FINAL REPORT
FOR
THE STUDY
ON
THE RENOVATION OF
THE FOUR INDUSTRIAL PROJECTS
IN
THE UNION OF BURMA
(Volume II)

MAIN REPORT

April 1989

JAPAN INTERNATIONAL COOPERATION AGENCY
Tokyo, Japan

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PREFACE

In response to a request from the Union of Burma, the Japanese Government decided to conduct the study on the Renovation of the Four Industrial Projects and entrusted the survey to the Japan International Cooperation Agency (JICA).

JICA sent to Burma the study teams headed by Mr. Masayasu Sakanashi, Unico International Corporation from January 27 to February 26 and from May 22 to June 5, 1988.

The team held discussions with officials concerned of the Government of the Union of Burma, 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 contribute to the development of the project and to the promotion of friendly relations between our two countries.

I wish to express my sincerest appreciation to the officials concerned of the Government of the Union of Burma for their close cooperation extended to the team.

April, 1989

Kensuke Yanagiya
President
Japan International Cooperation Agency

LIST OF VOLUMES

ABBREVIATIONS, ACRONYMS, AND SYMBOLS

"	inch
'	foot
@	(in a renovation plan) applied to plants of the same category
#	(in a renovation plan) a new shop
AM	agricultural machinery
AMD	Agricultural Mechanization Department
AME	agricultural machinery and equipment
assy or ass'y	assembly
B600 or B-600	350kg pickup truck
B600L or B-600L	350kg pickup truck with left side steering wheel
BM	25 passengers bus, BM600
BSK	ventilated drip-proof type generator
BX	33 passengers bus, BX402
C & ESTC	Construction and Electrical Stores Trade Corp.
CKD	complete knockdown
COOP	Central Cooperative Society
CP	component part
CPT or cpt	complete
d	diameter
DCI	ductile cast iron
Dept	department
DIN	Deutsche Normen
E & S	Electric & Services (Maintenance)
E/M	equipment and machinery
ECCOM	Economic Coordination Committee
EP	electric products
EPC	Electric Power Corporation
eqpt	equipment
FL	fluorescent lamp

GDP	Gross Domestic Product
GNP	Gross National Product
H or h	hour
HI	Heavy Industry
HIC	Heavy Industries Corporation
HV	heavy vehicle
IL	incandescent lamp
IWTC	Inland Water Transport Corporation
JICA	Japan International Cooperation Agency
JIS	Japanese Industrial Standards
JP	yen
K	kyats
kg	kilogram
KM	3.5 ton truck, KM600
KND	horizontal water cooled, 4 cycle, 1 cyliner, diesel engine
kVA or KVA	kilovolt-ampere
kWh or KWH	kilowatt-hour
lb	pound (weight)
LH	left-hand
LP	local component parts
LPG	liquefied petroleum gas
LV	light vehicle
m	meter
mm or m/m	milimeter
M/C	machine
MOC	Myanma Oil Corporation
MW	metal working equipment
NG	natural gas
NIES	Newly Industrialized Economies
PM	preventive maintenance

QC	quality control
Qty or qty	quantity
R/D	research and development
RH	right-hand
RM	raw materials
RSM	rough shaped material
RTC	Road Transport Corporation
SEE	State Established Enterprises
SK	JIS4401 carbon tool steels
SKD	semi-complete knockdown
SKH	JIS4403 high speed tool steels
SKS	JIS4404 alloy tool steels
T2000 or T-2000	2 ton truck
T/G	timing gear
T/M	transmission
TC	Timber Corporation
TE	6.5 ton truck, TE21
V & ESTC	Vehicle and Machinery Stores Trade Corporation
WHM	Watt-hour meter
WTP	Whole Township Special High Yield Variety Production Program
X2000 or X-2000	1/4 ton crosscountry vehicle
X2000L or X-2000L	1/4 ton truck with left side steering wheel

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Chapter 1 BACKGROUND OF THE STUDY, AND THE SOCIAL AND ECONOMIC CONDITIONS OF BURMA

1-1 Background of the Study

1-1-1 Outline of HIC, and Background of the Four Industrial Projects

(1) Background and Activities of HIC

1) Background of HIC

In 1962, the Heavy Industry Corporation (HIC) was formed as a state corporation succeeding the activities of the Home Utility Division established in 1960. Under Order No. 1 of the Ministry of Industry dated 16th March, 1972, HIC was reformed in 1972 to operate as a Holding and Operating Commercial Organization, and it was allowed to operate on a purely commercial basis since 1975/76.

HIC was formed with 867,064,200 Kyats of equity capital wholly owned by the state. HIC is under the control of the Ministry of Industry (2). Although HIC is an autonomous entity, the Government controls the management of HIC by means of sanctions for annual operation plans, budgets and other principle aspects of the management.

2) Objectives of HIC

The primary objectives of HIC were to promote industrialization of Burma through the following undertakings:

1. To establish metal-based precision industries, which involve comprehensive and complicated technology, such as the manufacturing of automobiles and agricultural machinery.

2. To establish machine tool industries that will form the basis and nuclei for the industrialization of Burma based on agricultural and natural resources.

3. To manufacture capital goods required for the development of electrical and petroleum energy, such as distribution transformers, oil pumping sets, electric motors, etc.

4. To develop casting and forging technology.

5. To develop electric and electronic technology.

6. To establish processing industries based on petrochemicals and rubber.

7. To develop technology for the designing, engineering and manufacturing of plants, machinery, equipment and machine tools.

8. To acquire technology from other countries and to promote transfer of technology in collaboration with those countries.

3) Development of HIC's activities

The Home Utility Division, the forerunner of HIC, was engaged in the manufacturing of bicycles developed and designed in Burma and also in the manufacturing of spare parts to be supplied to the industries in Burma. While taking over the activities of the Home Utility Division, in 1962 HIC embarked on the following projects:

1. Light vehicles manufacturing project

2. Heavy vehicles manufacturing project

3. Agricultural machinery and equipment manufacturing project

4. Electric and electronic products manufacturing project

At that time the Revolutionary Government of the Union of Burma passed the judgment that the Reparations Funds previously received from Japan had not been utilized effectively for the rehabilitation and development of the nation with the exception of the Lawpita Hydro Electric Project. For this sole reason, the Revolutionary Government decided to utilize the Reparations Funds to establish the above projects which were to produce the products essentially required for the rehabilita-

tion and development of the nation, and thus assigned HIC as the implementation agency for those projects.

HIC's task was to establish the automobile and machinery industries which could ensure a stable supply of vehicles and agricultural machinery, such as vehicles for land transportation, light agricultural machinery and equipment required for promoting mechanized agriculture, and pumps for irrigation needed for the development of agriculture, while establishing electric and electronic industries which would supply electric appliances and electric/electronic apparatus needed for the development of electric power and the extention of utilization of electricity.

With the mandate of the Revolutionary Government, HIC launched in 1962, the implementation of the foregoing industrial projects under the technical assistance rendered by the following Japanese firms:

1.	Kubota Iron and Machinery Works Ltd. (predecessor of Kubota, Ltd.)	Agricultural Machinery and Equipment Manufacturing Project
2.	Toyo Kogyo Co., Ltd. (predecessor of Mazda Motor Corporation)	Light Vehicles Manufacturing Project
3.	Matsushita Electric Industry Co., Ltd.	Electric and Electronic Products Manufacturing Project
4.	Hino Motors Ltd.	Heavy Vehicles Manufacturing Project

HIC expanded its operation to achieve its corporate objectives. Following the accomplishment of the above projects, HIC launched the manufacturing of tractors and tyres with the technical assistance of Czechoslovakia and also the manufacturing of machine tools with the technical assistance of West Germany.

HIC's organizational structure consists of the headoffice located in Rangoon and six factories named in a series of No. 1 HI to No. 6 HI constructed in the following locations:

Factories	Location
No. 1 HI	Rangoon
No. 2 HI	Malun
No. 3 HI	Sinde
No. 4 HI	Htonbo
No. 5 HI	Nyaunchidauk
No. 6 HI	Thaton

The number of employees was 15,306 persons as of January, 1988. The sales revenue, gross profit and net profit of HIC during the last three years were as follows:

(unit: million Kyats)

Fiscal Year	Sales Revenue	Gross Profit	Net Profit
1984/85	932	252	36
1985/86	975	271	40
1986/87	1,281	294	72

(Notes)

1) Fiscal year (from 1st April to 31st March of the succeeding year).

2) Provisional figures for 1987/88 (in million Kyats):

Sales revenue: 1,050
Gross profit : 266
Net profit : 54

(2) Background of the Four Industrial Projects

The Four Industrial Projects refer to the four projects as listed below that HIC has undertaken since 1962 by utilizing the Reparations Funds of Japan and under the technical assistance provided by the aforesaid Japanese companies.

1. Heavy Vehicles Manufacturing Project

2. Light Vehicles Manufacturing Project

3. Agricultural Machinery and Equipment Manufacturing Project

4. Electric and Electronic Products Manufacturing Project

The Government of Japan has continuously extended economic assistance to the Four Industrial Projects since 1962. Following the 8th and 9th Reparations Funds utilized for the Projects, the Government of Japan provided the Economic and Technical Cooperation Agreement (ETCA) Funds and the OECF Yen Credit loans to finance the acquisition of additional machinery and equipment and also the procurement of imported raw materials, component parts and other materials required. The total of these funds and loans provided since 1962 amounts to 150 billion yen, including the commodity loans provided for financing the procurement of imported raw materials, component parts and spare parts for maintenance yearly since 1977.

1-1-2 Role and Current Status of HIC and the Four Industrial Projects in the Manufacturing Industry in Burma

(1) Position of HIC in the Manufacturing Industry in Burma

HIC, as stated earlier, is the only manufacturer of precision machinery such as heavy and light vehicles, agricultural machinery, electric and electronic products, tractors and machine tools, but also the only manufacturer of tyres in Burma. HIC is one of the leading manufacturers in terms of business scale and the number of employees.

As reviewed in details in Section 1-2 of this chapter "Present Social and Economic Conditions of Burma, and the Tasks Imposed on the Four Industrial Projects", the total value of production of the nation in 1986/87 was 104.9 billion Kyats in nominal terms, in which the production of the processing and manufacturing sector was 33 billion Kyats accounting for about 31% of the total value of production. In that year the Gross Domestic Product (GDP) was 58.5 billion Kyats, of

which the value added of the processing and manufacturing sector was 5.9 billion Kyats accounting for about 10% of GDP.

In 1986/87 the sales revenue of HIC was approximately 1.28 billion Kyats which was equivalent to about 4% of the value of production of the processing and manufacturing sector, and the gross profit (sales revenue less cost of goods sold) was 0.29 billion Kyats, equivalent to about 5% of the value added of the sector. These figures demonstrate that HIC holds an important position in the manufacturing industry in Burma.

(2) Position of the Four Industrial Projects in the HIC's Operation

The Four Industrial Projects are the main stream of the HIC's operation occupying about 60% of the sales revenue as shown below:

Fiscal year	(A) HIC's Sales Revenue	(B) Revenue from Four Industrial Projects	B/A(%)
	(in million Kyats)		
1984/85	932	511	55
1985/86	975	660	68
1986/87	1,281	740	58

The Projects produce capital goods such as vehicles, agricultural machinery and motors which other industries require for maintaining their production activities, while producing electric appliances needed for satisfying the peoples demands. HIC intends to expand the production of the Four Industrial Projects to meet the needs for those products, and the Four Industrial Projects therefore will play a more important role in the HIC's operation henceforth.

(3) Effects to Other Industries

The activities of HIC centered on the Four Industrial Projects have substantial influences on other industries. As HIC produces capital goods which other industries require for maintaining and expanding their production activities, should the production of HIC be reduced, it will adversely affect the activities of other industries.

As HIC is the manufacturer leading the machinery industry and the electric and electronic industries in Burma, its role should not be confined to the supply of the products but it should be extended to provide related industries with technical assistance as required by them for improving productivity and expanding operations by utilizing technology and experiences built up in HIC.

In fact, HIC has assisted other manufacturers with the supply of some equipment which HIC designed and manufactured for their import substitution and also with technical services for the repair and improvement of the machinery and equipment which they operate.

(4) Current Situation of the Four Industrial Projects

Since the production facilities of the Four Industrial Projects have been set up about 20 years ago, there are a large number of worn out machinery and equipment, causing deterioration of productivity and product quality. As a result, the present production facilities are not capable of filling the initial installed capacities. HIC is concerned that the wear and tear of machinery and equipment will become so serious that the production cannot be sustained, if no measures are taken to prevent it.

HIC has been devoted to the expansion of the local production of raw materials and component parts. So the localization of the raw materials and component parts has progressed to some extent. Nevertheless, there are many areas unlocalized yet due to constraints in manufacturing facilities and technology. The Government curtailed the imports of raw materials and component parts to a substantial extent in order to cope with the current stringent foreign exchange situation, so that HIC was compelled to limit the production. In order to sustain and expand the production, it may be important for HIC to form the basis for self-sustaining operation by expanding the local production of raw materials and component parts so that the operation may not be affected by the availability of foreign exchange.

1-1-3 Background, Objective and Outline of the Execution of the Study

(1) Background of the Study

Against the foregoing background, the Government of Burma has made a request to the Government of Japan to provide technical assistance for conducting a study (the Study) for the renovation of the Four Industrial Projects. In response to this request, the Japan International Cooperation Agency (JICA) dispatched a contact team to Burma in early June, 1987, and the team preliminarily discussed with HIC to define the scope and methodology of the Study in principle. Following the discussion of the contact team in early October, 1987, JICA dispatched a preliminary survey team (the Preliminary Survey Team) to finalize the scope of work for the Study. The Scope of Work (S/W) and the Minutes of Meeting for the Study on the Renovation of the Four Industrial Projects were executed between the JICA's Preliminary Survey Team and HIC on October 14, 1988, a copy of which is attached to this report.

(2) Objective and Scope of the Study

The objective of the Study, as set forth in the S/W, is to diagnose factories of the Four Industrial Projects and investigate the possibilities of their renovation from technical and economic points of view. The factories and sites as well as products and assembly lines to be covered by the Study are those defined in Appendix III of the Minutes of Meeting. The scope of the Study is set forth in Section III of the S/W.

(3) Outline of the Execution of the Study

According to the aforesaid S/W, the JICA's survey team for the Study (the Survey Team) conducted a field survey in Burma for about one month from the latter part of January, 1988. An interim report was prepared on the basis of the findings made in the field survey and the first stage of the Study, which was presented to the Government of Burma in the middle of May, 1988. The representatives of the Survey Team visited Burma in early June, 1988 to discuss with HIC the interim

report. Based on the comments made by HIC during the review meetings held in Burma, the Team succeeded with subsequent investigations and examination after the interim meetings. This draft final report presents the outcome of the Study thus made.

The performance record of the Survey Team during the field survey and the interim review meetings, and also a list of the Burmese counterpart members for the Study are attached to this report.

1-2 Present Social and Economic Situation of Burma, and the Tasks Imposed upon the Four Industrial Projects

1-2-1 Present Social and Economic Situation of Burma, and Issues Relating to Economic Structure of Burma

(1) General Trends of the Burmese Economy

For the last 14 years the Government of Burma has pursued the economic development programs designed to promote "Industrialization Based on an Expanded Agriculture". This development strategy has been adopted in "the Twenty-Year Long-Term Plan*1) for the period of 1974/75 - 1993/94" launched in 1974/75*2) and has been implemented through specific measures set in the successive four year plans which have been formulated in the framework of the Twenty-Year Plan.

The Burmese economy has been largely dependent on the agricultural sector. At the early part of 1970's, with the cultivated land of approximately 19.6 million acres (7.9 million hectares) accounting for about 12% of the country's total land covering approximately 676,581 km^2, the agricultural sector largely contributed to the Gross Domestic Product (GDP) by 32% in nominal terms or 26% in real terms while absorbing about 66% of the active labor force. The sector also played an important role in ensuring the export earnings as well as the supply of rice and other essential foods required for the population of 29.2 millions of the early 1970's, increasing at about 2% per annum. Under these circumstances the Twenty-Year Plan primarily aimed at the continuous expansion of agriculture.

(Notes)

*1) The Long-Term Twenty-Year Plan was originally started in 1972/73. However, this original plan was abolished and the presently enacted Long-Term Twenty-Year Plan, as amended, was started in 1974/75.

*2) Specified years are fiscal years beginning in April and ending at the end of March in succeeding years, except the years for consumer price index which are expressed by calendar years.

