under construction and will be completed in 1987/88. In electric power, three natural gas turbine power stations are located in the division.

The division is situated in the dry zone. In agriculture, the production of paddy occupies only less than 3 percent of the whole country. On the other hand, sesamum, groundnut and tobacco are the main crop.

In livestock, mutton, fowl meat, fresh milk and beef are main products.

(6) Sagaing division

Sagaing division has 38 townships. Its population was 3,856 thousand in the 1983 Census, and the annual growth rate was 2.14 percent between 1973 and 1983.

The division ran through the Myohang-Myitkina line in the east region and has a relation with the Rangoon-Mandalay line also.

The dominant economic activity is agriculture, and around 52 percent of the gross regional product came from agriculture in 1985/86. Wheat production amounts to approximately 75 percent of that for the whole country. Sesamum, groundnut and tobacco have also shares of around 20 percent to the whole country in 1985/86. Maize is another crop that can be mentioned here. The Chang-Oo Flood Protection project in the Chindwin river basin was nearly completed and some projects like ground water project are implemented.

In livestock, fresh milk, beef and mutton are main products.

In mining, a copper mine is being developed in the Monywa area in the south western region. A coal field is also located in it.

In processing and manufacturing, a textile mill is operating, apart from rice mills and several industrial and construction materials producing factories. A wheat flour mill, having an annual capacity of 18 thousand metric tons of wheat flour, is expected to be completed in 1986/87.

(7) Kachin state

Kachin state has 18 townships. Its population was 904 thousand in the 1983 Census, and the annual growth rate was 2.05 percent between 1973 and 1983.

The state is a surrounding division located in the northern part of Burma, and its economic development is behind in general.

In agriculture, main crops are paddy, groundnut and sugar cane, of which sugar cane has a relatively high share. In livestock, pork has a relatively high share. In forestry, a project is in progress with Mandalay and Shan.

In processing and manufacturing, sugar is being produced at the rate of 5.2 thousand metric tons per year. Other main products are sawn timber and rice. In mining, jade is produced and stone quarrying is being carried out here.

(8) Shan state

Shan state has 52 townships. Its population was 3,719 thousand in 1983 Census, and the annual growth rate was 1.58 percent between 1973 and 1983.

The state relates to the Rangoon-Mandalay line through two branch lines.

Main products are mineral products in the north Shan, agricultural and forestry products in the south Shan.

In agriculture, relative higher shares of crops to the whole country are wheat, sugar cane and groundnut. The production of paddy occupies nearly 6 percent of that for the whole country. A characteristic in agriculture is production of tea leaves, potatoes and various fruits. The acreage of tea plantation occupies 9 percent of net areas sown in this state.

In livestock, fresh milk, beef and pork occupy around 10 percent of that for the whole country in 1985/86. In forestry, a large volume of charcoal is produced here.

In mining, lead/sulphide ore is produced in the Bawdwin Mine in the north Shan. Its share to the whole country is nearly 100 percent. Refined silver, lead and other heavy metals are also produced. Production of gypsum occupies around 90 percent of that for the whole country, and around 75 percent for coal.

In processing and manufacturing, non-food industries are under-developed in general.

(9) Karen state

Karen state has 7 townships. Its population was 1,058 thousand in 1983 Census, and the annual growth rate was 2.11 percent between 1973 and 1983. A demographic characteristic of the state is that the rural population ratio is the highest among all divisions. The ratio was 89.6 percent in 1983 compared with 76.0 percent for the whole country. (The second is 86.3 percent for Sagaing.)

The state relates indirectly to the Rangoon-Mandalay line as well as the Pegu-Martaban line.

The state is estimated to belong to the lowest per capita income group.

In the primary industries, a few rubber plantation may be only mentioned here.

In the secondary industries, a cement factory in Pa-an area is being constructed and will operate in 1986/87 with a capacity of 240 thousand metric tons per annum.

(10) Mon State

Mon state has 10 townships. Its population was 1,682 thousand in the 1983 Census, and the annual growth rate was 2.50 percent between 1973 and 1983. A demographic characteristic is the relative high urban population ratio of 28.2 percent. This figure ranks second among all divisions. (The highest is Rangoon.)

In agriculture, paddy is the main product, but its share to the whole country is around 5 percent. A particular product is coconut, 15 million pieces being produced per annum. In livestock and fishery, fish production is estimated to occupy about 5 percent of the national total.

In processing and manufacturing, the production of pulp is monopolistic in the country in 1985/86, and paper is produced by two third of the whole country. Shares of sugar and salt occupy around 13 percent and 8 percent respectively. The construction of a tyre and rubber factory in Thaton was completed in 1985/86, and will produce various kinds of tyre products.

In electric power, a natural gas turbine power station is completed already, and a steam power station, respectively located in Thaton, will be completed in 1986/87.

2-4 Directions of the Economic Development Policies

2-4-1 Basic Directions of the Economic Development Policies in Burma

Burma has been implementing a series of Four Year Plans within the framework of the guidelines for long- and short-term plans laid down by the Burma Socialist Programme Party for the achievement of economic and social development.

The basic document for the economic policies in Burma is the Long-term Twenty Year Plan pronounced in December 1973.

The main economic objectives of the Long-term Twenty Year Plan, which covers 1974/75 through 1993/94, are:

- (1) to double the standard of living of all nationalities of the Union and to fulfil to the maximum extent food, clothing, shelter and social needs of the all people.

(2) to transform smoothly and by planning the Burmese economic structure from an agricultural country to an agriculture-based industrial country in accordance with the law of balanced plan in the national economy.

2-4-2 Directions of the 5th Four Year Plan

The primary objective of the 5th Four Year Plan, which covers 1986/87 through 1989/90, is to accelerate the growth of aggregate output by streamlining the existing economic activities and programmes with a view to achieving the objectives of the Long-term Twenty Year Plan.

To achieve this, the GDP at constant producers' prices is planned to increase at an average rate of 4.5 percent and per capita GDP is planned to increase at an average rate of 2.5 percent with increasing of labour productivity at an average rate of 2.1 percent per annum respectively, by the end of 1989/90.

