THE SOCIALIST REPUBLIC OF THE UNION OF BURMA

FEASIBILITY STUDY

ON

IRRAWADDY RIVER BRIDGE

CONSTRUCTION PROJECT

FINAL REPORT

APPENDIX

MARCH 1987

JAPAN INTERNATIONAL COOPERATION AGENCY

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	At 1985/86 Constant Prices (Kyat in million)				Annual Growth Rates (Percentage)			Percentage Distributions (Percentage)			
	1985/86	1990/91	2000/01	2010/11	1986/87 to 1990/91	1991/92 to 2000/01	2001/02 to 2010/11	1985/86	1990/91	2000/01	2010/11
1. Goods	35,275	46,581	85,585	161,590	5.7	6.3	6.6	61.1	61.5	63.1	64.9
Agriculture	22,434	29,448	51,933	91,826	5.6	5.8	5.9	38.9	38.9	38.3	36.9
Livestock and Fishery	4,352	5,832	11,055	21,356	6.0	6.6	6.8	7.5	7.7	8.1	8.6
Forestry	807	1,044	1,839	3,435	5.3	5.8	6.5	1.4	1.4	1.4	1.4
Mining	661	981	1,977	4,121	8.2	7.3	7.6	1.1	1.3	1.5	1.7
Processing and Manufacturing	5,735	7,522	14,770	31,458	5.6	7.0	7.9	9.9	9.9	10.9	12.6
Power	317	550	1,709	4,853	11.7	12.0	11.0	0.5	0.7	1.3	1.9
Construction	968	1,204	2,303	4,541	4.5	6.7	7.0	1.7	1.6	1.7	1.8
2. Services	8,449	10,824	17,855	31,060	5.1	5.1	5.7	14.6	14.3	13.2	12.5
Transportation	1.987	2,690	4,831	9,135	6.2	6.0	6.6	3.4	3.6	3.6	3.7
Communications	204	379	1,076	2,921	13.2	11.0	10.5	0.4	0.5	0.8	1.2
Financial Institutions	1,313	1,667	2,821	5,004	4.9	5.4	5.9	2.3	2.2	2.1	2.0
Social and Administrative Services	2,762	3,533	5,593	9,111	5.0	4.7	5.0	4.8	4.7	4.1	3.7
Rentals and Other Services	2,183	2,554	3,533	4,889	3.2	3.3	3.3	3.8	3.4	2.6	2.0
3. Trade	14,008	18,300	32,229	56,315	5.5	5.8	5.7	24.3	24.2	23.8	22.6
Gross Domestic Product (at Producers Prices)	57,733	75,705	135,669	248,965	5.6	6.0	6.3	100.0	100.0	100.0	100.0

Note: Totals may not be consistent as the amounts of each component are rounded off.

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Appendix Table 2.2.3.2 GROSS DOMESTIC EXPENDITURE (HIGHER CASE)

	At 1985/86 Constant Prices (Kyat in million)				Annual Growth Rates (Percentage)			Percentage Distributions (Percentage)			
	1985/86	1990/91	2000/01	2010/11	1986/87 to 1990/91	1991/92 to 2000/01	2001/02 to 2010/11	1985/86	1990/91	2000/01	2010/11
1. Consumption, Total	49,839	65,256	115,111	202,705	5.5	5.8	5.8	86.3	86.2	84.8	81.4
2. Gross Domestic Fixed Capital Formation	9,782	12,472	21,531	47,818	5.0	5.6	8.3	16.9	16.5	15.9	19.2
3. Increase in Inventories	193	606	5	1,351	-	-	-	0.3	0.8	0.0	0.5
4. Exports (f.o.b), Total	3,234	4,721	9,639	22,721	7.9	7.4	9.0	5.6	6.2	7.1	9.1
5. (Less) Imports (c.i.f), Total	4,930	6,138	10,607	22,928	4.5	5.6	8.0	8.4	8.1	7.8	9.2
Gross Domestic Expenditure	57,733	75,705	135,669	248,965	5.6	6.0	6.3	100.0	100.0	100.0	100.0

Note: Increase in inventories includes statistical discrepancy.
Totals may not be consistent as the amount of each component has been rounded off.
(Less) means a negative value.

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Appendix Table 2.2.3.3   GROSS DOMESTIC PRODUCT (LOWER CASE)

	At 1985/86 Constant Prices (Kyat in million)				Annual Growth Rates (Percentage)			Percentage Distributions (Percentage)			
	1985/86	1990/91	2000/01	2010/11	1986/87 to 1990/91	1991/92 to 2000/01	2001/02 to 2010/11	1985/86	1990/91	2000/01	2010/11
1. Goods	35,275	43,207	63,585	92,115	4.1	3.9	3.8	61.1	61.1	61.4	61.6
Agriculture	22,434	26,913	38,332	53,345	3.7	3.6	3.4	38.9	38.0	37.0	35.7
Livestock and Fishery	4,352	5,770	9,670	15,751	5.8	5.3	5.0	7.5	8.2	9.3	10.5
Forestry	807	959	1,314	1,766	3.5	3.2	3.0	1.4	1.4	1.3	1.2
Mining	661	994	1,779	3,068	8.5	6.0	5.6	1.1	1.4	1.7	2.1
Processing and Manufacturing	5,735	7,045	10,328	14,997	4.2	3.9	3.8	9.9	10.0	10.0	10.0
Power	317	484	826	1,359	8.8	5.5	5.1	0.5	0.7	0.8	0.9
Construction	968	1,043	1,335	1,829	1.5	2.5	3.2	1.7	1.5	1.3	1.2
2. Services	8,449	10,367	15,190	21,987	4.2	3.9	3.8	14.6	14.7	14.7	14.7
Transportation	1,987	2,483	3,660	5,316	4.6	4.0	3.8	3.4	3.5	3.5	3.6
Communications	204	328	683	1,223	10.0	7.6	6.0	0.4	0.5	0.7	0.8
Financial Institutions	1,313	1,660	2,577	3,927	4.8	4.5	4.3	2.3	2.3	2.5	2.6
Social and Administrative Services	2,762	3,377	4,950	7,188	4.1	3.9	3.8	4.8	4.8	4.8	4.8
Rentals and Other Services	2,183	2,519	3,320	4,333	2.9	2.8	2.7	3.8	3.6	3.2	2.9
3. Trade	14,008	17,179	24,859	35,314	4.1	3.8	3.6	24.3	24.3	24.0	23.6
Gross Domestic Product (at Producers Prices)	57,733	70,752	103,635	149,416	4.2	3.9	3.7	100.0	100.0	100.0	100.0

Note: Totals may not be consistent as the amounts of each component are rounded off.

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Appendix Table 2.2.3.4 GROSS DOMESTIC EXPENDITURE (LOWER CASE)

	At 1985/86 Constant Prices (Kyat in million)				Annual Growth Rates (Percentage)			Percentage Distributions (Percentage)			
	1985/86	1990/91	2000/01	2010/11	1986/87 to 1990/91	1991/92 to 2000/01	2001/02 to 2010/11	1985/86	1990/91	2000/01	2010/11
1. Consumption, Total	49,839	62,717	91,802	130,846	4.7	3.9	3.6	86.3	88.6	88.6	87.6
2. Gross Domestic Fixed Capital Formation	9,782	9,101	11,962	17,251	-1.4	2.8	3.7	16.9	12.9	11.5	11.5
3. Increase in Inventories	193	15	47	182	-	-	-	0.3	0.0	0.0	0.1
4. Exports (f.o.b), Total	3,234	4,128	6,724	10,952	5.0	5.0	5.0	5.6	5.8	6.5	7.3
5. (Less) Imports (c.i.f), Total	4,930	5,178	6,806	9,815	1.0	2.8	3.7	8.4	7.3	6.6	6.6
Gross Domestic Expenditure	57,733	70,752	103,635	149,416	4.2	3.9	3.7	100.0	100.0	100.0	100.0

Note: Increase in inventories includes statistical discrepancy.
Totals may not be consistent as the amount of each component has been rounded off.
(Less) means a negative value.

Appendix Table 2.3.1.1   CLASSIFIED LABOUR FORCE EXCLUDING AGRICULTURE,
                         FOREST AND FISHERY IN THE FIVE DIVISIONS, 1984

No.	Name of Zone	State E[1]	Cooperative	Private E[2]	Owner, Casual	Total
1.	Magwe	63,828	9,151	14,641	94,042	181,662
	5	6,806	822	1,145	5,048	13,821
	6	6,479	880	492	4,650	12,501
	7	21,713	3,292	6,515	32,827	64,347
	8	13,576	1,556	1,405	17,579	34,116
	11	15,254	2,601	5,084	33,938	56,877
2.	Rakhine	22,683	1,992	13,323	85,284	123,282
	9	4,289	383	2,367	12,160	19,199
	15	18,394	1,609	10,956	73,124	104,083
3.	Irrawaddy	69,961	5,695	47,649	169,819	293,124
	1	12,616	1,118	5,654	22,296	41,684
	16	57,345	4,577	41,995	147,523	251,440
4.	Pegu	76,586	6,646	55,751	146,167	285,150
	2	11,857	1,465	20,201	20,411	53,934
	3	19,310	2,008	14,730	53,757	89,805
	4	9,497	257	851	3,154	13,759
	12	35,922	2,916	19,969	68,845	127,652
5.	Mandalay[3]	107,412	13,408	71,699	177,449	369,968
	10	10,364	7,612	8,405	28,438	54,819
	13	97,048	5,796	63,294	149,011	315,149

Source: Department of Labour Fource

Note: 1   State E means state enterprises.
          2   Private E means private enterprises.
          3   Only in Mandalay Division, not incuding Shan State.

Appendix Table 2.3.1.2   1984/85 UTILIZATION OF LAND IN THE DIRECT INFLUENCE AREA

(In Acre)

No.	Zone	Net area sown	Culturable waste land	Fallow land	Reserved forest	Other forest area	Other lands	Total area
1.	Magwe	2,105,433	431,876	624,274	2,483,284	3,055,495	2,375,043	11,075,405
	5	155,926	29,635	30,020	159,635	748,182	44,598	1,167,996
	6	149,984	64,520	15,178	293,298	1,195,936	77,183	1,796,099
	7	766,994	166,630	318,374	347,464	2,896	777,353	2,379,711
	8	384,498	69,805	135,478	993,269	607,023	487,963	2,678,036
	11	648,031	101,286	125,224	689,618	501,458	987,946	3,053,563
2.	Rakhine	951,188	344,241	256,357	413,048	4,495,928	2,627,293	9,088,055
	9	123,997	70,264	15,024	252,428	1,912,380	283,116	2,657,209
	15	827,191	273,977	241,333	160,620	2,583,548	2,344,177	6,430,846
3.	Irrawaddy	3,723,941	632,881	505,012	1,779,758	470,197	1,570,830	8,682,619
	1	438,626	100,127	13,215	564,753	39,628	169,184	1,325,533
	16	3,285,315	732,754	491,797	1,215,005	430,569	1,401,646	7,357,086
4.	Pegu	2,501,257	647,465	325,771	3,318,187	1,077,407	1,866,956	9,737,043
	2	567,522	56,838	39,832	514,980	77,134	199,962	1,456,268
	3	488,247	239,552	16,947	501,181	103,638	261,285	1,610,850
	4	59,107	106,288	127	341,738	19,996	92,253	619,509
	12	1,386,381	244,787	268,865	1,960,288	876,639	1,313,456	6,050,416
5.	Mandalay	2,635,998	380,151	763,840	2,392,120	1,163,712	1,812,801	9,148,622
	10	681,386	21,549	214,355	8,208	239,235	251,328	1,416,061
	13	1,954,612	358,602	549,485	2,383,912	924,477	1,561,473	7,732,561

Source: Land Record Department (February 1986)

Appendix Table 2.3.3.1 GROSS REGIONAL PRODUCT

Annual Growth Rates (1)

(%)

(1) 1986/87 - 1990/91

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Surrounding States/Divisions			Whole Country
									I	II	III	
Agriculture	2.3	4.1	4.0	4.4	4.7	5.0	2.4	4.1	3.0	3.6	3.6	4.0
Livestock, Fishery and Forestry	5.2	5.6	6.2	6.5	6.5	6.3	6.0	3.0	5.6	6.1	4.9	5.8
Mining, Processing and Manufacturing	4.3	5.5	5.6	6.4	6.9	6.5	4.6	6.6	4.6	6.7	6.4	5.8
Other Goods	4.9	3.5	3.7	4.2	4.0	3.8	3.8	3.6	4.1	4.1	3.9	4.1
Transportation	4.6	5.0	4.9	5.8	5.7	5.7	4.5	4.6	4.6	4.5	4.8	5.0
Other Services	4.6	4.2	4.2	4.4	4.7	4.5	4.1	3.8	4.2	4.2	4.4	4.4
Trade	4.9	4.7	4.7	4.9	5.0	5.0	4.7	4.4	4.7	4.7	4.9	4.9
Gross Divisional Product	4.5	4.5	4.3	5.1	5.1	5.2	4.1	4.1	4.1	4.6	4.5	4.7

(2) 1991/92 - 2000/01

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Surrounding States/Divisions			Whole Country
									I	II	III	
Agriculture	2.3	4.1	3.4	4.1	4.2	4.6	2.4	4.1	2.9	3.5	2.5	3.8
Livestock, Fishery and Forestry	5.4	5.4	5.4	5.5	5.5	5.3	5.2	5.6	5.4	5.5	5.3	5.4
Mining, Processing and Manufacturing	4.5	4.3	4.8	5.3	5.9	5.9	4.3	6.6	4.8	5.6	5.4	5.1
Other Goods	6.2	5.0	5.2	5.7	5.6	5.5	5.1	5.1	5.5	5.5	5.7	5.6
Transportation	4.6	4.0	4.2	4.8	4.9	4.9	4.1	4.7	4.1	4.3	4.6	4.5
Other Services	4.3	3.9	3.9	4.1	4.4	4.2	3.9	3.7	3.9	3.9	4.0	4.1
Trade	4.7	4.1	4.2	4.3	4.5	4.4	4.1	3.8	4.1	4.1	4.2	4.4
Gross Divisional Product	4.5	4.3	4.0	4.5	4.7	4.8	3.9	4.5	4.0	4.2	4.0	4.4

Note: Surrounding States/Divisions I means Kachin, and II means Shan. Surrounding States/
Divisions III includes Kayah, Karen, Mon and Tenasserim.

Annual Growth Rates (2)

(3) 2001/02 - 2010/11

| | Rangoon | Irrawaddy | Pegu | Magwe | Mandalay | Sagaing | Rakhine | Chin | Surrounding States/Divisions | | | Whole Country |
									I	II	III	
Agriculture	3.0	4.3	3.7	4.1	4.3	4.7	2.9	4.1	3.3	3.9	3.8	4.1
Livestock, Fishery and Forestry	5.6	4.9	6.1	6.1	5.7	5.5	5.8	8.0	5.2	5.4	5.7	5.7
Mining, Processing and Manufacturing	5.3	5.9	5.5	6.0	6.2	6.5	4.4	7.3	5.2	5.7	6.2	5.8
Other Goods	7.5	7.2	7.2	7.5	7.6	7.5	7.0	7.3	7.1	7.2	7.5	7.4
Transportation	5.1	5.2	4.8	5.1	5.0	5.0	4.4	5.6	4.5	4.6	5.1	5.0
Other Services	4.7	4.2	4.3	4.4	4.6	4.5	4.2	4.0	4.1	4.1	4.2	4.4
Trade	5.2	4.6	4.7	4.8	5.0	4.9	4.7	4.4	4.5	4.6	4.7	4.9
Gross Divisional Product	5.0	4.7	4.6	5.0	5.0	5.0	4.4	5.4	4.4	4.6	4.8	4.8

Note: Surrounding States/Divisions I means Kachin, and II means Shan. Surrounding States/Divisions III includes Kayah, Karen, Mon and Tenasserim.

Appendix Table 2.3.3.2 GROSS REGIONAL PRODUCT

Percentage Distribution by Sector

(1) 1985/86 (%)

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Surrounding States/Divisions			Whole Country
									I	II	III	
Agriculture	12.2	48.4	48.8	45.2	45.5	52.0	28.8	31.8	33.9	38.5	35.3	38.9
Livestock, Fishery and Forestry	6.6	10.6	9.6	9.8	7.9	8.2	11.5	17.4	10.5	6.2	11.9	9.1
Mining, Processing and Manufacturing	11.4	10.5	10.9	15.3	9.8	8.6	10.6	6.5	15.6	12.0	11.0	11.1
Other Goods	2.4	2.1	2.0	2.2	2.3	2.1	2.4	2.3	2.4	2.4	2.3	2.2
Transportation	4.5	3.3	3.3	3.3	3.1	3.1	3.4	3.1	3.2	3.3	3.2	3.4
Other Services	17.7	8.6	8.2	8.8	9.4	8.9	14.0	14.2	12.5	12.8	12.0	11.2
Trade	45.3	16.6	17.3	15.4	22.1	17.1	29.2	24.7	21.8	24.8	24.3	24.3
Gross Divisional Product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(2) 2010/11

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Surrounding States/Divisions			Whole Country
									I	II	III	
Agriculture	7.3	44.7	40.5	38.6	39.9	49.3	20.0	26.9	25.9	32.2	26.3	33.2
Livestock, Fishery and Forestry	7.8	12.7	13.7	12.9	10.0	9.6	16.4	23.5	13.9	8.2	14.9	11.3
Mining, Processing and Manufacturing	11.6	12.3	13.7	19.4	13.4	11.4	11.5	10.7	18.5	16.8	15.7	13.7
Other Goods	3.6	2.7	2.8	3.1	3.1	2.6	3.4	2.9	3.6	3.4	3.3	3.1
Transportation	4.5	3.4	3.5	3.5	3.3	3.2	3.5	3.3	3.3	3.3	3.5	3.6
Other Services	17.0	7.7	7.7	7.8	8.6	7.7	13.7	11.3	12.0	11.6	11.2	10.4
Trade	48.1	16.3	18.1	14.8	21.6	16.1	31.5	21.5	22.8	24.7	24.9	24.7
Gross Divisional Product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Surrounding States/Divisions I means Kachin, and II means Shan. Surrounding States/
Divisions III includes Kayah, Karen, Mon and Tenasserim. Totals may not be consistent
as the amounts of each component are rounded off.

Appendix Table 2.3.3.3   GROSS REGIONAL PRODUCT

Percentage Distribution by Division

(1) 1985/86

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Surrounding States/Divisions			Whole Country
									I	II	III	
Agriculture	5.5	18.6	15.0	10.9	15.3	14.9	2.8	0.5	1.6	7.3	7.5	100.0
Livestock, Fishery and Forestry	12.9	17.7	12.7	10.3	11.5	10.3	4.8	1.3	2.2	5.1	11.0	100.0
Mining, Processing and Manufacturing	18.2	14.1	11.7	12.9	11.5	8.7	3.6	0.4	2.6	8.0	8.2	100.0
Other Goods	18.8	13.9	10.7	9.4	13.6	10.5	4.0	0.7	2.0	7.9	8.4	100.0
Transportation	22.9	14.1	11.3	8.9	11.9	10.1	3.7	0.6	1.7	7.0	7.8	100.0
Other Services	27.9	11.4	8.7	7.4	11.0	8.8	4.7	0.8	2.1	8.4	8.8	100.0
Trade	33.0	10.2	8.5	6.0	11.9	7.9	4.5	0.7	1.7	7.5	8.3	100.0
Gross Divisional Product	17.6	14.9	11.9	9.4	13.1	11.2	3.7	0.7	1.9	7.4	8.3	100.0

(2) 2010/11

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Surrounding States/Divisions			Whole Country
									I	II	III	
Agriculture	4.0	19.5	13.5	11.4	16.7	17.9	2.0	0.6	1.3	6.8	6.2	100.0
Livestock, Fishery and Forestry	12.5	16.3	13.5	11.3	12.4	10.2	4.9	1.4	2.1	5.1	10.4	100.0
Mining, Processing and Manufacturing	15.1	13.0	11.0	13.9	13.6	10.1	2.8	0.5	2.3	8.6	9.0	100.0
Other Goods	21.1	12.6	10.0	9.7	13.8	10.4	3.7	0.6	1.9	7.7	8.5	100.0
Transportation	22.7	13.6	10.7	9.6	12.9	10.8	3.3	0.6	1.6	6.5	7.8	100.0
Other Services	29.5	10.7	8.3	7.4	11.6	9.0	4.4	0.7	1.9	7.9	8.5	100.0
Trade	35.0	9.5	8.1	5.9	12.2	7.9	4.3	0.6	1.5	7.0	8.0	100.0
Gross Divisional Product	18.0	14.5	11.1	9.8	13.9	12.1	3.3	0.7	1.7	7.1	7.9	100.0

Note: Surrounding States/Divisions I means Kachin, and II means Shan. Surrounding States/
Divisions III includes Kayah, Karen, Mon and Tenasserim.

Appendix 2.1 Forecast Method for the National Economy

The forecast procedure is composed of a cycle of various checks.
Forecast figures are determined by convergence to specific figures
through the repetitions of checks. Explanation of the forecast
procedure begins with the balance of payments block.

1. Forecasting of Import Capability

Appendix Fig. 2.1.1 shows the check flows in this block.

(1) Using a fixed figure (foreign loans outstanding) and two exogenous
co-efficients (rates of increase in foreign loans and grants and
interest rate payable), net loans disbursed, net grant receipts and
interest payments in each year are forecasted.

(2) From the primary industries block (also partly included in the
economic activity block), exports by major commodity in each year are
forecasted tentatively.

(3) Requested imports are forecast tentatively from both the demand
block and the economic activity block. This determines payment values
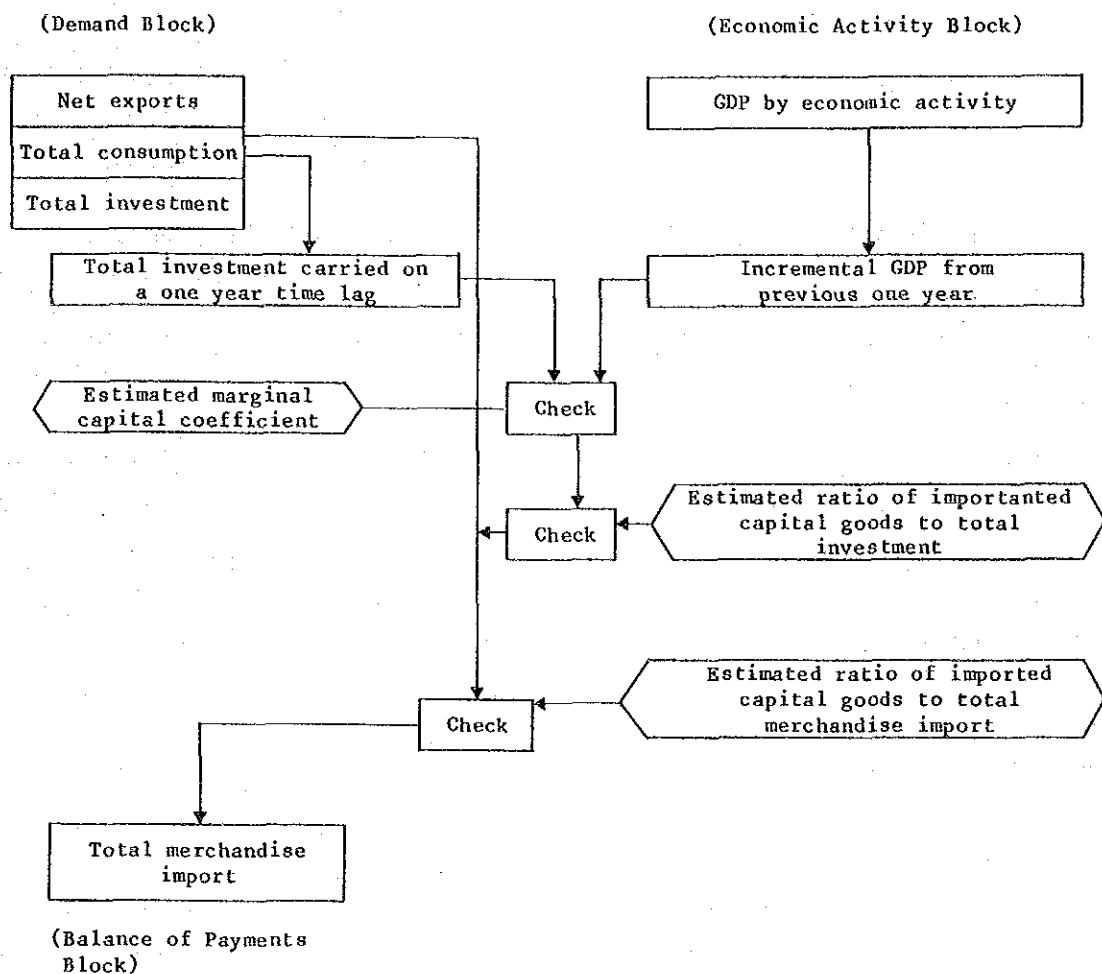for the requested imports.