At the same time the development of industry was also required for achieving economic growth together with the establishment of a self-sustaining economy. Thus the Twenty-Year Plan called for pursuit of the development of industry as well as agriculture.

Table 1.2-1 tabulates the key economic indicators of Burma recorded for the last 13 years from 1974/75 to 1986/87, and Tables 1.2-2 to 1.2-5 give the value of production and the GDP by industrial origins achieved during the same period.

Through the Second Four-Year Plan (FYP)*3) implemented for 1974/75 - 1977/78, the initial four years of the Twenty-Year Plan period, and the succeeding Third FYP for 1978/79 - 1981/82, Burma continued a steady growth of economy. The real GDP has grown at 4.7% per annum in average during the period of the Second FYP, despite the unstable external economic conditions affected by the first oil shock, and it achieved a substantially higher growth at an annual average of 6.5% during the Third FYP.

In recent years, however, the Burmese economy shows a stagnant tendency. During the Fourth FYP period of 1982/83 - 1985/86, the real GDP growth declined to an average annual rate of 5%. Particularly in 1985/86, the final year of the Fourth FYP, the growth rate remained at 4.3%, and in 1986/87 it further declined to 3.7%.

(Note)

*3) The First Four-Year Plan was implemented in 1972/73 under the abolished original Twenty-Year Plan. However, it was abolished after its implementation for one and a half years, since the present Twenty-Year Plan was started in 1974/75.

Table 1.2-1 KEY ECONOMIC INDICATORS

Particulars	Second FYP				Third FYP				Fourth FYP				Fifth FYP
	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 (Provisional Actual)	1986/87 (Provisional)
1. Population (Thousand)	29,778	30,389	31,009	31,642	32,284	32,939	33,608	34,287	34,976	35,680	36,392	37,115	37,850
(Growth Rate: %)	(2.05)	(2.05)	(2.04)	(2.04)	(2.03)	(2.03)	(2.03)	(2.02)	(2.01)	(2.01)	(2.00)	(1.99)	(1.98)
2. Gross Domestic Product (GDP)													
1) GDP in Nominal Term (Kyat. Million)	19,347.5	23,477.3	27,427.3	29,617.5	31,800.4	35,333.1	38,609.1	42,879.2	46,810.5	49,823.3	53,597.1	56,080.8	58,452.6
(Equiv. US$ Million)	(3,793.6)	(3,611.9)	(4,033.4)	(4,113.5)	(4,746.3)	(5,353.5)	(5,849.9)	(5,717.2)	(6,001.3)	(6,151.8)	(6,090.6)	(7,379.1)	(8,596.0)
2) GDP in Real Term (Kyat. Million)	11,101.1	11,561.7	12,265.3	12,995.7	13,843.3	14,562.3	15,717.6	16,717.0	17,653.6	18,429.3	19,454.5	20,295.3	21,038.0
3) Growth Rate of Real Term GDP (%)	2.7	4.1	6.1	6.0	6.5	5.2	7.9	6.4	5.6	4.4	5.6	4.3	3.7
3. Per-Capita GDP													
1) Nominal Term (Kyat)	650	773	884	936	985	1,073	1,149	1,251	1,338	1,396	1,473	1,511	1,544
(Equiv. US$)	(127)	(119)	(130)	(130)	(147)	(163)	(174)	(167)	(172)	(172)	(167)	(199)	(227)
2) Real Term (Kyat)	373	380	396	411	429	442	468	488	505	517	535	547	556
3) Growth Rate of Real Term Per-Capita GDP(%)	0.5	1.9	4.2	3.8	4.4	3.0	5.9	4.3	3.5	2.4	3.5	2.2	1.6
4. Balance of Trade (Kyat. Million)	-)90.0	-)120.7	+)87.8	-)329.6	-)1,371.0	-)1,613.5	-)1,409.9	-)2,158.5	-)3,277.3	-)1,777.8	-)1,846.7	-)2,148.1	-)1,587.8
1) Exports (Kyat. Million)	925.8	1,322.6	1,715.7	1,756.9	1,852.7	2,696.0	3,225.1	3,452.8	3,036.3	3,419.5	3,194.5	2,653.9	2,925.1
- Growth Rate (%)	-)4.3	+)42.9	+)29.7	+)2.4	+)5.5	+)45.5	+)19.6	+)7.1	-)12.1	+)12.6	-)6.6	-)16.9	+)10.2
- Percentage to GDP (%)	4.8	5.6	6.3	5.9	5.8	7.6	8.4	8.1	6.5	6.9	6.0	4.7	5.0
2) Imports (Kyat. Million)	1,015.8	1,443.3	1,627.9	2,086.5	3,223.7	4,309.5	4,635.0	5,611.3	6,313.6	5,197.3	5,041.2	4,802.0	4,512.9
- Growth Rate (%)	+)76.7	+)42.1	+)12.8	+)28.2	+)54.5	+)33.7	+)7.6	+)21.1	+)12.5	+)17.7	-)3.0	-)4.7	-)6.0
- Percentage to GDP (%)	5.3	6.1	5.9	7.0	10.1	12.2	12.0	13.1	13.5	10.4	9.4	8.6	7.7
5. Terms of Trade (1969/70=100)	113.7	93.4	83.6	88.0	87.0	92.5	104.2	106.7	86.3	86.5	89.7	77.1	63.2
6. Fixed Investment in Nominal Term (Kyat. Million)	1,524.5	1,680.7	2,320.4	3,752.6	5,363.6	7,388.8	7,228.3	8,634.8	10,043.7	9,057.1	8,476.8	8,642.5	9,921.4
Percentage to GDP (%)	7.9	7.2	8.5	12.7	16.9	20.9	18.7	20.1	21.5	18.2	15.8	15.4	17.0
7. Official Rate of Foreign Exchange (Kyat/US$)	5.1	6.5	6.8	7.2	6.7	6.6	6.6	7.5	7.8	8.1	8.8	7.6	6.8*

Note: * November in 1986

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1986/87 and 1987/88

Table 1.2-2 VALUE OF PRODUCTION OF GOODS AND SERVICES (AT CURRENT PRODUCERS' PRICES)

(Unit: Million Kyats)

Particulars	Second FYP				Third FYP				Fourth FYP				Fifth FYP
	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 (Provisional Actual)	1986/87 (Provisional)
1. Goods	20,844.2	26,665.4	31,766.9	35,282.4	37,199.0	41,169.3	45,483.8	50,359.5	54,846.8	59,133.0	65,254.9	68,758.3	71,713.6
1) Agriculture	8,883.3	11,400.2	13,036.7	13,111.4	13,605.1	15,441.8	17,321.4	19,302.9	20,926.6	22,336.6	24,319.7	25,533.3	26,173.1
2) Livestock & Fishery	1,549.3	1,778.2	2,172.7	2,694.1	2,892.3	3,614.3	3,655.7	4,481.6	4,947.9	5,290.3	6,204.3	6,519.6	6,798.8
3) Forestry	467.6	496.4	543.0	586.2	768.5	842.1	869.6	984.3	1,022.7	1,021.3	1,042.4	1,093.6	1,167.9
4) Mining	367.7	302.2	390.1	483.4	539.5	739.4	790.3	803.4	845.5	850.3	959.5	920.4	1,069.1
5) Process'g & Manufactur'g	8,821.9	11,845.1	14,709.8	17,220.4	17,860.4	18,709.7	20,533.5	22,275.2	24,061.3	26,437.8	29,253.7	31,130.8	33,049.0
6) Power	113.8	126.1	144.8	166.1	172.9	190.3	214.4	264.4	313.4	338.2	379.5	421.9	457.3
7) Construction	640.6	717.2	769.8	1,020.8	1,360.3	1,631.7	2,089.9	2,247.7	2,729.4	2,858.5	3,095.8	3,138.7	2,999.2
2. Services	4,712.0	4,929.6	5,932.8	6,032.1	7,027.7	8,066.4	8,952.6	10,472.5	11,478.7	11,948.6	12,631.9	13,592.1	14,252.4
1) Transportation	1,170.9	1,256.4	1,334.2	1,482.4	1,614.1	2,048.9	2,250.2	2,624.9	2,990.8	3,131.9	3,314.1	3,449.4	3,620.8
2) Communications	48.9	49.2	64.3	68.5	69.2	79.6	107.9	150.1	187.4	211.7	222.2	245.1	277.1
3) Financial Institutions	302.8	241.6	380.5	487.0	727.5	916.8	1,229.9	1550.6	1,804.1	1,919.2	2,051.0	2,147.5	2,262.4
4) Social & Administrative Services	2,196.1	2,360.6	2,542.1	2,878.3	3,152.1	3,344.1	3,490.7	3,970.2	4,211.1	4,297.9	4,547.0	5,167.1	5,409.8
5) Rentals & Other Services	993.3	1,021.8	1,071.7	1,115.9	1,464.8	1,677.0	1,873.9	2,176.7	2,277.3	2,387.9	2,497.6	2,583.0	2,682.3
3. Trade	6,744.1	8,355.5	9,896.8	10,690.1	11,255.7	12,163.0	13,066.4	14,159.3	15,259.3	16,244.2	17,226.6	18,140.3	18,955.5
4. Total (1+2+3)	32,300.3	39,950.5	47,056.5	52,004.6	55,482.4	61,398.7	67,502.8	74,991.3	81,576.8	87,325.8	95,113.4	100,490.7	104,921.5
5. Total Inter-industry Use	12,952.8	16,473.2	19,629.2	22,387.1	23,682.0	26,065.6	28,893.7	32,112.1	34,766.3	37,502.5	41,516.3	44,409.9	46,468.9
6. Total Net Output (4-5)	19,347.5	23,477.3	27,427.3	29,617.5	31,800.4	35,333.1	38,609.1	42,879.2	46,810.5	49,823.3	53,597.1	56,080.8	58,452.6

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1986/87 and 1987/88.

Table 1.2-3 VALUE OF NET OUTPUT AND SERVICES (GROSS DOMESTIC PRODUCT)
(AT CURRENT PRODUCERS' PRICES)

(Unit: Million Kyats)

Particulars	Second FYP				Third FYP				Fourth FYP				Fifth FYP
	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 (Provisional Actual)	1986/87 (Provisional)
1. Goods	10,814.7	13,579.8	15,944.0	17,084.1	18,063.1	20,604.7	22,862.1	25,627.7	28,212.9	30,089.4	32,828.6	34,223.6	35,632.3
1) Agriculture	7,319.8	9,306.5	10,639.4	10,713.7	11,518.8	13,100.5	14,962.2	16,764.3	18,439.9	19,670.3	21,337.3	22,249.8	22,885.5
2) Livestock & Fishery	1,204.1	1,420.2	1,791.3	2,208.5	2,030.1	2,540.9	2,431.3	2,911.3	3,203.6	3,361.6	3,767.6	3,937.7	4,191.7
3) Forestry	305.7	324.4	358.1	386.9	509.1	561.4	576.8	654.5	674.8	680.0	689.9	724.0	772.6
4) Mining	163.9	135.7	192.6	282.7	316.2	410.2	426.9	429.8	501.2	504.0	545.1	505.7	594.6
5) Process'g & Manufactur'g	1,563.7	2,106.0	2,655.6	3,084.3	3,171.9	3,363.2	3,683.2	4,008.8	4,349.5	4,774.6	5,280.3	5,552.0	5,948.8
6) Power	59.6	66.1	70.0	94.0	98.1	125.7	135.1	166.7	210.4	227.3	262.4	286.0	313.7
7) Construction	197.9	220.9	237.0	314.0	418.9	502.8	646.6	692.3	833.5	871.6	946.0	968.4	925.4
2. Services	3,002.6	3,050.8	3,367.9	3,767.5	4,453.9	5,058.8	5,625.6	6,537.3	7,085.5	7,461.4	7,882.4	8,455.7	8,842.5
1) Transportation	649.9	698.1	741.4	824.8	900.7	1,146.1	1,263.9	1,491.3	1,678.9	1,808.6	1,919.8	2,012.1	2,122.8
2) Communications	41.2	41.8	55.4	59.0	59.7	68.8	93.3	120.6	154.8	176.7	186.3	206.1	233.3
3) Financial Institutions	242.1	122.6	235.3	358.7	564.1	648.1	828.5	1,038.6	1,095.4	1,172.2	1,253.8	1,332.3	1,398.9
4) Social & Administrative Services	1,229.4	1,324.3	1,435.6	1,595.9	1,686.6	1,765.8	1,837.4	2,032.2	2,215.4	2,266.0	2,397.3	2,711.8	2,836.3
5) Rentals & Other Services	840.0	864.0	900.2	929.1	1,242.8	1,430.0	1,602.5	1,854.6	1,941.0	2,037.9	2,125.2	2,193.4	2,259.2
3. Trade	5,530.2	6,846.7	8,115.4	8,765.9	9,283.4	9,669.6	10,121.4	10,714.2	11,512.1	12,272.5	12,886.1	13,401.5	13,977.8
4. Total Net Output (1+2+3) (Gross Domestic Product)	19,347.5	23,477.3	27,427.3	29,617.5	31,800.4	35,333.1	38,609.1	42,879.2	46,810.5	49,823.3	53,597.1	56,080.8	58,452.6

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1986/87 and 1987/88.

Table 1.2-4 VALUE OF NET OUTPUT AND SERVICES (GROSS DOMESTIC PRODUCT)
(AT 1969/70 CONSTANT PRODUCERS' PRICES)

(Unit: Million Kyats)

Particulars	Second FYP				Third FYP				Fourth FYP				Fifth FYP
	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 (Provisional Actual)	1986/87 (Provisional)
1. Goods	5,524.4	5,835.8	6,191.1	6,579.5	7,070.1	7,487.4	8,235.7	8,861.3	9,409.4	9,844.7	10,420.9	10,753.5	11,180.0
1) Agriculture	2,962.8	3,121.9	3,306.4	3,480.6	3,747.8	3,943.8	4,443.1	4,831.7	5,159.3	5,412.0	5,577.0	5,721.6	5,866.3
2) Livestock & Fishery	794.0	833.9	862.4	895.9	949.6	1,012.0	1,053.6	1,095.9	1,134.1	1,213.4	1,331.4	1,356.5	1,412.9
3) Forestry	272.0	262.9	278.3	292.9	334.8	342.8	349.6	368.9	381.5	375.9	401.7	417.6	440.9
4) Mining	117.4	120.2	134.0	156.8	168.9	196.0	189.6	197.6	213.7	220.6	253.3	265.5	315.7
5) Process'g & Manufactur'g	1,098.3	1,200.2	1,295.3	1,385.2	1,419.3	1,474.7	1,584.8	1,704.8	1,794.6	1,854.0	2,006.9	2,098.1	2,243.0
6) Power	88.6	97.1	108.9	131.2	136.6	150.1	171.3	207.6	242.7	262.1	302.1	332.0	364.0
7) Construction	191.3	199.6	205.8	236.9	313.1	368.0	443.7	454.8	483.5	506.7	548.5	562.2	537.2
2. Services	2,816.5	2,862.8	3,063.7	3,297.0	3,522.8	3,738.3	3,999.0	4,287.7	4,550.6	4,739.9	5,001.8	5,373.5	5,576.2
1) Transportation	573.4	585.1	594.5	625.9	665.3	719.5	763.6	846.2	926.9	980.5	1,039.3	1,075.6	1,124.2
2) Communications	39.6	40.0	49.5	52.7	53.2	61.3	71.8	90.9	114.5	129.9	135.7	151.0	171.0
3) Financial Institutions	216.5	146.1	239.9	325.3	436.2	496.0	620.9	679.2	701.6	738.6	789.3	837.4	865.5
4) Social & Administrative Services	1,147.0	1,233.1	1,305.4	1,395.0	1,453.9	1,518.8	1,572.0	1,671.9	1,785.8	1,819.0	1,920.8	2,162.2	2,240.0
5) Rentals & Other Services	840.0	858.5	874.4	898.1	914.2	942.7	970.7	999.5	1,021.8	1,071.9	1,116.7	1,147.3	1,175.5
3. Trade	2,760.2	2,863.1	3,010.5	3,119.2	3,250.4	3,336.6	3,482.9	3,568.0	3,693.6	3,844.7	4,031.8	4,168.3	4,281.8
4. Total Net Output (1+2+3) (Gross Domestic Product)	11,101.1	11,561.7	12,265.3	12,995.7	13,843.3	14,562.3	15,717.6	16,717.0	17,653.6	18,429.3	19,454.5	20,295.3	21,038.0

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1986/87 and 1987/88.