To achieve these objectives, measures to be adopted to ensure successful implementation of the 5th Four Year Plan are:

- (1) to further strengthen the active participation of the people in the planning process and plan implementation,
- (2) short-term special programmes for extensive cultivation of selected crops will be formulated and implemented in order to achieve domestic self-sufficiency; to fulfil domestic raw material requirement; to facilitate diversification and expansion of exports; and to enhance farm income,
- (3) to formulate and implement specific programmes to boost export earnings not only from export of goods but also from services,
- (4) to maintain consistency among the existing economic activities and programmes in accordance with the prevailing economic conditions,
- (5) to strive for effective utilization of existing productive resources,
- (6) to raise the efficiency of investment through efficient allocation and use of resources, and
- (7) to strive for effecting improvements in production efficiency, and maximum cost-effectiveness in every field of economic activities.

2-4-3 Directions of the Long-term Economic Development Policies after 1993/94

As to the long-term economic development policies after 1993/94, official documents concerned are not available.

The Government aims at a balanced economic growth by region on the development framework as the whole, although it is said that some kinds of newly established industrial factories are being located in a specific area. However, the economic effect of such new establishments is relatively limited from the viewpoint of the economic development of the whole country. So, each region will perform a balanced socio-economic growth in accordance with its characteristics.

2-5 Forecasting on the National Economy

2-5-1 Forecast Method Adopted

(1) General procedure

1) Basis year

The basis year for forecasting is the fiscal year of 1985/86. All figures are calculated on the 1985/86 basis.

2) Price valuation

The valuation uses kyat at 1985/86 constant prices.

3) Cases forecasted

Three cases are forecasted. Those are the standard case, the higher case and the lower case.

The final year for forecasting is the fiscal year of 2005/06, and both 1993/94 and 1997/98 are selected for intermediate fiscal years.

4) Data mainly used

Data mainly used are the figures since the 3rd Four Year Plan period. The reason is that some co-efficients among economic factors, such as growth rates, relative prices and balance of payments structure, have changed since the 3rd Four Year Plan period due to rearrangements on the economic policies.

(2) Presuppositions for forecasting

1) Crude oil and petroleum products

In all cases, an assumption is set up that the import of crude oil and petroleum products can be avoided by the timely energy policies enforced by the government, in which priority is given to the development of natural gas and electric power in accordance with energy demands.

2) Terms of trade

Presupposition on the terms of trade differs among cases. This is due to the different assumption on the world economic situation in the future.

(3) General forecast method

A balance check method, which checks various variables by step and secures the consistency among variables, is adopted for forecasting. For these checks, a system of model on the national economy is developed by using published statistical data.

Balance check is to prepare by block, namely balance of payments block, demand block, production block, and primary industries block. Thereafter, balances and consistencies among blocks are again examined through the balance check method.

The key point for forecasting is as follows:

Burma has a large economic possibility, but the full use of this possibility is held down by the limitation of import ability. So, the most important is the forecasting of import ability.

The import ability is forecasted by the following equation:

$$\text{(Merchandise imports)} = \text{(forecasted merchandise exports)} + \text{(net receipts of non-merchandise accounts except interest payment)} + \text{(net grants)} + \text{(net loans receipt)} - \text{(interest payment)}$$

(4) Main co-efficients and equations in the standard case

1) Balance of payments block

a) Receipts of grants and gross foreign loans, which are exogenous co-efficients, increase by 2.5 percent per annum in the real terms. This figure is estimated using OECD "Twenty-five Years of Development Cooperation, a Review (1985 Report)".

b) The interest rate paid to foreign loan outstandings stays at the same level as the 1980's performance.

c) The terms of trade in the national accounts basis deteriorate by 5 percent in 1986/87. After 1987/88, they stay in the same level as 1986/87.

d) The exports by main commodity are forecasted by following equations:

For main agricultural products; $(\text{export}) = (\text{domestic production}) - (\text{domestic consumption})$

For main forestry and traditional exporting mineral products; $(\text{export}) = (\text{increased value of supply}) + (\text{export value in the basis year})$

For other minor export commodities and newly exportable commodities; $(\text{export}) = (\text{production}) \times (\text{fixed rates})$

2) Demand block

a) The capital goods import ratio to the total imports is fixed at 58 percent, although performance fluctuates from 52 percent to 61 percent in recent several years.

b) The import requirement ratio to the total investment is fixed at 0.33, which reflects the performance in recent several years.

c) The marginal output capital coefficient on GDP (marginal GDP/investment) is fixed at 0.315 with one year time lag.

3) Production and primary industries blocks

The total value is, in principle, controlled by the demand block. Approaches come from the value of production side, and not from the GDP side. Keeping consistencies with the demand block, forecasting by economic activity is prepared by using following equations.

a) Agriculture

By main commodity group;

$(\text{production}) = (\text{gross acreage sown}) \times (\text{yield per acre})$

b) Processing and Manufacturing

To be forecasted as a function of the selected agriculture and livestock production for food industries, and to be forecasted by extrapolations using recent trends, considering commercial operation of on-going projects, for other industries.

c) Power

To be forecasted by a function of industrial use, service use and domestic use.

d) Construction

To be forecasted by a correlation with the investment estimated from the past performance.

e) Trade

To be forecasted by a function of the production for commodities, such as agriculture, livestock, fishery, forestry, mining, processing and manufacturing.

f) Transportation

Transportation has a relation with all productive activities including services, and all demand including consumption and exports. A transportation matrix for Burma is prepared by using the Input-Output Tables for Thailand in 1975 and Indonesia in 1980. The co-efficients by sector are estimated using this matrix.

The forecasting of transportation is prepared by multiplying the values of production and demands of each sector by respective estimated co-efficients.

g) Other Goods and Services

Estimated growth trends in the demand block are adopted by main commodity group.

(5) Main co-efficients and equations in the alternative cases

The general forecast method in the two alternative cases is the same as the standard case. However, some co-efficients and trends are different from the standard case.

1) The higher case

(a) Balance of payments block

The world economic situation is forecasted with an optimistic view than the standard case.

For this reason, a) the total exports show higher increasing rates than the standard case, and b) the deteriorating rate of terms of trade is only one percent for 1986/87, and it continues after 1987/88 at a moderate rates.

(b) Demand block

The marginal output capital coefficient is fixed not at 0.315 but at 0.330, which is the average of the six years out of the recent eight years.

(c) Production and primary industries blocks

Due to narrow adjustments on the reason of balance of payments, the growth rates of economic activities are higher than the standard case.