(4) The results of (1) and (2) regulate import capability, and these
figures are checked for consistency, with requested imports.
Conversely, results of (3) requested imports would indicate the
requested exports. Checks are carried out between requested exports and
forecast exports by major commodity in each year. Where there is no
consistency, requested imports and exports are re-checked, by the demand
block, economic activity block and primary industries block.

2. Forecasting of Investment

Appendix Fig. 2.1.2 shows the check flows in this block.

(1) Total merchandise imports, which are checked in the balance of
payments block mentioned above (1), are also checked with the demand
block and the economic activity block through consideration of three co-
efficients; that is the ratio of imported capital goods to total

Appendix Fig. 2.1.1 CHECK FLOWS ASSOCIATED WITH THE BALANCE OF PAYMENTS BLOCK

(Balance of Payments Block)

(Primary Industries Block)

Appendix Fig. 2.1.2 CHECK FLOWS FOR THE DEMAND BLOCK

(Demand Block)   (Economic Activity Block)

```
┌─────────────────────┐                 ┌──────────────────────────────┐
│    Net exports      │                 │   GDP by economic activity   │
├─────────────────────┤                 └──────────────────────────────┘
│  Total consumption  │────┐                           │
├─────────────────────┤    │                           │
│  Total investment   │    │                           ▼
└─────────────────────┘    │             ┌──────────────────────────────┐
   ┌──────────────────────────┐          │     Incremental GDP from     │
   │ Total investment carried on │       │      previous one year       │
   │    a one year time lag      │       └──────────────────────────────┘
   └──────────────────────────┘                        │

   ⟨ Estimated marginal    ⟩         ┌─────────┐
   ⟨ capital coefficient   ⟩─────────│  Check  │
                                     └─────────┘
                                          │
                                          ▼
                           ┌─────────┐   ⟨ Estimated ratio of importanted ⟩
                           │  Check  │───⟨    capital goods to total       ⟩
                           └─────────┘   ⟨         investment              ⟩

                                       ⟨ Estimated ratio of imported  ⟩
                           ┌─────────┐ ⟨   capital goods to total      ⟩
                           │  Check  │─⟨    merchandise import         ⟩
                           └─────────┘

   ┌─────────────────────┐
   │ Total merchandise   │
   │      import         │
   └─────────────────────┘

(Balance of Payments
 Block)
```

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imports; the ratio of imported capital goods to total investment; and the marginal capital co-efficient.

(2) In case of inconsistency, figures of those blocks are re-checked,

3. Forecasting of Value of Production and Gross Domestic Product

Appendix Fig. 2.1.3 shows the check flows in this block.

(1) A check is carried out between exports and value of production by economic activity. Another check is carried out between imports and gross domestic product by economic activity through the marginal capital co-efficient.

(2) Checks between value of production and gross domestic product are carried out in consideration of the changes in gross value added ratio of each forecast years. When there is no consistency, figures are re-checked. With a few repetitions of steps 1, 2 and 3, all figures converge to specific values.

4. Forecasting of Main Figures in the Economic Activity
   Block and the Primary Industries Block

(1) Agriculture

Forecasting of agriculture are organized by main crops and these figures are forecast by multiplying yield per acre to gross sown acreage.

Gross sown acreage as a whole is estimated by adding mixed and multiple cropping acreage to the net sown acreage. Annual growth rates of more than 0.4% for the net sown acreage and of approximately 3.5% for the mixed and multiple cropping acreage are assumed. Therefore, annual growth rates of 1.2 -1.4% are set for the gross sown acreage, and these figures control the total of gross sown acreage. (See Appendix Table 2.1.1)

Annual growth rates for main crop yield per acre have declined reflecting a slow down of high yield varieties extension work. (See Appendix Table 2.1.2).

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Agricultural production by main crops is estimated by multiplying gross sown acreage with yield per acre in each main crop. Results are shown in Appendix Table 2.1.3. Agricultural production forecast is then converted to value of production and GDP by agricultural activity. Agricultural exports are forecast for five crops: paddy, maize, pulses, jute and rubber.

(2) Livestock and Fishery

Forecasting of livestock and fishery sector are divided into three groups: livestock, fresh water and marine fisheries. Livestock is forecast by commodities such as fresh milk, beef, mutton, pork, fowl meat (included duck). Export check is carried out only for marine fisheries.

(3) Forestry

Forecasts are made for teak, hardwood and other forest products, and export check are made as well.
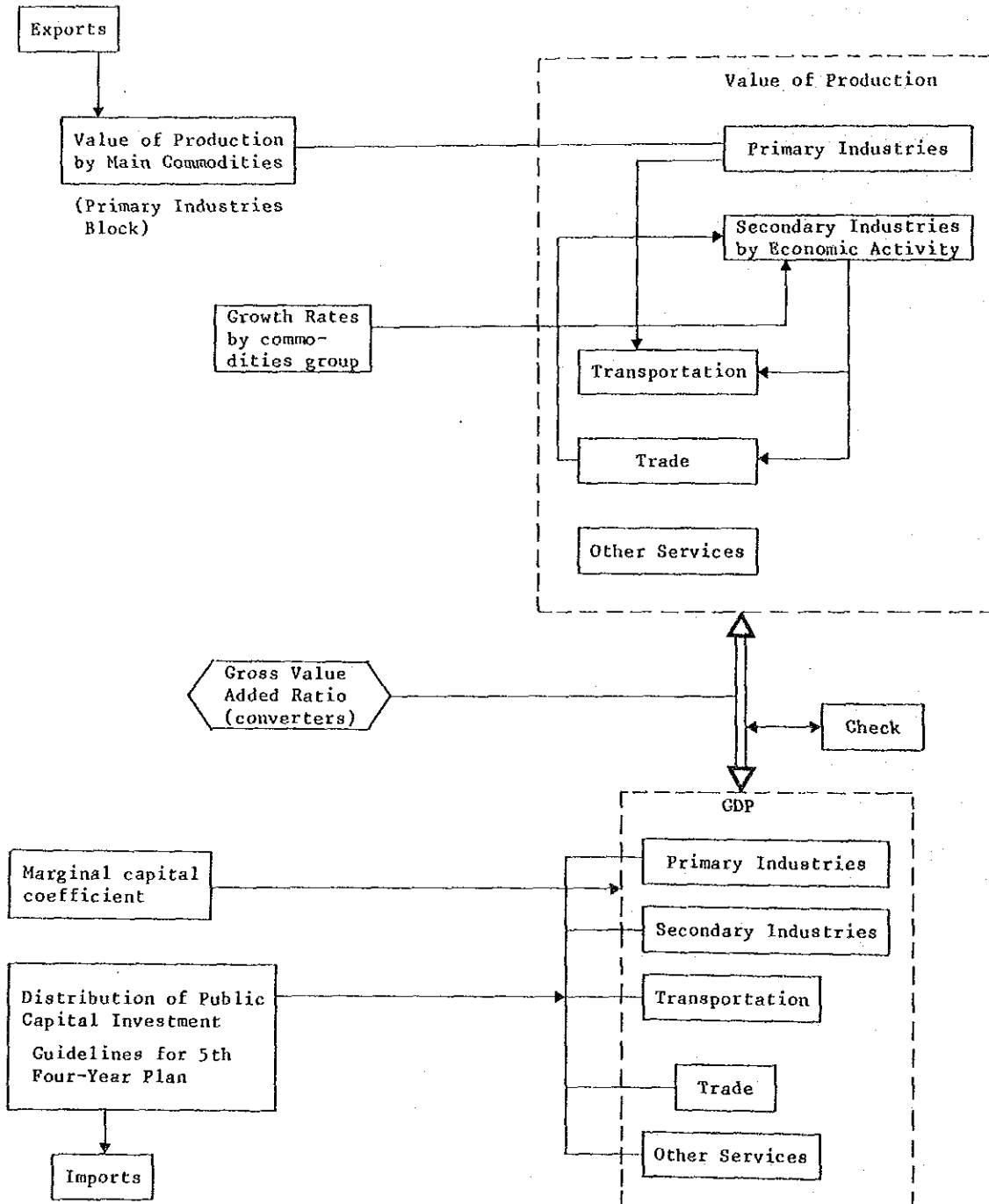
(4) Mining

Mining are forecast for crude oil, natural gas and others.

(5) Processing and Manufacturing

Processing and manufacturing are forecast by main commodities groups, referring to recent trends shown in Appendix Table 2.1.4. The result is shown in Appendix Table 2.1.5.

Appendix Fig. 2.1.3   CHECK FLOWS FOR THE VALUE OF PRODUCTION

(Balance of Payments Block)

Appendix Table 2.1.1 GROSS SOWN ACREAGES BY MAIN CROPS AND THEIR PERCENTAGE DISTRIBUTION

	Gross Sown Acreage (Unit: 1,000 Acres)				Rate of increase per annum (%)				Percentage Distribution (%)			
	1985/86	1990/91	2000/01	2010/11	1974/75-76/77 to 1983/84-85/86	1986/87 to 1990/91	1991/92 to 2000/01	2001/02 to 2010/11	1985/86	1990/91	2000/01	2010/11
Paddy	12,076	11,836	11,486	11,372	-0.6	-0.4	-0.3	-0.1	46.1	42.5	36.6	31.5
Wheat	346	405	544	717	4.4	3.2	3.0	2.8	1.3	1.5	1.7	2.0
Maize	596	856	1,394	2,165	11.7	7.5	5.0	4.5	2.3	3.1	4.4	6.0
Pulses	2,379	2,652	3,233	3,941	3.1	2.2	2.0	2.0	9.1	9.5	10.3	10.9
Groundnut	1,597	1,557	1,496	1,452	-0.7	-0.5	-0.4	-0.2	6.1	5.6	4.8	4.0
Sesamum	3,668	4,170	5,183	6,381	3.7	2.6	2.2	2.0	14.0	15.0	16.5	17.7
Sun flower	488	804	1,348	1,901	26.2*	10.5	5.3	3.5	1.9	2.9	4.3	5.3
Cotton	569	628	766	934	2.0	2.0	2.0	2.0	2.2	2.3	2.4	2.6
Jute	151	156	167	179	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5
Rubber	193	186	175	166	-0.7	-0.7	-0.6	-0.5	0.7	0.7	0.6	0.5
Sugarcane	337	383	495	627	2.9	2.6	2.6	2.4	1.3	1.4	1.6	1.7
Tobacco	161	169	187	207	1.0	1.0	1.0	1.0	0.6	0.6	0.6	0.6
Other crops	3,660	4,030	4,905	6,038	2.2	1.9	2.0	2.1	14.0	14.5	15.6	16.7
Total	26,221	27,832	31,379	36,080	1.1	1.2	1.2	1.4	100.0	100.0	100.0	100.0

Source: Figures on 1985/86 are extracted from the Report to the Pyithu Hluttaw, 1986.

Note: * Rate of increase per annum between 1977/78 - 1979/80 and 1983/84 - 1985/86

Appendix Table 2.1.2 YIELD PER ACRE BY MAIN CROP

	Yield per Acre (Unit: in basket)				Rate of increase per annum (%)			
	1985/86	1990/91	2000/01	2010/11	1974/75-76/77 to 1983/84-85/86	1986/87 to 1990/91	1991/92 to 2000/01	2001/02 to 2010/11
Paddy	59.98	63.54	81.54	102.35	6.0	2.2	2.0	2.3
Wheat	22.78	29.49	43.28	57.49	9.6	5.3	3.9	3.5
Maize	28.85	34.26	45.16	57.81	8.8	3.5	2.8	2.5
Pulses*	11.52	13.42	15.73	18.12	6.9	3.1	1.6	1.4
Groundnut	38.43	43.06	52.49	63.98	4.8	2.3	2.0	2.0
Sesamum	4.18	4.71	5.74	6.90	4.9	2.4	2.0	2.0
Sanflower	29.50	35.89	51.12	70.45	7.1	4.0	3.6	3.3
Cotton	130.27	159.26	218.50	290.86	8.8	4.1	3.2	2.9
Jute	272.89	286.81	316.82	349.96	2.5	1.0	1.0	1.0
Rubber	329.13	354.57	403.45	467.18	1.7	1.5	1.3	1.5
Sugar cane	23.61	26.20	31.24	38.08	6.4	2.1	1.8	2.0
Tobacco	334.91	405.51	541.22	812.97	5.4	3.9	3.2	3.9
Other crops**	(100.00)	(114.61)	(145.61)	(190.82)	-	2.8	2.4	2.8

Source: Figures in 1985/86 are extracted from the Report to the Pyithu Hluttaw, 1986.

Note: * Weighted average of main commodities.
          ** Index numbers (1985/86 = 100.0)

Appendix Table 2.1.3   FORECAST OF AGRICULTURAL PRODUCTION (STANDARD CASE)

	Weight[1] in percent	Quantum Index (1985/86 = 100)				Production by Main Crops (Unit: 1,000 tons)			
		1985/86	1990/91	2000/21	2010/11	1985/86	1990/91	2000/01	2010/11
Paddy	27.9	100.0	109.3	129.3	160.7	14,476	15,822	18,717	23,263
Wheat[2]	2.1	100.0	151.7	298.7	554.4	234	355	699	1,300
Maize	2.3	100.0	170.5	366.1	626.1	378	644	1,384	2,367
Pulses	5.0	100.0	129.9	185.5	260.6	644	837	1,195	1,678
Groundnut	17.1	100.0	109.3	127.9	151.4	651	712	833	985
Sesame	8.6	100.0	128.0	192.1	288.2	269	344	517	775
Sunflower	2.7	100.0	200.4	478.7	930.3	186	373	890	1,730
Cotton	1.9	100.0	135.1	225.8	366.5	112	151	253	410
Jute	0.5	100.0	105.1	128.4	152.0	50	53	64	76
Rubber	0.2	100.0	104.0	111.1	122.1	16	17	18	20
Sugarcane	1.6	100.0	125.8	194.3	300.1	3,786	4,763	7,356	11,362
Tobacco[2]	0.5	100.0	127.0	192.3	312.1	134	170	258	418
Other crops	29.6	100.0	126.2	194.7	314.8	-	-	-	-
Total	100.0	100.0	122.5	178.2	267.2	-	-	-	-

Note: 1   Weight is estimated by the average value of production in
            1983/84 - 1985/86. Those data are provided by the Planning Department.

        2   The weight of wheat includes sorghum. The weight of tobacco includes
            Burmese tobacco.

Appendix Table 2.1.4   PRODUCTION OF PROCESSING AND MANUFACTURING

	Quantum Index, 1969/70 = 100					Percentage Distribution of Value of Production, at Current Prices				
	1961/62	1973/74	1977/78	1981/82	1985/86	1961/62	1973/74	1977/78	1981/82	1985/86
1. Food and beverages	82.4	97.9	111.9	137.2	182.5	60.0	69.9	67.4	65.4	70.7
2. Clothing and wearing apparel	87.4	63.5	122.1	119.9	112.6	14.8	6.7	9.6	8.2	6.5
3. Construction materials	79.5	85.6	97.1	122.0	139.6	7.7	4.6	3.2	4.1	3.4
4. Personal goods	75.8	70.8	120.9	161.6	122.5	3.6	2.1	2.8	3.0	1.7
5. Household goods	34.5	67.9	95.7	157.8	213.8	0.2	0.3	0.4	0.6	0.5
6. Printing and publishing	42.6	88.4	172.8	209.5	255.0	0.7	1.0	0.9	0.9	0.8
(Sub-total, 4 - 6)						4.5	3.4	4.1	4.5	3.0
7. Industrial raw materials	141.7	102.2	178.1	280.4	384.3	3.4	4.0	5.2	6.3	6.6
8. Mineral and petroleum products	71.7	85.0	123.6	130.1	132.5	5.9	6.6	6.1	5.0	4.1
9. Agricultura equipment	-	166.2	286.0	205.8	200.8	-	0.6	0.5	0.6	0.3
10. Machinery and equipment	67.4	78.3	24.8	70.2	607.3	0.1	0.1	0.0	0.0	0.2
11. Transport vehicles	18.9	84.3	160.6	207.1	292.1	0.5	1.3	1.6	2.0	2.1
12. Electrical goods	25.4	104.6	92.7	210.5	435.7	0.3	0.7	0.6	0.9	1.0
(Sub-total, 9 - 12)						0.9	2.7	2.7	3.6	3.6
13. Miscellaneous	120.2	150.9	221.9	364.2	400.0	2.9	2.1	1.7	2.9	2.1
Total	82.4	91.8	119.0	145.5	180.9	100.0	100.0	100.0	100.0	100.0

Source: The Report to the Phyithu Hluttaw, 1982 and 1986.

Appendix Table 2.1.5 FORECAST OF INDUSTRIAL PRODUCTION (STANDARD CASE)

(Quantum Index: 1985/86 = 100.0)

	Weight[1]	1985/86 (Basis Year)	1990/91	2000/01	2010/11
Food and beverages	70.66	100.0	126.8	195.1	311.8
Clothing and wearing apparel	6.49	100.0	104.6	115.5	142.2
Construction materials	3.43	100.0	122.8	196.3	351.5
Personal and household goods[2]	2.96	100.0	133.8	236.2	435.1
Industrial raw materials	6.60	100.0	156.0	338.9	759.8
Mineral and petroleum products	4.12	100.0	127.6	186.4	275.9
Machineries and equipments, total	3.62	100.0	150.7	282.8	582.9
Miscellaneous	2.12	100.0	146.9	251.0	462.4
Total	100.0	100.0	128.7	204.7	346.9

Note: 1 Weight is estimated by value of production in 1985/86.
        2 Personal and household goods include printing and publishing.

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Appendix 2.2   Transportation Matrix for Burma

1.   Objective

This section aims to estimate the transportation structure in
Burma.

2.   Form of Transportation Matrix

The transportation matrix is estimated by user and by kind of
transportation service, and is presented with a co-efficient in each
matrix cell.

3.   Basic Documents for the Estimation

(1)   Basic Input-Output Table of Thailand, 1975, compiled by a joint
project of National Economic and Social Developing Board of the
Government of Thailand, National Statistical Office of the Government of
Thailand and Institute of Developing Economies of Japan, published in
March 1980.

(2)   Input-Output Table, Indonesia, 1980 by Central Bureau of Statistics
of the Government of Indonesia, published in September 1984.

   Tables utilized are as follows;

   (1)   Table of Input Structure (160 sectors) and Table of Output
         Distribution (160 sectors) in Thailand
   (2)   Transaction Table at Purchaser's Prices in 66 x 66 sectors and
         Transaction Table at Producer's Prices in 66 x 66 sectors in
         Indonesia

4.   Estimation Method and Procedure

The estimate is prepared in accordance with the following procedure
as shown in Appendix Fig. 2.2.1.

   Step 1:   To coordinate and consolidate the four tables to be
             consistent with the classification of national accounts in
             Burma.

Appendix Fig. 2.2.1 ESTIMATION FLOW OF PERCENTAGE DISTRIBUTION OF
PRODUCTION VALUE OF TRANSPORTATION BY USER

I-O Tables in Thailand
on 1975

I-O Tables in Indonesia
on 1980

```
┌──────────┐  ┌──────────┐    ┌──────────┐  ┌──────────┐
│ at pur-  │  │ at pro-  │    │ at pur-  │  │ at pro-  │
│ chaser's │  │ ducer's  │    │ chaser's │  │ ducer's  │
│ prices   │  │ prices   │    │ prices   │  │ prices   │
└──────────┘  └──────────┘    └──────────┘  └──────────┘
                                                             ┌──────────────────┐
                                                             │ Coordination and │
                                                             │ consolidation to │
                                                             │ Burma's economic │
                                                             │ activities       │
                                                             └──────────────────┘
┌──────────┐  ┌──────────┐    ┌──────────┐  ┌──────────┐
│ at pur-  │  │ at pro-  │    │ at pur-  │  │ at pro-  │
│ chaser's │  │ ducer's  │    │ chaser's │  │ ducer's  │
│ prices   │  │ prices   │    │ prices   │  │ prices   │
└──────────┘  └──────────┘    └──────────┘  └──────────┘
                                                             ┌──────────────────┐
                                                             │ Conversion to    │
                                                             │ transport trans- │
                                                             │ action table by  │
                                                             │ user             │
                                                             └──────────────────┘
┌──────────┐  ┌──────────┐    ┌──────────┐  ┌──────────┐
│Passenger │  │Fright    │    │Passenger │  │Freight   │
│transpor- │  │transpor- │    │transpor- │  │transpor- │
│tation    │  │tation    │    │tation    │  │tation    │
└──────────┘  └──────────┘    └──────────┘  └──────────┘
┌────────────────┐            ┌────────────────┐
│Percentage distri-│          │Percentage distri-│
│bution by user  │            │bution by user  │
└────────────────┘            └────────────────┘
  ┌──────────────────┐          ┌──────────────────┐
  │Coefficient by user│         │Coefficient by user│
  │to total gross     │         │to total gross     │
  │output in Thailand │         │output in Indonesia│
  └──────────────────┘          └──────────────────┘
                                                             ┌──────────────────┐
          ┌──────────────────┐                               │ Some adjustment  │
          │Coefficient by user│                              │ of coefficients  │
          │to total gross out-│                              │ between Thailand │
          │put in Burma       │                              │ and Indonesia    │
          └──────────────────┘                               └──────────────────┘
┌──────────────────────┐
│Percentage distribution│
│of gross output by    │
│economic activity in  │    ┌──────────────────────┐
│Burma, 1985/86        │    │Percentage distribution by│
└──────────────────────┘    │economic activity and by  │
                            │user in Burma, 1985/86    │
                            └──────────────────────┘
```

Step 2:   To convert tables valued by purchaser's prices and producer's prices to transport transaction tables by user.

Step 3:   To estimate percentage distribution by user according to the transport transaction tables mentioned in Step 2.

Estimate co-efficients of total value of transport production by user through use of the same tables.

Step 4:   To adjust a few co-efficients to better reflect the economic structure in Burma.

Examples of co-efficients include maize in goods transport services, and non-ferrous metals and fluorite in passenger transport services in Thailand, and rubber plantation in goods transport services and air-transport in passenger transport services in Indonesia. Co-efficients are adjusted to reflect the classification in Burma.