Table 1.2-5 SHARES OF GDP BY INDUSTRIAL ORIGIN, AND SECTORAL GROWTH RATES
(AT 1969/70 CONSTANT PRODUCERS' PRICES)

Particulars	Shares of GDP by Industrial Origin (%)				Sectoral Growth Rates (% per annum)						
					Average Growth Rates		Growth Rates Against Preceding Year				
	1974/75	1978/79	1982/83	1986/87	(1973/74 -1977/78)	(1977/78 -1981/82)	1982/83	1983/84	1984/85	1985/86	1986/87
1. Agriculture	26.7	27.1	29.2	27.9	3.6	8.5	6.8	4.9	3.0	2.6	2.5
2. Livestock & Fishery	7.1	6.9	6.4	6.7	2.8	5.2	3.5	7.0	9.7	1.9	4.2
3. Forestry	2.4	2.4	2.2	2.1	5.5	5.9	3.4	-)1.5	6.9	4.0	5.6
4. Mining	1.1	1.2	1.2	1.5	6.9	5.9	8.1	3.2	14.8	4.8	18.9
5. Process'g & Manufactur'g	9.9	10.2	10.2	10.7	7.1	5.3	5.3	3.3	8.2	4.5	6.9
6. Power	0.8	1.0	1.4	1.7	10.3	12.2	16.9	8.0	15.3	9.9	9.6
7. Construction	1.7	2.3	2.7	2.6	6.0	17.7	6.3	4.8	8.2	2.5	-)4.4
8. Transportation	5.2	4.8	5.3	5.3	3.1	7.8	9.5	5.8	6.0	3.5	4.5
9. Trade	24.9	23.5	20.9	20.4	4.0	3.4	3.5	4.1	4.9	3.4	2.7
10. Social & Administrative Services	10.3	10.5	10.1	10.6	7.7	4.6	6.8	1.9	5.6	12.6	3.6
11. Other Services	9.9	10.1	10.4	10.5	5.1	8.5	3.9	5.6	5.2	4.6	3.6
Total GDP	100.0	100.0	100.0	100.0	4.7	6.5	5.6	4.4	5.6	4.3	3.7

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1986/87 and 1987/88

The nominal GDP increased twofold from 19.3 billion Kyats (US$3.8 billions) in 1974/75 to 42.9 billion Kyats (US$5.7 billions) in 1981/82, and further to 58.5 billion Kyats (US$8.6 billions) in 1986/87, so that the per capita GDP rose in nominal terms from 650 Kyats (US$127) in 1974/75 to 1,251 Kyats (US$167) in 1981/82 and further to 1,544 Kyats (US$227) in 1986/87 as the population increased at an average growth rate of about 2% per annum from 29.8 millions in 1974/75 to 34.3 millions in 1981/82 and 37.9 millions in 1986/87.

The steady GDP growth achieved through the Second and Third FYPs was substantially attributed to a high growth of the agricultural sector together with a growth of the processing and manufacturing, power, construction and transportation sectors supported by increases in the public sector investments. The agricultural sector achieved a growth of value-added over 5% per annum in real terms from 1975/76 to 1977/78 and averaged 8.5% per annum in real terms from 1977/78 to 1981/82, resulting in an increase in its share of the real GDP from 26.7% in 1974/75 to 29.2% in 1982/83. The share of the processing and manufacturing sector in the real GDP slightly increased from 9.9% in 1974/75 to 10.2% in 1982/83 with an average growth of 7.1% per annum from 1973/74 to 1977/78 and 5.3% per annum from 1977/78 to 1981/82, while the combined share of power, construction and transportation sectors increased from 7.7% to 9.4% during the same period.

After 1982/83, however, there was a stagnation in the agricultural production and also the production in the processing and manufacturing sector. The growth of real value-added in the agricultural sector declined to 3% in 1984/85, 2.6% in 1985/86 and further to 2.5% in 1986/87.

A growth of real value-added in the processing and manufacturing sector, after attaining annual rates over 7% in 1980/81 and 1981/82, declined to 5.3% in 1982/83 and 3.3% in 1983/84, and after that recorded 8.2% in 1984/85, 4.5% in 1985/86 and 6.9% in 1986/87.

In view of the past trend of external trades, as shown in Table 1.2-1, the exports increased from 0.9 billion Kyats equivalent to 4.8% of the nominal GDP in 1974/75 to 3.5 billion Kyats equivalent to 8.1% of the

GDP in 1981/82, while the imports also increased from 1.0 billion Kyats equivalent to 5.3% of the GDP to 5.6 billion Kyats equivalent to 13.1% of the GDP during the same period. Consequently, in 1981/82 the external trade deficit expanded to 2.2 billion Kyats as much as 24 times of the deficit recorded in 1974/75. The Burma's export earnings heavily rely on the exports of agricultural products and forest products represented by rice and teak. Table 1.2-6 gives the current trends in exports. In 1981/82 the exports of the aforesaid two categories account for 79% of the country's total exports. In recent years, the exports of agricultural products tended to decrease due to the falling international rice prices and decrease in the export volume of rice, resulting in the 1985/86 export value as little as 58% of that in 1981/82. Thus, although the exports of forest products increased, the total exports in 1984/85 decreased to 77% of the 1981/82 exports in value.

Table 1.2-7 gives the current trend in imports. Majority of the imports are capital goods, and raw materials and component parts for industry uses. In 1981/82 imports of the capital goods and the raw materials and component parts account for 52% and 39% of the total imports respectively. In order to cope with reduced export earnings, the Government curtailed the imports of those categories. In 1985/86 the imports of the capital goods and of the raw materials and component parts were 94% and 67%, respectively, of the 1981/82 imports in value. In view of current trends of the imports, after a peak of 6.3 billion Kyats in 1982/83, with the Government measures taken to curtail the imports to counter the reduced export earnings, the imports steadily decreased to 4.5 billion Kyats equivalent to 7.7% of the nominal GDP in 1986/87, so that the external trade deficit remained in the range of 1.6 to 2.1 billion Kyats during 1983/84 - 1986/87 after the deficit peaked at 3.3 billion Kyats in 1982/83.

Table 1.2-8 gives recent trends in the balance of payments and the foreign exchange reserves. The increased external trade deficit deteriorated the country's balance of payments since 1980/81, rapidly widening the current account deficit from 1.5 billion Kyats in 1980/81 to 4.2 billion Kyats in 1982/83; the overall balance worsened from a surplus of 218 million Kyats in 1980/81 to a deficit of 964 million

Table 1.2-6 CURRENT TRENDS IN EXPORTS (IN VALUE)

Particulars	Index (1981/82=100)				Share to Total (%)				
	1982/83	1983/84	1984/85	1985/86 (Provisional Actual)	1981/82	1982/83	1983/84	1984/85	1985/86 (Provisional Actual)
1. Agricultural Products	80.3	91.1	71.2	57.7	56.5	51.6	52.0	43.5	42.4
2. Animal and Marine Products	122.1	74.5	109.2	84.1	3.6	5.0	2.7	4.3	3.9
3. Forest Products	104.8	118.4	137.5	135.4	22.5	26.8	26.9	33.4	39.6
4. Minerals and Gems	84.1	106.2	99.8	43.5	13.7	13.1	14.7	14.8	7.8
5. Others	68.1	74.8	64.3	73.9	3.1	2.4	2.3	2.1	3.0
6. Re-exports	161.0	228.8	299.5	428.3	0.6	1.1	1.4	1.9	3.3
Total Exports	87.9	99.0	92.5	76.9	100.0	100.0	100.0	100.0	100.0

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1986/87 and 1987/88.

Table 1.2-7 CURRENT TRENDS IN IMPORTS (IN VALUE)

Particulars	Index (1981/82=100)				Share to Total (%)				
	1982/83	1983/84	1984/85	1985/86 (Provisional Actual)	1981/82	1982/83	1983/84	1984/85	1985/86 (Provisional Actual)
1. Consumer Goods	111.9	82.8	98.4	132.6	7.7	7.6	6.9	8.4	11.9
1) Durable Goods	104.4	104.5	93.2	229.4	2.1	2.0	2.4	2.2	5.7
2) Foodstuffs	113.3	80.3	118.2	66.7	1.7	1.7	1.5	2.2	1.3
3) Textiles	88.8	66.4	39.1	137.6	0.8	0.6	0.6	0.4	1.3
4) Medicines and Pharmaceuticals	122.8	60.6	73.0	91.5	2.4	2.6	1.5	1.9	2.5
5) Other Consumers Goods	120.3	117.4	220.3	133.6	0.7	0.7	0.9	1.7	1.1
2. Raw Materials and Spares for Inter-industry Use	92.5	74.6	80.6	67.2	39.4	32.4	31.7	35.3	30.9
1) Raw Materials	95.4	64.5	86.7	68.6	25.5	21.6	17.8	24.6	20.4
2) Fuel	152.8	0	7.9	1.0	0.6	0.8	0	(*)	(*)
3) Tools and Spares	84.5	96.9	71.9	67.2	13.3	10.0	13.9	10.7	10.5
3. Capital Goods	127.7	108.3	95.7	93.5	52.2	59.3	61.0	55.7	57.1
1) Construction Materials	118.1	90.1	123.9	82.7	10.9	11.4	10.6	15.0	10.5
2) Machinery and Equipment	139.1	124.1	85.3	96.8	32.9	40.7	44.1	31.3	37.3
3) Transport Equipment	117.1	64.8	133.4	110.7	4.9	5.1	3.4	7.3	6.3
4) Other Capital Goods	65.8	76.4	54.1	72.8	3.5	2.1	2.9	2.1	3.0
4. Commodity Unspecified	110.1	47.9	75.3	9.6	0.7	0.7	0.4	0.6	0.1
Total	112.5	92.6	89.8	85.6	100.0	100.0	100.0	100.0	100.0

Note: (*) denotes percentage less than 0.1.

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1986/87 and 1987/88.

Table 1.2-8 RECENT TRENDS IN BALANCE OF PAYMENTS AND FOREIGN EXCHANGE RESERVES

(Unit: Million Kyats)

Particulars	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 (Provisional Actual)	1986/87 (Provisional)
1. Exports of Goods	3,180.0	3,462.1	2,891.4	3,291.7	3,056.8	2,672.6	2,925.1
2. Imports of Goods	4,602.7	5,951.4	6,869.9	4,895.3	4,815.9	4,700.9	4,512.9
3. Balance of Trade (1-2)	-)1,422.7	-)2,489.3	-)3,978.5	-)1,603.6	-)1,759.1	-)2,028.3	-)1,587.8
(Equivalent to US$ Millions)*3)	(-215.6)	(-331.9)	(-510.1)	(-198.0)	(-199.9)	(-266.9)	(-233.5)
4. Net Payments of Interest	159.6	168.1	346.8	510.4	516.9	581.4	638.8
5. Income of Services and Transfer	47.0	-)55.5	78.2	248.0	359.4	213.8	277.0
- Receipts	447.2	437.5	579.3	726.7	743.4	718.7	694.0
- Payments	400.2	493.0	501.1	478.7	384.0	504.9	417.0
6. Current Balance (3-4+5)	-)1,535.3	-)2,712.9	-)4,247.1	-)1,866.0	-)1,916.6	-)2,395.9	-)1,949.6
(Equivalent to US$ Millions)*3)	(-232.6)	(-361.7)	(-544.5)	(-230.4)	(-217.8)	(-315.3)	(-286.7)
7. Grants	639.4	428.5	601.8	528.1	503.8	709.0	700.3
8. Loans	1,564.5	2,465.4	2,944.3	2,184.5	1,955.8	2,161.1	2,883.7
9. Repayment of Principal	456.4	622.6	545.2	723.3	795.3	959.6	1,081.6
10. Other Receipts	6.8	133.4	282.3	128.2	-)132.8	426.7	-)663.1
11. Overall Balance (6+7+8+10-9)	+)218.2	-)308.2	-)963.9	+)251.5	-)385.1	-)58.7	-)110.3
(Equivalent to US$ Millions)*3)	(+33.1)	(-41.1)	(-123.6)	(+31.0)	(-43.8)	(-7.7)	(-16.2)
Foreign Exchange Reserves (As at End of March)	1,894.7	1,586.5	622.6	874.1	489.0	430.3	407.9*1)
(Equivalent to US$ Millions)*3)	(287.1)	(211.5)	(79.8)	(107.9)	(55.6)	(56.6)	(60.0)
Debt Service Ratio (%)	20.5	24.5	27.2	31.3	35.2	45.6	47.7
Official Rate of Foreign Exchange (Kyat/US$)	6.6	7.5	7.8	8.1	8.8	7.6	6.8*2)

Notes: *1) End of September in 1986
*2) November in 1986
*3) Converted from the amounts in Kyat by applying the official rate of foreign exchange.

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1986/87 and 1987/88.

Kyats in 1982/83. After that, with the Government measures taken to curtail the imports, the current account deficit was reduced to the order of 1.9 to 2.4 billion Kyats. However, as the repayment of official external debts increased in 1983/84 onward, the overall balance, after improved to a surplus of 251 million Kyats in 1983/84, was situated in a deficit of 385 million Kyats in 1984/85, 59 million Kyats in 1985/86, and 110 million Kyats in 1986/87.

In recent years, the foreign exchange reserves have also deteriorated. The reserves of 1.9 billion Kyats (US$287 millions) in 1980/81 fell to 0.4 billion Kyats (US$60 millions) in 1986/87. The debt-service ratio worsened from 20.5% in 1980/81 to 47.7% in 1986/87.

Table 1.2-9 gives the consumer price index at Rangoon for the last 10 years from 1977 to 1986. The consumer prices tended to be stable until 1984. However, they show a rise of 6.9% in 1985 and 7.9% in 1986.

(2) Major Issues of the Burmese Economy in Recent Years

In recent years the Burmese economy has encountered several difficulties, including the deterioration of the balance of payments and the rise of consumer prices together with the stagnation of economic growth.

The economy, as reviewed in the preceding section, continued a steady growth up to the end of the Third FYP period (1978/79 - 1981/82). The growth, however, stagnated after that (Table 1.2-1 to 1.2-5).

The balance of payments also rapidly deteriorated after 1980/81, and the Government tried to improve the imbalance by curtailing imports. In Burma, since there exist only a small number of industries producing raw materials and intermediates and the majority of the existing industries, therefore, is heavily dependent on the imported raw materials and intermediates, the restriction on imports, especially that on raw materials and intermediates, has hindered the production of the industries, weakening the basis of the country's economy and depressing the exports. Consequently, the foreign exchange reserves became tight and the debt-service ratio also deteriorated rapidly from 20.5% in 1980/81 to 47.7% in 1986/87, due partly to repayment of official external debts which had increased since 1983/84 onward (Table 1.2-8).

Table 1.2-9 CONSUMER PRICE INDEX AT RANGOON (1978=100)

Year*	Consumer Price Index	Change in Percentage (%)
1977	106.4	
1978	100.0	-)6.0
1979	106.1	+)6.1
1980	107.2	+)1.0
1981	107.5	+)0.3
1982	112.0	+)4.2
1983	118.3	+)5.6
1984	124.0	+)4.8
1985	132.5	+)6.9
1986	143.0	+)7.9

Note: * Calendar year
Average annual increase rate during 1977-1984: 2.2%

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1984/85 - 1987/88

At the same time, a rise in the consumer prices has been conspicuous after 1985. The consumer prices, as shown in Table 1.2-9, had tended to be stable until 1984 since the second half of 1970s due to the effect of the Government policy to maintain low prices, except for that of 1979 affected by the second oil shock. After 1985, however, the consumer prices turned upward to increase by nearly 8% in 1986. When taking into account the facts that 34% of the commodities listed for the consumer price index, are those controlled by the Government, and that the official prices for those controlled commodities have been held at a nearly same level since the second half of the 1970s, it is surmised that the increase rate of the prices in an uncontrolled market should have been much higher than the above.

(3) Characteristics of the Economic Structure of Burma

The basic characteristics of the economy in Burma is that the principal part of the industries, except the agriculture, is undertaken mainly by the state sector consisting of State Economic Enterprises (SEEs) and the Government departments, and the private sector plays a very minor role in the industries. This is because the Government limits the business fields for the private sector under the Rights of Private Enterprise Law enacted in 1977, and gives priority to SEEs' investments. The Government also gives priority to SEEs in supplying raw materials, and thus, the private sector has difficulty in obtaining raw materials. The situation is similar in the marketing of products. Imports and exports are controlled by the Government, and the private sector has various kinds of limitation both in importing raw materials and exporting products. The private sector also faces difficulty in the distribution of products because the distribution sector is also nationalized.