2) The lower case

The world economic situation is forecasted with a more severe view. It is set presupposing that the increasing rates of the total exports are lower than the standard case, and the terms of trade continue to deteriorate at moderate rates after 1987/88.

As adjustments on the reason of balance of payments are broader than the standard case, they influence various activities in the demand and production blocks.

2-5-2 Results of the Forecastings

Table 2.5.1 to 2.5.3 show the results for the standard case, followed by Table 2.5.4 for the higher case and Table 2.5.5 for the lower case.

(1) Standard case

1) General feature

GDP at 1985/86 constant prices will increase by 4.5 percent per annum in the eight years of 1986/87 to 1993/94, followed by 4.4 percent for the four years of 1994/95 to 1997/98, and by 4.7 percent for the eight years of 1998/99 to 2005/06. Those growth rates are approximately

Table 2.5.1 Value of Production (Standard Case)

	Value at 1985/86 Constant Prices (Kyat in Million)				Annual Growth Rates (Percentage)				Percentage Distribution (Percentage)			
	1985/86	1993/94	1997/98	2005/06	1986/87 to 1993/94	1994/95 to 1997/98	1998/99 to 2005/06		1985/86	1993/94	1997/98	2005/06
1. Goods	69,819	100,980	120,647	177,341	4.7	4.5	4.9		68.5	68.6	68.8	69.2
Agriculture	25,502	34,951	40,612	55,708	4.0	3.8	4.0		25.0	23.8	23.1	21.7
Livestock and Fishery	6,687	10,576	13,162	20,655	5.9	5.6	5.8		6.6	7.2	7.5	8.1
Forestry	1,217	1,633	1,876	2,498	3.7	3.5	3.6		1.2	1.1	1.1	1.0
Mining	1,115	2,115	2,715	4,466	8.3	6.4	6.4		1.1	1.4	1.5	1.7
Processing and Manufacturing	31,695	46,885	56,445	84,445	5.0	4.7	5.2		31.1	31.9	32.2	32.9
Power	465	932	1,295	2,454	9.1	8.5	8.3		0.5	0.6	0.7	1.0
Construction	3,137	3,888	4,542	7,115	2.7	4.0	5.8		3.1	2.6	2.6	2.8
2. Services	13,611	19,323	22,786	32,218	4.5	4.2	4.4		13.4	13.1	13.0	12.6
Transportation	3,423	4,964	5,903	8,583	4.8	4.4	4.8		3.4	3.4	3.4	3.3
Communications	242	607	872	1,762	12.2	9.5	9.2		0.2	0.4	0.5	0.7
Financial Institutions	2,121	3,096	3,703	5,324	4.8	4.6	4.6		2.1	2.1	2.1	2.1
Social and Administrative Services	5,261	7,403	8,661	11,965	4.4	4.0	4.1		5.2	5.0	4.9	4.7
Rentals and Other Services	2,563	3,253	3,647	4,584	3.0	2.9	2.9		2.5	2.2	2.1	1.8
3. Trade	18,483	26,829	32,005	46,848	4.8	4.5	4.9		18.1	18.2	18.2	18.3
Value of Production (at Producers Prices)	101,913	147,132	175,438	256,407	4.7	4.5	4.9		100.0	100.0	100.0	100.0

Note: For rounding off, totals may not consist with the amounts of each component.

Table 2.5.2 Gross Domestic Expenditure (Standard Case)

	Value at 1985/86 Constant Prices (Kyat in Million)				Annual Growth Rates (Percentage)				Percentage Distribution (Percentage)														
	1985/86		1993/94		1997/98		2005/06		1986/87 to 1993/94		1994/95 to 1997/98		1998/99 to 2005/06		1985/86		1993/94		1997/98		2005/06		
1. Consumption, Total	49,839	72,250	85,305	119,727	4.8	4.2	4.3	4.3	4.8	4.2	4.3	4.3	86.3	87.7	87.7	87.3	85.0						
2. Gross Domestic Fixed Capital Formation	9,782	11,524	13,653	21,789	2.0	4.3	6.0	6.0	2.0	4.3	6.0	6.0	16.9	14.0	14.0	14.0	15.5						
3. Increase in Inventories	-193	-7	-107	210	-	-	-	-	-	-	-	-	-0.3	-0.0	-0.1	-0.1	0.1						
4. Exports (F.O.B), Total	3,234	5,179	6,539	11,496	6.1	6.0	7.3	7.3	6.1	6.0	7.3	7.3	5.6	6.3	6.3	6.7	8.2						
5. (Less) Imports (C.I.F), Total	4,930	6,557	7,674	12,397	3.6	4.3	6.2	6.2	3.6	4.3	6.2	6.2	-8.4	-8.0	-7.9	-7.9	-8.8						
Gross Domestic Expenditure	57,733	82,389	97,716	140,824	4.5	4.4	4.7	4.7	4.5	4.4	4.7	4.7	100.0	100.0	100.0	100.0	100.0						

Note: Increase in Inventories includes Statistical Discrepancy.
For rounding off, totals may not consist with the amounts of each component.

Table 2.5.3 Gross Domestic Product (Standard Case)