Step 5:   To estimate percentage distribution of transport services by economic activity and by user by multiplying co-efficients by user and the percentage distribution of total gross output by economic activity in Burma.

Figures estimated are shown in Appendix Table 2.2.1.

5.   Some Characteristics on the Transportation in Burma

Transportation in Burma consists of 57.3% passenger services and 42.7% freight in value terms. This structure is nearly the same for Thailand and Indonesia.

By user, it consists of 27.8% for inter-industry use and 72.2% for final demand use such as consumption, investment and exports. Burma has a high percentage distribution to consumption. The figure of 65.6% (45.6% for passenger and 20.0% for goods) for consumption is higher than that of Thailand (53.8%) or Indonesia (54.9%). In industry use, construction and services shares (except transportation) are lower than in Thailand and Indonesia.

Appendix Table 2.2.1   COMPOSITION OF TRANSPORTATION

(Unit: %)

	Thailand		Indonesia		Burma	
	Passenger	Goods	Passenger	Goods	Passenger	Goods
Agriculture	0.2	0.6	0.2	2.6	0.4	2.7
Livestock and Fishery	0.0	0.9	0.0	0.9	0.0	1.6
Forestry	0.0	0.0	0.1	0.1	0.0	0.1
Mining	0.2	0.0	1.0	0.3	0.2	0.1
Manufacturing and Processing	1.0	9.7	0.9	7.3	1.1	9.5
Power	0.1	0.3	0.1	0.1	0.1	0.1
Construction	0.5	8.6	0.2	5.5	0.1	2.4
Services except Transportation	2.4	2.2	1.7	2.3	1.2	1.4
Transportation	0.6	0.8	2.6	0.6	2.1	0.5
Trade	1.7	0.5	2.1	0.2	3.7	0.5
Inter-industry Use, Total	6.7	23.6	8.9	19.9	8.9	18.9
Consumption	39.4	14.4	39.4	15.5	45.6	20.0
Investment	0.0	3.7	0.0	2.0	0.0	2.1
Exports	7.3	5.0	9.5	4.7	2.8	1.7
Final Demand, total	46.7	23.1	48.9	22.3	48.4	23.8
Sub-total	53.4	46.6	57.8	42.2	57.3	42.7
Grand Total	100.0		100.0		100.0	

6. A Comparison with Japanese Transportation Structure

A comparison with Japan has only limited meaning, as its economic
structure is considerably different from Burma's. But, the comparison
may suggest a long term direction.

Appendix Table 2.2.2 is a transportation matrix of Japan in 1980,
rearranged by economic activity classification in Burma. Approximately
53.2% of Japan's transportation is used for inter-industry use and 46.8%
for final demand. Applied to Burmese economic structure, this would
mean 48.5% inter-industry use and 51.5% for final demand.

The Input-Output Tables of Japan include self-transportation, but
the Input-Output tables of both Thailand and Indonesia and Burma's
national accounts do not include self-transportation[1] in the
transportation sector. The last columns show percentage distributions
except self-transportation applied to the Burmese economic structure.
The rearranged Japanese Table consists of 42.6% for inter-industry use
and 57.4% for final demand.

Compared with the transportation matrix in Appendix Table 2.2.1,
this table shows a high percentage distribution for inter-industry use.
This may suggest a direction for future transportation activity in
Burma. The shares of agriculture, livestock and fishery show high
figures in Japan, which reflect input structures in those industries.
The inter-industry use ratio in Burma, for example, is only 12.03% for
agriculture in 1985/86, as against 33.59% for agriculture and
agricultural services in 1980 Input-Output Tables of Japan. Conversely
the inter-industry use ratio of processing and manufacturing in Burma
was 81.91% in 1985/86, while that of Japan was 70.48%. This result
reflects a relatively narrow rising share for processing and
manufacturing in the transportation matrix for Japan.

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1 Self-transportation means transport service activities by
   institutional persons in non-public transport service.

Appendix Table 2.2.2   TRANSPORTATION MATRIX IN JAPAN, 1980

	Freight Margin Included in Purchasers' Prices	Direct Purchase of Transport Services	Self-Transportation on Goods	Self-Transportation on Passenger	Total	In Burma's Economic Activity Weight	
						Total	Total except Self-Transportation
Inter-industry Use	13.736	19.761	12.134	7.556	53.188	48.53	42.60
Agriculture	0.158	0.023	0.393	0.027	0.601	8.70	4.70
Livestock and Fishery	0.371	0.038	0.164	0.039	0.613	3.19	3.82
Forestry	0.011	0.141	0.064	0.024	0.241	0.75	0.85
Mining	0.027	0.089	1.609	0.032	1.758	3.53	0.42
Processing and Manufacturing	8.628	1.912	1.540	0.918	12.999	8.06	11.72
Power	0.366	0.126	0.556	0.083	1.131	0.19	0.15
Construction	2.273	0.927	2.172	0.862	6.234	1.66	1.53
Transportation	0.360	10.282	0.051	0.112	10.805	5.36	9.47
Other Services	1.394	4.157	1.926	3.026	10.503	3.12	3.28
Trade	0.148	2.066	3.659	2.433	8.305	13.97	6.67
Final Demand	5.611	26.527	–	14.674	46.812	51.47	57.40
Consumption	3.844	16.500	–	–	35.017	46.46	48.40
Investment	0.932	–	–	–	0.932	0.54	0.97
Export	0.835	10.027	–	–	10.863	4.48	8.03
Total	19.348	46.288	12.134	22.230	100.000	100.00	100.00

Source: The Input-Output Table, Japan, 1980

Appendix 2.3 Population Forecasting in Burma

1.   History of the Population Census

Census were taken regularly during the British administration
between 1872 and 1941. However, information obtained by the 1941 Census
was lost in the war. The first post-war Census was attempted between
1953 and 1955. However, this attempt was abandoned due to unstable
conditions in the country.

The first country-wide census in the post-war period was completed
in 1973. It covered 85.1% of the total area and 97.1% of the total
population.

The second post-war decennial census was taken in April 1983 with
the following objectives:

(a) To obtain reliable population statistics,

(b) To undertake some basic scientific research and analysis on
current state of the population,

(c) To provide other government institutions with important
social, economic and demographic information, and

(d) To provide a basic frame for future social and economic
surveys.

2.   Considerations on Available Data

(1) An unexplained discontinuity exists for total population between
the old official population series (until 1974) and the new official
population series (since 1974). Another unexplained discontinuity
exists for population data between 1983 and 1984 for some
states/divisions.

Inconsistencies exist in a few fields between mid-fiscal year
estimations for population and various sample surveys like crude birth
rates and death rates.

Considering such matters, population forecast were made using
adjusted figures at some points.

3. Forecasting of the Union Total

(1) Available Data

The following data are available:

(a) Population stratification by five years age groups and by sex in 1982, based on the 1973 Census. These statistics were prepared by the United Nations secretariat;

(b) Population by the three age groups and by sex in 1982/83 based on the 1983 Census. This is contained in the "Report (Pyithu Hluttaw)";

(c) Population by three age groups and by sex in 1985/86 based on the 1983 Census. This is contained in the "Report"; and

(d) Crude birth rates, crude death rates, infant mortality rates, and life expectancies defined by five year age group increments by a sampling survey, also contained in the "Report".

(2) Forecasting Procedure

1) Estimation of the population by five year of age groups and by sex in 1982/83 was based on the 1983 Census. This estimation converted the data (a) above mentioned to data (b), using as controls of the three age groups and sex divisions of the 1983 census.

2) Estimation of the population by five year age groups and by sex in 1985/86 based on the 1983 Census. First, specific birth rates and death rates by age group are estimated from the data (d), 1983 Census, and the result of 1) above.

Secondly, a tentative population division by five year age groups and by sex in 1985/86 is estimated utilizing 1) and the first procedure in 2)

Thirdly, some adjustments as a result of the second procedure in 2) are taken using as control the data (c). These are the final figures of 2). the results are shown Appendix Table 2.3.1 and Appendix Fig. 2.3.1.

Appendix Table 2.3.1 POPULATION BY AGE AND SEX IN 1985/86

(1,000 persons)

	1982		1985/86		Difference to next age group (1985/86)	
	Male	Female	Male	Female	Male	Female
0 - 4	2,678.6	2,626.3	2,448	2,422	194	181
5 - 9	2,321.5	2,291.2	2,254	2,241	120	118
10 - 14	2,114.3	2,094.4	2,134	2,123	128	138
15 - 19	1,951.7	1,930.1	2,006	1,985	229	212
20 - 24	1,691.2	1,684.0	1,777	1,773	295	252
25 - 29	1,369.8	1,406.5	1,482	1,516	300	290
30 - 34	1,068.5	1,115.9	1,182	1,236	213	220
35 - 39	870.1	909.1	969	1,011	88	98
40 - 44	791.8	821.5	881	913	58	70
45 - 49	747.7	766.6	823	843	112	113
50 - 54	649.0	667.3	711	730	138	134
55 - 59	521.7	543.8	573	596	127	118
60 - 64	406.5	433.1	446	478	118	112
65 - 69	296.5	325.2	324	361	116	115
70 - 74	195.8	223.2	208	246	--	--
75 - 79	111.0	133.3	190	237	--	--
80 -	66.6	86.4				

Source: 1982; UN, Demographic Yearbook 1983
1985/86; Estimation by JICA Study Team

Appendix Fig. 2.3.1 POPULATION BY AGE AND SEX IN 1985/86

(Male)   (Female)

(Ages)

Estimation of
1985/86 by the
Study Team

1982
by U.N.

1982
by U.N.

Estimation of 1985/86
by the study Team

3,000   2,000   1,000   0   1,000   2,000   3,000

(1,000 Persons)
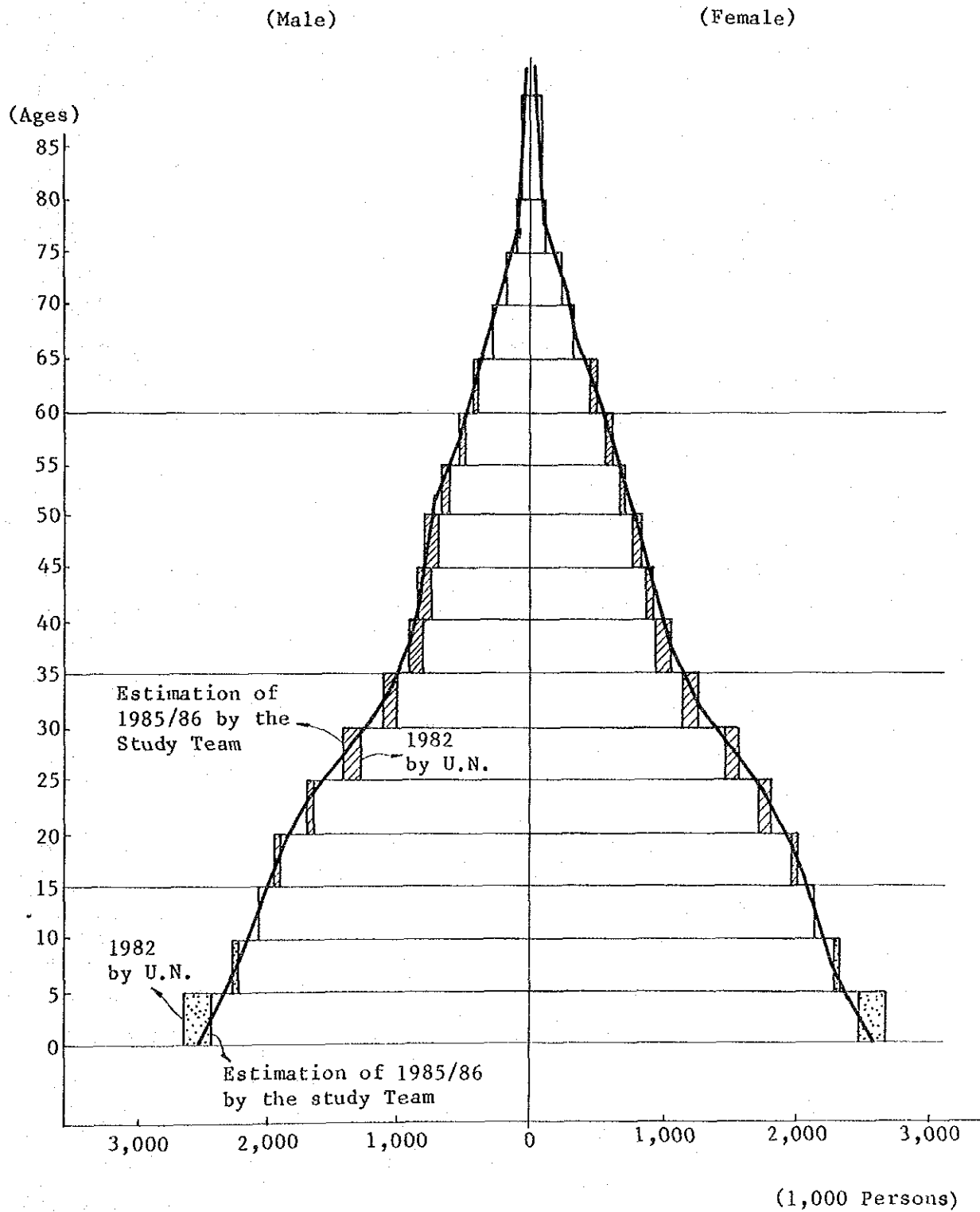
(3) Population Forecast

First, (a) female population between ages 15 and 39, (b) specific
birth rates of female aged 15 to 39, and (c) death rates by age group
are extrapolated for each target year by using the result of 2) and data
(d). Second, those number of persons are calculated by category, and
those figures by category are added to the base figure of 1985/86. The
sum in each year is the total population.

4. Population Forecast by State/Division

(1) Estimation of the Population in 1985/86

The population data up to 1984/85 are provided by the Planning
Department. The population in 1985/86 is estimated by
multiplication of average annual increase rates between the two
recent census periods with 1984/85 population to determine figures
in 1985/86 by state/division.

(2) Population Forecast

Concerning annual growth rates of population by township between
the recent two census periods, a few industrial places such as Minlha
(3.60% p.a.) with its Mann oil refinery, Padaung (2.44% p.a.) with its
few big heavy industrial plants, and Kyangin (2.14% p.a.) with a cement
factory, are showing high rates of increase compared with other
townships in the divisions. But, nevertheless Padang and Kyangin did
not register the highest growth rate in their division.

Townships, which showed the highest increase in each division, are
located in suburban areas of the divisional capital or in agricultural
areas. The differential in the rate of increase among states/divisions
in central Burma is rather marginal. Domestic migration due to social
factors is estimated to be limited in each division, thereby, imposing
little changes and is considered to continue so in the future.

Forecasts are extrapolated by time trends between the recent two
censuses by division. Then, the forecasted population is modified, to a
narrow extent, by considering the forecast divisional economic growth.

Finally, those figures are adjusted again under the control of the
total population of the Union.

5.   Problems on the Forecasting

(1) Population of the Union

The key factors for the forecast are the specific birth rates and the death rates by age group. As shown in Fig. 2.3.1, the present population composition in Burma shows a typical pagoda shape. That is, the number of persons between 20 and 35 years increases steeply.

The forecast are prepared under an assumption that both of specific birth rates and death rates by age group will decline at moderate rates, and that the decline of the former will exceed slightly that of the latter.

However, the following possibilities remain worthy of consideration:

a)   Even if specific birth rates show a moderate decline, crude birth rates may not decline due to increasing female population between 15 and 39 years of age. This possibility exists especially in the 1990s.

b)   Crude death rates may decline at a slightly higher rate due to a relatively low increase in the number persons of aged 55 and above. If this is realized, the population may increase at slightly higher rates than forecast. (This tendency is partly shown in the recent sample survey. See Appendix Table 2.3.2)

(2) Population by Division

There are a few townships which showed rather large changes in population between the two census years, although reasons are not disclosed.

Appendix Table 2.3.2-1 BIRTH AND DEATH RATES

Years	Number of towns covered	Crude birth rate (Per 1000 population)	Crude death rate (Per 1000 population)	Infant mortality rate (Per 1000 live birth)
1961	70	38.5	18.4	129.9
1962	64	36.2	16.0	121.5
1963	50	42.7	18.3	121.8
1964	78	41.0	17.6	115.4
1965	69	44.8	17.9	114.5
1966	68	41.1	14.1	92.3
1967	70	41.1	12.2	66.5
1968	67	40.4	12.9	65.8
1969	66	39.3	12.2	65.0
1970	68	36.2	10.8	62.0
1971	70	40.0	11.4	58.1
1972	70	38.0	11.3	61.0
1973	66	35.8	11.1	56.8
1974	71	33.7	11.3	49.8
1975	71	31.5	10.5	53.8
1976	73	29.3	10.6	54.2
1977	73	29.1	10.4	56.3
1978	73	28.3	10.1	50.8
1979	140	26.9	8.7	44.6
1980	136	27.4	8.9	45.8
1981	133	28.3	9.2	47.8
1982	151	28.5	9.2	48.6
1983	142	28.3	9.1	46.8
1984[1]	174	28.4	8.7	45.1
1985[2]	168	28.6	8.7	44.7

Source: Report to the Phyithu Hluttaw

Note: Since 1979, data for towns under Town and City Development Committees as well as smaller towns were included.

1 Provisional actual
2 Provisional

Appendix Table 2.3.2-2
LIFE EXPECTANCY, 1983

Age Group	Total	Male	Female
0- 1	62.5	60.5	64.7
1- 4	63.9	61.9	66.0
5- 9	61.8	59.7	64.1
10-14	57.6	55.5	59.9
15-19	53.0	50.9	55.3
20-24	48.6	46.3	50.9
25-29	44.3	42.0	46.7
30-34	40.0	37.8	42.4
35-39	35.7	33.5	38.1
40-44	31.4	29.2	33.8
45-49	27.4	25.3	29.6
50-54	23.5	21.6	25.5
55-59	19.8	18.1	21.6
60-64	16.4	14.9	17.9
65-69	13.4	12.1	14.6
70-74	10.6	9.5	11.5
75-79	8.0	7.2	8.7
80-84	6.1	5.3	6.8
85 and over	4.8	4.0	5.5

Source: Report to the Pyithu Hluttaw

Appendix 2.4   Forecast Method of Gross Regional Product[1]

There are three methods used in the forecasting of gross regional product (GRP).

1.   Matrix Type

This method is adopted for agriculture, livestock and fishery, forestry, mining, and processing and manufacturing. Followings are the procedures for dividing GDP into GRP.

(1)   Preparation of a matrix

In commodities or commodity groups, for which data on production quantum is available by state/division, the following matrix can be prepared for the basis year.

$$
\begin{array}{cccc|c}
q11 & \cdots \cdots \cdots q1j & \cdots \cdots \cdots q1m & & Q1 \\
| & & | & | & \\
| & & | & | & \\
| & & | & | & \\
| & & | & | & \\
qi1 & \cdots \cdots \cdots qij & \cdots \cdots \cdots qim & & Qi \\
| & & | & | & \\
| & & | & | & \\
| & & | & | & \\
qn1 & \cdots \cdots \cdots qnj & \cdots \cdots \cdots qnm & & Qn \\
\end{array}
$$

where,

q =	production quantum of commodity or commodity group by state/division
i =	commodity or commodity group
j =	state/division
Q =	production quantum in the whole country

A percentage distribution matrix in the basis year is estimated by dividing figures in each cell (qij) by their total (Qi). This stage is shown in Appendix Tables 2.4.1 to 2.4.3. A weight of Qi in GDP is estimated from the forecast of the national economy.

Note 1: Gross regional product (GRP) is defined as the gross value added originated from the terriorial sphere of the region defined.

A weight matrix in the basis year $(q_{ij}/Q_i \cdot w_i)$ is estimated by dividing q_{ij}/Q_i by w_i. Growth rates of Q_i are forecast on a whole economy basis. Therefore, another weight matrix can be determined by multiplying $(q_{ij}/Q_i \cdot w_i)$ by growth rates (r_i).

Weights by state/division in each target year are estimated by totaling all "i"s $q_{ij} \cdot r_i/Q_i \cdot w_i$ by state/division (j). Total values of production by state/division are estimated by multiplying $(\ q_{ij} \cdot r_i/Q_i \cdot W_i)$ by the total value of production of the whole country in the basis year.

This is the first forecasting stage for states/divisions. Attention should be directed to those indicators that are represented by selected commodity or commodities groups, for which data is available only by state/division. After this stage, co-ordination of statistical discrepancies between total figures and cumulative figures by state/division are conducted and some adjustments made considering implementation of projects.

In the case of agriculture, other adjustments are carried out in selected divisions with available data on a few special crops like tea, coconut and dry chilies. In processing and manufacturing, production quantum by state/division in selected commodity groups are indirectly estimated by using various Divisional data provided by the Planning Department.

2. Population Distribution Type

This method is adopted for construction, communications, financial institutions, social and administrative services, rentals and other services, and trade.

In this type, each activity is divided into three categories for the whole country, for a regional area, and for state/division. Fore example, there is a kind of trade for the whole country, another for a region, and the rest is for a division.

Considering data from Burma and from other countries, activities take place along with the activities of the Rangoon division, and regional activities take place in regional business centres like Rangoon, Mandalay, Moulmein, and several other large townships. The

assumed values of regional activities are therefore allocated to the
Rangoon division and other regional business center divisions.

Residuals are divided into each division in proportion to
population.

3. Co-efficient Type

This method is adopted for electric power and transportation. Due
to a limitation in available data, a consumers' location basis is used
for electric power estimates, and a requesters' location basis is used
for transportation estimates.[1]

In electric power, power consumed is divided into Rangoon and other
all areas, using the "Report" part 6, and a power consumed ratio is
estimated by Rangoon and other all areas in the basis year. Ratios of
industrial use, domestic use and service use for the basis year are
estimated by using the "Report" and then devided between Rangoon and
other all areas.

Industrial electricity use is a function of mining, processing and
manufacturing. Domestic electricity use is related to total final
consumption; service electricity use is related to trade and services
except transportation. Each type of electric power consumed is
forecasted to grow as a function of those activities in Rangoon and
other all areas.

An adjusted transportation matrix is used for the forecasting due
to the different transportation structures of Rangoon and other areas.

Note 1 Examples are as follows:

(1) Case 1: Electric power is generated at a power station in
    Irrawaddy division, and is consumed at a household in Rangoon
    division after travelling transmission lines and distribution
    lines. In this case, the value of production of the electric power
    is counted in Rangoon division on a consumer location basis.

(2) Case 2: Gypsum is produced in Shan state. It is transported to a
    cement factory in Irrawaddy division and is used as one of the
    materials for cement production. In this case, the value of
    production of the transportation sector is counted in Irrawaddy
    division on a requesters' basis.

(3) Case 3: A passenger, who lives in Rangoon, travels to Mandalay by
    train. In this case, the value of production of the transportation
    sector is counted in Rangoon division on a requesters' basis.