As a result, the share of the private sector in the GDP has currently declined in comparison with that accounted for around 70% in the early 1960's. Table 1.2-10 shows the shares of GDP by industrial origins and ownership during the last six years from 1981/82 to 1986/87. In 1986/87, the share of state sector and cooperative sector accounts for 38.9% and 6.8%, respectively, and the private sector accounts for 54.3% of the real GDP. The agricultural sector, contributing about 28% of the real GDP, remains in the hands of the private sector; the

Table 1.2-10 CONTRIBUTION TO GDP BY INDUSTRIAL ORIGIN AND OWNERSHIP (1981/82-1986/87)
(AT 1969/70 CONSTANT PRODUCERS' PRICE)

(Unit: %)

Particulars	1981/82				1982/83				1983/84				1984/85				1985/86 (Provisional Actual)				1986/87 (Provisional)			
	State	Co*	Pri-vate	Total	State	Co*	Pri-vate	Total	State	Co*	Pri-vate	Total	State	Co*	Pri-vate	Total	State	Co*	Pri-vate	Total	State	Co*	Pri-vate	Total
1.Agriculture	0.1	0.6	28.2	28.9	(*)	0.7	28.5	29.2	0.1	1.0	28.3	29.4	0.1	1.3	27.3	28.7	0.1	1.6	26.5	28.2	0.1	1.9	25.9	27.9
2.Livestock and Fishery	0.1	0.1	6.4	6.6	0.1	0.1	6.2	6.4	0.1	0.1	6.4	6.6	0.1	0.1	6.6	6.8	0.1	0.1	6.5	6.7	0.1	0.1	6.5	6.7
3.Forestry	0.8	0.1	1.3	2.2	0.8	0.1	1.3	2.2	0.8	0.1	1.3	2.0	0.6	0.1	1.3	2.0	0.7	0.1	1.3	2.1	0.7	0.1	1.3	2.1
4.Mining	1.0	(*)	0.2	1.2	1.0	0.1	0.1	1.2	1.0	0.1	0.1	1.2	1.2	(*)	0.1	1.3	1.2	(*)	0.1	1.3	1.4	(*)	0.1	1.5
5.Processing and Manufacturing	6.1	0.3	3.8	10.2	6.0	0.3	3.9	10.2	5.8	0.3	4.0	10.1	5.7	0.3	4.3	10.3	5.5	0.3	4.5	10.3	6.0	0.5	4.2	10.7
6.Power	1.2	(*)	-	1.2	1.4	(*)	-	1.4	1.4	(*)	-	1.4	1.6	(*)	-	1.6	1.6	(*)	-	1.6	1.7	(*)	-	1.7
7.Construction	2.2	(*)	0.5	2.7	2.2	(*)	0.5	2.7	2.2	(*)	0.5	2.7	2.3	(*)	0.5	2.8	2.2	(*)	0.5	2.7	2.0	(*)	0.5	2.5
8.Transportation	2.2	0.3	2.6	5.1	2.2	0.3	2.8	5.3	2.0	0.3	3.0	5.3	2.0	0.3	3.0	5.3	1.7	0.3	3.3	5.3	1.7	0.4	3.3	5.4
9.Communication	0.5	-	-	0.5	0.6	-	-	0.6	0.7	-	-	0.7	0.7	-	-	0.7	0.7	-	-	0.7	0.8	-	-	0.8
10.Financial Institutions	4.0	0.1	-	4.1	3.9	0.1	-	4.0	4.0	(*)	-	4.0	4.0	0.1	-	4.1	4.1	(*)	-	4.1	4.0	0.1	-	4.1
11.Social & Admin Services	9.9	0.1	-	10.0	10.0	0.1	-	10.1	9.8	0.1	-	9.9	9.8	0.1	-	9.9	10.5	0.2	-	10.7	10.5	0.1	-	10.6
12.Rental and Other Services	0.8	0.2	5.0	6.0	0.8	0.2	4.8	5.8	0.8	0.3	4.7	5.8	0.8	0.3	4.7	5.8	0.8	0.3	4.6	5.7	0.7	0.3	4.6	5.6
13.Trade	9.8	1.9	9.6	21.3	9.6	1.9	9.4	20.9	9.6	2.0	9.3	20.9	9.3	2.4	9.0	20.7	8.9	2.5	9.2	20.6	9.2	3.3	7.9	20.4
Total (GDP)	38.7	3.7	57.6	100.0	38.6	3.9	57.5	100.0	38.1	4.3	57.6	100.0	38.2	5.0	56.8	100.0	38.1	5.4	56.5	100.0	38.9	6.8	54.3	100.0

Notes: (*) denotes percentage less than 0.1.
Co* Cooperative

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions; 1986/87 and 1987/88.

share of the state sector and cooperative sector accounts for 0.4% and 6.9%, respectively, and the private sector accounts for 92.7% of the real value-added of the agricultural sector in 1986/87. Thus, if the agricultural sector is excluded, the share of private sector in the real value-added of the rest of the economy is only 39.4% in that year.

In the processing and manufacturing sector in 1986/87, the state and cooperative sectors accounted for 55.7% and 4.6% of the real sectoral value-added, respectively, while the private sector accounted for 39.7%. Tables 1.2-11 and 1.2-12 show the sub-sectoral structure of the value of production and the value-added of the processing and manufacturing sector in real terms. In view of the sub-sectoral structure of the real value of production averaged for the last three years of 1984/85 - 1986/87, the share of food and beverages accounted for 62%, realizing a share of 73% of the value of production of the processing and manufacturing sector for general consumer goods including food and beverages, clothing and wearing apparel, personal goods and household goods. The production of industrial raw materials accounted for about 7%, minerals and petroleum products account for 5%, machinery including transport vehicles, electrical goods, agricultural equipment, and other machinery and equipment accounted for 4%, and the construction materials account for 6%. The sub-sectoral structure in the real value-added of the processing and manufacturing sector in 1984/85 also shows a similar structure with a majority accounted for by the general consumer goods such as food and beverages, clothing and wearing apparel accounting for about 53%, and the remainder shared by other sub-sectors, including 11% for the industrial raw materials, 10% for the production of minerals and petroleum products, 8% for the machinery (e.g., transport vehicles, electrical goods, agricultural equipment, and other machinery and equipment), and 10% for the construction materials. This structure reveals the present status of the Burmese industry that is represented by the manufacturing of general consumer goods holding a dominant share and by the few industrial establishments engaged in the manufacturing of capital goods or producer goods.

Table 1.2-13 gives structure of the real value of production by sub-sector and ownership of the processing and manufacturing sector during

Table 1.2-11 VALUE OF PRODUCTION OF PROCESSING AND MANUFACTURING SECTOR BY COMMODITY GROUP
(AT 1969/70 CONSTANT PRODUCERS' PRICES)

	Value (Million Kyats)							Structure in Percentage (%)						
	1974/75	1978/79	1982/83	1983/84	1984/85	1985/86 (Prov.A)	1986/87 (Prov.)	1974/75	1978/79	1982/83	1983/84	1984/85	1985/86 (Prov.A)	1986/87 (Prov.)
1. Food & Beverages	3,321.2	3,855.5	4,829.4	5,228.3	5,609.7	5,817.6	6,088.2	64.9	58.3	58.7	61.3	61.8	62.4	61.6
2. Clothing & Wearing Apparel	405.1	754.1	854.3	782.6	755.3	780.5	764.4	7.9	11.4	10.4	9.2	8.3	8.4	7.7
3. Construction Materials	339.8	382.3	476.6	482.1	502.0	501.5	588.6	6.6	5.8	5.8	5.6	5.5	5.4	6.0
4. Personal Goods	131.7	175.4	241.6	185.5	187.5	188.8	173.7	2.6	2.7	2.9	2.2	2.1	2.0	0.8
5. Household Goods	18.2	24.8	50.6	40.4	58.3	53.4	52.2	0.4	0.4	0.6	0.5	0.6	0.6	0.5
6. Printing & Publishing	50.0	108.1	143.3	155.7	184.2	151.3	176.0	1.0	1.6	1.7	1.8	2.0	1.6	1.8
7. Industrial Raw Materials	213.9	393.6	554.8	619.1	654.4	660.0	678.3	4.2	6.0	6.8	7.2	7.2	7.1	6.9
8. Mineral&Petroleum Products	385.6	464.5	485.1	444.4	479.4	465.1	502.8	7.5	7.0	5.9	5.2	5.3	5.0	5.1
9. Agricultural Equipment	12.0	39.6	29.9	28.6	25.5	29.2	41.4	0.2	0.6	0.4	0.3	0.3	0.3	0.4
10. Machinery & Equipment	4.9	1.0	6.8	7.0	4.6	5.5	19.0	0.1	(*)	0.1	0.1	0.1	(*)	0.2
11. Transport Vehicles	63.9	147.9	207.4	201.5	220.6	232.0	338.7	1.3	2.2	2.5	2.4	2.4	2.5	3.4
12. Electrical Goods	27.7	24.9	46.1	49.8	52.3	90.1	80.4	0.5	0.4	0.6	0.6	0.6	1.0	0.8
13. Miscellaneous	142.5	235.7	294.8	305.5	343.0	350.2	377.7	2.8	3.6	3.6	3.6	3.8	3.7	3.8
Processing & Manufacturing Sector Total (A)	5,116.5	6,607.4	8,220.7	8,530.5	9,076.8	9,325.2	9,881.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Value of Production of Goods and Services (B)	18,653.5	23,429.6	30,326.6	31,559.4	33,422.2	34,790.2	36,167.5							
Percentage of A to B (%)	27.4	28.2	27.1	27.0	27.2	26.8	27.3							

Notes: Prov.A: Provisional Actual Prov.: Provisional

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1986/87 and 1987/88

Table 1.2-12 SUB-SECTORAL STRUCTURE OF VALUE-ADDED IN PROCESSING AND MANUFACTURING SECTOR (AT 1969/70 CONSTANT PRODUCERS' PRICES)

	Structure in Percentage (%)				Average Annual Growth Rate (%)		
	1974/75	1978/79	1982/83	1984/85	1973/74 -1977/78	1977/78 -1981/82	1981/82 -1984/85
1. Food & Beverages	42.5	38.8	36.8	38.8	4.6	3.8	8.5
2. Clothing & Wearing Apparel	8.8	12.3	11.2	9.4	16.4	2.5	-)15.9
3. Construction Materials	12.3	10.4	10.2	10.0	2.0	6.0	4.9
4. Personal Goods	5.3	5.1	5.3	4.3	7.2	7.6	-)3.8
5. Household Goods	0.7	0.6	1.0	0.9	2.9	13.1	11.8
6. Printing & Publishing	2.1	2.8	3.1	3.4	15.6	4.4	13.9
7. Industrial Raw Materials	6.4	8.6	10.1	11.4	15.4	9.7	10.5
8. Mineral&Petroleum Products	13.1	9.5	9.3	9.7	-)0.6	4.6	7.0
9. Agricultural Equipment	0.9	2.2	1.3	1.1	31.1	-)3.2	-)2.8
10. Machinery & Equipment	0.4	0.1	0.3	0.3	-)32.0	29.1	34.6
11. Transport Vehicles	3.4	4.6	5.6	5.3	15.4	6.1	10.3
12. Electrical Goods	0.8	0.5	0.8	1.1	-)4.8	24.4	12.2
13. Miscellaneous	3.3	4.5	5.0	4.3	15.6	10.5	-)1.3
Processing & Manufacturing Sector - Total	100.0	100.0	100.0	100.0	7.1	5.3	6.3

Source: Ministry of Planning and Finance

Table 1.2-13 SUB-SECTORAL STURUCTURE BY OWNERSHIP OF VALUE OF PRODUCTION OF PROCESSING AND MANUFACTURING SECTOR
(AT 1969/70 CONSTANT PRICES)

(Unit: %)

	1983/84				1984/85				1985/86			
	State	Co-operative	Private	Total	State	Co-operative	Private	Total	State	Co-operative	Private	Total
1. Food and beverages	16.1	1.8	43.4	61.3	14.8	2.0	45.0	61.8	13.4	2.3	46.7	62.4
2. Clothing and wearing apparel	3.2	1.1	4.9	9.2	2.8	0.9	4.6	8.3	2.5	1.1	4.8	8.4
3. Construction materials	3.2	0.2	2.2	5.6	3.1	0.3	2.1	5.5	3.3	0.2	1.9	5.4
4. Personal goods	1.9	(*)	0.3	2.2	1.8	(*)	0.3	2.1	1.7	(*)	0.3	2.0
5. Household goods	0.3	(*)	0.2	0.5	0.3	(*)	0.3	0.6	0.3	(*)	0.3	0.6
6. Printing and publishing	1.7	0.1	(*)	1.8	1.9	0.1	(*)	2.0	1.4	0.1	0.1	1.6
7. Industrial raw materials	5.8	(*)	1.4	7.2	5.5	(*)	1.7	7.2	5.7	(*)	1.4	7.1
8. Mineral and petroleum products	4.5	(*)	0.7	5.2	4.6	(*)	0.7	5.3	4.3	(*)	0.7	5.0
9. Agricultural equipment	0.3	-	-	0.3	0.3	-	-	0.3	0.3	-	-	0.3
10. Machinery and equipment	0.1	-	(*)	0.1	0.1	(*)	(*)	0.1	(*)	(*)	(*)	(*)
11. Transport vehicles	2.1	(*)	0.3	2.4	2.1	(*)	0.3	2.4	2.3	(*)	0.2	2.5
12. Electrical goods	0.6	-	(*)	0.6	0.6	-	(*)	0.6	1.0	-	(*)	1.0
13. Miscellaneous	2.6	0.1	0.9	3.6	2.8	0.1	0.9	3.8	2.7	0.2	0.8	3.7
Total	42.4	3.3	54.3	100.0	40.7	3.4	55.9	100.0	38.9	3.9	57.2	100.0

Note: (*) denotes percentage less than 0.1.

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1987/88

1983/84 - 1985/86. In view of an average of the production value for those three years, the private sector accounts for 69% of the production of general consumer goods such as food, beverages, clothing and wearing apparel. The state sector holds a majority in the production of industrial raw materials and also of minerals and petroleum products accounting for 77% and 86% respectively. For the machinery including transport vehicles, electrical goods, agricultural equipment, and other machinery and equipment, the state sector accounts for 92% of the production. This manifests that the state sector dominates the principal industries producing capital goods or producer goods, while the private sector is engaged in small-scale or cottage industries mainly for manufacturing food, wearing apparel and other general consumer goods but little in the fields related to the manufacturing of machinery or industrial raw materials.

Because of the industrial structure in Burma as stated above, except for agriculture, production activities of the state sector have substantial impacts on the Burmese economy. Hence, in the processing and manufacturing sector, as in other sectors, the state sector is required to sustain efficient production activities and further expansion in production so as to contribute to a steady growth of the Burmese economy. The SEEs, however, have been unable to accumulate capital due to marginal returns gained through their operations, because the sales prices of their products have been fixed at low levels under the control of the Government. Thus the SEEs have financial constraints in undertaking renovation, rationalization or expansion of their manufacturing facilities.

In general, in the countries where the private sector is allowed to operate business in all fields of industries, even if governments take measures giving priority to the industrial activities of the public sector, the private sector would undertake medium- and small-scale industries which are linked or relevant to the principal industries dominated by the public sector. This formulates and develops peripheral industries forming industrial clusters which function to support or supplement the production activities of the principal industries, leading to an increase in domestic demands and production

which can induce reproduction on an expanded scale and thereby economic growth of the countries. Foreign capital investments may also be invited, as required, if the restrictions on foreign investment are eased and the investment climate is facilitated to attract foreign investors. However, such a pattern of economic development is not applicable to Burma, because of the different type of social and economic institutions adopted in Burma. Therefore, in Burma it is necessary for the SEEs to sustain efficient operation so that they can accumulate capital for re-investment in order not only to expand the production capacity of main streams but also to undertake, by themselves or in other SEEs, the production activities supporting or relevant to the main streams which are to be undertaken by peripheral industries if such industries are established in future.

The basic industry being in a formative stage and the peripheral industries lagging behind, most of the SEEs are dependent largely on imports for raw materials and component parts as well as spare parts for maintenance, and their production activities therefore are adversely affected by the Government's measures taken to curtail imports coping with stringent foreign exchange situation such as prevails recently.