	Value at 1985/86 Constant Prices (Kyat in Million)			Annual Growth Rates (Percentage)			Percentage Distribution (Percentage)				
	1985/86	1993/94	1997/98	2005/06	1986/87 to 1993/94	1994/95 to 1997/98	1998/99 to 2005/06	1985/86	1993/94	1997/98	2005/06
1. Goods	35,275	50,252	59,669	86,196	4.5	4.4	4.7	61.1	61.0	61.1	61.2
Agriculture	22,434	30,561	35,478	48,577	3.9	3.8	4.0	38.9	37.1	36.3	34.5
Livestock and Fishery	4,352	6,943	8,667	13,632	6.0	5.7	5.8	7.5	8.4	8.9	9.7
Forestry	807	1,074	1,232	1,638	3.6	3.5	3.6	1.4	1.3	1.3	1.2
Mining	661	1,260	1,616	2,658	8.4	6.4	6.4	1.1	1.5	1.7	1.9
Processing and Manufacturing	5,735	8,575	10,392	15,833	5.2	4.9	5.4	9.9	10.4	10.6	11.2
Power	317	628	873	1,659	8.9	8.6	8.3	0.5	0.8	0.9	1.2
Construction	968	1,211	1,411	2,199	2.8	3.9	5.7	1.7	1.5	1.4	1.6
2. Services	8,449	11,934	14,074	19,932	4.4	4.2	4.4	14.6	14.5	14.4	14.2
Transportation	1,987	2,900	3,458	5,060	4.8	4.5	4.9	3.4	3.5	3.5	3.6
Communications	204	482	693	1,401	11.4	9.5	9.2	0.4	0.6	0.7	1.0
Financial Institutions	1,313	1,909	2,286	3,290	4.8	4.6	4.7	2.3	2.3	2.3	2.3
Social and Administrative Services	2,762	3,872	4,530	6,257	4.3	4.0	4.1	4.8	4.7	4.6	4.4
Rentals and Other Services	2,183	2,771	3,107	3,905	3.0	2.9	2.9	3.8	3.4	3.2	2.8
3. Trade	14,008	20,202	23,972	34,715	4.7	4.4	4.7	24.3	24.5	24.5	24.7
Gross Domestic Product (at Producers Prices)	57,733	82,389	97,716	140,824	4.5	4.4	4.7	100.0	100.0	100.0	100.0

Note: For rounding off, totals may not consist with the amounts of each component.

Table 2.5.4 Gross Domestic Product (Higher Case)

	Value at 1985/86 Constant Prices (Kyat in Million)				Annual Growth Rates (Percentage)				Percentage Distribution (Percentage)			
	1985/86	1993/94	1997/98	2005/06	1986/87 to	1994/95 to	1998/99 to	1998/99 to	1985/86	1993/94	1997/98	2005/06
					1993/94	1997/98	2005/06	2005/06				
1. Goods	35,275	55,870	71,261	117,452	5.9	6.3	6.4	6.4	61.1	62.0	62.6	64.1
Agriculture	22,434	34,909	43,798	69,054	5.7	5.8	5.9	5.9	38.9	38.7	38.5	37.7
Livestock and Fishery	4,352	7,065	9,125	15,368	6.2	6.6	6.7	6.7	7.5	7.8	8.0	8.4
Forestry	807	1,237	1,551	2,514	5.5	5.8	6.2	6.2	1.4	1.4	1.4	1.4
Mining	661	1,211	1,603	2,851	7.9	7.3	7.5	7.5	1.1	1.3	1.4	1.6
Processing and Manufacturing	5,735	9,212	12,070	21,551	6.1	7.0	7.5	7.5	9.9	10.2	10.6	11.8
Power	317	773	1,217	2,880	11.8	12.0	11.4	11.4	0.5	0.9	1.1	1.6
Construction	968	1,463	1,897	3,234	5.3	6.7	6.9	6.9	1.7	1.6	1.7	1.8
2. Services	8,449	12,548	15,328	23,282	5.1	5.1	5.4	5.4	14.6	13.9	13.5	12.7
Transportation	1,987	3,206	4,052	6,459	6.2	6.0	6.0	6.0	3.4	3.6	3.6	3.5
Communications	204	519	787	1,773	12.4	11.0	10.7	10.7	0.4	0.6	0.7	1.0
Financial Institutions	1,313	1,952	2,409	3,755	5.1	5.4	5.7	5.7	2.3	2.2	2.1	2.0
Social and Administrative Services	2,762	4,055	4,873	7,139	4.9	4.7	4.9	4.9	4.8	4.5	4.3	3.9
Rentals and Other Services	2,183	2,815	3,206	4,156	3.3	3.3	3.3	3.3	3.8	3.1	2.8	2.3
3. Trade	14,008	21,688	27,201	42,593	5.6	5.8	5.8	5.8	24.3	24.1	23.9	23.2
Gross Domestic Product (at Producers Prices)	57,733	90,106	113,790	183,327	5.7	6.0	6.1	6.1	100.0	100.0	100.0	100.0

Note: For rounding off, totals may not consist with the amounts of each component.

Table 2.5.5 Gross Domestic Product (Lower Case)

	Value at 1985/86 Constant Prices (Kyat in Million)				Annual Growth Rates (Percentage)				Percentage Distribution (Percentage)			
	1985/86	1993/94	1997/98	2005/06	1986/87 to 1993/94	1994/95 to 1997/98	1998/99 to 2005/06	1985/86	1993/94	1997/98	2005/06	
1. Goods	35,275	48,492	56,597	76,500	4.0	3.9	3.8	61.1	61.1	61.2	61.5	
Agriculture	22,434	29,926	34,474	45,231	3.7	3.6	3.5	38.9	37.7	37.3	36.4	
Livestock and Fishery	4,352	6,736	8,282	12,342	5.6	5.3	5.1	7.5	8.5	9.0	9.9	
Forestry	807	1,054	1,195	1,523	3.4	3.2	3.1	1.4	1.3	1.3	1.2	
Mining	661	1,183	1,494	2,337	7.6	6.0	5.7	1.1	1.5	1.6	1.9	
Processing and Manufacturing	5,735	7,902	9,208	12,446	4.1	3.9	3.8	9.9	10.0	10.0	10.0	
Power	317	568	704	1,059	7.6	5.5	5.2	0.5	0.7	0.8	0.9	
Construction	968	1,123	1,240	1,563	1.9	2.5	2.9	1.7	1.4	1.3	1.3	
2. Services	8,449	11,616	13,533	18,263	4.1	3.9	3.8	14.6	14.6	14.6	14.7	
Transportation	1,987	2,789	3,257	4,410	4.3	4.0	3.9	3.4	3.5	3.5	3.5	
Communications	204	409	548	914	9.1	7.6	6.6	0.4	0.5	0.6	0.7	
Financial Institutions	1,313	1,894	2,259	3,181	4.7	4.5	4.4	2.3	2.4	2.4	2.6	
Social and Administrative Services	2,762	3,787	4,414	5,965	4.0	3.9	3.8	4.8	4.8	4.8	4.8	
Rentals and Other Services	2,183	2,736	3,056	3,793	2.9	2.8	2.7	3.8	3.4	3.3	3.0	
3. Trade	14,008	19,212	22,303	29,618	4.0	3.8	3.6	24.3	24.2	24.1	23.8	
Gross Domestic Product (at Producers Prices)	57,733	79,321	92,433	124,381	4.1	3.9	3.8	100.0	100.0	100.0	100.0	

Note: For rounding off, totals may not consist with the amounts of each component.

the same level as the 2nd Four Year Plan period, and slow down from the 3rd and 4th Four Year Plan periods.