Appendix Table 2.4.1 AGRICULTURAL PRODUCTION AND SOWN ACREAGE BY STATE/DIVISION, 1985/86

(Agricultural production of main crops)

Percentage distribution

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Sub-total of Divisions Percentage	Nationwide Quantity (1,000 tons)
1. Paddy	11	31	19	2	4	8	7	1	83	100	14,466
2. Wheat	-	-	-	-	7	76	-	14	83	100	234
3. Maize	-	13	5	14	19	25	0	-	90	100	378
4. Pulses	1	-	10	13	25	21	-	-	70	100	735
5. Groundnut	3	11	17	20	20	17	1	-	89	100	651
6. Sesamum	-	14	8	26	30	19	-	-	97	100	269
7. Sunflower	-	42	14	4	-	-	-	-	60	100	186
8. Cotton	-	-	4	20	59	16	1	-	100	100	112
9. Jute	2	68	30	-	-	-	-	-	100	100	50
10. Rubber	2	-	7	-	-	-	-	-	9	100	16
11. Sugarcane	1	-	30	-	39	-	3	-	73	100	3,786
12. Tobacco	-	-	10	21	32	19	3	-	85	100	134

(Sown acreage of main crops)

Percentage distribution

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Sub-total of Divisions Percentage	Nationwide Quantity (1,000 tons)
1. Paddy	10	27	17	3	5	10	7	1	80	100	12,076
2. Wheat	-	-	-	-	7	75	-	15	82	100	346
3. Maize	-	7	4	19	11	22	1	-	79	100	596
4. Pulses	1	-	7	10	17	18	-	-	53	100	2,379
5. Groundnut	3	9	15	22	22	20	1	-	92	100	1,597
6. Sesamum	-	7	6	31	30	24	0	-	98	100	3,668
7. Sunflower	-	39	13	5	-	-	0	-	57	100	488
8. Cotton	-	-	6	22	51	21	0	-	100	100	569
9. Jute	2	65	33	-	-	-	-	-	100	100	151
10. Rubber	3	-	5	-	-	-	1	-	9	100	193
11. Sugarcane	0	-	16	16	-	-	2	-	38	100	337
12. Tobacco	-	-	13	17	29	19	5	-	83	100	161

Source: Report to the Pyithu Hluttaw for the whole country.
Percentage distributions by state/division are estimated by data provided
from the Planning Department.

Appendix Table 2.4.2   PRODUCTION OF LIVESTOCK, FISHERY AND FORESTRY BY STATE/DIVISION, 1985/86

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Sub-total of Divisions	Percentage	Nationwide Quantity
A. (Production of livestock and fishery by Selected commodities), Percentage Distribution											
1. Fresh milk	5	12	10	14	13	16	6	1	77	100	392,373
2. Beef	5	11	10	13	13	15	6	1	74	100	22,579
3. Mutton	2	2	1	27	38	17	5	2	94	100	4,678
4. Pork	10	20	15	9	10	8	2	4	76	100	30,671
5. Fowl meat	12	17	18	16	9	8	5	2	87	100	51,661
6. Duck meat	29	30	26	1	3	1	1	0	91	100	12,365
7. Fish	3	48	7	0	3	3	10	0	74	100	426,869
B. (Production of forestry by selected commodities), Percentage Distribution											
1. Teak	81	–	7	3	6	3	–	–	100	100	410
2. Hardwood	2	6	15	5	17	10	1	–	56	100	1,298
3. Teak and hardwood post	–	–	39	9	8	33	8	1	98	100	35
4. Teak and hardwood pole	–	30	8	9	1	11	27	–	86	100	1,337
5. Fire wood	11	11	13	3	5	9	1	–	53	100	16,900
6. Charcoal	0	68	3	1	3	2	0	–	77	100	781
7. Bamboo	2	12	20	14	9	12	9	1	79	100	962
8. Cane	–	0	1	8	3	28	4	–	44	100	59

Source: Report to the Pyithu Hluttaw for the whole country.
Percentage distributions by state/division are estimated by data provided from the Planning Department.

Note: 1. Production unit for livestock and fishery is 1,000 viss (1 viss = 3.6 lb.)
2. Production unit for forestry: wood post and pole 1,000 pieces; bamboo—1 million pieces; and other products 1,000 cubic tons.

Appendix Table 2.4.3   PRODUCTION VALUE OF PROCESSING AND MANUFACTURING, 1985/86
(Percentage Distribution)

	Rangoon	Irrawaddy	Pegu	Magwe	Mandalay	Sagaing	Rakhine	Chin	Sub-total	Nationwide
1. Food and beverage	12.1	19.2	15.8	8.1	12.6	9.8	4.8	0.3	82.6	100.0
2. Clothing and wearing apparel	48.6	10.8	-	-	5.5	10.5	-	-	75.4	100.0
3. Construction materials	14.4	28.7	11.1	11.0	11.6	8.4	2.3	-	87.5	100.0
4. Personal and household goods	67.0	3.0	5.0	3.0	8.0	-	3.0	2.0	91.0	100.0
5. Industrial raw materials	2.7	0.8	2.2	28.4	28.8	22.0	-	2.0	86.9	100.0
6. Mineral and Petroleum products	46.5	3.0	3.0	36.0	-	-	9.5	-	98.0	100.0
7. Machinery and equipment, total	53.3	-	29.5	15.5	-	-	-	-	98.3	100.0

Note: Figures are estimated by utilizing the Pyithu Hluttaw report and data provided
by the Planning Department.

2-40

Appendix 2.5 Development Potential of the Direct Influence Area

1. Possibility and Potential for Development

It may be necessary to divide development concepts into
possibilities and potentials. A Development possibility is something
which night occur under conditions which ignore the constraints of the
present socio-economic situation, while a development potential is
defined as something which might occur within the present constraints
which, in some cases, may be constraints based on the world economy's
business cycle. An example of the difference between the two concepts
is as follows.

Multiple cropping is technically possible in many areas of lower
Burma. To achieve multiple cropping, however, many projects are needed,
such as flood control, irrigation facilities, technical improvements in
cultivation, increased fertilizers input, and introduction of
pesticides. Implementing those projects is severely restricted by
financing, particularly foreign currency financing. Therefore, the
development potential in the agricultural sector is smaller in magnitude
than the development possibility at the present time.

Any region's economic development potential is realized within the
context of national economic development. Therefore, the development of
any region is restricted by national economic development priorities.

Development priority may be focused on a specific region, where
more benefits will achieve with similar effort than other regions. In
these cases, constraints for regional development may be considerably
reduced than those of other regions, and the gap between possibility and
potential will be narrowed. Regional development potential is therefore
greatly influenced by government regional development policies.

Following are observations concerning the development potential in
the influence area, given the above mentioned context.

2. Constraining Factors for Development Potential in the Influence
   Area

   Two constraining factors are considered; the first is the
geographic location of the project; and the second is the socio-economic
impact of the project on regional development.

   The project is located close to the border of Pegu and Magwe
division, and it may have a large influence on both Magwe division and
the western half of Pegu division. Development potential analysis
should therefore be concentrated in Magwe division, the west half of
Pegu division, and other areas close the project site.

   The second relates to economic activity impact. As the project
will benefit transport services first, it is necessary to study economic
activities most strongly influenced by transportation. Sectors strongly
related to transportation are consumption in the final demand,
processing, manufacturing, trade and agriculture in the inter-industry
use, all according to the transportation matrix in Appendix Table 2.5.1.

   For inter-industry use, the majority of construction work is
related to final capital fixed formation (investment), and more than
half of service activities except transportation are related to
consumption. Consumption depends on population and income.

   Therefore, an effective measure to increase the development
potential caused by the project is to generate economic growth centering
processing and manufacturing.

3. Development potential: with Project and without the Project

   Differences in regional economic growth rates for a with the
project case and a without the project case are considered. In the
national economy of Burma, the overall economic growth may not be
affected directly by the completion of a single project, as economic
growth is more directly controlled by import capability. Even if the
project has some influence, it has to be generated through export
promotion or import substitution.

Appendix Table 2.5.1 AN ESTIMATED COMPOSITION OF TRANSPORTATION
IN THE PRESENT BURMESE ECONOMY (VALUE OF
PRODUCTION, AND REQUESTERS' PLACE BASIS)

	Passenger	Goods	Total
Agriculture	$0.4^{\%}$	$2.7^{\%}$	$3.1^{\%}$
Livestock and Fishery	0.0	1.6	1.6
Forestry	0.0	0.1	0.1
Mining	0.2	0.1	0.3
Manufacturing and Processing	1.1	9.5	10.6
Power	0.1	0.1	0.2
Construction	0.1	2.4	2.5
Services except Transportation	1.2	1.4	2.6
Transportation	2.1	0.5	2.6
Trade	3.7	0.5	4.2
Inter-industry Use, total	8.9	18.9	27.8
Consumption	45.6	20.0	65.6
Investment	0.0	2.1	2.1
Exports	2.8	1.7	4.5
Final Demand, total	48.4	23.8	72.2
Total	57.3	42.7	100.0

Note: The estimating method is explained in Appendix 2.2.

Total transportation = 100.

In the regional economy, some influence will be directly generated by the project. Economic growth rates in the influence area will increase when compared to the no-project case, while there may be decline of economic growth rates outside the influence area, because more economic resources will be committed to the direct influence area, resulting in larger products.

4.   An Approval of Development Potential in the DIA

Following is examination of the future direction of the DIA, centering on Magwe division and the west half of Pegu division.

(1) Primary industries

The development of primarily industries is affected largely by geographic and climatic conditions. Development is represented by the land utilization pattern. Magwe division has 28.6% of the total culturable land, while Pegu division has 35.7% of the total of the calturable land as shown in Table 2.3.2. Main crops in Magwe division are oil seeds like seasamum and groundnut, while in Pegu division the main crop is paddy. Values of agricultural production per acre by main crop are estimated as shown in the following Appendix Table 2.5.2.

As shown in Appendix Table 2.5.2, paddy, pulses and sesamum belong to low land productivity crops. Magwe is estimated to be in the low productivity area, as opposed to high land productivity of crops sown in Pegu (See Appendix Table 2.4.2). Magwe has considerable possibilities to promote land productivity in the future in view of the present cropping pattern. Land productivity is but one of the factors for crops sown selection. Economic growth will require improvement in other factors such as demand, season sown, and cultivation methods. Possible improvement measures like multi-cropping, diversification of crops sown and high yield variety extension works can be proposed in the DIA.

In view of its geographic location, Pegu has an advantage in the production of fowl meat, duck meat and fresh milk, while Magwe, due to its weather conditions and land utilization pattern, has an advantage for pork, mutton and beef. In forestry, Pegu has an advantage in reserved forests, and Magwe has a development resource in its other forest area.

Appendix Table 2.5.2 AGRICULTURAL LAND PRODUCTIVITY BY MAIN CROPS AND
DISTRIBUTION OF AREA SOWN IN MAGWE AND PEGU, 1985/86

| | Agricultural Land Productivity (Average of all crops = 100) | Distribution of Sown Area | |
| | | Pegu Division | Magwe Division |
		(Total of main crops mentioned = 100)	
Paddy	59	68	15
Wheat	162	–	–
Maiz	72	1	6
Pulses	55	6	11
Groundnut	298	8	16
Sesamum	74	9	44
Sunflower	169	2	1
Cotton	86	1	6
Jute	120	2	–
Rubber	34	*1	–
Sugar Cane	121	2	–
Tobacco[2]	115	1	1
Others	194	–	–
All crops	100	100	100

Source: Documents provided by Planning Department.

Note: 1 *: less than 0.5
         2 Tobacco: Virginia tobacco only in agricultural land
                     productivity. Virginia and Burmese tobacco are
                     combined in the calculation of distribution
                     of sown acreage.

(2) Secondary Industries

    The deposits of mineral oil and natural gas are important resources
for secondary industries in the both divisions.

    Mining has development potential primarily in crude oil and natural
gas. Processing and manufacturing are also advantageous if they
encourage development of oil and natural gas related industries.
Moreover, the west bank of Irrawaddy River in Pegu division has atracted
the development of a heavy industrial complex. Therefore, the region
has a high potential for the development of heavy and chemical
industries in the future.

(3) Tertiary Industries

    Prome is a regional business centre whose development is likely to
continue. However, general potential for the tertiary sector
development may be less than the Rangoon and Mandalay regions, in which
a large infrastructure for the tertiary industries has already been
accumulated.

Appendix 2.6 Zonal Distribution of Cross Regional Product

The gross domestic product (GDP) was divided into Divisions/States as described in 2.3.3. The Gross Regional Product (GRP) of the Divisions in the Direct Influence Area (DIA) are, in Appendix Table 2.6.1, distributed into zones by sector as described in the following paragraphs. Necessary data by which the distribution is conducted are in reality quite limited[1]. The percent share distribution among zones is determined by using available data combined with the team's own assessment.

Appendix Table 2.6.1 GROSS REGIONAL PRODUCT

(In million Kyat)

Division Year	1985/86	1990/91	2000/01	2010/11
Pegu	6,871.7	8,473.7	12,585.3	19,742.9
Magwe	5,422.0	6,943.6	10,822.9	17,561.0
Irrawaddy	8,602.6	10,730.3	16,288.5	25,806.0
Rakhine	2,165.3	2,645.9	3,861.6	5,952.6
Mandalay	7,567.0	9,720.1	15,317.2	24,882.1
Total	30,628.6	38,513.6	58,875.5	93,944.6
Whole Country	57,732.6	72,544.4	111,198.5	178,510.8

Note: Annual average growth of the total of five Divisions is 4.6% from 1985/86 to 2010/11.

1. Agriculture

This sector is divided into two groups: one produces paddy, jute, sugar cane; and the other produces groundnuts, sesamum, cotton and so on. The percentage share of two groups is forecast to change reflecting the government policies towards the diversification of agriculture. Their forecasts are shown below in Appendix Table 2.6.2.

Sources:

1 Report to the Pyithu Hluttaw, 1985/86 and 1986/87,
   Division values of production, 1982/82 - 1985/86 (plans) (Planning Department, M.O.P.F),
   Utilization of land in the Direct Influence Area in 1984/85,
   Classified Labour Force excluding Agriculture, Forestry and Fishery in the Direct Influence Area, 1984 (Appendix Table 2.3.1.3),
   Discussions with Division and Township authorities.

Appendix Table 2.6.2   CHANGES IN THE SHARE OF AGRICULTURAL SECTOR IN GRP

(In percent)

		Rakhin	Mandalay	Magwe	Pegu	Irrawaddy
1985/86	1st Group	96.2	18.2	8.5	55.6	66.7
	2nd Group	3.8	81.8	91.5	44.4	33.3
1990/91	1st Group	95.2	17.7	7.7	52.6	58.5
	2nd Group	4.8	82.3	92.3	47.4	41.5
2000/01	1st Group	94.3	16.7	6.6	47.1	46.0
	2nd Group	5.7	83.3	93.4	52.9	54.0
2010/11	1st Group	92.6	16.4	5.6	42.8	34.4
	2nd Group	7.4	83.6	94.4	57.2	65.6

Classified areas, Appendix Table 2.3.1.3 Utilization of Land in the Direct Influence Area in 1984/85, are used to determine the percent share of products among the zones in a Division. The area sown in a zone is weighted by the relative magnitude within the division through the following formulas.

1st group:

$$AS_{i1} = NAS_i \times \frac{\dfrac{NAS_i}{NAS_i + CW_i + FL_i}}{\dfrac{NAS_d}{NAS_d + CW_d + FL_d}}$$

2nd group:

$$AS_{i2} = NAS_i \times \frac{\dfrac{CW_i + FL_i}{NAS_i + CW_i + FL_i}}{\dfrac{CW_d + FL_d}{NAS_d + CW_d + FL_d}}$$

where AS : area sown

NAS : net area sown

CW : culturable waste land

FL : fallow land

i : zone i

d : the Division

The percentage share of the zones in the first group is used for figures of the first agriculture category and that in the second group is used for the other category. The total value of these two groups is GRP in the agriculture sector in a zone in a specific year.

2. Livestock and Fishery

Classified areas, Appendix Table 2.3.1.3 Utilization of Land in the Direct Influence Area for 1984/85, are used to determine the distribution of livestock and subsequently the production of livestock by zone. The livestock production is much larger in the area where culturable and fallow lands predominant than in the area where sown acreage is prevalent. Since statistical data for livestock production by township is not available, it is assumed that the production patterns are similar to those of the second agriculture group which follows the distribution pattern of culturable waste land and fallow land. Production in the Divisions of Magwe, Rakhine, Pegu and Mandalay are divided into zones by this method.

Fishery in these inland Divisions is considered marginal when compared with the livestock and it is reasonable to assume that its production, mostly from rivers, is in proportion to the livestock production. Rakhine's situation is different because it faces to the Bay of Bengal on the west side. However, fishery productions are divided into Zone 9 (Sandoway) and Zone 15 (Akyab) in proportion to the livestock production.

In Irrawaddy Division, the sea fishery is forecast to have the following percentages of total sector production, which are allocated to Zone 16 (Bassein).

    1985/86   15.6%,   1990/91   15.7%
    2000/01   13.7%,   2010/11   11.7%

The remaining percentage of the total livestock and river fishery products is divided into Zone 1 (Kyangin) and Zone 16 (Bassein) by using the share of the second agriculture group.

3. Forestry

Appendix Table 2.3.1.2 Utilization of Land in the Direct influence Area in 1984/85 is also used to distribute forest production among zones. In the Table, reserved forests mean forest being administered by Governmental organizations for the purpose of harvesting trees of a certain volume on a 30 to 50 year cycle reproduction program. Other forest area is those not yet covered by reproduction planning. Reserved forest area is used to determine the percent share of forest production among the zones.

4. Mining

Mineral resources are extracted from specific areas. The production is concentrated in the zones containing these specific areas. The zones producing mineral resources are determined as follows:

A. Magwe

The shares of production value between the curde oil and natural gas in Magwe Division are forecast to change, giving an increasing share for natural gas.

	1985/86	1990/91	2000/01	2010/11
Crude oil	94.0%	90.0%	78.2%	60.7%
Natural gas	6.0%	10.0%	21.8%	39.3%

Zone 7, covering Chauk and Yenangyaung, is assumed to produce 40% and Zone 6 covering Thayet and Minhla produces 60% of the Division's crude oil output. Natural gas is produced in Zone 6, Zone 7 and Zone 8, including Minbu. Zone 6 also produces limestone. The production of natural gas is divided equally into these zones.

B. Pegu

Zone 3 (covering Prome) represents all mineral outputs in the Division.

C. Mandalay

Zone 10 covering Myingyan and Nyaung U produces little mineral output, while Zone 12 extending form Mandalay to Shan State produces tungsten, gem, quarry, etc. All outputs are assumed to be extracted from Zone 12.

D. Irrawaddy

Limestone is produced in Zone 1 (Kyangin is included). Its production is forecast to change as percentages of mining sector production within the Division as follows:

    1985/86   2.7%,   1990/91   2.9%
    2000/01   2.9%,   2010/11   2.3%

Crude oil and natural gas in the Division, which comprise the balance of division production, are produced 50% in Zone 1 and 50% in Zone 16 (the remaining part of Irrawaddy Division).

5. Manufacturing

This sector's Gross Regional Product is divided into food processing and other manufacturing by using the following percentages in Appendix Table 2.6.3, which are determined by referring to data provided by the Planning Department, which are the basic data for estimating GRP in processing and manufacturing.

Appendix Table 2.6.3   SHARE OF FOOD PROCESSING IN THE
                       MANUFACTURING SECTOR

(In percent)

	Rakhine	Mandalay	Magwe	Pegu	Irrawaddy
1985/86	80.5	71.5	45.0	85.0	84.5
1990/91	81.5	70.0	44.0	83.5	86.0
2000/01	81.0	66.5	42.0	79.5	86.0
2010/11	81.5	55.5	33.0	75.5	87.5

A. Food Processing

Of the values corresponding to the figures in the Table above, a special percentage share is given to zones as following:

25% for Zone 13 (Mandalay)   Brewery and sugar mills

10% for Zone 11 (Pakokku)   Virginia tobacco

The remainder is distributed into zones in proportion to GRP of the agriculture sector. Food processing such as rice milling, seed oil processing, etc., depends closely on agricultural production.

B. Other Manufacturing

Zonal distribution of production in other manufacturing is determined by referring to a labour force distribution pattern. The pattern of employees in state enterprises in Appendix Table 2.3.1.2 is used to find the percentage distribution of other manufacturing products.

6. Other Goods

A. Power

The percentage share of power output is forecast to change as follow:

(In percent)

	Rakhine	Mandalay	Magwe	Pegu	Irrawaddy
1985/86	21.9	18.3	24.5	21.9	21.0
1990/91	28.8	24.3	31.4	27.9	26.6
2000/01	37.8	33.9	41.8	37.3	35.4
2010/11	39.7	37.2	45.3	40.2	37.8

Values corresponding to the above percentages are further divided into three groups:

mining and manufacturing   57%

services   13%

households   30%

Mining and manufacturing group is divided into zones in proportion
to the total amounts of mining and manufacturing sector in GRP.
Services group is divided by using the total amount of the service
(except transportation) and trade sectors. And, households group is
divided into zones in proportion to the population distribution in
each forecast year.

B. Construction

The amount is divided into zones in proportion to population
distribution in each forecast year.

7. Other Services

In four Divisions other than Mandalay, the total of each Division
in 1985/86 is divided into zones in proportion to the labour force
distribution shown in Appendix Table 2.3.1.2.

For the other forecast years, they are divided into zone with the
following equation.

(Total amount ratio by zone) = (1985/86 ratio by zone)

$$x \quad \dfrac{\dfrac{\text{population in each forecast year}}{\text{population in 1985/86}} \text{ in each zone}}{\dfrac{\text{population in each forecast year}}{\text{population in 1985/86}} \text{ in the Division}}$$

In Mandalay, 10% is allocated into Zone 13 considering the urban
activities in Mandalay town area. The remaining 90% is divided into
Zone 10 and Zone 13 with the same methods of the other four Divisions.

8. Transportation

Transportation is distributed into zones in proportion to the
distribution of the total amounts from 1. Agriculture through 9. Trade,
except 8. Transportation.

9. Trade

Concentrated activities in selected large townships are taken into consideration. The following percentage figures within each Division are assigned to the zone which includes a large township.

29% to Zone 13   (Mandalay)
27% to Zone 15   (Sittwe)
9% to Zone 12   (Pegu)
9% to Zone 16   (Bassein)
8% to Zone 3   (Prome)

The remaining percentages are distributed into zones in proportion to the labour force distribution shown in Appendix Table 2.3.1.2 for 1985/86.

For the other forecast years, they are divided into zone with the following equation.

(Total amount ratio by zone) = (1985/86 ratio by zone)

$$x \quad \frac{\dfrac{\text{population in each forecast year}}{\text{population in 1985/86} } \text{ in each zone}}{\dfrac{\text{population in each forecast year}}{\text{population in 1985/86} } \text{ in the Division}}$$

The percentage distribution of GRP by sector and zone is shown in Appendix Table 2.6.4, and the distribution of values at 1985/86 prices is shown in Appendix Table 2.6.5. Summaries of the zonal GRP are presented in Chapter 2 of the main report.