The Burmese industry situated in a limited scope of production is limited in the creation of intermediate demands as well as the creation of employment. Thus, the size of domestic demand remains small without expansion. Under these situations, the production of the domestic-market oriented industries is limited to a fairly small scale so that the production facilities have to be used for prolonged periods without replacements, leaving the industry lagging behind in technological innovation. Hence, the industries in Burma lose export competitiveness in competition with the products exported from other countries where industrial development has progressed. Such a situation hinders the vigor of the industries in Burma.

1-2-2 Targets of the Economic Policy in Burma and the Present Situation of the Main Economic Sectors Relevant to the Four Industrial Projects

(1) Targets of the Economic Policy in Burma

The policy target for the fiscal year of 1988/89 is not published yet, but according to the policy target for 1987/88, an annual increase rate of GDP in real terms was set at 5%, while sector-wise targets were set at 5.4% for the agricultural sector and 11% for the processing and manufacturing sector. In order to achieve the above targets, the Government puts emphasis on the following points in its implementation plan for 1987/88.

1. Strengthen mass participation in the implementation of economic plans.

2. Adopt effective measures for upgrading the quality of agricultural products and adopting more appropriate cropping patterns; and implement special programs for self-sufficiency in food crops and expansion of agricultural exports.

3. Formulate and implement specific export promotion programs so as to take full advantage of opportunities for export expansion of merchandise and services to promote foreign exchange earnings.

4. Strive for consistency and coordinated development by balancing the economic activities and the economic programs.

5. Achieve the growth targets set in the plan through effective mobilization of domestic resources.

6. Promote productivity and cost-effectiveness in every field of economic activity.

The present situation of the agricultural, transportation and energy sectors, which are the three main sectors relevant to the Four Industrial Projects is briefly described in the following sections.

(2) Current Situation of the Agricultural Sector

Agriculture is the most important sector in the Burmese economy. For the last 13 years from 1974/75 to 1986/87, the agricultural sector has grown at a real growth rate averaged at 5.9% per annum which is higher than the real growth of GDP averaged at 5.5% per annum, the share of the agricultural sector in the GDP has consequently increased up to 39.2% in nominal terms and 27.9% in real terms in 1986/87 (Tables 1.2-3 and 1.2-4). The share of active labor force engaged in the agriculture has declined year by year, but it still accounts for 63% of the total active labor force. The export of agricultural products has substantially contributed to the country's export earnings, and the foreign exchange earned through the export of agricultural products has played an important role in imports of raw materials and component parts for the industrial production.

The WTP (Whole Township Special High Yield Variety Paddy Rice Production Program), which was launched in 1976, increased the yield of paddy rice mainly in the rainfed paddy area in the lower part of Burma, by extension service on intensive farming technology adopting the cultivation of the High Yield Variety (HYV) and the application of chemical fertilizers. The increase in paddy rice production, however, stagnated after 1982 because of limitation of yield per acre without increasing the cultivated area. The domestic demand for rice increased more rapidly than that of production, and the exportable surplus of rice decreased year by year. In addition, as the international price of rice fell, the value of rice export decreased in recent years. The depression of the agricultural sector is one of the major causes of current economic stagnation in Burma.

Given such conditions, the Government has launched a program for improvement of agriculture under the main tasks of (i) the achievement of regional self-sufficiency of food, (ii) promotion of exports, and (iii) increased production of agricultural products for industrial raw materials and promotes the following two measures for achieving the tasks; that is, the promotion of intensive cultivation method, and the expansion of arable area by reclaiming the idle land and waste land. The Government plans to provide superior seeds and adequate inputs such as chemical fertilizers and agricultural chemicals required for

them for improving productivity and expanding operations by utilizing technology and experiences built up in HIC.

(3) Current Situation of the Transportation Sector

The transportation in Burma is operated by three categories of organizations, namely, the state-owned transport organizations, cooperative transport organizations, and private transport organizations. The Government gives priority to the reinforcement of state-owned transport organizations, the state sector as in other economic sectors. The transportation capacity of the cooperative transport organizations is limited both in transport volume and area covered. The share of private transport organizations in the country's cargo transport is estimated high, though it is difficult to make quantitative assessment of the actual situation because of a lack of published statistics available for the assessment.

Table 1.2-14 shows the record of transportation of internal freight by transport distance and by ownership in 1983/84 and 1984/85. The figures show that the volume of cargo transported by the private sector accounts for 84% of total volume, and also that the volume of cargo transported in short haul accounts for almost 60% of total volume. It is estimated that about 80% of the volume transported in short haul were handled by private operators using non-powered ships or carts. Of the cargo transported by road, the share of truck transportation is estimated to be about 25%, of which 95% are handled by private operators. Private truck operators are engaged mainly in medium and long haul transportation, while the state-owned transport organizations are engaged mainly in short haul transportation.

Although there is no statistics showing the passenger transportation handled by private operators, it is surmised that they are engaged mainly in short haul urban transportation. Table 1.2-15 shows the transportation of passengers by transportation modes for the last four years from 1983/84 to 1986/87. The figures manifest that the railway transportation holds a large share of transportation in terms of passenger-miles as compared to other transportation modes. The road transportation is mainly by buses, and taxi services cater to a minor portion of passenger transportation.

Table 1.2-14 INTERNAL FREIGHT VOLUME

(Unit: 1,000 metric tons)

	1983/84	1984/85
Domestic Output *1)	79,825	82,871
Imports	805	888
Total Internal Freight Volume	80,630	83,759
Of which:		
Short Haul	48,502	50,292
Medium Haul	17,132	18,060
Long Haul	14,996	15,407
Transportation by:		
1) State-owned Transport Organizations	5,744	5,774
- Burma Railways Corp.	(2,243)	(2,120)
- Inland Water Transport Corp.	(2,128)	(2,302)
- Road Transport Corp.	(1,237)	(1,301)
- Burma Five Star Shipping Corp. (Coastal Transport)	(136)	(51)
- Other State-owned Organizations	(5,119)	(5,357)
2) Cooperative Transport Organizations	2,194	2,247
3) Private Transport Organizations	67,573	70,381

Note: *1) Tonnage of commodities transported.

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1987/88

Table 1.2-15 INTERNAL TRANSPORTATION OF PASSENGERS EXCLUDING AIR TRANSPORT

(Unit: in thousand)

	1983/84	1984/85	1985/86 (Provisional Actual)	1986/87 (Provisional)
Rail Transport				
Passengers (Number)	61,198	61,414	57,640	60,929
Passenger Miles	2,283,283	2,228,728	2,092,691	2,355,686
Water Transport				
Passengers (Number)	18,618	20,112	20,312	21,248
Passenger Miles	377,026	423,429	418,008	442,622
Road Transport				
Passenger Service				
Passenger (Bus) (Number)	104,779	94,735	79,938	78,112
Passenger Miles (Bus)	716,617	691,357	632,823	679,600
Taxi Service				
Passenger (Taxi) (Number)	5,172	5,170	5,110	5,185
Passenger Miles (Taxi)	17,590	17,618	17,578	17,992

Source: Report to the Pyithu Hluttaw on the Financial, Economic and Social Conditions: 1987/88

There is no basic statistics available for analyzing the requirement for road transportation and the adequacy of the existing facilities, but it is obvious that the shortage is serious by observing the situation in Rangoon. According to the plan for 1987/88, the Government declared its target not only to expand the capacity of the state-owned transport organizations by increasing the number of new vehicles and enhancing periodical maintenance, but also to take similar measures for cooperative and private transport organizations so as to maximize the efficient utilization of available transportation facilities as a whole.

(4) Energy Sector

Table 1.2-16 gives the consumption of energy in Burma by major uses and energy sources in 1982/83. The overwhelming majority of energy consumption in Burma is dependent on non-commercial energies such as fire wood. The consumption of petroleum products accounts for about 11% of total energy consumption, of which 68% is by the transportation sector. The consumption of electric power accounts for only 1%, of which 30% is for home use. Natural gas is consumed entirely for feedstock and fuel by the industries, and there is no household use at the present time. The consumption of natural gas remains at about 2% of total energy consumption even with the industrial use for feedstock being included.

The exploration and commercial exploitation of oil and natural gas have been undertaken by the Myanma Oil Corporation (MOC), a state-owned petroleum corporation, but the production of crude oil has currently been decreasing due to technical and financial constraints. The existing refineries have adequate capacities to produce gasoline and other petroleum products so as to meet the domestic requirements. The production of petroleum products, however, has currently decreased due to a shortage of crude oil. In order to supply gasoline and heavy oil required by the industrial sector and transportation sector, the refineries have been operated so as to maximize the production of heavy oil by reducing that of kerosene. Nevertheless, there is a tight supply of gasoline and heavy oil due to a reduced refining volume.

Table 1.2-16 FINAL ENERGY CONSUMPTION, 1982/83

(Unit: '000 tons) *1)

	Biomass	Fuel-wood	Char-coal	Coal	Elec-tricity	Petro-leum	Natural Gas	Total	Share (%)
Industry	-	-	-	15	62	265	158	500	6.0
Transport	-	-	-	7	-	623	-	630	7.6
Households/ Rural	260	6,283	594	-	27	26	-	7,190	86.4
Total	260	6,283 *2)	594	22	89	914	158	8,320	100.0
Share (%)	3.1	75.5	7.1	0.3	1.1	11.0	1.9	100.0	

Notes: *1) ton of crude oil equivalent (=1,000 million Btu)
*2) Includes some consumption by industry for which separate data are not available.

Source: World Bank

Burma has an adequate size of recoverable reserves of natural gas so that the production of natural gas can be increased. However, in order to increase the supply of natural gas, it is necessary to undertake the development of gas wells and also the construction of gas pipelines, which require a large amount of capital investment. Therefore, an integrated natural gas utilization program has to be formulated, and the development of natural gas supply system, including drilling of gas wells and laying of pipelines according to the program, must be implemented at the national level. The Government has a plan to extend the existing natural gas to some areas by 1990. If this plan is implemented, the distribution areas of natural gas will be expanded so that the natural gas can be used for industrial fuel in those areas.

LPG has been consumed both for industrial fuel and home use in the recent years, but the consumption has not grown well, since it was limited in supply, and more expensive than other fuels. The annual production of LPG is 15,000 tons, of which 6,000 tons are consumed domestically and the remaining 9,000 tons are exported. A methanol plant having a capacity of 450 tons per day and using natural gas as the feedstock, commenced its operation in 1987. The methanol produced is to be locally used in a blend with light oil as fuel for three-wheel motor-cars, while it is partly exported under a long-term contract. Since the use of methanol blends is still in the trial stage, the demand for the blends at present is small. Under this situation, there is a surplus of methanol and it is partly supplied also to the domestic industries for their use as a substitute fuel. However, it is expected that methanol blends will be increasingly consumed in 2 to 3 years and the total output of methanol will be directed to blends.

The development of electric power in Burma still remains at a low level although there exists abundant water resource that can be used for hydropower. As of 1984, a generation rate of electric power was 45kWh per person with a rate of electrification of 7%, which is fairly low compared to other countries in the region. Further development of electric power is essential for improvement of the living standard and development of industries. Table 1.2-17 shows the future supply/

Table 1.2-17 EPC CONSUMPTION AND GENERATION FORECAST, PLANNED GROWTH SCENARIO

(Unit: GWh)

	Generation			Consumption				
	Inter-connected systems	Isolated	Total	Domestic	Industry	Commer-cial Bulk	Others	*3) Total
1982/83 (Actual)	1,477	75	1,552	316	552	145	37	1,050
1983/84 (Actual)	1,571	81	1,652	341	585	158	38	1,122
1984/85	1,849	*1) 141	1,990	370	886	166	42	1,473
1985/86	2,151	143	2,294	415	1,167	178	44	1,744
1986/87 *2)	2,274	147	2,421	448	1,207	188	45	1,888
1987/88	2,456	149	2,605	484	1,316	200	46	2,046
1988/89	2,651	152	2,803	523	1,440	212	47	2,222
1989/90	2,863	155	3,018	565	1,563	224	48	2,400
1990/91	3,091	158	3,249	610	1,704	238	49	2,601
1991/92	3,337	162	3,499	658	1,857	252	49	2,816
1992/93	3,604	165	3,769	711	2,024	267	50	3,052
1993/94	3,892	168	4,060	768	2,206	283	51	3,308
1994/95	4,203	171	4,374	829	2,405	300	53	3,587
1999/00	6,175	190	6,365	1,219	3,700	401	58	5,378
Growth Rate (% per annum)								
1983/84 - 1993/94	9.5	7.6	9.4	8.5	14.2	6.0	3.0	11.4
1983/84 - 1985/86	17.0	32.9	17.8	10.3	41.2	6.1	7.6	24.7
1986/87 - 1999/00	8.0	2.0	7.7	8.0	9.0	6.0	2.0	8.4

Notes: *1) The sudden increase is due to commissioning of thermal unit in Thaton (Mon State).
*2) From 1986/87 onwards, constant growth has been assumed.
*3) The difference between consumption and generation is due to system losses.

Source: World Bank

consumption of electric power projected for the power development to be undertaken by the Electric Power Corporation (EPC). The present progress of the power development seems to be fairly behind the projected development program. There are 64,400 non-electrified villages in Burma. EPC plans to proceed with electrification of 28 villages every year.

1-2-3 Tasks to be Fulfilled by The Four Industrial Projects

(1) Major Issues to be Considered in Investigating Renovation of The Four Industrial Projects

A review of the economic structure and the present social and economic situation in Burma, as made in the foregoing sections, indicates the need to take the following three issues into consideration in investigating the renovation of the Four Industrial Projects (the Project). Firstly, the Project has to sustain and expand the production in a form that can contribute to foreign exchange savings or earnings. Secondly, the Project has to undertake the enhancement of the production lines with appropriate means that can contribute to the promotion of peripheral industries which are yet undeveloped. Thirdly, the Project should undertake the renovation and expansion of the production lines which can contribute to the activation of other sectors by providing the equipment and parts which are required. The direction of measures to be taken for these tasks is discussed in the succeeding sections.

(2) Measures for Contributing to Foreign Exchange Savings or Earnings

As the industry in Burma largely relies for its supply of raw materials and component parts on imports, the industrial production has currently been hindered by the shortage of raw materials and component parts caused by the curtailment of imports, a measure taken to cope with the stringent foreign exchange situation. Most developing countries pursue industrial development which is dependent on the imports of raw materials and intermediates. If the domestic demand is large enough to support an economic scale production, the production cost may be competitive in export markets, so that the products can be exported. Consequently, the foreign exchange required for the import of raw materials and component parts can be earned through the exports, which will lead to successful development of industries without deteriorating the balance of payments even if the industries are dependent on imported raw materials and component parts. Such a situation can be observed in the development process of such countries as Asia NIES and Thailand.

In the case of Burma, however, as the domestic demand is still very small and its expansion might not be expected in a short period, the foregoing development pattern is not immediately applicable. Nevertheless, the industries may contribute indirectly to the improvement of foreign exchange, even if they are unable to earn foreign exchange by exports of their own products, but if there are other sectors, which are engaged in exports, and if the industries can supply the products which are required by these sectors and the supply of such products can stimulate their exports, the industries may achieve an indirect contribution to export expansion in the end. As the major export industries are agriculture and forestry in Burma, it is important to ensure the supply of equipment and materials which are required for sustaining the production activities in these sectors.

There is another case observed in the process of the development of export industries in the developing countries where the scale of domestic market for an industrial product is still small. There are successful examples of embarking on the production of exportable manufactures under sub-contracting arrangements or other forms of collaboration with foreign companies which have effective marketing and distribution networks abroad, so that the off-taking of the products for exports can be assured by them. The examples for this type of case may be observed in the garment industry and wood-working industry in Burma. In order to promote such arrangements with foreign companies, it is important for the Burmese industries to establish preparedness for production at a level satisfactory to the foreign companies. One of such measures is to establish an acceptable system for quality control of products and intermediates, and control of delivery.

Another measure to save foreign exchange outlay is to produce domestically raw materials and component parts which have been imported. It is recommended to undertake the domestic production of selected items and then expand the production items gradually, because there may be some component parts for which the immediate undertaking of the domestic production is not appropriate due to technical difficulties. The selection of the items for the domestic production must also be made in due consideration of the facts that there are some items of

which the production costs may be very high due to a small-scale production and also that, if the domestic production of component parts is undertaken without the build-up of required technology and appropriate production systems, it may result in an unstable supply and/or inferior quality of the component parts. These points have to be considered in launching a domestic production project.

(3) Measures for Fostering the Peripheral Industries

As described above, in Burma, there exist no peripheral industries which would be formed around the principal industries, hence no specialization. Thus, the SEEs, which are engaged in the principal industries, have to undertake such supporting or supplemental functions by themselves within their own organization or in other SEEs.