Among those three periods, the average growth rate will be the highest in 1998/99 to 2005/06, and the lowest in 1994/95 to 1997/98. Main reasons are due to (a) burdens of the interest payments and principal repayments for the disbursed foreign loans, and (b) time lags between the investment and the economic growth. Those factors, which hold down the economic growth rates, will be stronger in 1994/95 to 1997/98 and adversely weaker in 1998/99 to 2005/06.

2) Characteristics of the demand side

(a) Foreign trade

The growth rates of export volume do not become lower than the 4th Four Year Plan period. However, following may be pointed out:

a) The first is the deterioration of terms of trade. The import ability will be restricted in certain extents through all periods forecasted.

b) The second is a slow growth of newly exportable commodities. This factor becomes influential specially in 1994/95 to 1997/98, and will restrict the import ability to certain extents.

(b) Investment (Gross fixed capital formation)

Another characteristic is low investment levels. The investment ratio to GDP will be forecasted by ranges of 14.0 percent to 15.5 percent. This investment ratio will influence the economic growth.

3) Characteristics of the production side

(a) Structural change of the economic activities

The percentage distribution among goods, services and trade is few change in the forecasted period. However, agriculture, forestry, social and administrative services and rentals and other services will decline in their shares, and livestock and fishery, mining, processing and manufacturing, power, communications will on the contrary rise in their shares in a more detailed classification.

(b) Main causes of structural change

The structural change mentioned above is due to the growth differential by main commodity group.

Following are main features.

a) In agriculture, the production of paddy is forecasted to increase at moderate rates. This is due to i) a slight declining trend of the gross sown acreages in the recent years, and ii) a relatively high yield per acre among paddy growing developing Asian countries already. Crops like vegetable oil materials, maize, wheat and sugar cane are forecasted to increase at reasonable rates due to i) lower yields per acre among main Asian countries, ii) increasing domestic demands, and iii) progress of diversification of sown crops.

b) In livestock and fishery, fowl and duck meat, and marine fish will show relative higher growth. In forestry, teak will be smaller shares compared with hardwood and some other forest products.

c) In mining, natural gas is forecasted to rise its importance, and non-metallic industrial materials and heavy metals will also rise in their shares. On the other hand, crude oil and tin will decline in their shares in the future.

d) In processing and manufacturing, growth rates of industrial materials, and machineries and equipments will be higher than clothing and wearing apparels.

e) In power and communications, their growth rates are forecasted to exceed the average of the national economy supported by deep-rooted domestic demands.

4) Per capita GDP

The population is forecasted to increase by annual rates of 1.95 percent for 1986/87 to 1993/94, by 1.93 percent for 1994/95 to 1997/98 and by 1.89 percent for 1998/99 to 2005/06.

Per capita GDP is forecasted to increase from Kyat 1,555.5 in 1985/86 to Kyat 1,902.3 in 1993/94, and followed by Kyat 2,090.0 in 1997/98 and by Kyat 2,591.7 in 2005/06 at 1985/86 constant prices. The details are described in the section 2.6.

(2) Higher case

In the higher case, GDP at 1985/86 constant prices will grow by 5.7 percent per annum in 1986/87 to 1993/94, followed by 6.0 percent for 1994/95 to 1997/98, and by 6.1 percent for 1998/99 to 2005/06.

To realize this case, the international economic environments are needed to improve and the diversification of exportable commodities are needed to develop smoothly.

If this case is realized, the economic potential in Burma will be improved to a more better direction in the future.

(3) Lower case

In this case, GDP at 1985/86 constant prices will increase by 4.1 percent per annum in 1986/87 to 1993/94, followed by 3.9 percent for 1994/95 to 1997/98, and by 3.8 percent for 1998/99 to 2005/06.

The results of this case might be pessimistic for the decline of economic potential in the future.

2-6 Forecasting of Socio-Economy by Related State/Division

2-6-1 Forecasting of Population by Related State/Division

(1) Forecast method

At first, the population of the Union and by State/Division are forecasted separately.

The population of the Union is forecasted by using various demographic data, such as the Census, the population by five year age groups, specific birth rates and death rates by age group respectively estimated. Both specific birth rates and death rates by age group are assumed to show moderate declining trends, of which the former are assumed to slight exceed the later in each year.

Secondly, the population forecasted, in the first stage, by state/division is adjusted to some extent to secure consistency with the total of the Union. According to the Census of 1973 and 1983, the rate of domestic migration owing to social factors is estimated to be very limited in each division, and is considered to continue in the future. Considering this direction, the future population is forecasted using mainly an adjusted time-trend by State/Division.

(2) Population forecasted

The results are shown in Table 2.6.1.

As shown in Table 2.6.1, the future population growth rates in Rangoon, Mandalay, Sagaing and Magwe will be higher than the average of the Union, and other States/Divisions will be moderate. But, their difference will be limited.

2-6-2 Forecast Method for the Divisional Economy

Few data exists for the demand side, such as consumption, investment, increase in inventories, and inter-divisional transactions of goods and services. For this, the forecasting is prepared from only the production side.

A dividing method is adopted for forecastings. Indicators for dividing are selected from various statistical documents provided by the Government of Burma. Concretely, various percentage distributions are calculated using these documents, and figures forecasted are estimated by multiplying the figures of the whole country by these percentage distribution.

Many indicators are used for dividing by State/Division. The number of indicators consists of 12 for agriculture, 8 for livestock and fishery, 7 for forestry, 7 for mining, 10 for food and beverage industries, nearly 50 for other processing and manufacturing, 4 for other goods producing sector, 6 for services except transportation, and 3 for trade. The indicators for transportation are compiled by use of a transportation matrix, which is estimated for forecasting of the whole country.

The specific estimation basis for the gross regional product may be mentioned here. Due to the limitation of available data, electric power is estimated by a consumers' place basis, and by a requesters' place basis for transportation.

Note:

- (1) Case 1; Electric power is generated at a power station in Irrawaddy division, and is consumed at a household in Rangoon division through transmission lines and distribution lines. In this case, the production of electric power is counted in Rangoon division.