Appendix Table 2.6.4

-1. ZONAL SHARE OF GROSS REGIONAL PRODUCT: (CASE - 1)

1985/86

	Pegu					Magwe					
	2	3	4	12	Total	5	6	7	8	11	Total
1. Agriculture	0.2023	0.2090	0.0315	0.5572	1.0000	00635	0.0745	0.4199	0.1918	0.2503	1.0000
2. L/F[1]	0.1250	0.2529	0.0571	0.5650	1.0000	0.0620	0.0749	0.4281	0.1929	0.2421	1.0000
3. Forest	0.1545	0.1505	0.1030	0.5920	1.0000	0.0641	0.1179	0.1410	0.4000	0.2770	1.0000
4. Mining	-	1.0000	-	-	1.0000	-	0.5757	0.3830	0.0202	0.0201	1.0000
5. M/P[2]	0.1780	0.1977	0.0427	0.5816	1.0000	0.0663	0.0704	0.3647	0.1802	0.3184	1.0000
6. Other goods	0.2014	0.2087	0.0361	0.5538	1.0000	0.0768	0.1034	0.3369	0.1793	0.2986	1.0000
7. Transport	0.1831	0.2249	0.0388	0.5339	1.0000	0.0645	0.0944	0.3920	0.1838	0.2653	1.0000
8. Other services	0.1890	0.3149	0.0479	0.4482	1.0000	0.0761	0.0690	0.3539	0.1879	0.3131	1.0000
9. Trade	0.1569	0.3415	0.0399	0.4617	1.0000	0.0761	0.0690	0.3539	0.1879	0.3131	1.0000
Grand Total	0.1830	0.2441	0.0389	0.5340	1.0000	0.0646	0.0942	0.3919	0.1841	0.2652	1.0000

	Irrawaddy			Rakhine			Mandalay		
	1	16	Total	9	15	Total	10	13	Total
1. Agriculture	0.1179	0.8821	1.0000	0.1221	0.8779	1.0000	0.2300	0.7700	1.0000
2. L/F[1]	0.0869	0.9131	1.0000	0.0228	0.9772	1.0000	0.2201	0.7799	1.0000
3. Forest	0.3167	0.6833	1.0000	0.6108	0.3892	1.0000	0.0023	0.9977	1.0000
4. Mining	0.5133	0.4867	1.0000	0.1289	0.8711	1.0000	0.1654	0.8346	1.0000
5. M/P[2]	0.1276	0.8724	1.0000	0.1289	0.8711	1.0000	0.1654	0.8346	1.0000
6. Other goods	0.1230	0.8770	1.0000	0.1299	0.8701	1.0000	0.1902	0.8098	1.0000
7. Transport	0.1241	0.8759	1.0000	0.1397	0.8603	1.0000	0.1786	0.8214	1.0000
8. Other services	0.1420	0.8580	1.0000	0.1561	0.8439	1.0000	0.1332	0.8668	1.0000
9. Trade	0.1292	0.8708	1.0000	0.1139	0.8861	1.0000	0.0946	0.9054	1.0000
Grand Total	0.1242	0.8758	1.0000	0.1315	0.8685	1.0000	0.1787	0.8213	1.0000

Notes: 1 L/F means livestock and forestry

2 M/P means manufacturing and processing

-2. ZONAL SHARE OF GROSS REGIONAL PRODUCT: (CASE - 1)

1990/91

	Pegu					Magwe					
	2	3	4	12	Total	5	6	7	8	11	Total
1 Agriculture	0.1981	0.2114	0.0328	0.5577	1.0000	0.0634	0.0746	0.4207	0.1918	0.2495	1.0000
2. L/F[1]	0.1250	0.2529	0.0571	0.5650	1.0000	0.0621	0.0750	0.4280	0.1930	0.2419	1.0000
3. Forest	0.1551	0.1507	0.1029	0.5913	1.0000	0.0642	0.1189	0.1396	0.4000	0.2773	1.0000
4. Mining	-	1.0000	-	-	1.0000	-	0.5598	0.3735	0.033	0.0334	1.0000
5. M/P[2]	0.1745	0.2005	0.0451	0.5800	1.0000	0.0675	0.0684	0.3654	0.1813	0.3174	1.0000
6. Other goods	0.1955	0.2107	0.0376	0.5562	1.0000	0.0774	0.1117	0.3388	0.1775	0.2946	1.0000
7. Transport	0.1782	0.2470	0.0404	0.5344	1.0000	0.0674	0.0947	0.3920	0.1848	0.2641	1.0000
8. Other services	0.1852	0.3140	0.491	0.4517	1.0000	0.0783	0.0691	0.3545	0.1871	0.3110	1.0000
9. Trade	0.1538	0.3408	0.0409	0.4645	1.0000	0.0783	0.0690	0.3545	0.1871	0.3110	1.0000
Grand Total	0.1782	0.2471	0.0405	0.5342	1.0000	0.0650	0.0948	0.3920	0.1840	0.2642	1.0000

	Irrawaddy			Rakhine			Mandalay		
	1	16	Total	9	15	Total	10	13	Total
1. Agriculture	0.1141	0.8859	1.0000	0.1211	0.8789	1.0000	0.2297	0.7703	1.0000
2. L/F[1]	0.0868	0.9132	1.0000	0.0230	0.9770	1.0000	0.2199	0.7801	1.0000
3. Forest	0.3172	0.6828	1.0000	0.6110	0.3890	1.0000	0.0032	0.9968	1.0000
4. Mining	0.5130	0.4870	1.0000	-	-	-	-	1.0000	1.0000
5. M/P[2]	0.1279	0.8721	1.0000	0.1279	0.8721	1.0000	0.1652	0.8348	1.0000
6. Other goods	0.1241	0.8759	1.0000	0.1297	0.8703	1.0000	0.1848	0.8152	1.0000
7. Transport	0.1220	0.8780	1.0000	0.1394	0.8606	1.0000	0.1773	0.8227	1.0000
8. Other services	0.1420	0.8580	1.0000	0.1561	0.8439	1.0000	0.1310	0.8690	1.0000
9. Trade	0.1292	0.8708	1.0000	0.1139	0.8861	1.0000	0.0930	0.9070	1.0000
Grand Total	0.1221	0.8779	1.0000	0.1308	0.8692	1.0000	0.1773	0.8227	1.0000

Notes: See Appendix Table 2.6.4-1

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2000/01

	Pegu					Magwe					
	2	3	4	12	Total	5	6	7	8	11	Total
1. Agriculture	01905	0.2158	0.0353	0.5584	1.0000	0.0632	0.0746	0.4217	0.1920	0.2485	1.0000
2. L/F[1]	0.1250	0.2529	0.0570	0.5651	1.0000	0.0620	0.0749	0.4280	0.1930	0.2421	1.0000
3. Forest	0.1547	0.1513	0.1030	0.5910	1.0000	0.0644	0.1178	0.1396	0.4000	0.2782	1.0000
4. Mining	-	1.0000	-	-	1.0000	-	0.5126	0.3422	0.0726	0.0726	1.0000
5. M/P[2]	0.1681	0.2061	0.0507	0.5752	1.0000	0.0679	0.0684	0.3648	0.1816	0.3173	1.0000
6. Other goods	0.1864	0.2162	0.0403	0.5573	1.0000	0.0795	0.1111	0.3401	0.1772	0.2921	1.0000
7. Transport	0.1700	0.2521	0.0439	0.5340	1.0000	0.0652	0.0917	0.3913	0.1853	0.2655	1.0000
8. Other services	0.1788	0.3121	0.0515	0.4576	1.0000	0.0827	0.0693	0.3556	0.1856	0.3068	1.0000
9. Trade	0.1486	0.3395	0.0430	0.4659	1.0000	0.0827	0.0693	0.3556	0.1856	0.3068	1.0000
Grand Total	0.1703	0.2523	0.0434	0.5340	1.0000	0.0662	0.0917	0.3912	0.1854	0.2655	1.0000

	Irrawaddy			Rakhine			Mandalay		
	1	16	Total	9	15	Total	10	13	Total
1. Agriculture	0.1117	0.8883	1.0000	0.1202	0.8798	1.0000	0.2292	0.7708	1.0000
2. L/F[1]	0.0889	0.9111	1.0000	0.0230	0.9770	1.0000	0.2200	0.7800	1.0000
3. Forest	0.3170	0.6830	1.0000	0.6108	0.3892	1.0000	0.0032	0.9968	1.0000
4. Mining	0.5143	0.4857	1.0000	-	-	-	-	1.0000	1.0000
5. M/P[2]	0.1276	0.8724	1.0000	0.1270	0.8730	1.0000	0.1639	0.8361	1.0000
6. Other goods	0.1264	0.8736	1.0000	0.1294	0.8706	1.0000	0.1785	0.8215	1.0000
7. Transport	0.1212	0.8788	1.0000	0.1368	0.8632	1.0000	0.1758	0.8242	1.0000
8. Other services	0.1421	0.8579	1.0000	0.1561	0.8439	1.0000	0.1289	0.8711	1.0000
9. Trade	0.1293	0.8707	1.0000	0.1140	0.8860	1.0000	0.0915	0.9085	1.0000
Grand Total	0.1212	0.8788	1.0000	0.1281	0.8719	1.0000	0.1758	0.8242	1.0000

Notes: See Appendix Table 2.6.4-1

2010/11

	Pegu					Magwe				
	2	3	4	12	Total	5	6	7	8	11	Total
1. Agriculture	0.1845	0.2192	0.0373	0.5590	1.0000	0.0630	00747	0.4227	0.1921	0.2475	1.0000
2. L/F[1]	0.1250	0.2530	0.0570	0.5650	1.0000	00620	0.0750	0.4280	0.1930	0.2420	1.0000
3. Forest	0.1550	0.1510	0.1030	0.5910	1.0000	0.0642	0.1179	0.1398	0.4000	0.2781	1.0000
4. Mining	--	1.0000	0	0	1.0000	0	0.4428	0.2952	0.1310	0.1310	1.0000
5. M/P[2]	0.1633	0.2107	0.0557	0.5703	1.0000	0.0696	0.0685	0.3628	0.1830	0.3161	1.0000
6. Other goods	0.1796	0.2193	0.0427	0.5584	1.0000	0.0833	0.1060	0.3386	0.1795	0.2926	1.0000
7. Transport	0.1639	0.2560	0.0461	0.5340	1.0000	0.0678	0.0887	0.3883	0.1875	0.2677	1.0000
8. Other services	0.1734	0.3103	0.0538	0.4625	1.0000	0.0875	0.0694	0.3566	0.1840	0.3025	1.0000
9. Trade	0.1445	0.3389	0.0427	0.4739	1.0000	0.0875	0.0694	0.3566	0.1840	0.3025	1.0000
Grand Total	0.1638	0.2564	0.0456	0.5342	1.0000	0.0678	0.0887	0.3884	0.1875	0.2676	1.0000

	Irrawaddy			Rakhine			Mandalay		
	1	16	Total	9	15	Total	10	13	Total
1. Agriculture	0.1095	0.8905	1.0000	0.1184	0.8816	1.0000	0.2290	0.7710	1.0000
2. L/F[1]	0.0909	0.9091	1.0000	0.0230	0.9770	1.0000	0.2200	0.7800	1.0000
3. Forest	0.3170	0.6830	1.0000	0.6100	0.3891	1.0000	0.0031	0.9969	1.0000
4. Mining	0.5120	0.4880	1.0000	--	--	--	--	1.0000	1.0000
5. M/P[2]	0.1279	0.8721	1.0000	0.1255	0.8745	1.0000	0.1615	0.8385	1.0000
6. Other goods	0.1276	0.8724	1.0000	0.1293	0.8707	1.0000	0.1738	0.8262	1.0000
7. Transport	0.1212	0.8788	1.0000	0.1370	0.8630	1.0000	0.1889	0.8111	1.0000
8. Other services	0.1421	0.8579	1.0000	0.1561	0.8439	1.0000	0.1264	0.8736	1.0000
9. Trade	0.1293	0.8707	1.0000	0.1140	0.8860	1.0000	0.0897	0.9103	1.0000
Grand Total	0.1211	0.8789	1.0000	0.1283	0.8717	1.0000	0.1732	0.8268	1.0000

Notes: See Appendix Table 2.6.4-1

Appendix Table 2.6.5

-1. ZONAL GROSS REGIONAL RRODUCT

1985/86   (In million Kyat, 1985/86 prices)

	Pegu					Magwe				
	2	3	4	12	Total	5	6	7	8	11	Total
1. Agriculture	678.6	701.0	105.6	1,869.0	3,354.2	155.7	182.6	1,029.4	470.2	613.6	2,451.5
2. L/F[1]	68.2	137.8	31.1	307.9	545.0	30.3	36.6	209.2	94.3	118.2	488.6
3. Forest	17.3	16.8	11.5	66.2	111.8	2.9	5.2	6.3	17.8	12.3	44.5
4. Mining	-	9.8	-	-	9.8	-	122.3	81.3	4.4	4.4	212.4
5. M/P[2]	131.9	146.5	31.6	430.9	740.9	40.7	43.3	224.1	110.8	195.7	614.6
6. Other goods	27.7	28.7	5.0	76.1	137.5	9.3	13.2	40.9	21.8	36.2	121.4
7. Transport	41.1	54.8	8.7	119.8	224.4	11.4	16.7	69.3	32.5	46.9	176.8
8. Other services	105.9	176.5	26.8	251.1	560.3	36.4	33.0	169.2	89.7	149.7	478.0
9. Trade	186.4	405.6	47.4	548.4	1,187.8	63.4	57.6	295.3	156.8	261.1	834.2
Grand Total	1,257.9	1,677.5	267.7	3,669.4	6,871.7	338.7	510.5	2,125.0	998.3	1,438.1	5,422.0

	Irrawaddy			Rakhine			Mandalay		
	1	16	Total	9	15	Total	10	13	Total
1. Agriculture	491.1	3,673.9	4,165.0	76.3	548.3	624.6	791.5	2,650.0	3,441.5
2. L/F[1]	68.6	720.4	789.0	4.3	183.7	188.0	119.4	423.1	542.5
3. Forest	39.6	85.3	124.9	37.7	24.1	61.8	0.1	52.0	52.1
4. Mining	7.5	7.2	14.7	-	-	-	-	51.7	51.7
5. M/P[2]	113.6	776.5	890.1	29.7	200.9	230.6	113.5	572.9	686.4
6. Other goods	22.0	156.5	178.5	6.8	45.2	52.0	33.3	141.7	175.0
7. Transport	34.8	245.6	280.4	10.2	62.8	73.0	42.3	194.5	236.8
8. Other services	107.0	628.9	735.9	47.2	255.3	302.5	94.3	613.8	708.1
9. Trade	184.3	1,239.8	1,424.1	72.1	560.7	632.8	158.2	1,514.7	1,672.9
Grand Total	1,068.5	7,534.1	8,602.6	284.3	1,881.0	2,165.3	1,352.6	6,214.4	7,567.0

Notes: See Appendix Table 2.6.4-1

-2. ZONAL GROSS REGIONAL PRODUCT

1990/91   (In million Kyat, 1985/86 prices)

	Pegu					Magwe					
	2	3	4	12	Total	5	6	7	8	11	Total
1. Agriculture	785.9	838.6	130.1	2,212.5	3,967.1	193.2	227.3	1,282.1	584.5	760.4	3,047.5
2. L/F[1]	93.5	189.1	42.7	422.5	747.8	41.9	50.6	288.8	130.3	163.2	674.8
3. Forest	21.5	20.9	14.3	82.2	138.9	3.5	6.6	7.7	22.1	15.3	55.2
4. Mining	-	20.0	-	-	20.0	-	163.2	108.9	9.7	9.7	291.5
5. M/P[2]	168.4	193.5	43.5	559.6	965.0	56.4	57.1	305.1	151.4	265.0	835.0
6. Other goods	32.2	34.7	6.2	91.6	164.7	11.6	16.7	50.6	26.5	44.0	149.4
7. Transport	50.7	70.3	11.5	152.1	284.6	15.3	22.2	91.9	43.1	61.9	234.4
8. Other services	127.4	216.0	33.8	310.8	688.0	46.5	41.0	210.5	111.1	184.6	593.7
9. Trade	230.3	510.3	61.3	695.7	1,497.6	83.2	73.4	376.5	198.7	330.3	1,062.1
Grand Total	1,509.9	2,093.4	343.4	4,527.0	8,473.7	451.6	658.1	2,722.1	1,277.4	1,834.4	6,943.6

	Irrawaddy			Rakhine			Mandalay		
	1	16	Total	9	15	Total	10	13	Total
1. Agriculture	580.6	4,508.2	5,088.8	85.2	618.2	703.4	992.9	3,329.6	4,322.5
2. L/F[1]	90.6	953.5	1,044.1	5.8	247.6	253.4	165.0	585.5	750.5
3. Forest	48.6	104.6	153.2	48.9	31.2	80.1	0.2	64.3	64.5
4. Mining	14.1	13.3	27.4	-	-	-	-	89.6	89.6
5. M/P[2]	147.5	1,005.5	1,153.0	37.0	252.2	289.2	155.1	783.5	938.6
6. Other goods	26.4	186.0	212.4	8.1	54.6	62.7	39.3	173.4	212.7
7. Transport	43.6	313.5	357.1	12.7	78.4	91.1	55.5	257.6	313.1
8. Other services	128.1	774.2	902.3	57.8	312.5	370.3	116.5	772.5	889.0
9. Trade	231.2	1,560.8	1,792.0	90.7	705.0	795.7	199.0	1,940.6	2,139.6
Grand Total	1,310.7	9,419.6	10,730.3	346.2	2,299.7	2,645.9	1,723.5	7,996.6	9,720.1

Notes: See Appendix Table 2.6.4-1

-3. ZONAL GROSS REGIONAL PRODUCT

2000/01   (In million Kyat, 1985/86 prices)

	Pegu					Magwe					
	2	3	4	12	Total	5	6	7	8	11	Total
1. Agriculture	1,056.6	1,197.0	195.8	3,097.2	5,546.6	286.7	338.3	1,912.5	870.8	1,127.0	4,535.3
2. L/F[1]	162.7	329.2	74.2	736.6	1,302.7	72.8	88.0	502.8	226.7	284.4	1,174.7
3. Forest	30.3	29.6	20.1	115.8	195.9	5.0	9.1	10.8	31.0	21.6	77.5
4. Mining	–	60.4	–	–	60.4	–	220.1	147.0	31.2	31.2	429.5
5. M/P[2]	254.9	312.5	76.9	872.3	1,516.6	99.5	100.2	534.7	266.2	465.0	1,465.6
6. Other goods	51.1	59.2	11.2	152.8	274.2	207	28.9	88.3	46.0	75.9	259.8
7. Transport	72.4	108.0	18.8	228.7	428.3	24.7	34.2	145.9	69.1	99.0	372.9
8. Other services	180.5	315.2	52.0	462.1	1,009.8	73.4	61.5	315.8	164.8	272.5	888.0
9. Trade	334.6	764.5	96.8	1,055.8	2,251.7	134.0	112.2	575.9	300.6	496.9	1,619.6
Grand Total	2,143.5	3,175.6	545.8	6,720.4	12,585.3	716.8	992.5	4,233.7	2,006.4	2,873.5	10,822.9

	Irrawaddy			Rakhine			Mandalay		
	1	16	Total	9	15	Total	10	13	Total
1. Agriculture	847.4	6,739.2	7,586.6	107.4	786.4	893.9	1,500.1	5,044.9	6,545.0
2. L/F[1]	161.6	1,656.0	1,817.6	10.1	431.0	441.1	287.4	1,019.1	1,306.5
3. Forest	68.5	147.5	216.0	69.0	44.0	113.0	0.3	90.3	90.6
4. Mining	38.0	35.8	73.8	–	–	–	–	172.6	172.6
5. M/P[2]	220.5	1,507.8	1,728.3	56.2	386.4	442.6	271.6	1,385.7	1,657.3
6. Other goods	43.8	302.9	346.7	13.4	90.1	103.5	65.3	300.5	365.8
7. Transport	64.0	463.9	527.9	18.7	118.0	136.7	89.1	417.6	506.7
8. Other services	187.1	1,129.7	1,316.8	84.3	456.1	540.4	175.5	1,186.2	1,361.7
9. Trade	345.9	2,328.9	2,674.8	135.7	1,054.8	1,190.5	303.0	3,008.0	3,311.0
Grand Total	1,974.8	14,313.7	16,288.5	494.8	3,366.8	3,861.6	2,692.3	12,624.9	15,317.2

Notes: See Appendix Table 2.6.4-1

-4. ZONAL GROSS REGIONAL PRODUCT

2010/11   (In million Kyat, 1985/86 prices)

	Pegu					Magwe					
	2	3	4	12	Total	5	6	7	8	11	Total
1. Agriculture	1,474.4	1,751.7	298.1	4,467.1	7,991.3	427.1	506.4	2,865.5	1,302.3	1,677.8	6,779.1
2. L/F¹	299.6	606.3	136.5	1,354.0	2,396.4	132.9	160.8	917.5	413.6	518.8	2,143.6
3. Forest	48.8	47.5	32.5	186.0	314.8	8.0	14.7	17.5	50.0	34.7	124.9
4. Mining	-	133.5	-	-	133.5	-	302.5	201.6	89.5	89.5	683.1
5. M/P²	419.7	541.6	143.2	1,465.9	2,570.4	189.1	186.3	987.0	497.8	860.0	2,720.2
6. Other goods	98.8	120.6	23.5	307.1	550.0	44.7	56.9	181.7	96.3	157.1	536.7
7. Transport	112.5	175.7	31.6	366.5	686.3	41.6	54.4	238.2	115.0	164.2	613.4
8. Other services	265.3	474.7	82.3	707.5	1,529.8	119.4	94.7	486.7	251.1	412.9	1,364.8
9. Trade	515.9	1,210.0	152.5	1,692.0	3,570.4	227.1	180.1	925.4	477.5	785.1	2,595.2
Grand Total	3,235.0	5,061.6	900.2	10,546.1	19,742.9	1,189.9	1,556.8	6,821.1	3,293.1	4,700.1	17,561.0

	Irrawaddy			Rakhine			Mandalay		
	1	16	Total	9	15	Total	10	13	Total
1. Agriculture	1,269.1	10,320.4	11,589.5	140.6	1,047.3	1,187.9	2,276.3	7,663.9	9,940.2
2. L/F¹	269.6	2,696.2	2,965.8	17.8	756.1	773.9	516.9	1,832.8	2,349.7
3. Forest	99.8	215.0	314.8	123.6	78.8	202.4	0.4	136.0	136.4
4. Mining	80.8	77.1	157.9	-	-	-	-	327.0	327.0
5. M/P²	387.3	2,640.6	3,027.9	85.7	597.4	683.1	487.2	2,529.8	3,017.0
6. Other goods	88.6	605.7	694.3	26.3	176.8	203.1	132.0	627.5	759.5
7. Transport	105.9	768.1	874.0	28.9	182.0	210.9	143.5	685.1	828.6
8. Other services	281.1	1,697.4	1,978.5	126.9	686.8	813.7	271.0	1,872.6	2,143.6
9. Trade	543.5	3,659.8	4,203.3	214.0	1,663.6	1,877.6	482.8	4,897.3	5,380.1
Grand Total	3,125.7	22,680.3	25,806.0	763.8	5,188.8	5,952.6	4,310.1	20,572.0	24,882.1

Notes: See Appendix Table 2.6.4-1

APPENDIX

CHAPTER 3   REGIONAL DEVELOPMENT AND THE COMPLETION OF THE BRIDGE PROJECT

Appendix 3.1 Economic Development with the Bridge Project

1. Agriculture and Others in the Primary Industry

Land utilization in 1984/85 shows the following pattern in DIA (In '000 acres):

	East		West		Total	
Net area sown	2660.1	(70.1)	2374.7	(66.2)	5034.8	(68.2%)
Fallow land	619.5	(16.3)	567.4	(15.8)	1186.9	(16.1%)
Culturable waste L.	514.2	(13.6)	644.2	(18.0)	1158.4	(15.7%)
Total	3793.8	(100.0)	3586.3	(100.0)	7380.1	(100.0%)

Economic forecast in Chapter 2 assumed the increase of net sown area will be 0.43% p.a. (Appendix 2.1 of Chapter 2), resulting in the following utilization in 2010/11 (In '000 acres).