In order to ensure stable production, HIC also has to have not only main production lines but also the supporting functions such as manufacturing parts, manufacturing and repairing the jigs, tools and dies and maintaining the machinery within its organization or in other SEEs. At the initial stage, these supporting units will function to support HIC's production. They, however, have the potential to grow into independent entities specializing in metal working, and repairing and manufacturing machines in the future. HIC should promote such development which results in fostering the peripheral industries. To this end, it is important to handle the business from other SEEs in addition to that of HIC.

At the same time, it is recommended to establish other organizations which can widely provide repairing and service for the products supplied by HIC. As repair shops for motor cars could grow into independent business as the number of motor cars increases, so could it be with the repairing and service for other products. It is important that HIC structure the nuclei for such business for the future.

(4) Measures for Contributing to Activation of Other Industries

The HIC's products contribute to sustaining the activities of other economic sectors and also to improving the living standard as summarized below. Thus, HIC's stable and continued production with appropriate expansion is indispensable to activating the national economy of Burma.

Especially for the products which are required for such sectors as agriculture and forestry that can contribute to immediate activation of the Burmese economy, it is important for HIC to sustain efficient production and further expansion.

1. For the agricultural sector:

   a) Contribution to mechanization of agriculture (supply of power tillers, threshers, etc.)

   b) Contribution to expansion of agricultural infrastructure (supply of diesel engines and pumps)

2. For the forestry sector: Supply of transportation facilities to move timber (trucks)

3. For the fishery sector: Contribution to inland aquaculture (supply of water pumps)

4. For the traffic and transportation sector: Supply of transportation facilities (bus, truck, passenger cars for taxi, etc., and marine engine for river boats)

5. For the energy sector: Contribution to expansion of power distribution network (supply of transformers)

6. For the improvement of the living standard:

   a) Contribution to improvement of the living standard by electrification (supply of various kinds of electric appliances, watt-hour meters, dry cell batteries, etc.)

b) Contribution to improvement of the living standard in remote areas by supplying portable generators.

c) Supply of fire engines, and ambulances

Chapter 2 MARKET ASPECTS

2-1 Distribution Channels

2-1-1 Introduction

Ninety percent of the imports to Burma consist of capital goods including raw materials and supplies, parts, tools for industrial use, construction materials, machinery, and transportation equipment (Table 1.2-7). As all imports are controlled by the Government, the specific item to be imported and its quantity are regulated at the stage of allocation of the foreign exchange. Consequently, regular imports of industrial products for the general consumers are virtually nil.

The approval of the Government is required for imports of raw materials, parts, tools, and capital goods. Imports of products that are produced domestically, such as vehicles, are not approved except in the following cases:

1. Import of equipment, machinery and supplies of projects for economic aid by the World Bank, Asian Development Bank, and foreign governments.

   One example is the Timber Corporation which was granted approval to import long body and high loading capacity trucks for moving teak timber, as part of the promotion of teak export and imported them from Hino, Isuzu, and other Japanese auto manufacturers with a loan from the World Bank. Even such a SEE as Timber Corporation, who makes great contribution to exports, is not free to use funds acquired by exports without the approval of the Government.

2. A case in which an individual who worked abroad and acquired foreign exchange, brought into the country a vehicle that the individual purchased with such foreign exchange, for his own personal use - the Burmese system permits such a case, and many of the foreign-made motor cars that are noticeable in Rangoon are those that were brought in by such individuals under this system.

Industrial products for the general consumers such as electrical products manufactured in the neighboring countries including Thailand, China and India have penetrated the markets in Rangoon. These products entered the country from neighboring countries through the border trade, and as they do not enter through the regular channel, there is no statistics, but the amount is estimated to be substantial. Raw materials, parts and capital goods are imported directly by the state corporations who use them under the import licenses and foreign exchange allocation issued by the Government.

2-1-2 Distribution Channels of Industrial Products

The end consumers of the industrial products of Burma can be broadly divided into the government organizations including government agencies and the state corporations, and the general consumers (private firms and individuals). The distribution channels differ between sales to the government organizations and to the general consumers, but these channels are simpler than those of other countries. There are nine SEEs that manufacture industrial products (HIC under the Ministry of Industry (2) and eight SEEs under the Ministry of Industry (1)), and the products manufactured by these SEEs are distributed through the following channels:

1. To the government organizations including government agencies and state corporations: direct transactions with the particular organization

2. To the general consumers:

    a. through the co-operatives
    b. through the specialized sales corporations

2-1-3 Distribution Channels for the Products of HIC

The distribution channels for HIC products can be largely divided into the five types. The sales through each channel are described below. The figures in parentheses following a product indicate the percentage of the product sold through this channel to the total amount of the product sold by HIC.

(1) Supply to the Government Organizations

1) Supply of Products to be Used by the Government Organizations

When the products to be used by the government organizations including government agencies and state corporations are supplied to them, direct transaction takes place between HIC and the particular organization. The following products are those that have been supplied directly to these organizations. When an organization purchases any product which is booked as an asset, the organization must submit a products purchase plan to the Government at the beginning of the year for approval prior to the purchase of the product. On the other hand, products to be used as consumable goods and fixtures (e.g., dry cell batteries, fluorescent lamps, incandescent lamps, electric fans, etc.) are purchased by the organizations within the annual operating expense budget allocated to the organization.

Dry cell batteries (10), Fluorescent lamps (10), Incandescent lamps (10), Watt-hour meters (100), Distribution transformers (100), Lighting fixtures (60), Electric motors (60), Electric fans (90), 600 cc pick ups and vans (30), X-2000 jeeps (100), T-2000 light trucks (80), 6.5 ton trucks (80), 33 passenger buses (100), Pumps (10), and Diesel electric generators (70).

Of the state corporations that use the products of HIC, Electric Power Corporation (EPC), Road Transport Corporation (RTC), and Timber Corporation (TC) are the large users.

a) Electric Power Corporation (EPC)

At the same time that they are a user of the watt-hour meters and distribution transformers, this corporation is also in charge of planning of electric supply which affects the demand for every kind of electrical equipment. EPC will increase the electric generation capacity at the rate of 10% per annum and plan to achieve a capacity which is 2.6 times of the present capacity in 10 years. HIC has set its estimates for demand for electrical equipment on the basis of this plan.

b) Road Transport Corporation (RTC)

This corporation operates three departments; the Haulage Department which handles truck freight transportation throughout the country (with a stock of 2,800 vehicles of which 1,500 are in operation), the Passenger Service Department which handles the regular bus service in Rangoon City and on the trunk line roads (with a stock of 1,300 vehicles of which 350 are in operation), and the Taxi Service Department which handles the taxi transportation in Rangoon City (with a stock of 400 vehicles of which 160 are in operation). This is a large user of both the heavy and light vehicles manufactured by HIC. The ratio of vehicles in operation to those in stock is low due to the limited number of operable vehicles. There are a number of vehicles that have become inoperable due to the shortage of spare parts, while there are those that have expired their lives. Each vehicle pool has a repair shop, but as there is a shortage of spare parts, complete repairs are inhibited.

c) Timber Corporation (TC)

Teak, as well as rice, is Burma's main export. This corporation has approximately 2,000 trucks in stock and is responsible for all stages from logging to the shipment of timber from the exporting ports. Of the trucks in stock some 1,500 are the TE-11 or TE-21 model produced by HIC. However, of these only about half (750) are in operation, about 600 are inoperable because of lack of spare parts, and the rest, and about 150 are those that have expired their lives.

In addition to the general repair shops in each state and district, there are a large number of repair centers. Therefore, should the supply of spare parts be adequate, it would be possible to increase the vehicle operating rates.

2) Supply of Agricultural Machinery and Equipment

As indicated below, a major portion of the agricultural machinery and equipment is sold to the Agricultural Mechanization Department (AMD), but there is a small portion sold to the Agricultural Corporation.

Pumps (80), Power Tillers (100), Threshers (100)

AMD promotes the research and development of agricultural machinery, equipment and tools which meet the conditions of Burmese farming. It has tractor stations in 90 locations with a total stock of 5,000 tractors and lends them along with the agricultural machinery, equipment and tools to the farmers. In addition this department has set up repair shops for agricultural machinery, equipment and tools, where workshop training and counseling services are provided to farmers. AMD sells pumps, tillers and threshers via these stations to farmers. Also the Agricultural Corporation purchases the agricultural machinery for its uses directly from HIC.

(2) Sales to the Private Sector

1) Sales through the Central Cooperative Society (COOP)

The products sold to the general consumers through COOP are as follows:

Dry cell batteries (75), Fluorescent lamps (75), Incandescent lamps (75), Lighting fixtures (30), T-2000 light trucks (20 - for private use), 6.5 ton trucks (20 - for private use)

COOP has sub-organizations comprising 14 societies on the state and district level, 298 societies on the township level, and approximately 20,000 societies on the primary level. The products of HIC and the eight other Industrial Corporations are sold throughout Burma via this organization. The total turnover for 1986 was 830 million Kyats. A list of the items handled and photographs of samples are distributed among the local cooperatives and the members place orders on the basis of this list. The payment is on a cash-on-delivery basis.

2) Sales through the Trade Corporations

The Trade Corporations that handle the products of HIC are the Construction and Electrical Stores Trade Corporation (C & ESTC) and the Vehicle and Machinery Stores Trade Corporation (V & MSTC).

a) C & ESTC

C & ESTC has sales outlets in 19 locations throughout Burma and handles sales of construction materials and supplies and electrical equipment.

The products handled by C & ESTC are as follows:

Dry cell batteries (15), Fluorescent lamps (15), Incandescent lamps (15), Lighting fixtures (10), Electric accessories (100), Electric fans (10).

b) V & MSTC

V & MSTC has sales outlets in 25 locations throughout Burma and a large number of repair shops. It handles spare parts for vehicles, components, motors, pumps and portable diesel generators. The products handled by the V & MSTC are as follows:

Motors (40), Pumps (10), Portable diesel generators (30), 600 cc pick ups and vans (70 - for taxi or private use).

3) Direct Sales by HIC

HIC has their own sales outlets in Rangoon and sells dry cell batteries, fluorescent lamps, tools and spare parts.

The supply of each product of HIC to the main dealers and users is shown in Table 2.1-1.

Table 2.1-1 DISTRIBUTOR/USER OF HIC PRODUCTS, AND DISTRIBUTION RATE BY CHANNEL

(Unit: %)

	Distributor/ User / Products	Government Organizations	Cooperative Society	Construction & Electrical Stores Trade Corp.	Vehicle & Machinery Stores Trade Corp.	Electric Power Corp.	Road Transport Corp.	Timber Corp.	Agricultural Mechanization Dept.	Agricultural Corp
Electric Products	Dry Cell Batteries	10	75	15						
	Fluorescent Lamp	10	75	15						
	Incandescent Lamp	10	75	15						
	Lighting Fixture	60	30	10						
	Electric Accessories			100						
	Electric Fan	90		10						
	Electric Motor	60			40					
	Watt Hour Meter					100				
	Distribution Transformer					100				
Light Vehicle	600cc Vehicles	30			70		*			
	2000cc Vehicles	90	10							
Heavy Vehicle	6.5-ton Truck Series	#	20				#	#		
	33 Passenger Busses						100			
Agricultural Machinery	Power Tiller								90	10
	Thresher								100	
	Water Pumping Set	10			10				80	
	Portable Diesel Generator	70			30					

Notes: *: Negligibly small percent
#: 80%; Detail is not available.

Source: HIC

2-2 Price Mechanism of Manufactured Products

2-2-1 Pricing Policy of the Government

Each Industrial Corporation is specialized in the range of products it manufactures, and so there is no competition between the different corporations, each manufacturing its products exclusively. As described in Section 2-1-1, imports are limited and therefore there is no competition with the products imported in a regular way. The production of various products is controlled by the Government, and prices of the products are also controlled. The principal objectives of this control are reduction of production costs and stability of the prices of the products.

The Economic Coordination Committee (ECCOM), formed by the competent ministers of the Government, using the Pricing Committee, an ad hoc committee, as an examining institution, checks and passes the final decision on the price proposals submitted by the industrial corporations through the competent ministry of industry.

2-2-2 Procedures for Controlling Prices

HIC is one of the SEEs, and operates as a self-supporting entity on the prices and budget approved by the Government. When HIC needs a revision of price, they will submit a "Cost Allocation Sheet" and a "Cost Review Sheet" to the Pricing Committee through the Ministry of Industry (2), who are the competent ministry. The final proposal prepared by the committee after checking and adjusting the original proposal, is submitted to ECCOM and approved. Up to 1972, there was almost no need for revision of the prices, but after 1972, fairly frequent revisions were necessary because of the fluctuation in the prices of the raw materials and the foreign exchange rate. The price revision taken place in 1987, approved a price increase in the range of 10 to 15%. Looking at the Cost Allocation Sheet, the total annual production cost arrived at by adding the raw material costs, labor costs, fixed costs, variable costs, administrative expenses and other expenses based on the annual planned production, is divided by the planned annual production which gives the unit manufacturing cost per product (referred to as Prime Cost). To the Prime Cost are added the regular HIC

profit and margin and the excise tax, which results in the ex-factory price. HIC sells its products to the distribution organizations or the users at this ex-factory price as a rule. The distribution organizations that purchased from HIC formulates the selling price to the general consumers by adding the excise tax that is imposed on the distribution organizations, and the storage costs, freight, distribution service fees, other expenses and the regular profit and margin to the ex-factory price of HIC. Such price to the general consumers is also subject to the approval of ECCOM.

2-2-3 Market Price and Demand

Consumers' goods are sold from HIC to the cooperatives or the two specialized trade corporations, C & ESTC and V & MSTC, who finally sell them to the general consumers. Producers' goods are sold from HIC directly to the users. Table 2.2-1 shows the HIC ex-factory prices for the main products produced by the Four Industrial Projects and the official sales prices to the general consumers of the products listed which are handled by the above mentioned specialized trade corporations. As may be seen from the table, the sales prices of motors and pumps to the general consumers are higher by 47% and 161%, respectively, as compared to the HIC ex-factory prices, but for the other products the prices to the general consumers are set at around 10 to 20% higher than the ex-factory prices.

A portion of the electrical products sold by C & ESTC and the cooperatives pass into the hands of the private retailers and are sold on the general market. Also sold are the electrical products that entered the country from the neighboring countries through the border trade. For these products the findings of the survey conducted by HIC are shown in Table 2.2-2. The electrical products from the neighboring countries are sold at prices fairly higher than the official prices, but the products of HIC sold on the market are priced higher than the foreign products. Table 2.2-3 shows HIC's share of the supply estimated on the electrical products and the sales prices of these products on the market in contrast with the HIC ex-factory prices. Comparing the price ratios shown in this table with the ratios between the official prices of C & ESTC to the general consumers and the HIC ex-factory prices as shown in Table 2.2-1, the general market pri-

Table 2.2-1 HIC'S EX-FACTORY PRICES AND OFFICIAL SALES PRICES FOR CONSUMERS OF HIC'S PRODUCTS

(Unit: Kyat)

Products	Ex-factory Prices (A)	Official Sales Prices for Consumers (B)	B/A
Dry Cell Batteries (UM-1)	3.15	3.55	1.13
Fluorescent Lamp (40W)	31.30	37.25	1.19
Incandescent Lamp (60W)	7.15	7.80	1.09
Lighting Fixture (LF-F41)	279.70	323.00	1.15
Electric Motor (EC-FB-4P)	1,126.45	1,658.40	1.47
Electric Accessories (W-1803)	5.00	6.10	1.22
Pump (4", SC4C)	3,512.20	9,184.15	2.61
Generator (BSK-140)	14,192.35	16,998.500	1.20
Electric Fan (40XP)	1,285.55		
Watt Hour Meter (TE-1)	653.85		
Transformer (6.6kV/0.4kV, 300kVA)	206,977.95		
600cc Pick-up (BEA-33L)	67,093.35		
2000cc Cross-country (XV-1)	172,651.70		
6.5-ton Truck (TE-21 AZ)	248,986.20		
33 Passenger Bus (BX-402)	809,223.35		
Power Tiller (KMB 200)	22,364.60		
Thresher (ATA 45)	9,364.30		

Notes: (A) HIC's ex-factory prices
(B) Official sales prices of C & ESTC and V & MSTC for consumers

Source: HIC

Table 2.2-2 PREVAILING UNOFFICIAL PRICES AT MARKETS OF HIC'S PRODUCTS AND SIMILAR PRODUCTS MADE IN NEIGHBORING COUNTRIES

(Unit: Kyat)

Products	HIC's Products	Similar Products Made in Neighboring Countries
Dry Cell Batteries (UM-1)	5.5	4.0 (China)
- ditto -		5.0 (Thailand)
Fluorescent Lamp (40W)	120.0	90.0 (Thailand)
Incandescent Lamp (40W)	7.0	6.5 (China)
Electric Accessories (Sample)	20.0	12.0 (India, Taiwan)
Electric Fan (Stand Type)	3,600.0	3,400.0 (Thailand)

Note: The countries indicated in parentheses mean the supply sources of those products.