Table 2.6.1 Forecasting of Population by State/Division

	Population (thousand)				Annual Increasing Rates (%)				
	1983 Census	1985/86	1993/94	1997/98	2005/06	1974-1983 (Census)	1986/87 to 1993/94	1994/95 to 1997/98	1998/99 to 2005/06
Rangoon	3,973.8	4,197	4,980	5,422	6,414	2.22	2.16	2.15	2.12
Pegu	3,800.2	3,985	4,600	4,942	5,704	1.80	1.81	1.81	1.81
Mandalay	4,580.9	4,820	5,719	6,222	7,341	2.25	2.16	2.13	2.09
Irrawaddy	4,991.1	5,234	6,021	6,454	7,408	1.85	1.77	1.75	1.74
Magwe	3,241.1	3,400	3,992	4,323	5,057	2.09	2.03	2.01	1.98
Sagaing	3,856.0	4,059	4,775	5,173	6,047	2.14	2.08	2.02	1.97
Kachin	904.0	951	1,098	1,178	1,349	2.05	1.81	1.77	1.71
Shan	3,718.7	3,873	4,470	4,798	5,509	1.58	1.81	1.78	1.74
Karen	1,057.5	1,114	1,291	1,388	1,593	2.11	1.86	1.82	1.74
Mon	1,682.0	1,789	2,099	2,271	2,646	2.50	2.02	1.99	1.93
Others	3,508.6	3,693	4,266	4,582	5,258	1.98	1.82	1.80	1.74
Total	35,313.9	37,115	43,311	46,753	54,326	2.02	1.95	1.93	1.89

Note: (1) Others include the population of Rakine, Chin, Kayah and Tenasserim.

(2) Forecasting of population by state/division are estimated using documents supplied by the Planning Department.

Since: 1983 Population Census and Documents supplied by the Planning Department.

(2) Case 2; Gypsum is produced in Shan state. It is transported to a cement factory in Irrawaddy division from Shan state, and is consumed as one of the materials for cement production. In this case, its transportation service is counted in Irrawaddy division.

(3) Case 3; A passenger, who lives in Rangoon, travels to Mandalay by train. In this case, the transportation service is counted in Rangoon division.

The forecastings are prepared on the standard case at first, and the other cases may be converted from results of the standard case by using certain converters.

2-6-3 Main Characteristics of Forecasting in the Standard Case

The results of the forecasting on the economic activity by State/Division are shown in Table 2.6.2 to Table 2.6.6.

Table 2.6.2 shows the value of gross regional product by State/Division in 1985/86, 1993/94, 1997/98 and 2005/06, followed by Table 2.6.3 for the annual growth rates in each period, Table 2.6.4 for the percentage distribution by sector, and Table 2.6.5 for the percentage distribution by State/ Division of the gross regional product. Table 2.6.6 shows data related to the per capita gross regional product.

Main characteristics of the results are as follows:

(1) Growth rates

The related State/Divisions are largely divided into three groups.

The first is the divisions of Mandalay, Magwe and Sagaing, which belong to the central and upper Burma. Their growth rates are the highest among all groups. A main reason is the relatively high growth rates in agriculture.

The second is the divisions of Rangoon, Pegu and Irrawaddy, which belong to the lower Burma. A main reason of relative low growth rates compared with the first group is in agriculture in the period of 1986/87 through 1997/98, due to a low growth of paddy production. In the period of 1998/99 through 2005/06, growth rates of this group will recover by the progress in the diversification in crops sown.

The third is Kachin, Shan, Karen and Mon, which belong to the surrounding states for some reason or other. Growth rates of this group are in low compared with the other two groups. (See Table 2.6.3.)

(2) Economic structure

As mentioned in above 2-5-2, the percentage distribution of agriculture will decline in a limited extent and on the contrary those of the other goods will rise in the whole country. This structural change is also observed by State/Division.

In agriculture, Rangoon, Pegu and some surrounding divisions will decline their shares to a wide extent, but Sagaing to a narrow extent.

In mining, processing and manufacturing, shares of Mandalay, Magwe, Sagaing, Shan and Mon will rise more or less, and Rangoon will decline to a narrow extent. (See Table 2.6.4)

(3) Relative share to the whole country

Shares in agriculture will rise in Mandalay, Magwe and Sagaing, and will decline in Rangoon and some surrounding divisions. In livestock and fishery, shares will rise in Pegu, Mandalay and Magwe.

In mining, processing and manufacturing, the importance of Mandalay, Magwe and Sagaing will rise, and will decline in Rangoon. In trade, the importance of Rangoon will rise more in the future. (See Table 2.6.5)

(4) Per capita gross regional product

The differential on per capita gross regional product will be reduced at a limited extent. In this limited extent, Sagaing, Magwe and Mandalay will rise in their positions, and contrarily will decline in Rangoon and Pegu.

However, Rangoon will keep 1.5 times to the average of per capita gross regional product, followed by 1.07 times for Pegu and Irrawaddy in 2005/06. In surrounding divisions, they will remain levels less than three quarters of the average in the final year of forecasting. (See Table 2.6.6)

Table 2.6.2 Gross Regional Product

Value by Sector (1)

(1) 1985/86

(Kyat in Million)

	Rangoon	Pegu	Mandalay	Irrawaddy	Mague	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	1244.6	3354.2	3441.5	4165.0	2451.5	3348.4	363.0	1637.5	360.6	821.2	1247.0
Livestock, Fishery and Forestry	667.9	656.8	594.6	913.9	533.1	531.1	112.6	263.9	83.4	161.6	640.8
Mining, Processing and Manufacturing	1161.4	750.7	738.1	904.8	827.0	557.2	167.1	509.5	87.3	241.7	451.0
Other Goods	242.0	137.5	175.0	178.5	121.4	134.7	26.0	101.1	27.5	50.7	90.8
Transportation	434.7	224.4	236.8	280.4	176.8	200.9	34.5	139.3	33.8	71.6	133.7
Other Services	1803.5	560.3	708.1	735.9	478.0	570.6	133.8	544.6	156.6	251.5	519.3
Trade	4615.8	1187.8	1672.9	1424.1	834.2	1100.8	233.2	1055.3	273.3	600.0	1011.0
Gross Divisional Product	10189.9	6871.7	7567.0	8602.6	5422.0	6443.7	1070.2	4251.2	1022.5	2198.3	4093.6