	East		West		Total	
Net area sown	2974.0	(78.4)	2655.0	(74.0)	5629.0	(76.3%)
Fallow land	448.4	(11.8)	437.8	(12.2)	865.6	(11.7%)
Culturable waste L.	371.8	(9.8)	437.8	(12.2)	809.6	(11.0%)
Total	3794.2	(100.0)	3586.3	(100.0)	7380.5	(100.0%)

Land transport accessibility crossing the Irrawaddy River will improved when the bridge has been constructed. Better accessibility will accelerate agricultural production by expanding the net area sown in the west side. As the result of expansion, the west side is expected to have the same percent shares as the east side. On the east side of the area, the impact of the bridge project will be less than in the west, approximately half the percent change in the net sown area. The result is shown below.

- In '000 Acres	East		West		Total		Balance	
Net area sown	3058.1	(80.6)	2811.6	(78.4)	5869.7	(79.5)	+240.7	(+4.3%)
Fallow land	440.1	(11.6)	423.2	(11.8)	863.3	(11.7)	-22.9	(-2.6)
Culturable w.l.	296.0	(7.8)	351.5	(9.8)	647.5	(8.8)	218.1	(-26.9)
Total	3794.2	(100.0)	3586.3	(100.0)	7380.5	(100.0)	0.0	(0.0)

It is forecast in 2010 that the net area sown will increase the acreage by 4.3%.

Multiple and mixed cropping areas occupy 26% of the net sown area of the whole country[1]. The percentage, being estimated in the forecast, is 29.8% in Pegu Division, 26.5% in Magwe, 26.6% in Irrawaddy Division, 28.7% in Mandalay Division and 27.1% in Sagain Division, an average of 27.7%.

The above percentages will change upto 55.5% for the whole country and 59.2% on average for the five Divisions in 2010. The percentage of mixed and multiple cropping areas on the west side of the River is forecast at 56.3%, in 2010 without the bridge project. The share can be increased from 56.3% to 59.2%, the average of the five Divisions.

The increase in the east side is assumed to be an half the percent change of the west side.

The result of these forecast is summarized as follows:

In 2010, West side, $2811.6 \times (0.592-0.563=0.029) = 81.5$

East side, $3058.1 \times (0.633-0.618=0.015) = 45.9$

Total, DIA $5629.0 \times (0.615-0.592=0.023) = 127.4$

Increases in production are forecast by using the above ratio of increase 4.3% + 2.3% = 6.6% in 2010.

2. Mining

A number of national projects, such as crude oil, natural gas, and copper production, have already been in operation in the DIA. Expanding production depends rather on government policy and on factors other than on the improvement of a river crossing facility. Accordingly, output of this sector in GRP will be the same "with" or "without" the bridge project.

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1 Report, 1986. P.59

3. Manufacturing/Processing

3.1 Existing Status

Manufacturing/processing plants in DIA are divided into two groups
as discussed in Appendix 2.6, Chapter 2.

A. Food Processing

Many products in the primary industry, including agriculture, are
processed mostly by private and cooperative plants and sent to market.
The percent share of outputs of food processing was discussed in
Appendix 2.6 of Chapter 2. By studying the percentage in the Divisions
concerned, 60% of the plants and products in the DIA currently engaged
in the food processing, such as rice mills, seed oil extraction, cakes,
sugar, cigarette, noodles, bread, and dry food.

B. Other manufacturing

Major government owned plants are listed in Fig. 3.2.1 and Appendix
Table 3.2.1. There is no private large scale plant in the area. Their
locations depend on Government decision. Further development will be
characterized by the following:

-a. Locational advantages in utilizing natural gas, crude/refined oil,
     and other resources since these materials are found in the area.

-b. Manufacturing plants currently in operation have sufficient
     manpower and resources to expand their capacity. There are
     potentials to develop power plants by using natural gas in DIA.

-c. There are more than 13 large manufacturing plants currently in
     operation. They represent a core of development, a growth pole in
     the DIA.

-d. Small scale private plants can follow the development if the growth
     pole sector moves first.

3.2 Forecast

Food processing plants will increase their outputs in proportion to increases in agriculture, livestock, fishery and forest. The same rate of the increase, 6.6%, is applicable for 2010/11. It is forecast their output will be 50% of the total of the manufacturing sector.

Other manufacturing plants have shown record of development during the fourth and fifth plan periods. The fourth plan period earmaked a high growth of GDP, 5.5% p.a.; while in the fifth plan period GDP is targeted to increase at 4.5% p.a. Within the DIA, new construction and improvement of capacity of large scale government owned plants are shown:-

Four-Year Plan Periods	Increased/Expanded Plants	
1982/83 - 85/86 (Fourth, completed)	P : Kyawzwa Fertilizer	
	P : Shwedaung Textile	
	E : Sale Fertilizer (1st stage)	
	E : Kyangin Cement	
		Total plants, 16
1986/87 - 89/90 (Planned Fifth)	P : Prome Cotton Gining	
	E : Sale Fertilizer (2nd stage)	
		Total pants, 18

Source: Dept. of Planning

P means new construction
E means capacity expansion

At the end of 1989/90, the total number of large scale plants will be 18. It is assumed that if the bridge is not constructed, this development of the 5th Plan period will continue; that means the addition of 2 plants in every four years. The total number in 2010/11 will be 28.

If the bridge is completed, increases in the number of plants is supposed to follow the record in the 4th Plan period: 4 plants in every four years. The total number will be 38 in 2010/11. Although

long range development plan is likely to be drafted by Government, this supposition seems reasonable under the present circumstance of the Burmese economy.

The net increase is 10 from which 10/28 = 35% can be used to estimate an increase of other manufacturing sector in 2010. The 35% (1.2% p.a.) is adopted to forecast the net increase of output for the rail-cum-road bridge. A half of this percent is assumed for the road bridge.

	Base year 1985/86	"Without" 2010/11	"With" 2010/11	(In million kyat) 2010/11
Food Process	728.9	2445.5	+161.4	2606.9 (+6.6%)
Other Manuf.	466.0	2445.5	+855.9	3301.4 (+35%)
Total, DIA	1194.9	4891.0	+1017.3[1]	5908.3 (20.8%)

Source: Appendix 2.6 of Chapter 2.

1. Assuming Rail-cum Road Bridge. In the case of Road bridge, half of net increase is used.

161.4 + 427.9 = 589.3 (+12.0%) in 2010/11.

4.   Other Goods

Other goods are likely to increase 20.8% in 2010/11, the same ratio as the manufacturing sector in the case of Rail-cum-road bridge.   In the case of road bridge an increase of 12.0% is used.

5.   Transport, Other Services and Trade

These sectors will depend on the development of the sectors of the primary industry, mining, manufacturing/processing and other goods.   The total net increase in these sectors in 2010/11 amount to 11.2% in the case of rail-cum-road bridge and 9.3% in the case of road bridge.

6.   Total GRP

The estimated GRP in 2010/11 is shown in Appendix Table 3.3.3 for the case of rail-cum-road bridge and Appendix Table 3.3.4 for the case of road bridge.

Appendix Table 3.3.3   GRP AND POPULATION WITH RAIL-CUM-ROAD BRIDGE

(In million kyat, 1985/86 prices)

	1985/86	1990/91	2000/01	2010/11	1985-2010 ratio, (% p.a.)
Agriculture	5738.8	7040.3	10958.3	16525.7	2.88 (4.3%)
Livestock, fishery	955.0	1311.7	2419.4	4405.5	4.61 (6.3 %)
Forestry	171.0	216.8	348.1	547.9	3.20 (4.8%)
Mining	273.0	385.0	626.2	1089.2	3.99 (5.7%)
Manufacturing	1194.9	1602.4	3117.5	5908.3	4.94 (6.6%)
Other goods	259.1	313.9	686.8	1315.5	5.08 (6.7%)
Transport	389.7	507.2	845.3	1416.5	3.63 (5.3%)
Other services	1077.2	1325.9	2105.0	3290.2	3.05 (4.6%)
Trade	1987.1	2511.8	4095.4	6632.7	3.34 (4.9%)
Total	12046.6	15214.5	25202.0	41222.3	3.42 (5.0%)
Population in '000					
DIA	7390.2	8122.9	10065.6	12368.0	1.67 (2.1%)

Source: Study Team

Appendix Table 3.3.4 GRP AND POPULATION WITH ROAD BRIDGE

(In million kyat, 1985/86 prices)

	1985/86	1990/91	2000/01	2010/11	1985-2010 ratio, (% p.a.)
Agriculture	5738.8	7040.3	10958.3	16525.7	2.88 (4.3%)
Livestock, fishery	955.0	1311.7	2419.4	4405.5	4.61 (6.3 %)
Forestry	171.0	216.8	348.1	547.9	3.20 (4.8%)
Mining	273.0	385.0	626.2	1089.2	3.99 (5.7%)
Manufacturing	1194.9	1602.4	2979.2	5477.9	4.58 (6.3%)
Other goods	259.1	313.9	656.4	1219.7	4.71 (6.4%)
Transport	389.7	507.2	834.7	1386.9	3.56 (5.2%)
Other services	1077.2	1325.9	2078.4	3221.2	2.99 (4.5%)
Trade	1987.1	2511.8	4043.7	6493.7	3.27 (4.9%)
Total	12046.6	15214.5	24944.4	40367.6	3.35 (4.9%)
Population in '000					
DIA	7390.2	8122.9	9973.1	12179.0	1.65 (2.0%)

Source: Study Team

7. Population

Regional development brought about by the project bridge, associated investment and other inputs will increase the population. However, the rate of increase in population depends on changes in productivity and various social factors. Population change is forecast by considering a larger per capita productivity/income in accordance with the increased GRP.

	1985/86	2010/11	Per capita GRP
"Without"			
GRP (mill. kyat)	12046.6	37545.6	3197
Population ('000)	7390.2	11743.0	-
"With Rai-Road Bridge"			
GRP (mill. kyat)	12046.6	41222.3	3333
Population ('000)	7390.2	12368.0	
"With Road Bridge"			
GRP (mill. kyat)	12046.6	40367.6	3315
Population ('000)	7390	12179	

Appendix 3.2 Asset Value of Roads, Railways and the Project

1. Roads in DIA (miles)

Zone	Bitumen '22 '18-24 (B_1)	Bitumen '12 '10-'18 (B_2)	Macadam Metal (M)	Laterite Gravel (L)	Track Motor/cart (Tr)	Total (To)
2	76	10	20	10	--	116
3	51	40	20	10	--	121
5	68	15	20	10	--	113
7	149	34	109	10	--	302
10	71	65	20	10	-	166
1	77	20	54	--	-	151
4	81	-	10	10	-	101
6	58	28	89	14	--	189
8	67	50	95	20	-	232
11	76	46	171	45	-	338
20	24	20	74	10	-	128
Total	798	328	682	149	-	1957

Source: Construction Corporation's road map is used.

Note: 1 Track means earth roads. Mileages are not shown, but their asset value is considered negligible when compared to other types.

2. Approximate cost of Road Construction per Mile

(In kyat '000 in 1985/86)

Division	(B_1)	(B_2)	(M)	(L)	(Tr)	(To)
Mogwe	2000	1352	1199	726	205	-
Pegu	2100	1423	1262	764	216	-

Source: Construction Corp. (October 1986)

Note: 1 Magwe's figures are used for DIA's road asset value.

3. Assessed Value of Roads and Road Bidge in DIA

	Miles	K '000/mi	Cost in mill kyat		Assessed Value
B_1	798	2000	1596.0		
B_2	328	1352	443.5		
M	682	1199	817.7		
L	149	726	108.2	Factor	
Total	1957	-	2965.2	0.50	1483.0

If the asset value of the current roads in DIA, under the jurisdiction of CC, is assessed at 1483 million kyat and the new bridge of 596 million is added, the percent share of the projet bridge can be determined at 28%.

4. Assessed Value of Railways and Rail-cum-Road Bridge in DIA

	cost/mi		Factor	Assessed
West side (Myogwin-Kyangin) 48.5 miles	3.2	155.2	0.5	77.6
East side (Ngapngale-Prome) 125.5 miles	3.2	401.6	0.5	200.8
New extension lines between Kyangin and Prome 23 + 75 = 98.0 miles	3.2	310	0.67	207.7
Total in million kyat				486.1

If the railway value of 486.1 is added to the road value of 1483, the total is 1969.1 million kyat. The rail-cum-road bridge is added with a cost of 751 million kyat, the share of the bridge project in the land transport network is 28%.

Appendix Table 3.2.1 GOVERNMENT-OWNED ENTERPRISES

Division	Sector	Town	Construction Period	Description
Magwe	Power	Pakokku	1971/72 - 74/75	Kyun Chaung natural gas turbine power plant
Magwe	Power	Minbu	1977/78 - 83/84	Mann natural gas turbine power plant
Magwe	Power	Chauk	1980/81 - 83/84	Chauk natural gas turbine power plant
Magwe	Manufacturing	Myede	1972/73 - 73/74	Rice mill of 25 ton/day capacity
Magwe	Manufacturing	Thayet	1975/76 - 76/77	Kama rice mill of 15 ton/day capacity
Magwe	Manufacturing	Pakokku	1966/67 - 71/72	Cigarette factory No. 2, 1,500 million cigarettes
Magwe	Manufacturing	Thayet	1935-37, 56-62 1965-68	Cement factory, total 220,000 tons/yr capacity
Magwe	Manufacturing	Chauk	1967/68 - 69/70	Sale fertilizer Plant, 205 ton/day of urea
Magwe	Manufacturing	Chauk	1980/81 - 83/84	Sale fertilizer Plant Extention to add 260 tons/day of urea
Magwe	Manufacturing	Pakokku	1968/69 - 69/70	Kyun Chaung fertilizer plant, 207,000 tons/y of urea
Magwe	Energy	Mann	1977/78 - 81/82	Crude oil refinery, 336 million gallons of crude oil
Magwe	Energy	Chauk	- 1963	Crude oil refinery, 85 million gallons of crude oil
Magwe	Manufacturing	Myede	1982/83 - 84/85	Kyawzwa fertilizer plant, 600 tons/day of urea
Magwe	Manufacturing	Minhla	1970/71 - 73/74	Malon tractor plant
Pegu	Power	Prome	1977/78 - 83/84	Turbine power station project

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Division	Sector	Town	Construction Period	Description
Pegu	Power	Prome	1982/83 - 84/85	Extension of gas turbine power plant
Pegu	Manufacturing	Shwedaung	1969/70 - 70/71	Rice mill 50 ton per day capacity
Pegu	Manufacturing	Shwedaung	1980/81 - 82/83	Yarning textile factory
Pegu	Manufacturing	Tharawaddy	1972/73 - 75/76	Pottery plant of vitreous and sanitary wares
Pegu	Manufacturing	Padaung	- 1970	HIC factories Nos 3, 4 and 5. Vehicles engines electric equipment, etc.
Pegu	Manufacturing	Padaung	1983/84 - 86/87	Petye methane plant for export (under construction)
Irrawaddy	Power	Myan Aung	1971/72 - 75/76	Turbine power plant
Irrawaddy	Power	Kyaiklatt	1980/81 - 83/84	Kyaiklatt natural gas turbine power plant
Irrawaddy	Manufacturing	Kyangin	1971/72 - 75/76	Cement plant, 240,000 tons/yr
Irrawaddy	Manufacturing	Kyangin	1980/81 - 84/85	Cement plant extesion, 480,000 tons/yr
Irrawaddy	Power	Myan Aung	1982/83 - 84/85	Gas turbine power extension
Irrawaddy	Manufacturing	Einme, Labutta	1975/76 - 78/79	Rice mills, 50 ton/day capacity
Irrawaddy	Manufacturing	Einme, Dedaye	1980/81 - 84/85	Rice mills, 100 ton/day capacity

Source: Department of Planning (January 1986)

Appendix Table 3.2.2 POPULATION, ACTIVE LABOR FORCE AND LAND UTILIZATION, 1984-85

Zone	Population 1985/86	Active Labour Force, 1984/85			Land Utilization (Acres), 1984						
		State E	Others	Total	Area Sown	Culturable Waste Land	Fallow Land	Reserved Forest	Other Forest Areas	Other Lands	Total
East Bank											
10. Nyaung U	948,303	10,364	44,455	54,819	681,386	21,549	214,355	8,208	239,235	251,328	1,416,016
7. Magwe	1,124,549	21,313	42,634	63,947	766,994	166,630	318,374	347,464	2,896	777,353	2,379,711
5. Myede	276,743	6,806	7,015	13,821	155,926	29,635	30,020	159,635	748,182	44,598	1,167,996
3. Prome	815,300	19,310	70,495	89,725	488,247	239,552	16,947	501,181	103,638	261,285	1,610,850
2. Tharrawaddy	822,300	11,857	42,079	53,936	567,522	56,838	39,832	514,380	77,134	199,962	1,456,268
Subtotal	3,987,395	69,650	206,678	276,248	2,660,075	514,204	619,528	1,531,468	1,171,085	1,534,526	8,030,841
13. Mandalay	3,871,497	104,493	253,472	357,965	1,954,612	358,602	549,485	2,383,912	924,477	1,561,473	9,125,753
Total	7,858,892	174,143	460,150	634,213	4,614,687	872,806	1,169,013	3,915,380	2,095,562	3,095,999	17,156,594
West Bank											
20. Salingyi	630,463	8,014	33,646	41,660	694,464	202,213	278,136	2,734,844	25,070	151,009	4,085,7326
11. Pakokku	1,045,505	15,254	41,623	56,877	648,031	101,286	125,224	689,618	501,458	987,946	3,053,563
8. Minbu	631,844	13,576	20,540	34,116	384,498	69,805	135,478	993,269	607,023	487,963	2,678,036
6. Thayet	321,359	6,479	6,022	12,501	149,984	64,520	15,178	293,298	1,195,936	77,183	1,796,099
4. Padaung	138,900	9,497	4,262	13,759	59,107	106,288	127	341,738	19,996	92,253	619,509
1. Kyangin	634,731	12,616	29,068	41,684	438,626	100,127	13,215	564,753	39,628	169,184	1,325,533
Subtotal	3,402,802	65,436	135,161	200,597	2,374,710	644,239	567,358	5,617,520	2,389,111	1,965,538	13,558,476
14. Chin	386,000	7,933	5,137	13,070	234,000	4,211,000	1,000	387,000	1,196,000	2,871,000	8,900,000
9/15. Rakhine	2,151,000	22,683	100,599	123,282	951,188	344,241	256,357	413,046	4,495,928	2,627,293	9,088,053
16. Irrawaddy	4,599,357	69,961	223,163	293,124	3,285,315	532,754	491,797	1,215,005	430,569	1,401,646	7,357,086
Subtotal	7,136,357	100,577	328,899	429,476	4,470,503	5,087,995	749,154	2,015,051	6,122,497	6,899,939	25,345,139
Total	10,539,000	166,013	168,060	630,073	6,845,213	5,732,234	1,316,512	7,632,571	8,511,608	8,865,477	38,903,615

Source: Ministry of Home and Religious Affairs, Dept. of Labor and Land Record Dept.
Notes: 1 Non-primary industrial labor force is shown.

Appendix Table 3.2.3   POPULATION DENSITY AND TRAVEL TIME

Zone	Pop '85 ('000)	Area '000 Acre	Density	To Rangoon in min[1]		To Bassein in min[1]	
				Without Bridge	With Bridge	Without Bridge	With Bridge
Western Bank							
20 Salingyi	630	2,897	0.217	1,420	1,356	1,268	–
11 Pakokku	1,046	3,053	0.343	1,300	1,236	1,148	–
8 Minbu	632	2,678	0.236	994	930	842	–
6 Thayet	321	1,796	0.179	900	888	800	–
4 Padaung	139	619	0.225	661	596	508	–
1 Kyangin	635	1,326	0.479	644	614	338	–
Subtotal	3,403	12,369	0.275	987	937	817	–
14 Chin	386	8,900	0.043	1,336	1,272	1,184	–
15 Rakhine	2,151	9,088	0.234	1,064	999	593	–
16 Irrawaddy	4,600	7,357	0.625	884	854	–	–
Subtotal	7,137	25,345	0.281	1,095	1,042	889	–
Total	10,540	37,714	0.279	1,022	972	852	–
Eastern Bank							
10 Nyaung U	949	1,416	0.421	974	–	1,049	992
7 Magwe	1,125	2,379	0.472	770	–	871	815
5 Myede	276	1,167	0.237	535	–	639	579
3 Prome	816	1,611	0.507	394	–	545	587
2 Tharrawaddy	822	1,456	0.565	187	–	752	798
Subtotal	3,988	8,029	0.497	572	–	771	754
13 Mandalay	3,872	7,732	0.501	1,041	–	1,289	1,232
Total	7,860	15,761	0.499	650	–	858	834

Note: 1   Travel time in minutes by vehicles

Source: Data in Chapters 2 and 4.