Source: HIC

Table 2.2-3 COMPARISON BETWEEN HIC'S EX-FACTORY PRICES AND UNOFFICIAL PRICES PREVAILING IN MARKETS: HIC'S ELECTRICAL PRODUCTS

(Unit: Kyat)

Products	Share of HIC's Products in Total Supply (%)	HIC's Ex-factory Prices (A)	Unofficial Prices Prevailing in Markets (B)	Rate (B/A)
Dry Cell Batteries (UM-1)	50	3.15	5.5	1.75
Fluorescent Lamp (40W)	10	31.30	120.0	3.83
Incandescent Lamp (40W)	50	6.25	7.0	1.12
Electric Accessories (Sample)	5	4.00	20.0	5.00
Electric Fan (Stand Type)	3	1,286.55	3,600.0	2.80

Source: HIC

ces are higher than the official prices of C & ESTC in any of the cases. The price differentials vary fairly from product to product, but the general market prices for such products as fluorescent lamps and electric accessories, for which HIC's share of the supply is low, are 3 to 4 times of the official prices to the general consumers. Even for the products for which HIC has a high share of the supply such as dry cell batteries and incandescent lamps, the general market prices are 10 to 50% higher than the official prices to the general consumers. The fact that these products sell even at these high general market prices implies how strong the demand of the general consumers is for these products.

2-3 Demand and Distribution Conditions by Specific Products

The record of shipment of products of the Four Industrial Projects for 1984/85 through 1986/87 is shown in Table 2.3-1. The demand and the current situation of HIC's supply of agricultural machinery, vehicles and electrical products are described below. Also, for the products supplied by HIC, the rate of HIC's supply to the demand and the potential demand as estimated by HIC and other related organizations are shown in Table 2.3-2.

2-3-1 Agricultural Machinery

(1) Outline

As already mentioned in Chapter 1, in order to promote expansion of the agricultural production, the Government proceeds with the promotion of double cropping in order to further advance the intensive use of the present cultivated land and the expansion of the area of cultivated land by developing idle or uncultivated land.

In order to succeed with the double cropping it is particularly necessary to establish a system of well-timed agricultural operations from the harvesting of the main season crop to the sowing of the off-season crop. Generally, the main season crop is paddy rice. In the case of the local varieties which had been cultivated, the period from planting to harvesting is long taking some 170 days, and 145 days at shortest depending on the variety. However, with the WTP Program for

Table 2.3-1 SHIPMENTS OF HIC'S PRODUCTS PRODUCED AT FOUR INDUSTRIAL PROJECTS

(Unit: units)

Products	Shipments				
	1984/85	1985/86	1986/87	Average for the Three Years	1987/88 *)
Dry Cell Batteries	18,913,768	19,641,449	14,221,704	17,592,307	11,279,800
Fluorescent Lamp	431,198	454,260	421,720	435,726	375,840
Incandescent Lamp	3,464,796	3,366,100	2,944,700	3,258,532	1,357,400
Watt Hour Meter	28,849	24,925	26,000	26,591	18,254
Lighting Fixture	72,889	78,550	72,800	74,746	200
Electric Motor	1,074	750	1,475	1,100	647
Distribution Transformer	60	193	340	198	189
Electric Accessories	848,056	887,248	840,620	858,641	549,150
Electric Fan	3,812	2,000	3,027	2,946	1,466
600cc Vehicle	335	400	433	389	350
2000cc Vehicle	398	530	576	501	283
6.5-ton Truck Series	615	755	552	641	335
33 Passenger Bus	-	-	14	5	20
Water Pumping Set	4,200	4,627	4,920	4,582	2,767
Power Tiller	393	190	270	284	250
Thresher	108	117	505	243	100
Portable Diesel Generator	234	170	331	245	227

Note: *) April through December only.

Sources: HIC

Table 2.3-2 SUPPLY AND ESTIMATED DEMAND OF HIC'S PRODUCTS

(Unit: Units)

Products	Average Yearly Production (1984-1986)	Supply Rate of HIC Estimated by:		Estimated Average Demand in 1984-1986	
		HIC	Distributors/ Users	Supply Rate Assumed by HIC for Estimating Planned	Estimated Demand
	(A)	(B)	(C)	(D)	(E)
Dry Cell Batteries	17,592,000	75%	34%/25%	50%	36,000,000
Fluorescent Lamp	436,000	25%	25%/ 5%	10%	4,400,000
Incandescent Lamp	3,259,000	50%	80%/50%	50%	6,600,000
Watt Hour Meter	26,600	60%	90%/ -	90%	30,000
Distribution Transformer	200	70%	57%/ -	57%	350
Lighting Fixture	74,700	60%	5%/ -	11%	670,000
Electric Motor	1,100	10%	10%/ -	10%	11,000
Electric Accessories	859,000	10%	5%/ -	5%	17,000,000
Electric Fan	2,950	50%	less than 1%/-	3%	100,000
600cc Vehicle	400	50%	-	50%	800
2000cc Vehicle	500	50%/70%	-	37%	1,350
6.5 ton Truck Series	640	50%	-	50%	1,300
33 Passenger Bus	(5)*	50%	-	(10%)	50
Water Pumping Set	4,600	80%	60%/10%	42%	11,000
Power Tiller	284	80%	80%/ -	80%	400
Thresher	243	50%	50%/ -	50%	500
Portable Diesel Generator	245	50%	10%/ -	23%	1,100

Note: * Started production in 1986.

Source: A: "Production Data for 3 Years" (HIC)
B: HIC
C: Interview with main distributors and users
D,E: Study estimate

the introduction of the high yield improved varieties of paddy rice it is possible to harvest in 110 to 120 days. As a result, if the preparation for the second crop proceeds satisfactorily after the harvest of the first crop, the sowing of the seed for the second crop is possible while there is still sufficient moisture in the soil for the seed to germinate. The appropriate time for the sowing of the second crop is not later than the middle of December, for after this period the moisture in the soil decreases, the soil temperature drops, and the soil conditions become unfavorable for seed germination. Therefore, the sowing of the seeds for the second crop has to be completed by this time.

However, even with the introduction of the high yield improved varieties of paddy rice having a shorter growing period, the harvest time for paddy rice, the main season crop, is from October to the end of November, so that the time left for planting of the second crop is very limited. A possible solution to this problem is either planting of paddy rice to finish within a short period or to end the harvesting operations within a short time. Paddy planting depends largely on the labor of migrant agricultural workers from the North of Burma. Since all paddy fields are rainfed fields, not only is it unstable because the planting is dependent on the weather, but also the migrant workers would move into other regions if the planting of paddy cannot be done on time and there would waiting till they are finished there, which means extra delay in planting. Harvesting is done in cooperation with neighbors but cannot take place if the soil is not dry enough, and when the harvest of one farm is delayed this not only leads to delay in harvesting by other farmers in the region because labor cannot be organized and gathered but it also has an adverse effect on the yield and quality because of over-heating of the rice. Such being the situation, the Government is aggressively promoting the mechanization of such work in order to improve the unstableness of the time for planting and harvesting. As the Burmese soil, especially in the central dry region, is clayey and becomes extremely hard in the dry season, the use of livestock powered ploughing methods is difficult. Therefore ploughing is begun after the rains begin to fall in the rainy season. This has been traditionally done by cattle, but for the

above reasons together with the difficulty of obtaining suitable fodder grasses the use of machinery is widespread nowadays.

For this purpose AMD has tractor stations in the main districts and lends tractors and power tillers to farmers. Further, to undertake double cropping it is necessary that ploughing is done in a short time after the harvest of the main season crop and for this also the use of tractors and power tillers are effective.

In order to expand the area of cultivated land the provision of irrigation facility is necessary and a small type pump is increasingly used for small scale irrigation in the rainy season.

Despite the fact that the mechanization of agriculture is an essential factor in the development of agriculture in Burma, the agricultural machinery supplied now are inadequate in both type and number because of restricted production capacity and difficulty of importing.

The present situation of supply and demand regarding the agricultural machinery produced by HIC is described in the subsequent section.

(2) Demand for the Individual Products and Their Distribution

1) Power Tiller

The average annual production for the past three years (1984/85 - 1986/87) was 280 units, of which 90% were supplied to AMD and the remaining 10% to Agricultural Corporation. Almost all of the power tillers supplied to AMD is for lending to the farmers, but a portion is sold to farmers and cooperatives.

It is estimated that the demand filled by the supply of HIC is about 80%. AMD, however, points out that the farmers cannot afford the high price, e.g., the ex-factory price of 22,000 Kyats and that the model now produced is difficult to use because of the heavy weight of 395 kg with the engine. HIC is studying to improve it into a more simplified and lighter model.

2) Thresher

The average annual production for the past three years (1984/85 - 1986/87) was 240 threshers all supplied to AMD. The supply by HIC to the market is estimated to be 50% of the demand. For the years of 1984/85 to 1985/86 the production was only 100 threshers per annum which suddenly increased to 505 in 1986/87. Before 1987, farmers had to sell all of the rice grains harvested compulsorily to the Government via the Agricultural Corporation in the unthreshed form and therefore they did not use threshers. However, there was a change in the system in 1987, since when farmers were free to sell a portion of the rice to the market in the areas of surplus rice. Thus, farmers came to buy threshers to thresh the rice by themselves and this produced a rapid increase in demand for threshers.

3) Water Pumping Set

The average annual production for the past three years (1984/85 - 1986/87) was 4,000 sets of the SC4C model and 600 sets of the SV0102KB model. Of these about 80% were supplied to AMD for agricultural use including irrigation, and about 10% were sold to government organizations for purposes of water pumping. The remaining 10% were sold to the private sector via V & MSTC.

In view of the importance of the water pumping sets for agricultural use, HIC is placing importance on the production of agricultural pumping sets, but according to the explanation of AMD, HIC supplied about 3,000 sets against AMD's requirement for about 5,000 sets, which was a supply of only 60% of the requirement. Also, V & MSTC estimates that the supply of pumps through the corporation for use by the private sector met only about 10% of the demand of the private sector. Judging from the rate of HIC's supply to the demand, the potential demand for pumps would be estimated even at this date to be around 11,000 sets per annum.

In addition to the above-mentioned two types, HIC is planning to produce the large diameter pumps (6 and 8 inches) and the small diameter pumps (2 and 3 inches). The former was developed for uses in the

large scale irrigation by AMD, in the salt fields by the Salt Industry Corporation, in aquaculture of shrimps by the Peoples Pearl and Marine Products Corporation and in jute cultivation by the Jute Industry Corporation, and the manufacture of test products was started in 1986. Development of the latter is scheduled to start in 1988 for agricultural use and for water supply in the urban areas.

4) Portable Diesel Generator

The average annual production for the past three years (1984/85 - 1986/87) was about 250 generators per annum of which 70% were supplied to government organizations and the remaining 30% were supplied to the farmers and the small- and medium-scale industry via V & MSTC.

The demand is extremely strong in the rural areas where electrification has not progressed and V & MSTC estimated the percentage of the demand of the farmers and the small- and medium-scale industry met by the corporation to be about 10%. On the other hand, the percentage of the demand of the government organizations satiated by HIC is estimated by it to be 50%. Judging from the rate of the HIC's supply, the total annual demand is estimated to be around 1,100 generators.

As the BSK120 with a generating capacity of 2 kVA and the BSK140 with a 4 kVA capacity have only a 25% difference in price, there is a tendency for users to prefer the BSK140 because of its two-fold generating capacity.

2-3-2 Light and Heavy Vehicles

(1) Outline

There is no statistical data to analyze the total requirement of transportation for passengers and freight and the adequacy of the existing vehicles, but it is conjectured that a substantial shortage exists. It appears furthermore that provision of emergency vehicles such as ambulances and fire engines is inadequate.

Because of such a situation, HIC expects an expansion in the production of vehicles under the Four Industrial Projects.

Further, as there are many vehicles left inoperable because of a lack of spare parts, the shortage of vehicles is aggravated. In addition to the supply of new vehicles, HIC expects this project to supply the spare parts to repair the vehicles now in use in Burma.

(2) Light Vehicles

At present there are approximately 117,000 vehicles of various types which are registered in Burma. This means that there are 3.2 vehicles per 1,000 population. Looking at the rate of vehicles held per 1,000 population in the countries surrounding Burma according to the U.N. World Road Statistics, Thailand shows 20.6 units, Pakistan, 3.2 units and Nepal, 1.9 units. Burma is comparable to Pakistan, and is in a very inconvenient state compared with Thailand.

As has already been stated, the Government approves of the individuals who worked abroad and earned foreign exchange to bring into the country vehicles that they purchased abroad. The fact that a large number of vehicles are brought in under this system is evidence of the shortage of supply.

The following is a summary of the supply and demand situation for each of the vehicles produced by the Four Industrial Projects.

1) 600 cc Pick Up and Van

The average annual production for the past three years (1984/85 - 1986/87) was 400 units, of which 30% were supplied to the government organizations and the remaining 70% sold to the private sector via V & MSTC. Of the vehicles sold to the private sector, it is estimated that about 50% are for use as taxis and the remaining 50% for private use.

HIC estimates that the percentage of demand met by the present supply to be about 50%. From the rate of HIC's supply, the potential annual demand is estimated to be about 800 vehicles.

2) 2,000 cc Cross Country and 2-ton Light Truck

The average annual production for the past three years (1984/85 - 1986/87) was about 220 cross country vehicles and 280 2-ton light trucks. All of the cross country vehicles were supplied to government organizations. About 20% of the 2-ton light trucks were supplied to cooperatives for delivery use, and the remainder was supplied to government organizations. Supply to the private sector did not take place.

HIC estimates the rate of supply by HIC to the demand of the government organizations to be 50% for the cross country and 70% for the 2-ton light trucks. Judging from the rate of the HIC's supply, the current estimated demand for the cross country is about 450 per annum and about 400 for the light truck per annum.

These estimated potential demands do not include that of the private sector. Judging from the fact that there are at present some 82,000 foreign-made cars on the road in Burma, one would estimate that there would be a private sector demand of some 500 vehicles per annum.

(3) Heavy Vehicles

Unlike light vehicles, users and usages in the case of heavy vehicles are fixed. The main users and usages are the Road Transport Corporation (trucks for general freight and buses), the Timber Corporation (logging trucks), the Ceramic Industry Corporation (bulk carriers for cement), the Mining Corporations (1) to (3) and the Construction Corporation (dump trucks), the Petrochemical Industry Corporation (tank lorries), and the local governments (fire engines, water trucks, buses).

1) 6.5 ton Truck Series

HIC produces, in addition to ordinary type trucks with the 140 horsepower DS70 type engine, special specification vehicles including dump trucks, tank lorries, water trucks, logging trucks, fire engine, bulk carriers for cement, etc., by modifying the bodies using the aforementioned truck as the basic model. The annual average production for the period from 1984 to 1986 was 640 per annum. Eighty percent of these vehicles were supplied to government organizations such as the Road Transport Corporation and the Timber Corporation, and the remaining 20% were supplied to COOP for delivery use.

HIC estimates the rate of HIC's supply to the demand to be approximately 50%. Judging from this rate, demand for trucks centered on the demand from government organizations was estimated to be about 1,300 units per annum. Demand for large trucks is increasing with the improvement of road conditions.

2) Passenger Buses (25- and 33-passenger buses)

BX-402 33-passenger bus was first produced in 1986 in a batch of 14 units. In the nine month period of 1987 from April to December, 20 units were manufactured. RTC already operates this model in their long distance service to meet the increasing inter-city transportation. The public transport organizations of Mandalay, Pegu and other large cities also placed orders on this model of buses.

HIC estimates that the rate of supply by HIC to the demand of the buses to be about 50%, and judging from such rate the potential annual demand is estimated to be about 50 vehicles.