(2) 1993/94

	Rangoon	Pegu	Mandalay	Irrawaddy	Mague	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	1491.2	4383.7	4899.1	5739.9	3436.4	4909.1	458.9	2168.7	466.9	1001.4	1606.1
Livestock, Fishery and Forestry	1002.7	1046.0	961.2	1398.5	864.1	819.0	172.5	414.9	131.8	217.6	988.5
Mining, Processing and Manufacturing	1635.9	1134.0	1223.2	1340.2	1318.6	907.5	241.0	828.7	127.2	375.2	703.6
Other Goods	367.5	191.1	249.1	245.2	175.5	190.0	37.2	144.6	38.1	70.9	129.4
Transportation	650.7	321.8	361.8	401.6	269.5	305.5	48.8	197.3	47.7	100.0	195.2
Other Services	2561.6	770.7	1008.4	1008.9	668.8	801.9	183.8	749.0	216.3	351.5	713.6
Trade	6729.4	1691.3	2437.4	2019.6	1204.6	1596.1	331.2	1500.8	389.8	865.6	1436.5
Gross Divisional Product	14439.0	9538.6	11140.2	12153.9	7937.5	9529.1	1473.4	6004.0	1417.8	2982.2	5772.9

Value by Sector (2)

(3) 1997/98

(Kyat in Million)

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	1630.9	5004.2	5783.2	6734.2	4030.2	5895.7	515.4	2790.1	489.0	1084.2	1821.1
Livestock, Fishery and Forestry	1230.9	1304.2	1198.6	1720.8	1082.1	966.8	211.5	511.8	163.7	270.8	1237.5
Mining, Processing and Manufacturing	1949.2	1368.9	1540.5	1587.3	1623.6	1139.8	290.6	1031.4	152.2	469.3	855.3
Other Goods	467.2	234.2	309.5	298.2	219.0	235.1	46.5	179.2	46.5	88.1	160.8
Transportation	777.6	378.9	438.6	469.7	324.5	369.6	57.3	233.8	56.0	118.2	234.0
Other Services	3036.9	898.5	1195.9	1173.5	785.7	944.7	214.1	872.0	252.3	412.2	830.4
Trade	8080.7	1989.3	2899.9	2368.4	1424.7	1892.9	388.4	1761.5	457.7	1023.2	1685.2
Gross Divisional Product	17173.4	11178.2	13366.2	14352.1	9489.8	11444.6	1723.8	7079.8	1617.4	3466.0	6824.3

(4) 2005/06

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	2026.3	6670.0	8077.6	9385.6	5551.9	8473.8	659.8	3346.6	606.4	1392.7	2386.6
Livestock, Fishery and Forestry	1896.7	2041.7	1874.9	2568.6	1704.5	1500.9	320.1	784.2	251.3	424.2	1903.0
Mining, Processing and Manufacturing	2873.1	2064.7	2474.2	2395.8	2541.0	1827.5	430.0	1602.3	225.2	771.1	1286.0
Other Goods	809.6	388.0	526.7	490.1	373.1	397.7	76.1	298.8	76.0	149.9	271.8
Transportation	1137.1	542.1	647.9	679.3	478.2	543.6	80.4	332.0	78.3	172.6	339.5
Other Services	4330.9	1239.7	1703.9	1610.0	1098.0	1328.1	293.1	1192.2	346.1	572.0	1139.8
Trade	11976.8	2835.8	4221.1	3353.8	2050.4	2740.2	547.3	2486.9	646.4	1467.6	2388.2
Gross Divisional Product	25050.5	15782.0	19526.3	20483.2	13797.1	16811.8	2406.8	10943.0	2229.7	4950.1	9714.5

Note: Forecasting is prepared using data supplied by the Planning Department.

Table 2.6.3 Gross Regional Product

Annual Growth Rates

(%)

(1) 1986/87 - 1993/94

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	2.3	3.4	4.5	4.1	4.4	4.9	3.0	3.6	3.3	2.5	3.2
Livestock, Fishery and Forestry	5.2	6.0	6.2	5.5	6.2	5.6	5.5	5.8	5.9	3.8	5.5
Mining, Processing and Manufacturing	4.4	5.3	6.5	5.0	6.0	6.3	4.7	6.3	4.8	5.7	5.7
Other Goods	5.4	4.2	4.5	4.0	4.7	4.4	4.6	4.6	4.2	4.3	4.5
Transportation	4.6	4.6	5.4	4.6	5.4	5.4	4.4	4.4	4.4	4.3	4.8
Other Services	4.5	4.1	4.5	4.0	4.3	4.3	4.0	4.1	4.1	4.3	4.1
Trade	4.8	4.5	4.8	4.5	4.5	4.7	4.5	4.5	4.5	4.7	4.5
Gross Divisional Product	4.5	4.2	5.0	4.4	4.9	5.0	4.1	4.4	4.2	3.9	4.4

(2) 1994/95 - 1997/98

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	2.3	3.4	4.2	4.1	4.1	4.7	2.9	3.5	1.2	2.0	3.8
Livestock, Fishery and Forestry	5.3	5.7	5.7	5.3	5.8	4.2	5.2	5.4	5.6	5.6	5.8
Mining, Processing and Manufacturing	4.5	4.8	5.9	4.3	5.3	5.9	4.8	5.6	4.6	5.8	5.0
Other Goods	6.2	5.2	5.6	5.0	5.7	5.5	5.7	5.5	5.1	5.6	5.6
Transportation	4.6	4.2	4.9	4.0	4.8	4.9	4.1	4.3	4.1	4.3	4.6
Other Services	4.3	3.9	4.4	3.9	4.1	4.2	3.9	3.9	3.9	4.1	3.9
Trade	4.7	4.1	4.4	4.1	4.3	4.4	4.1	4.1	4.1	4.3	4.1
Gross Divisional Product	4.4	4.0	4.7	4.2	4.6	4.7	4.0	4.2	3.3	3.8	4.3