1/3 (Kyat in thousand)

Sector-Processing and Manufacturing

Sr. No.	Item	A/U	DIA		Other		The Country		Share of DIA (%)
			Quantity	Value	Quantity	Value	Quantity	Value	
1	2	3	4	5	6	7	8	9	10
1	Cigarette			180080		157560		337640	53.33
1	Pakokku Cigarette Factory No.(2) (Cigarette million numbers 1084.80)	Nos.	1650	180080		157560	3100	337640	
2	Rangoon Cigarette Factory No.(1)	"			1450	157560			
2	Rice Production			1324890		703873		2028763	65.31
1	Rice	metric ton	1489.35	1246928	800.65	670329	2290.00	1917257	
2	Broken Rice	"	131.96	45928	51.24	17835	183.20	63763	
3	Bran	"	169.02	32034	82.88	15709	251.90	47743	
3	Textile Shwedaung Textile Mill			67732		438091		505823	13.40
1	Yarn (Ibs. 000) 3695	Ibs 000	2405	36510	25263	216604	25668	253114	
2	Fabrics (yds. 000) 6039	Yds 000	4526	31222	39335	221487	43861	252703	
4	Cement			160700				160700	100.00
1	Kyangin Cement Mill (480,000 M.ton/yr)	Metric ton 000	300.00	100980			300.00	100980	
2	Thayet Cement Mill (220,000 M.ton/yr)	"	177.42	59720			177.42	59720	
3	Pa-an Cement Mill (300,000 M.ton/yr)	"							

1 Production Start in 1986-87

GOVERNMENT MANUFACTURING ACTIVITIES IN DIA AND THE COUNTRY
(PRODUCTION FOR THE YEAR 1985-86 AT CURRENT PRICES)

2/3 (Kyat in thousand)

Sector-Processing and Manufacturing

Sr. No.	Item	A/U	DIA		Other		The Country		Share of DIA (%)
			Quantity	Value	Quantity	Value	Quantity	Value	
1	2	3	4	5	6	7	8	9	10
5	Pottery, Ceramics and Earthern Wares	Nos. 000		11505		2543		14048	81.90
1	Tharawaddy Pottery Plant (Farthern Wares Nos. 3739000) (Sanitary Fitting and Fixtures Nos. 17600)			11505				11505	
2	Moulmein Pottery Plant (Ceremics Earthern Wares Nos. 599500) (Electrical Insulators Nos. 94000)					2543		2543	
6	Fertilizer	Metric ton 000	157.1	246106			157.1	246106	100.00
7	Refinery Products	Gal.000		399816		423879		823695	48.53
1	Motor Spirit		45250	158375	31473	110156	76723	268531	58.97
2	Kerosene	"	2096	5051	042	2271	3038	7322	68.98
3	Diesel oil	"	74717	186793	36189	90472	110906	277265	67.00
4	Others			49597		220980		270577	18.33
8	Transport vehicles			175103		312389		487492	35.91
1	Light vehicles			175103				175103	36.00
2	Heavy vehicles					312389			
9	Agricultural Machinery			77320				77320	100.00
1	Tractor			24602				24602	100.00
2	Pumping Set, Light Agricultural Machinery & Pesticide			52718				52718	100.00

GOVERNMENT MANUFACTURING ACTIVITIES IN DIA AND THE COUNTRY
(PRODUCTION FOR THE YEAR 1985-86 AT CURRENT PRICES)

3/3 (Kyat in thousand)

Sector-Processing and Manufacturing

Sr. No.	Item	A/U	DIA		Other		The Country		Share of DIA (%)
			Quantity	Value	Quantity	Value	Quantity	Value	
1	2	3	4	5	6	7	8	9	10
10	Electrical Equipment			139331		148011		287342	48.00
11	Timber Sawn			50858		370658		421516	12.06
1	Sawn Teak	cu. ft	8200	13448	106560	174563	114760	188011	7.15
2	Sawn Hardwood	"	105050	7394	179580	158777	284630	166171	4.65
3	Plywood and Others			30016		37318		67334	45.00
	Total			2833441		2557004		5390445	52.56

Source: Dept of Planning (October 1986)

Appendix Table 3.3.1 FORECAST POPULATION AND GRP OF DIRECT INFLUENCE AREA

	1985/86		1990/91		2000/01		2010/11	
	Population	G.D.D.P (Mil)	Population	G.D.D.P (Mil)	Population	G.D.D.P (Mil)	Population	G.D.D.P (Mil)
2	822,300 (0.206)	1,257.9 (0.286)	883,430 (0.2020)	1,509.9 (0.178)	1,055,792 (0.1920)	2,143.5 (0.165)	1,149,012 (0.1833)	3,235.0 (0.156)
3	815,300 (0.205)	1,677.5 (0.248)	885,386 (0.2024)	2,093.4 (0.246)	1,042,483 (0.1990)	3,175.6 (0.245)	1,226,689 (0.1957)	5,061.6 (0.245)
East Zones 5	276,743 (0.069)	338.7 (0.050)	314,781 (0.0720)	451.6 (0.053)	405,646 (0.0774)	716.8 (0.055)	520,454 (0.0830)	1,189.9 (0.058)
7	1,124,549 (0.282)	2,125.0 (0.316)	1,245,834 (0.2849)	2,722.1 (0.320)	1,523,003 (0.2907)	4,233.7 (0.327)	1,853,689 (0.2957)	6,821.1 (0.330)
10	948,503 (0.238)	1,352.6 (0.200)	1,044,027 (0.2387)	1,723.5 (0.203)	1,262,226 (0.2409)	2,692.3 (0.208)	1,518,393 (0.4222)	4,310.1 (0.211)
Total	3,987,385 (1.000)	6,763.1 (1.000)	4,373,458 (1.000)	8,500.5 (1.000)	5,239,150 (1.000)	12,961.9 (1.000)	6,268,237 (1.000)	20,617.7 (1.000)
Per Capital GDDP	1,693 (Kyat)		1,944 (Kyat)		2,474 (Kyat)		3,289 (Kyat)	
1	634,731 (0.187)	1,068.5 (0.202)	693,172 (0.185)	1,310.7 (0.195)	824,505 (0.1816)	1,974.8 (0.189)	978,759 (0.1788)	3,125.7 (0.185)
4	138,900 (0.041)	267.7 (0.051)	156,734 (0.042)	343.4 (0.050)	199,244 (0.0439)	545.8 (0.052)	353,126 (0.0462)	900.2 (0.053)
6	211,359 (0.095)	510.5 (0.097)	355,842 (0.095)	658.1 (0.098)	434,579 (0.0958)	992.5 (0.095)	528,415 (0.0966)	1,556.8 (0.092)
8	631,844 (0.186)	998.3 (0.189)	695,888 (0.186)	1,277.4 (0.192)	840,767 (0.1853)	2,006.4 (0.192)	1,001,363 (0.1847)	3,293.1 (0.195)
11	1,045,505 (0.305)	1,438.1 (0.272)	1,148,656 (0.306)	1,834.4 (0.273)	1,381,005 (0.3043)	2,873.5 (0.275)	1,653,080 (0.3019)	4,700.1 (0.278)
20	630,463 (0.185)	1,000.4 (0.189)	699,116 (0.186)	1,290.1 (0.192)	858,013 (0.1891)	2,052.8 (0.197)	1,049,994 (0.1918)	3,352.0 (0.198)
Total	3,402,802 (1.000)	5,283.5 (1.000)	3,749,408 (1.000)	6,714.1 (1.000)	4,538,113 (1.000)	10,445.8 (1.000)	5,774,737 (1.000)	16,927.9 (1.000)
Per Capital GDDP	1,553 (Kyat)		1,791 (Kyat)		2,302 (Kyat)		2,932 (Kyat)	
Total	7,390,197	12,046.6	8,122,866	15,214.5	9,777,263	23,407.7	11,742,974	37,545.6
Per Capital GDDP	1,629 (Kyat)		1,873 (Kyat)		2,394 (Kyat)		3,197 (Kyat)	

Source: Chapter 2, the forecast was supposed "without the bridge project".

Appendix Table 3.3.2 NEW PROJECT TO BE IMPLEMENTED IN DIA IN NEAR FUTURE (IN 1980S)

Sr. No.	Sector	Division/State	Project	Contents	Proposed Year of implementation	Approximated Cost (K in Thousand)	Benefit/Impact Increased Production
1	2	3	4	5	6	7	8
1	Agriculture	Pegu (Natalin-Zigon)	Taung Nyo Dam Project	Construction of 110 ft. high dam and appurtenances such as outlet and spillway structures to implement irrigation and drainage networks for 50000 acres of command area.	1989/90 to 1993/94	413500	To irrigate 80000 acres of crop area on 50000 acres of land area.
3	Agriculture	Pegu Division Magwe Division (not fixed)	Small Scale Irrigation Project	Construction of small scale reservoirs to supply timely and adequate water to the crops.	1986/87 to 1991/92	110000	The project will be made up of 20 to 25 reserviors with total service area of 13000 acres.
4	Agriculture	Magwe (Nat mauk/Myothet)	Tank Irrigation Project II	Construction of dam 100 feet high and appurtenances such as outlet and spillway.	1987/88 to 1991/92	244168	To irrigate 76580 acres of crops on 40900 acres of land area.
5	Agriculture	Magwe (Pakokku, Yesagyo)	Pump Irrigation Project II	To supply Irrigation water for double cropping and to protect from floods.	1987/88 to 1992/93	294540	To irrigate 32750 acres of crops on 18200 acres of land area.
6	Agriculture	Magwe (Salin)	Salin Dam Project	Construction of about 100 feet high dam and appurtenances such as outlet and spillway to implement irrigation and drainage network for 35000 acres of command area.	1989/90 to 1993/94	266040	To irrigate 56000 acres of crops on 35000 acres of land area by constructing a dam on Salin River.

Sr. No.	Sector	Division/State	Project	Contents	Proposed Year of implementation	Approximated Cost (K in Thousand)	Benefit/Impact Increased Production
1	2	3	4	5	6	7	8
7	Agriculture	Rakhine State (Kyauk)	Fresh Water Reservior Dam Project in Rakhine State	Construction of about 600 feet high and 900 feet long earth dam. Construction of an outlet diameter of 7 feet about 200 feet length spillway, to implement irrigation, drainage network and road for 25000 acres of command area.	1988/89 to 1993/94	163328	To irrigate 42500 acres of crops on 25000 acres of land area by constructing dam on Pyin Chaung.
8	Agriculture	Irrawaddy (Wakema)	Burma Agricultural Research Development Project	Research work on oil-seeds crops	1986/87 to 1988/89	124329	Promotion of oilseeds production.
10	Agriculture	Rakhine (Mountain areas)	Coffee Research and Development	To establish four experimental farms and ten full-fledged coffee production farms.	1986/87 to 1989/90	52650	To develop coffee growing area in the country and promote export promotion.
11	Agriculture	Irrawaddy (not fixed)	Seed Multiplication Farms Project	To establish farms for the production of quality seeds such as paddy, maize, groundnut and sunflower.	1986/87 to 1989/90	113000	
12	Agriculture	Pegu, Magwe (not fixed)	Burma Agriculture Production Project	To increase the production of oilseeds.	1987/88 to 1990/91	46440	Will promote the production of oilseeds and increase rural incomes.
13	Agriculture	Pegu, Irrawaddy, Magwe (not fixed)	Biological Control of Agricultural Pests Project	Biological control, Pesticide analysis, Plant quarantine and Inspection activities.	1986/87 to 1988/89	14957	Will have indirect benefit to the crop production program.

Sr. No.	Sector	Division/State	Project	Contents	Proposed Year of implementation	Approximated Cost (K in Thousand)	Benefit/Impact Increased Production
1	2	3	4	5	6	7	8
15	Livestock and Fishery	Rakhine State (Sandway)	Marine Prawn Propagation Project	To establish hatchery and experimental station in Rakhine Cost to impact the modern technology, with a minium of Financial and Technical imputs to enthusiastic aquaculturists, for achieving higher production.	1987/88	900	Dissemmation of latest trend and advanced technology to technicans and prawn culturists by training and demonstration.
18	Processing and Manufacturing	Pegu	Prome Cotton Ginning Mill Project		1986/87 to 1988/89	48767	1. Long Staple Cotton (180 lbs bale) 34300 2. Cotton (180 lbs bale) 13400 3. Oilseeds (viss in thousand) 4600
19	Processing and Manufacturing	Pegu	Ammonium Nitrate and Calcium Ammonium Nitrate Manufacturing Project		1986/87 to 1988/89	178312	(a) Ammonium Nitrate 4002 tons (b) Calcium Ammonium Nitrate 14904 tons
20	Power	Pegu	South Nawin Hydro-electric Power Project	To Construct South Nawin Dam Project and to supply electric Power to the National Grid Area from Prome Sub-station.	1986/87 to 1989/90	134995	Estimated installed Capacity will be (2.2) Megawatt
21	Processing and Manufacturing	Magwe (Sale)	Sale Fertilizer Renovation Plant		1987/88 to 1988/89	225	To produce 66000 metric tons of urea fertilizer yearly.
24	Processing and Manufacturing	Irrawaddy (Kyangin)	Integrated liquified Petroleum Gas Project Phase III		1986/87 to 1988/89	6000	6000 metric tons of petroleum Gas yearly.

Sr. No.	Sector	Division/State	Project	Contents	Proposed Year of implementation	Approximated Cost (K in Thousand)	Benefit/Impact Increased Production
1	2	3	4	5	6	7	8
25	Processing and Manufacturing	Irrawaddy (Bassein)	Finger Joint Board Mill		1986/87 to 1988/89	672	To produce 8' x 4' Finger Joint Board Sheet 100000 yearly.
28	Trade	Pegu, Irrawaddy (not fixed)	Burma Grain Storage and Processing Project	The main project Components include, (1) New mill construction (2) Rehabilitation of existing private rice mills (3) Construction of rice and paddy storage facilities (4) Construction of one grading and mixing plant. (360 ton per day)	1987/88 to	548000	The project is to expand rice milling and processing capacity as well as storage facilities to promote quantity and quality of rice and grain export.

Source: Dept. of Planning (October, 1986)

APPENDIX

CHAPTER 4   TRANSPORTATION SYSTEM

Appendix Table 4.2.2.1 VEHICLES REGISTERED IN BURMA, 1980/81 - 1984/85

	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	80 - 85 percent p.a.
Sedan	17,489	17,642	17,859	17,885	18,305	18,746	1.4 %
Jeep	11,235	11,534	11,804	12,280	12,855	13,637	4.0 %
Station Wagon	2,562	2,571	2,623	2,652	2,686	2,773	1.5%
Light Van	1,968	1,985	1,995	1,997	1,999	2,013	0.5 %
Pick-up	8,349	9,794	12,048	14,315	18,063	21,668	21.0 %
Light Truck	2,303	2,700	3,330	3,865	4,421	4,954	16.6 %
Van	1,515	1,513	1,518	1,532	1,556	1,573	0.7 %
Truck	30,863	30,899	31,936	32,639	33,077	34,064	2.0 %
Bus	8,116	8,170	8,210	8,287	8,323	8,419	0.7 %
Three wheeler	2,207	2,213	2,215	2,220	2,259	2,232	0.2 %
Motorcycle	12,159	15,041	17,887	20,784	24,253	27,401	17.6 %
Tractor	214	232	259	288	323	354	10.6 %
Others	2,305	2,348	2,417	2,653	2,876	3,181	6.7 %
Total	101,285	106,642	114,101	121,397	130,996	141,015	6.8 %

Source: Department of Road Transport Administration. (February, 1986).

1 Per annum average growth in per cent.

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Appendix Table 4.2.2.2 NATIONAL TRANSPORT PERFORMANCE OF RTC: 1980/81 - 85/86

(In '000)

	Bus service[1]			Taxi service[2]			Freight service		
	Passengers	Pass-miles	Miles/pass	Passengers	Pass-miles	Miles/pass	Tons	Ton-miles	Miles/ton
1980/81	138,092	733,868	5.3	4,564	15,495	3.4	1,049	124,785	119.0
	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)
1981/82	155,792	836,378	5.4	4,612	15,681	3.4	1,140	144,073	126.4
	(1.128)	(1.140)	(1.019)	(1.011)	(1.012)	(1.000)	(1.087)	(1.155)	(1.062)
1982/83	149,774	781,486	5.3	5,169	17,574	3.4	1,248	157,062	125.9
	(1.084)	(1.073)	(1.000)	(1.133)	(1.135)	(1.000)	(1.190)	(1.259)	(1.058)
1983/84	104,779	716,617	6.8	5,172	17,590	3.4	1,217	147,820	121.5
	(0.758)	(0.972)	(1.094)	(1.133)	(1.135)	(1.000)	(1.160)	(1.185)	(1.021)
1984/85 *	94,218	687,432	7.3	5,180	17,600	3.4	1,280	170,551	133.2
	(0.682)	(0.934)	(1.377)	(1.137)	(1.136)	(1.000)	(1.220)	(1.367)	(1.119)
1985/86 **	79,520	627,570	7.9	5,010	17,050	3.4	1,310	157,740	120.4
	(0.576)	(0.855)	(1.489)	(1.098)	(1.100)	(1.000)	(1.209)	(1.229)	(1.011)

Source: RTC (December 1985).
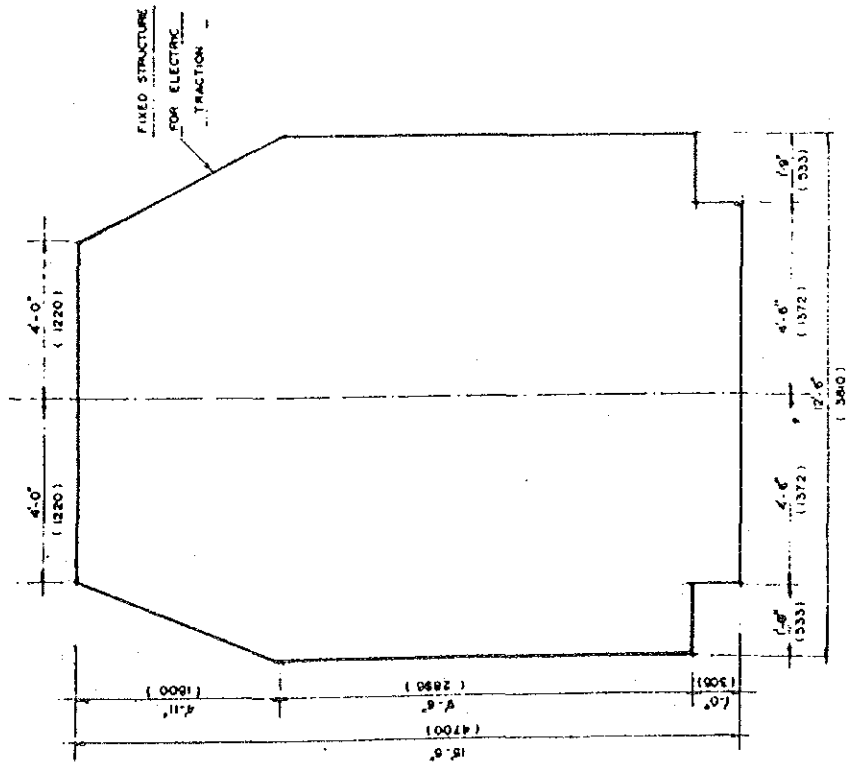
1 Rangoon, Moulmein, and highway buses.
2 In Rangoon city.
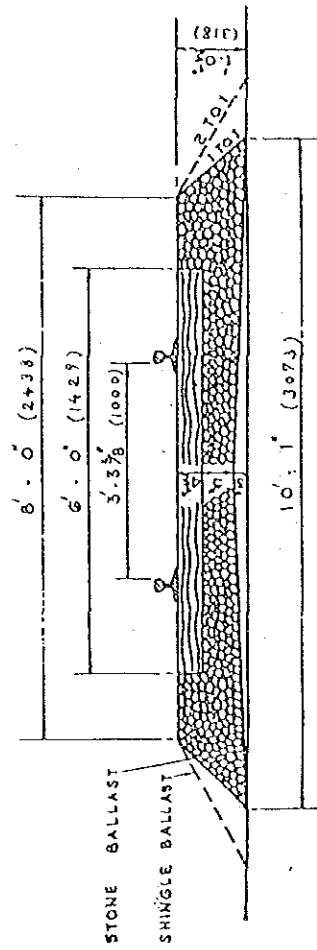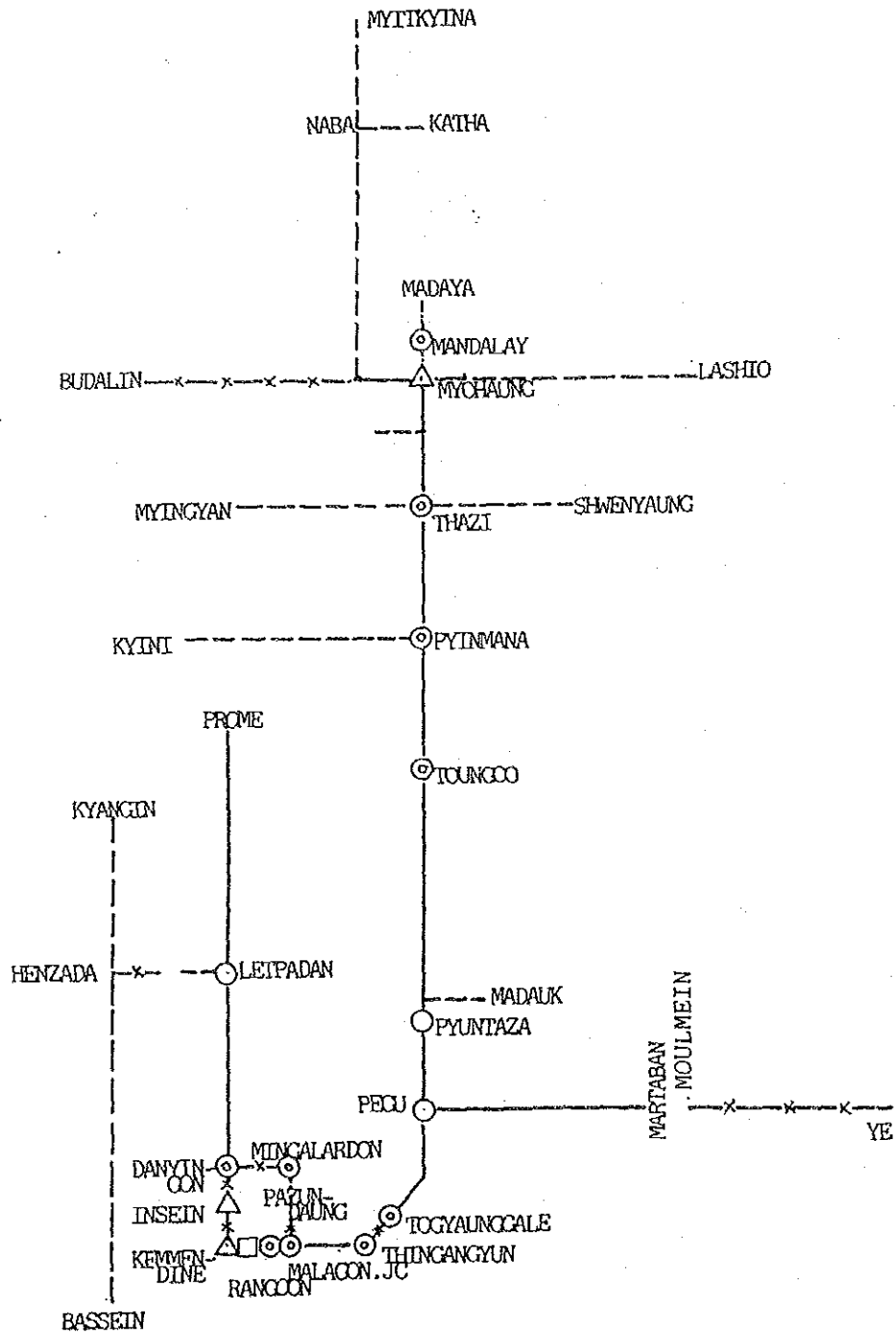* provisional actual and ** provisional.

Appendix Fig. 4.2.3.2 STANDARD BALLAST SECTION

Appendix Fig. 4.2.3.1

CONSTRUCTION CLEARANCE FOR FIXED STRUCTURE.