Up to this time, HIC has manufactured the BM-600 25-passenger bus, but compared to this, the 33-passenger bus has the advantages of increase in seating capacity by 30% and the possible use of the same DS70 engine as the 6.5 ton truck series which will drastically enhance the level of the domestic production. For such reasons, HIC plans to hold the production of the BM-600 25-passenger bus at the present level and to increase the production of the BX-402 33-passenger bus.

(4) Spare Parts for Vehicles and Agricultural Machinery

Table 2.3-3 shows the road transportion for the five years from 1981/82 to 1985/86. There was no substantial increase of the transportion volume for either trucks or buses. The reason is that the number of actual operating vehicles cannot be increased because of deterioration or inoperability due to lack of spare parts. An increase in the transportion capacity must be realized through provision of spare parts and repairs of vehicles along with the increase of new vehicles.

The annual demand for the main spare parts required by RTC are 2,400 cylinder liners, 800 piston pins, 50 rear axle shafts, 100 drive pinion pins, 1,000 disk wheels, 100 radiators, 1,500 transmission gears.

The only spare parts for vehicles and agricultural machinery that HIC produces and sells at present are piston rings and bolts/nuts to be used on the vehicles and agricultural machinery produced and sold by HIC.

HIC is planning to produce cylinder liners, piston pins and other items listed hereunder not only to be used as parts for the assembly of vehicles and agricultural machinery but also to be supplied externally as spare parts. According to the forecasts of HIC, the demand for these parts as of 1998 are as follows:

a) Cylinder Line

DS70 Diesel Engine	1,400 x 6 (cylinders) =	8,400
Marine Engine	500 x 6 (cylinders) =	3,000
H07 Diesel Engine	500 x 6 (cylinders) =	3,000
X2000 and T2000 Engine	1,600 x 4 (cylinders) =	6,400
KND5B Diesel Engine Generator		7,600
KND7B Diesel Engine Generator		3,500
Tractor Engine	1,200 x 4 (cylinders) =	4,800
Sub-total		36,700
Spare Parts		33,300
Total		70,000

Table 2.3-3 TREND OF ROAD TRANSPORT

Year	Cargo by Truck		Passenger by Bus	
	Thousand Ton Mile	Growth Rate (%)	Thousand Ton Mile	Growth Rate (%)
1981	14	115	836	114
1982	157	109	771	92
1983	148	94	717	93
1984	171	116	687	96
1985	153	89	829	121

Source: "Report to the Pyithu Hluttaw"

b) Piston Pin

Spare Parts (assumed one half of piston production)	80,000
Spare Parts (Replacement demand)	10,000
Total	90,000

c) Rear Axle Shaft

Light and Heavy Vehicles (1,750 + 2,300 = 4,050) x 2	8,100
Spare Parts	900
Total	9,000

d) Drive Pinion Gears

Light and Heavy Vehicles (1,750 + 2,300 = 4,050)	4,050
Spare Parts	950
Total	5,000

e) Gear for Engine and Transmission

No concrete demand forecast at this time.

f) Rear Axle Housing

Light and Heavy Vehicles (1,750 + 2,300 = 4,050)	4,050

g) Radiators

Light and Heavy Vehicles (not used on pick ups)	3,750
Air Conditioner	500
Total	4,250

h) Disc Wheel

Truck, Bus	1,750 x 7 (wheel) =	12,250
X-2000, T-2000	1,500 x 5 (wheel) =	7,500
Sub-total		19,750
Spare parts		5,250
Total		25,000

2-3-3 Electrical Products

(1) Introduction

As mentioned previously, emphasis in development of the electric power is on industrial use, and the electrification of household sector is extremely tardy. Nevertheless, there is a general shortage for electrical products even for essential items such as sockets for household electric use, etc.

(2) Household Electrical Appliance Products

Major portion of household electrical appliances are by nature sold to the private sector but lighting fixtures and electric fans are largely sold to government organizations for office use. The reason why the demand for these two products being largely from the government organization is that, due to the limited supply, priority is given to the state sector.

Sales to the private sector are through COOP or C & ESTC. All of the electrical appliances, produced by HIC are short of the demand and the shortage is filled by similar products that entered the country from the neighboring countries through the border trade.

1) Dry Cell Batteries

The average annual production for the past three years (1984/85 - 1986/87) was 18 million pieces of which 10% was supplied to the government organizations and 75% was sold through COOP and 15% through C & ESTC to the general consumer.

HIC estimates the percentage of demand supplied by HIC to be approximately 75%. On the other hand, COOP estimates the potential annual demand for dry cell batteries in the country to be 40 million pieces, and the supply of 13.5 million pieces by COOP represents 34% of the estimated potential demand.

Furthermore, C & ESTC estimates that the supply by HIC fills 25% of the demand. Thus the estimated demand varies according to the distri-

bution organization making the estimate, but except for the estimate of HIC, they agree in seeing a high level of insufficient supply. Assuming that the percentage of demand filled by the supply of HIC is 50%, the annual potential demand would be estimated to be approximately 36 million pieces per annum.

In 1986, Thailand, whose average per capita GNP*1) was approximately 5 times to that of Burma, produced some 355 million dry cell batteries which was ten times larger than the potential demand of Burma as estimated above.

Even considering that Thailand exports to neighboring countries and that their electrification is more advanced than Burma, the potential demand of Burma indicated above is a reserved estimate compared to Thailand.

2) Fluorescent Lamps

The average annual production for the past three years (1984/85 - 1986/87) was approximately 440,000 lamps, of these 10% were supplied to government organizations, and 75% were sold through COOP and 15% through C & ESTC to the general consumers.

HIC estimates that the percentage of demand filled by HIC was about 25%, and C & ESTC takes a similar view. COOP, however, estimates the potential demand for the fluorescent lamps nation-wide to be about 8 million lamps and holds the view that the percentage of demand filled by HIC would not be more than 5%. COOP has more than 20,000 sub-organizations throughout the nation and their estimates are based on data gathered from these local cooperatives. Because of the extreme shortage, their figure could contain speculative demand. Assuming that the percentage of the demand filled was 10%, the potential demand would be estimated to be approximately 4.4 million lamps.

Note: *1) GNP per capita Burma US$180
Thailand US$860

Source: The World Bank, World Development Report (1986)

The production of fluorescent lamps in Thailand in 1986 was about 14 million pieces. Considering that the average per capita GNP of Burma is, as mentioned before, about one-fifth of that of Thailand and the rate of electrification in Burma is also about one-fifth *1) of that of Thailand, and assuming that the demand in Burma is about one-fifth of the production in Thailand, the demand in Burma would be at least 2.8 million lamps per annum.

3) Incandescent Lamps

The average annual production for the past three years (1984/85 - 1986/87) was approximately 3.3 million lamps and the ratio of sales through the various distribution channels was similar to that of the fluorescent lamps with 10% to government organizations and 90% to the general consumers (75% through COOP and 15% through C & ESTC). According to HIC the demand filled by the present supply of HIC is estimated to be 50%. On the other hand, C & ESTC holds the view that the percentage of the demand filled by the supply of HIC is 80%. COOP, however, estimates the total national demand to be 6 million lamps, HIC filling no more than 50% of the demand. Assuming that the percentage of the demand filled was 50%, the potential demand would be estimated to be 6.6 million lamps per annum.

The 1986 Thailand production was 25 million and assuming the domestic demand for Burma to be one-fifth of that of Thailand, the potential demand would be estimated to be at least 5 million pieces per annum.

4) Lighting Fixtures

The average annual production for the past three years from 1984/85 to 1986/87 was about 75,000 pieces, of which about 60% was supplied to government organizations and the remaining 40% was supplied to the general consumers (30% through COOP and 10% through C & ESTC).

Note: *1) Source "Asian Electric Power Utilities Data Book (1985)", ADB

HIC estimates that the percentage of demand filled was 60%. Against this, both COOP and C & ESTC estimate that the present supply by HIC is around 5%.

From the percentage of the demand filled by the present supply as estimated by COOP and C & ESTC, it is estimated that the potential demand of the private sector is 600,000 pieces per annum. In addition, the demand of the government organizations is estimated to be 70,000 pieces, using the figure of 60%, the percentage of demand filled by the present supply as estimated by HIC above. Thus the total potential demand is estimated to be 670,000 pieces per annum.

5) Electric Accessories

The average annual production for the past three years (1984/85 - 1986/87) was approximately 860,000 which was all sold through C & ESTC.

HIC estimates the percentage of demand filled by the present supply to be 10%, but C & ESTC estimates the percentage of demand filled by the present supply to be around 5%. From the estimate of the latter, the potential demand is estimated to be about 17 million pieces per annum.

6) Electric Fans

The average annual production for the past three years from 1984/85 to 1986/87 was about 3,000 electric fans. Of these about 90% were supplied to government organizations and only 10% were supplied to the general consumers. All sales to the general consumers is handled by C & ESTC.

HIC estimates the percentage of demand filled by the present supply to be 50%, but C & ESTC estimates that there is an annual demand of 100,000 electric fans per annum, and therefore considers that the present supply by HIC fills less than 1% of the demand.

The production of electric fans in Thailand for 1986 was approximately 519,000. Being in the same climate zone, it is easy to surmise that there is a large demand for electric fans in Burma too. Assuming the

demand is equivalent to one-fifth of the production in Thailand, it is estimated that the demand for electric fans in Burma is at least 100,000 units per annum.

(3) Electric Appliances for Commercial Use

Of the electrical products for commercial use, the watt-hour meters and distribution transformers are indispensable in advancing the development of electric power and maintaining and expanding the power distribution system. Thus HIC is producing these products to adequately meet the requirements in accordance with the Power Development Program of EPC. The average annual production, however, of motors for agricultural and industrial uses have been only around 1,100 units, of which 60% was supplied to the government organizations and the remaining 40% or about 400 units to the private sector.

1) Watt-hour Meters

The average annual production for the past three years (1984/85 - 1986/87) was about 27,000 units, all of which was supplied to EPC. EPC, as mentioned earlier, does not have any plan to rapidly advance the expansion of distribution system for power supply to the households in general. EPC holds the view that the demand for new watt-hour meters based on the Power Distribution System Expansion Program and the replacement demand for the expired watt-hour meters could be adequately met by a supply of about 30,000 units per annum and the present supply of HIC is estimated to fill about 90% of the demand.

2) Distribution Transformers

The average annual production for the past three years from 1984/85 to 1986/87 was about 200 units, all of which was supplied to EPC. EPC sets its annual requirement at 350 units, and in 1987 HIC produced 340 units.

3) Electrical Motors

The average annual production for the past three years from 1984/85 to 1986/87 was about 1,100 units, of which about 60% was supplied to government organizations, and about 40% was sold to farmers and small and medium private industries through V & MSTC.

HIC estimates the percentage of demand filled by the present supply to be about 10%. From this rate the potential demand is estimated to be 11,000 units per annum.

2-3-4 Component Parts and Spare Parts

(1) Introduction

Industrial Corporations face short supply of component parts and spare parts.

These corporations sent HIC inquiries for manufacture of components and spare parts, in which cases HIC studied the technical aspects and responded to the orders if justified.

(2) Demand Situation by Specific Corporations

The component parts and spare parts which have been supplied by HIC in the past are summarized below.

1) Paper and Chemicals Industries Corporation - PCIC

HIC supplies to PCIC 600 blades yearly used in the cutting of bamboo for paper production. In addition HIC supplies such spare parts as fly knives, pin-type valves, bolts and nuts, washers, and welding bars, and products such as dry cell batteries, fluorescent lamps, tyre inner tubes, etc.

The number of products that HIC supplied to the Corporation in 1986 totalled 76 items made up of 40,000 pieces. Taking for example the hexagonal headed bolts, there are about 30 types varying in diameter and length, and HIC supplied about 15,600 pieces.

2) Foodstuff Industry Corporation - FIC

HIC supplies the cutter knives used for sugar cane in the sugar mills of FIC, and the blades for the tobacco factory, and other spare parts for machines of FIC.

3) Myanma Oil Corporation - MOC

Spare parts for the oil pumps are supplied.

2-3-5 Others

HIC has a record of large exports centered on pumps and its parts, but exports during the last three years have been slight. The only exports were in 1984 of 68,000 pieces of hose collars and foot valves destined for Saudi Arabia amounting to 58,920 U.S. dollars.

Besides exports HIC earned foreign exchange through successful bidding in international competitive bids invited by other SEEs for procurement of machinery and equipment to be used for their projects. Table 2.3-4 shows the performance of HIC in earning of foreign exchange.

Table 2.3-4 FOREIGN EXCHANGE EARNINGS OF HIC FOR 1984 THROUGH 1986

Products	Unit	1984/85		1985/86		1986/87	
		Quantity	Value	Quantity	Value	Quantity	Value
6.5-ton Truck Series	¥	14	61,925,826		15,940,252	-	-
	US$	2	33,406	9*3	335,234	82	572,439
600cc Vehicle	US$	-	-	2	8,114	9	42,922
	DM	-	-	-	-	2	25,656
2000cc Vehicle	¥	5	9,140,155	-	-	-	-
	US$	5	51,598	7	70,254	59	876,436
	DM	-	-	3	63,181	-	-
Water Pumping Set	US$	2	2,349	-	-	-	-
Others	¥		-		19,520,000		-
	US$		82,783*2		24,844		38,122
	DM		-		-		101,358
Total	¥		71,065,981		35,460,252		-
	US$		170,136		438,446		1,529,919
	DM		-		63,181		127,014
Grand Total	US$		453,155		640,577		1,596,768
Exchange Rate*1	¥/US$		251.1		200.5		-
	DM/US$		-		2.5		1.9

Notes: *1 Mid-year rate from "Monthly Bulletin of Statistics" (UN)
*2 Including US$58,920 value of hose collar and foot valve exported to Saudi Arabia.
*3 Spare parts

Source: "Foreign Exchange Income for Financial Year 1984-1987" (HIC)

Chapter 3 PRESENT SITUATION AND MAIN PROBLEMS OF THE FOUR INDUSTRIAL PROJECTS

3-1 Introduction

This chapter describes the organization, activities and financial status of HIC, the current situation of production and production costs of the products of the Four Industrial Projects, the present conditions and main problems of the production facilities related to the Projects and the production control systems practised, and also considers the directions for improvement.

The problems and issues presented in this chapter are based on the analysis of the data and information provided by HIC and the result of factory diagnosis conducted by the Survey Team during their field survey in Burma. According to the S/W, the diagnosis was made on four factories; No.1 HI (Rangoon), No.3 HI (Sinde), No.4 HI (Htonbo) and No.5 HI (Nyuangchidauk), and also on the production facilities and assembly lines related to the products which are the subjects of the Study as defined in the S/W. For example, the bicycle plant of No.1 HI and the storage battery plant of No.4 HI were excluded from the diagnosis, and the diagnosis of No.5 HI was confined to the distribution transformer plant. Therefore, the present situation and main problems of the facilities presented in this chapter are results of the analysis of the facilities which were diagnosed as above-mentioned. Details of the factory diagnosis are described in ANNEX 1 and details of the production control system in ANNEX 2.

3-2 Organization, Outline of Activities and Financial Status of HIC, and Current Situation of Production of the Four Industrial Projects

3-2-1 Organization and Outline of Activities of HIC

(1) Outline of HIC's Activities

The background and outline of HIC have been stated in Chapter 1. HIC has the headoffice in Rangoon and six factories which comprise No.1 HI located adjacent to the headoffice and five factories, No.2 HI to No.6 HI, located in several parts of the country. HIC is engaged in the manufacture of a wide variety of products including heavy and light vehicles, agricultural machinery and equipment, electric and electronic products, machine tools, tractors, tyres, and bicycles. All of these products, as stated in Chapter 2, are supplied to the domestic markets. The main products of HIC are listed below:

1) Light Vehicles: 600 cc pick-up trucks and light vans, 2,000 cc cross country vehicles and 2 ton light trucks

2) Heavy Vehicles: 6.5 ton diesel trucks, 3.5 ton diesel trucks, 25- and 35-passenger buses, rail buses* and special vehicles including tankers, logging trucks, fire engines, etc.

3) Agricultural Machinery and Equipment: tractors*, trailers*, diesel engine pump sets, power tillers, threshers, diesel generators, pesticide equipment, Burmese hoes, hand tools (spanners, screw drivers and hammers), shovels and axes.

4) Electrical and Electronic Products: incandescent lamps, fluorescent lamps, dry cell batteries, watt-hour meters, transformers, storage batteries, electric motors and home electrical appliances (irons, heaters, cookers, refrigerators, air conditioners, electric fans, radios, TVs and various accessories, etc.)

5) Others: machine tools*, bicycles* and welding rods*

Note: * Products not subject to the Four Industrial Projects