(3) 1998/99 - 2005/06

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	2.8	3.7	4.3	4.2	4.1	4.6	3.1	3.8	2.7	3.2	3.4
Livestock, Fishery and Forestry	5.6	5.8	5.8	5.1	5.8	5.7	5.3	5.5	5.5	5.8	5.5
Mining, Processing and Manufacturing	5.0	5.3	6.1	5.3	5.8	6.1	5.0	5.7	5.0	6.4	5.2
Other Goods	7.1	6.5	6.9	6.4	6.9	6.8	6.3	6.6	6.3	6.9	6.8
Transportation	4.9	4.6	5.0	4.7	5.0	4.9	4.3	4.5	4.3	4.8	4.8
Other Services	4.5	4.1	4.5	4.0	4.3	4.3	4.0	4.0	4.0	4.2	4.0
Trade	5.0	4.5	4.8	4.4	4.7	4.7	4.4	4.4	4.4	4.6	4.5
Gross Divisional Product	4.8	4.4	4.9	4.5	4.8	4.9	4.3	4.5	4.1	4.6	4.5

Table 2.6.4 Gross Regional Product

Percentage Distribution by Sector

(1) 1985/86

(GDP by Division = 100.0 %)

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	12.2	48.8	45.5	48.4	45.2	52.0	33.9	38.5	35.3	37.4	30.5
Livestock, Fishery and Forestry	6.6	9.6	7.9	10.6	9.8	8.2	10.5	6.2	8.2	7.4	15.7
Mining, Processing and Manufacturing	11.4	10.9	9.8	10.5	15.3	8.6	15.6	12.0	8.5	11.0	11.0
Other Goods	2.4	2.0	2.3	2.1	2.2	2.1	2.4	2.4	2.7	2.3	2.2
Transportation	4.5	3.3	3.1	3.3	3.3	3.1	3.2	3.3	3.3	3.3	3.3
Other Services	17.7	8.2	9.4	8.6	8.8	8.9	12.5	12.8	15.3	11.4	12.7
Trade	45.3	17.3	22.1	16.6	15.4	17.1	21.8	24.8	26.7	27.3	24.7
Gross Divisional Product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(2) 2005/06

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	8.1	42.3	41.4	45.8	40.2	50.4	27.4	33.3	27.2	28.1	24.6
Livestock, Fishery and Forestry	7.6	12.9	9.6	12.5	12.4	8.9	13.3	7.8	11.3	8.6	19.6
Mining, Processing and Manufacturing	11.5	13.1	12.7	11.7	18.4	10.9	17.9	16.0	10.1	15.6	13.2
Other Goods	3.2	2.5	2.7	2.4	2.7	2.4	3.2	3.0	3.4	3.0	2.8
Transportation	4.5	3.4	3.3	3.3	3.5	3.2	3.3	3.3	3.5	3.5	3.5
Other Services	17.3	7.9	8.7	7.9	8.0	7.9	12.2	11.9	15.5	11.6	11.7
Trade	47.8	18.0	21.6	16.4	14.9	16.3	22.7	24.8	29.6	29.6	24.6
Gross Divisional Product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 2.6.5 Gross Regional Product
Percentage Distribution by Division

(1) 1985/86

(Whole Country = 100.0, %)

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	5.5	15.0	15.3	18.6	10.9	14.9	1.6	7.3	1.6	3.7	5.6
Livestock, Fishery and Forestry	12.9	12.7	11.5	17.7	10.3	10.3	2.2	5.1	1.6	3.1	12.4
Mining, Processing and Manufacturing	18.2	11.7	11.5	14.1	12.9	8.7	2.6	8.0	1.4	3.8	7.1
Other Goods	18.8	10.7	13.6	13.9	9.4	10.5	2.0	7.9	2.1	3.9	7.1
Transportation	22.9	11.3	11.9	14.1	8.9	10.1	1.7	7.0	1.7	3.6	6.7
Other Services	27.9	8.7	11.0	11.4	7.4	8.8	2.1	8.4	2.4	3.9	8.0
Trade	33.0	8.5	11.9	10.2	6.0	7.9	1.7	7.5	2.0	4.3	7.2
Gross Divisional Product	17.7	11.9	13.1	14.9	9.4	11.2	1.9	7.4	1.8	3.8	7.1

(2) 2005/06

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others
Agriculture	4.2	13.7	16.6	19.3	11.4	17.4	1.4	6.9	1.2	2.9	4.9
Livestock, Fishery and Forestry	12.4	13.4	12.3	16.8	11.2	9.8	2.1	5.1	1.6	2.8	12.5
Mining, Processing and Manufacturing	15.5	11.2	13.4	13.0	13.7	9.9	2.3	8.7	1.2	4.2	7.0
Other Goods	21.0	10.1	13.7	12.7	9.7	10.3	2.0	7.7	2.0	3.9	7.0
Transportation	22.6	10.8	12.9	13.5	9.5	10.8	1.6	6.6	1.6	3.4	6.7
Other Services	29.2	8.3	11.5	10.8	7.4	8.9	2.0	8.0	2.3	3.9	7.7
Trade	34.5	8.2	12.2	9.7	5.9	7.9	1.6	7.2	1.9	4.2	6.9
Gross Divisional Product	17.8	11.2	13.9	14.5	9.8	11.9	1.7	7.2	1.6	3.5	6.9

Table 2.6.6 Per Capita Gross Regional Product at 1985/86 Prices

(1) Per Capita Gross Regional Product (Kyat)

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others	Whole Country
1985/86	2,428	1,724	1,570	1,644	1,595	1,588	1,125	1,098	918	1,229	1,108	1,555.5
1993/94	2,899	2,074	1,948	2,019	1,988	1,996	1,342	1,343	1,098	1,421	1,353	1,902.3
1997/98	3,167	2,262	2,148	2,224	2,195	2,212	1,463	1,476	1,165	1,526	1,489	2,090.0
2005/06	3,906	2,767	2,660	2,765	2,726	2,780	1,784	1,823	1,400	1,871	1,848	2,591.7

(2) Differential by Division (Whole Country = 100)

	Rangoon	Pegu	Mandalay	Irrawaddy	Magwe	Sagaing	Kachin	Shan	Karen	Mon	Others	Whole Country
1985/86	156	111	101	106	103	102	72	71	59	79	71	100
1993/94	152	109	102	106	105	105	71	71	58	75	71	100
1997/98	152	108	103	106	105	106	70	71	56	73	71	100
2005/06	151	107	103	107	105	107	69	70	54	72	71	100