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MYITKYINA

NABA ——— KATHA

MADAYA

MANDALAY

BUDALIN —×— ×— ×— ×— MYOHAUNG ——————— LASHIO

MYINGYAN ——————————— THAZI ————— SHWENYAUNG

KYINI ——————— PYINMANA

PROME

KYANGIN

HENZADA ×— — — LEIPADAN

MADAUK

PYUNTAZA

PEGU

MARTABAN
MOULMEIN

YE

MINGALARDON

DANYIN-
GON

PAZUN-
DAUNG

INSEIN

TOGYAUNGGALE

KEMMEN-
DINE

THINGANGYUN

MALAGON.JC

RANGOON

BASSEIN

1. ALL RELAY INTERLOCKED
2. MINIATURE LEVER ALL ELECTRIC INTERLOCKED
3. ELECTRO MECHANICAL INTERLOCKED
4. MECHANICAL INTERLOCKED
5. KEY INTERLOCKED SEMAPHORE
6. NONINTERLOCKED SEMAPHORE
7. NONINTERLOCKED FLAG BOARD

Appendix Fig. 4.2.3.4   BURMA RAILWAYS CORPORATION TYPE OF
                        LINE WIRE COMMUNICATION NET-WORK
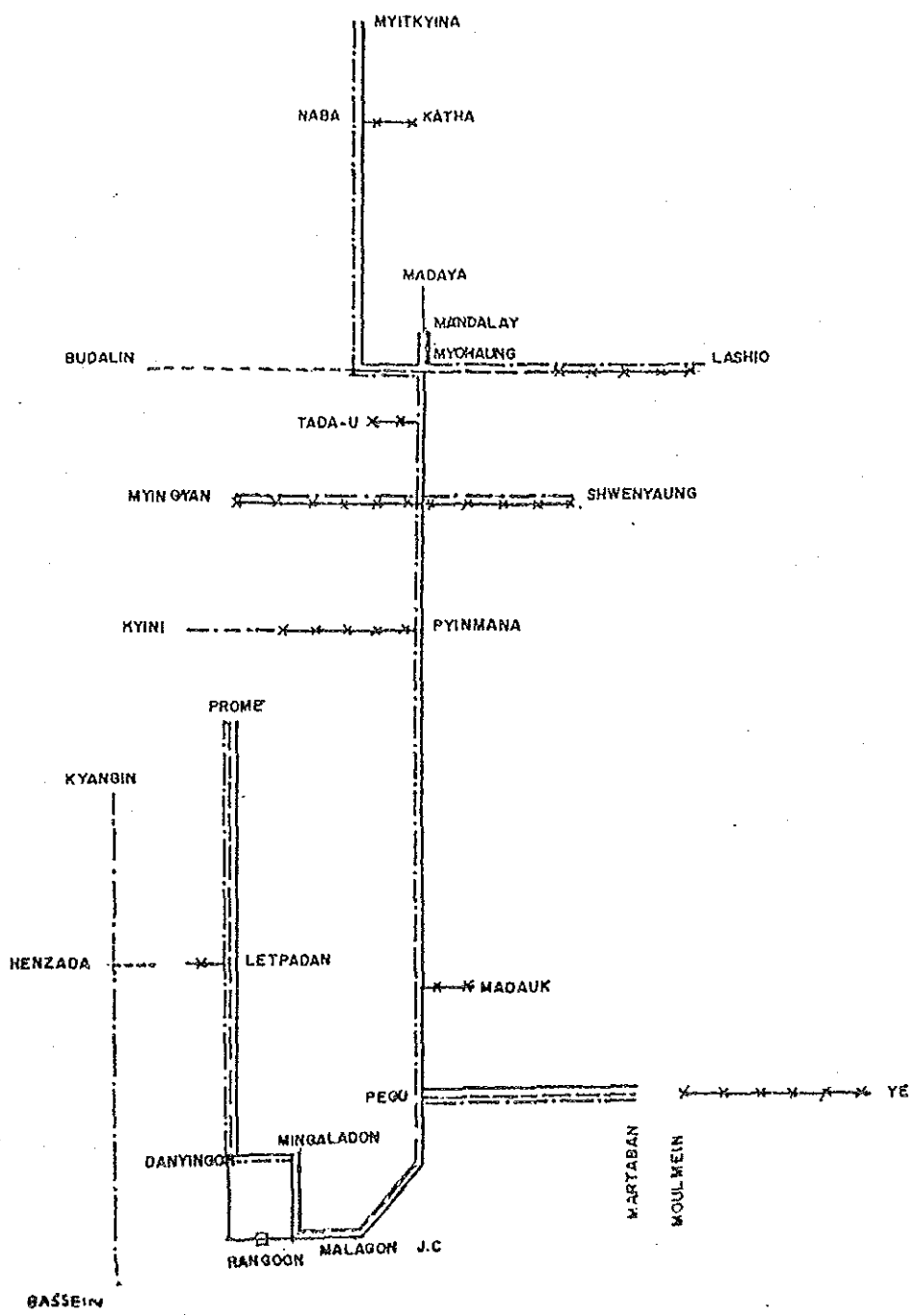
1.   CONTROL PHONE

2.   TOKENESS BLOCK

3.   TOKEN BLOCK

4.   MORSE TELEGRAPH

5.   MAGNETO TELEPHONE

6.   OTHER

Appendix Table 4.2.3.1   TRANSPORT PERFORMANCE OF BRC IN 1980/81 – 85/86

Year	Passengers ('000)			Freight ('000)		
	Persons	Pass-miles	Miles/pass	Tons	Ton-miles	Miles/ton
1980/81	55,015 (1.000)	2,078,155 (1.000)	37.8 (1.000)	2,258 (1.000)	333,326 (1.000)	147.6 (1.000)
1981/82	57,745 (1.050)	2,121,004 (1.021)	36.7 (0.971)	2,337 (1.035)	347,311 (1.042)	148.6 (1.007)
1982/83	62,111 (1.129)	2,341,642 (1.127)	37.0 (0.979)	2,257 (1.000)	353,235 (1.060)	156.5 (1.060)
1983/84	61,198 (1.112)	2,283,283 (1.098)	37.3 (0.987)	2,208 (0.978)	350,308 (1.051)	158.7 (1.075)
1984/85[1]	60,435 (1.099)	2,228,844 (1.073)	36.9 (0.976)	2,087 (0.924)	313,050 (0.939)	150.0 (1.016)
1985/86[2]	62,306 (1.133)	2,339,291 (1.126)	37.5 (0.992)	2,267 (1.004)	350,285 (1.051)	154.5 (1.047)

Source: BRC (December, 1985).

1 Provisional actual
2 Figures in parenthesis mean the ratio of change.

Appendix Table 4.2.3.2   BURMA RAILWAYS CORPORATION

Profit and Loss Statement, FY 1981-82 to 1985/86

(Kyats in Million)

	Actual				Provisional Actual	Forecast
	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
Operating Revenue	307.0	333.9	340.9	356.0	345.5	375.1
Operating Expenses	219.8	241.0	245.2	266.1	236.4	259.4
Net Revenue from Operation	87.0	92.5	95.5	89.8	109.0	115.6
Interest on loans	71.7	75.4	77.7	79.9	90.4	96.6
Turn over tax	15.2	17.0	17.7	17.9	17.7	18.9
Total Surplus	0.1	0.1	0.1	0.1	0.9	0.1

Source: BRC (December, 1985).

Appendix Table 4.2.3.3   BURMA RAILWAYS CORPORATION

Balance Sheets FY 1981-82 to 1985/86

	Actual				Provisional Actual	Forecast
	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
Fixed Assets	1,172.0	1,276.3	1,282.6	1,326.0	1,355.0	1,513.1
Current Assets	845.6	878.0	894.1	934.7	1,093.1	1,500.3
Total Assets	2,017.6	2,154.3	2,176.7	2,260.7	2,248.1	3,013.4
Current Liabilities	123.3	161.9	147.9	152.2	155.1	155.8
Long Term Liabilities Government Equity	1,248.1	1,346.1	1,382.5	1,464.8	1,648.4	2,212.9
Initial Investment and Accumulated Earnings	646.2	646.3	646.3	643.7	644.6	644.7
Total Liabilities and Capital	2,017.6	2,154.3	2,176.7	2,260.7	2,448.1	3,013.4

Source: BRC (December, 1985).

Appendix Table 4.2.4.1   PASSENGER VOLUMES OF IWTC, 1980/81 - 85/86

(In '000)

(1)	Irrawaddy River[1]			Others			National Total[2]		
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Persons	Pass-miles	Miles/Pass	Persons	Pass-miles	Miles/Pass	Persons	Pass-miles	Miles/Pass
1980/81	1599	55,097	34.5	12610	209,603	16.6	14209	264,654	18.6
1981/82	1749	60,672	34.7	16185	262,728	16.2	17934	323,369	18.0
1982/83	1636	61,276	37.5	17498	291,552	16.7	19134	352,828	18.4
1983/84	1687	69,304	41.1	16929	307,722	18.2	18618	377,026	20.3
1984/85*	1738	79,278	45.6	17977	337,369	18.8	20112	423,429	21.1
1985/86**	1,704	79,805	46.8	18,608	338,203	18.2	20,312	418,008	20.6

Source: 1   IWTC (January, 1986)
         2   Reports to the Pyithu Hluttaw, 1986

         *   Provisional-actual
         **   Provisional

Appendix Table 4.2.4.2 FREIGHT VOLUMES OF IWTC, 1980/81 – 85/86

(In '000)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Irrawaddy River[1]			Others			National Total[2]		
	Tons	Ton-miles	Miles/ton	Tons	Ton-miles	Miles/ton	Tons	Ton-miles	Miles/ton
1980/81	575	102,790	178.7	839	89,278	106.4	1,414	192,068	135.8
1981/82	596	96,460	161.8	999	93,057	93.2	1,595	189,517	118.8
1982/83	704	118,109	167.8	1,166	118,444	101.6	1,870	236,553	126.5
1983/84	751	129,132	171.9	1,377	133,894	97.2	2,128	263,026	123.6
1984/85*	662	126,098	190.5	1,364	153,735	112.7	2,301	289,790	138.1
1985/86**	652	110,602	169.6	1,676	196,936	117.5	2,328	307,538	132.1

Source: 1 IWTC (January, 1986)
2 Reports to the Pyithu Hluttaw, 1986

* Provisional-actual
** Provisional

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Appendix Table 4.3.1.1 ZONING TABLE

Zone No.	Name of Zone	Name of Division/State	Name of Township
1	Kyangin	Irrawaddy Div.	Kyangin, Myan Aung, Ingapu, Lemyethna
2	Tharrawaddy	Pegu Div.	Tharrawaddy, Letpatan, Monyo, Okpo Gyobingauk, Minhla (lower), Zigon
3	Prome	Pegu Div.	Nattalin, Paungde, Prome Paukkaung, Shwedaung, Thegon
4	Padaung	Pegu Div.	Padaung
5	Myede	Magwe Div.	Aunglan (Myede), Sinbaungwe
6	Thayet	Magwe Div.	Kamma, Thayet, Mindon, Minhla (upper)
7	Magwe	Magwe Div.	Taungdwingyi, Natmauk, Magwe, Chauk Yenangyaung, Myothit
8	Minbu	Magwe Div.	Ngape, Sidoktaya, Salin Seikpyu, Sagu-Minbu, Pwinbyu
9	Sandoway	Rakhine St.	Sandoway, Gwa, Taungup
10	Nyaung U	Mandalay Div.	Myingyan, Nyaung U, Taungtha Kyaukpadaung
11	Pakokku	Magwe Div.	Gangaw, Hilin, Yesagyo, Myaing, Pauk Pakokku, Saw
12	Pegu	Pegu Div.	Yedashe, Taungoo, Oktwin, Tantabin Pyu, Kyauktaga, Kyaukkyi, Nyaunglebin Daik U, Shwegyin, Waw, Pegu, Thanatpin Kawa
13	Mandalay/Shan	Mandalay Div. Shan St.	Townships in Mandalay Division except Zone 10, Townships in Shan State
14	Chin	Chin St.	Townships in Chin State
15	Rakhine	Rakhine St.	Buthidaung, Maungdaw, Kyautaw Rathedaung, Mraukoo, Ponnagyun, Akab Myebon, An, Kyaukpyu, Ramree, Mun Aung Minbya, Pauktaw
16	Irrawaddy	Irrawaddy Div.	Henzada, Yegyi, Kyonpyaw, Danubyu Kyaunggon, Thapaung, Yandoon, Pantanaw Einme, Bassein (West), Ma-ubin, Wakema Ngaputaw, Myaungmya, Kyaiklat Moulmeingyun, Dedaye, Bogale, Pyapon Labutta, Bassein (East), Zalun
17	Rangoon	Rangoon Div.	Townships in Rangoon Division
18	Karen	Karen St.	Townships in Karen State, Kayah State, Mon State, and Tenasserim Division
19	Sagaing/Kachin	Sagaing Div. Kachin St.	Townships in Sagaing Division and Kachin State except the ones in Zone 20
20	Salingyi	Sagaing Div.	Mingin, Kani, Yinmabin, Salingyi, Pale, Kalemyo

Year	Station	Rice /ton	Paddy /ton	Beans /ton	Stone/ Sand /ton	Fertilizer /ton	Timber /ton	General /ton	Total /ton	Ton-miles ('000)
1980/81	Magwel	23,697	-	-	-	741	12	23,394	47,844	7,596.2
	Minhla	36,431	449	1,144	442	4,600	377	11,446	54,889	10,703.8
	Padaung	1,536	6,263	10	283	3,406	108	9,520	21,126	2,173.5
	Total	61,664	6,712	1,154	725	8,747	497	44,360	123,859	20,473.5
		(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)
1981/82	Magwel	22,647	-	892	1,052	4,027	144	16,222	44,984	9,250.7
	Minhla	35,906	70	630	6,656	9,382	182	12,023	64,849	11,723.3
	Padaung	1,931	3,868	-	-	3,120	65	11,093	20,077	2,059.1
	Total	60,484	3,938	1,522	7,708	16,529	391	39,338	129,910	24,033.1
		(0.981)	(0.587)	(1.319)	(10.63)	(1.890)	(0.787)	(0.887)	(1.049)	(1.174)
1982/83	Magwel	20,698	-	1,193	-	3,810	98	23,936	49,735	9,947.1
	Minhla	31,905	171	3,161	33,794	11,176	377	15,048	95,632	14,186.1
	Padaung	2,257	4,120	-	-	3,610	-	15,182	25,169	2,218.6
	Total	54,860	4,291	4,354	33,794	18,596	475	54,166	170,536	26,351.8
		(0.890)	(0.639)	(3.773)	(46.62)	(2.126)	(0.956)	(1.221)	(1.377)	(1.287)
1983/84	Magwel	21,920	-	410	-	4,882	314	19,808	47,344	9,093.3
	Minhla	30,108	14	962	25,771	10,153	178	15,159	82,345	12,860.9
	Padaung	2,520	1,715	189	176	3,696	70	15,447	23,813	2,617.4
	Total	54,548	1,729	1,561	25,947	18,736	562	50,414	153,502	24,571.6
		(0.885)	(0.258)	(1.353)	(35.79)	(2.141)	(1.131)	(1.136)	(1.239)	(1.200)
1984/85	Magwel	20,535	292	396	-	7,543	0	24,774	53,540	10,918.7
	Minhla	27,651	494	1,423	21,170	10,056	357	13,056	74,207	13,208.5
	Padaung	1,367	1,696	319	-	1,250	0	23,792	28,424	3,494.0
	Total	49,553	2,482	2,138	21,170	18,849	357	61,622	156,171	27,621.2
		(0.804)	(0.370)	(1.853)	(29.20)	(2.155)	(0.718)	(1.389)	(1.261)	(1.349)
1985/86	Magwe	21,584	734	1,698	-	5,754	-	21,460	51,500	10,362.8
	Minhla	34,730	4,335	598	9,184	10,683	286	13,510	73,411	12,764.8
	Padaung	143	2,821	-	-	6,045	-	19,364	28,363	2,328.0
	Total	56,457	7,890	2,566	9,184	22,482	286	54,334	153,274	25,455.6
		(0.916)	(1.176)	(2.224)	(12.67)	(2.570)	(0.575)	(1.225)	(1.237)	(1.243)

Source: RTC (December, 1985).

Note: includes Prome and Myede stations

Figures in parenthesis mean the ratio of change.

Appendix Table 4.3.2.2   PASSENGERS AND CARGO MOVEMENT OF RTC IN THE DIRECT INFLUENCE AREA

1980/81 - 1985/86

	Rangoon-Prome-Magwe Line			Padaung (Branch)			Minhla (Branch)		
	Passengers ('000)	Pass-miles ('000)	Miles/pass	Passengers ('000)	Pass-miles ('000)	Miles/pass	Passengers ('000)	Pass-miles ('000)	Miles/pass
1980/81	227	34,878	153.6	79	7,173	90.8	29	1,463	50.4
	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)
1981/82	287	40,150	140.0	82	7,376	90.0	10	457	45.7
	(1.264)	(1.151)	(0.911)	(1.038)	(1.028)	(0.991)	(0.345)	(0.312)	(0.907)
1982/83	170	32,787	192.9	69	6,495	94.1	8	449	56.1
	(0.749)	(0.940)	(1.256)	(0.873)	(0.905)	(1.036)	(0.276)	(0.307)	(1.113)
1983/84	164	30,480	185.9	48	4,771	99.4	4	145	36.2
	(0.722)	(0.874)	(1.210)	(0.608)	(0.665)	(1.095)	(0.138)	(0.099)	(0.718)
1984/85	141	25,110	178.1	55	5,463	99.3	1	57	57.0
	(0.621)	(0.720)	(1.160)	(0.696)	(0.762)	(1.094)	(0.034)	(0.039)	(1.131)
1985/86	42	4,106	97.8	46	4,640	100.9	0.2	11	55.0
	(0.185)	(0.118)	(0.637)	(0.582)	(0.647)	(1.111)	(0.007)	(0.008)	(1.091)

Source: RTC (December, 1985)

Figures in parenthesis mean the ratio of change.

	Magwe (Branch)[1]			Padaung (Branch)			Minhla (Branch)		
	Tons ('000)	Ton-miles ('000)	Miles/ton	Tons ('000)	Ton-miles ('000)	Miles/ton	Tons ('000)	Ton-miles ('000)	Miles/ton
1980/81	48 (1.000)	7,596 (1.000)	158.3 (1.000)	21 (1.000)	2,174 (1.000)	103.5 (1.000)	55 (1.000)	10,704 (1.000)	194.6 (1.000)
1981/82	45 (0.938)	9,251 (1.218)	205.6 (1.299)	20 (0.952)	2,059 (0.947)	103.0 (0.995)	65 (1.182)	11,723 (1.095)	180.4 (0.927)
1982/83	50 (1.042)	9,947 (1.309)	198.9 (1.256)	25 (1.190)	2,219 (1.021)	88.8 (0.858)	96 (1.745)	14,186 (1.325)	147.8 (0.760)
1983/84	47 (0.979)	9,093 (1.197)	193.5 (1.222)	24 (1.143)	2,618 (1.204)	109.1 (1.054)	82 (1.491)	12,861 (1.202)	156.8 (0.806)
1984/85	54 (1.125)	10,919 (1.437)	202.2 (1.277)	28 (1.333)	3,494 (1.607)	124.8 (1.206)	76 (1.382)	13,208 (1.234)	173.8 (0.893)
1985/86	51.5 (1.073)	10,362.8 (1.364)	201.2 (1.271)	28.4 (1.352)	2,328 (1.071)	82.0 (0.792)	734 (1.335)	12,764 (1.192)	1,739 (0.894)

Source: RTC (December, 1985).
1 included Prome and Myede.

Figures in parenthesis mean the ratio of change.

Appendix Table 4.3.3.1 PASSENGERS AND FREIGHT TRAFFIC
Sections, Rangoon - Prome and Bassein - Kyangin

(In '000)

	Year	Rangoon - Prome	Bassein - Kyangin	Entire Country
Passengers	1980/81	3,740	4,070	55,015
	1981/82	2,862	4,091	57,745
	1982/83	3,188	4,429	62,111
	1983/84	3,052	3,961	61,198
	1984/85	2,491	3,624	60,414
	1985/86*	3,235	3,856	57,640
Passenger-miles	1980/81	269,280	122,100	2,078,155
	1981/82	208,926	122,730	2,121,004
	1982/83	226,348	132,870	2,341,642
	1983/84	393,708	126,752	2,283,283
	1984/85	249,100	119,592	2,228,728
	1985/86*	236,155	138,816	2,092,691
Freight in tons	1980/81	278	161	2,258
	1981/82	281	195	2,337
	1982/83	288	202	2,257
	1983/84	346	195	2,208
	1984/85	286	173	2,087
	1985/86*	301	155	2,267
Freight in ton-miles	1980/81	18,443	8,927	333,326
	1981/82	18,568	10,194	347,311
	1982/83	18,986	10,444	353,235
	1983/84	22,699	10,017	350,308
	1984/85	18,937	8,921	313,050
	1985/86*	19,932	7,983	302,355

Source: Burma Railways Corporation (December 1985).

* provisional.

Appendix Table 4.3.3.2   OUTWARD PASSENGERS AT PROME STATION
AND KYANGIN STATION

| Year | Prome | | Kyangin | |
	Express DN	Mail DN	Year	Total on 3 trains
1981	151,790	63,134	1980/81	138,990
1982	157,605	84,164	1981/82	147,612
1983	147,670	84,652	1982/83	196,274
1984	187,335	98,154	1983/84	155,710[2]
1985	190,362	110,143[1]	1984/85	139,693

Source: Burma Railways Corporation (December, 1985).

Notes: 1 In November 1985, there were many travellers to Prome for
Shwe San Daw Pagoda Festival. It also includes a
provisional figure for December 21-31, 1985.

2 Myogwin Bridge was under repair for 3 months.

Appendix Table 4.3.4.1 REGULAR RIVER TRANSPORT SERVICE

Between Rangoon and Prome   (In '000)

| | Passengers | | | | Cargoes | | | |
	Numbers		Pass-miles		Tons		Ton-Miles	
1980/81	125	(100)	3,986	(100)	12	(100)	1,421	(100)
1981/82	132	(106)	4,268	(107)	14	(117)	1,591	(112)
1982/83	131	(105)	4,345	(109)	14	(117)	1,576	(111)
1983/84	142	(114)	4,946	(124)	15	(125)	1,738	(122)
1984/85	146	(117)	6,144	(154)	14	(117)	1,630	(115)
1985/86 (6 months)	143	(114)	5,993	(150)	15	(125)	1,748	(123)
In 5 years	2.7% p.a.		8.5% p.a.		4.6% p.a.		4.2% p.a.	

Between Mandalay and Prome   (In '000)

| | Passengers | | | | Cargoes | | | |
	Numbers		Pass-miles		Tons		Ton-Miles	
1980/81	692	(100)	21,966	(100)	30	(100)	4,380	(100)
1981/82	796	(115)	23,082	(105)	32	(107)	4,674	(107)
1982/83	710	(103)	23,156	(105)	36	(120)	5,166	(118)
1983/84	708	(102)	25,960	(118)	39	(130)	5,607	(128)
1984/85	646	(93)	24,554	(112)	38	(127)	5,541	(128)
1985/86	575	(83)	21,837	(99)	35	(117)	5,124	(117)
In 5 years	-3.8% p.a.		0.0% p.a.		3.1% p.a.		3.2% p.a.	

Source: IWTC (January 1986)

Figures in parenthesis mean the ratio of change.

Appendix Table 4.3.4.2   CONSIGNMENT OF GOODS IN THE 4TH FOUR YEAR PLAN
(EXPORT + IMPORT)

(000' tons)

	1981/82	1982/83	1983/84	1984/85	1985/86
Rangoon					
Coastal	268.5	317.5	341.4	292.7	280.1
Sea-going	2512.6	2357.9	2231.4	1989.8	2049.8
Total	2781.1 (83.8)	2675.4	2572.8	2282.5	2329.9
Akyab					
Coastal	36.9	33.5	38.0	43.9	35.9
Sea-going	62.0	49.2	37.1	34.9	21.9
Total	98.9 (3.0)	82.7	75.1	78.8	57.8
Kyaukpyu					
Coastal	5.9	5.1	4.5	5.5	7.3
Sea-going	-	-	-	-	-
Total	5.9	5.1	4.5	5.5	7.3
Sandoway					
Coastal	3.9	1.6	2.4	2.1	2.6
Sea-going	-	-	-	-	-
Total	3.9	1.6	2.4	2.1	2.6
Bassein					
Coastal	16.7	17.9	16.1	10.2	7.3
Sea-going	63.4	72.8	130.6	111.8	76.4
Total	80.1	90.7	146.7	122.0	83.7
Moulmein					
Coastal	79.5	82.8	92.1	96.3	83.5
Sea-going	7.2	5.1	-	-	-
Total	86.7	87.9	92.1	96.3	93.5
Tavoy					
Coastal	49.0	49.0	56.3	52.1	49.7
Sea-going	-	-	-	-	-
Total	49.0	49.0	56.3	52.1	49.7
Mergui					
Coastal	159.9	167.0	174.4	138.2	194.8
Sea-going	-	-	-	-	-
Total	159.9	167.0	174.4	138.2	194.8
Victoria-Point					
Coastal	49.3	61.0	66.3	60.8	58.7
Sea-going	5.3	4.0	4.2	1.8	1.0
Total	54.6	65.0	70.5	62.6	59.7
Grand Total					
Coastal	669.6	735.4	791.5	701.8	719.9
Sea-going	2650.5	2489.0	2403.3	2138.3	2149.1
Total	3320.1	3224.4	3194.8	2840.1	2869.0

Source: Burma Ports Corporation (1986)