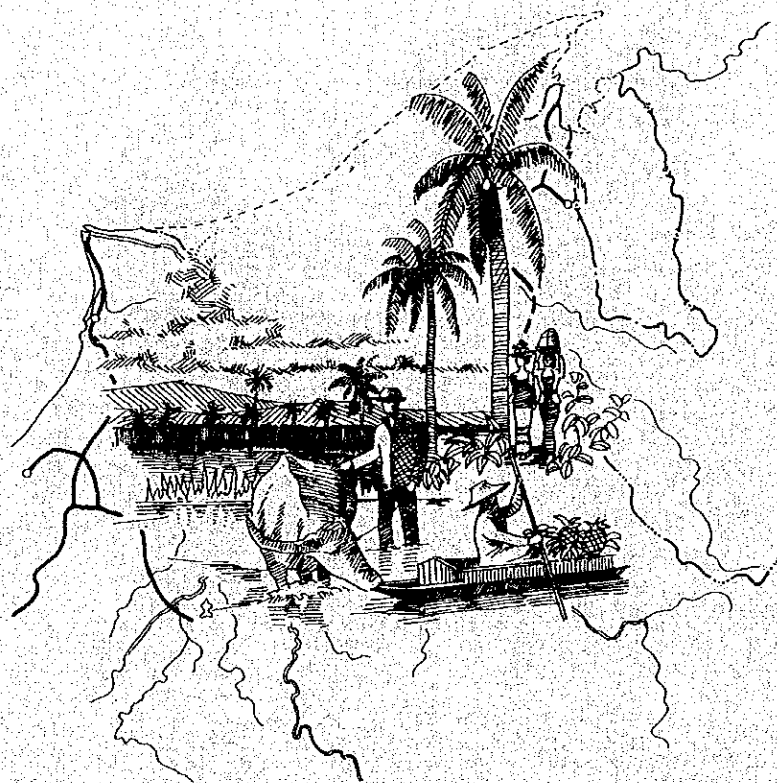


Chapter 2

PRESENT AND FUTURE STATE OF THE STUDY AREA



2-1 OUTLINE OF THE STUDY AREA

2-1-1 Location

The Study Area, as Fig. 1-1 and Fig. 2-1 show is located in the northern part of Sarawak and is composed of a part of Miri District and Baram District in the Fourth Division, and Limbang District in the Fifth Division. These districts, in terms of administration, are further divided into a number of sub-districts. The following lists the sub-districts within the boundary of the Study Area.

Miri S/Dist.	Miri Dist.	4th Division
Sibuti S/Dist.	"	"
Baram S/Dist.	Baram Dist.	"
Bakong S/Dist.	"	"
Baram Tengah S/Dist.	"	"
Baram Ulu S/Dist.	"	"
Limbang S/Dist.	Limbang Dist.	5th Division
N. Medamit S/Dist.	"	"

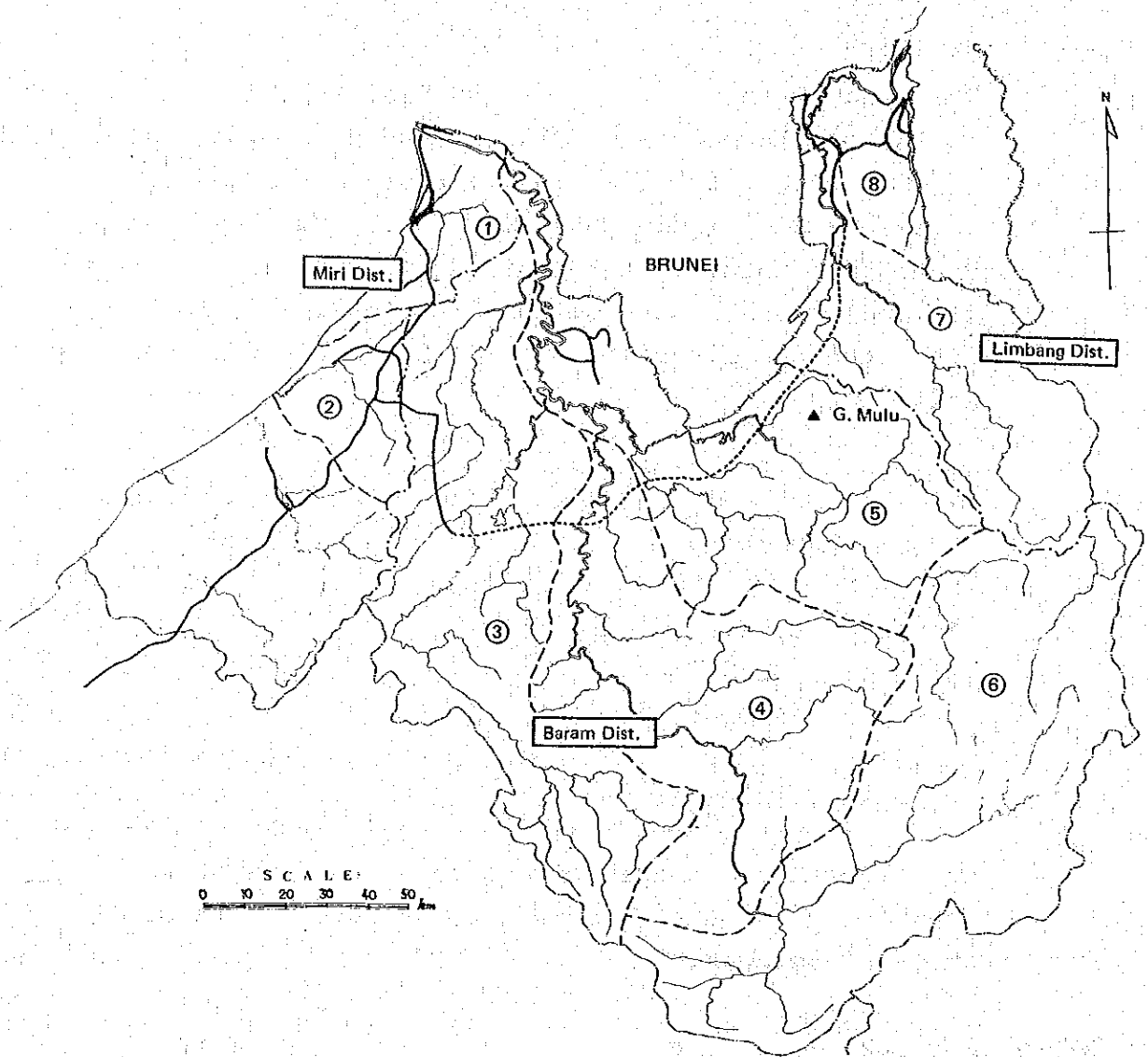
The Study Area roughly covers an area of 28,000km² (about 10,800 mile²), making up an area of 22% of the whole of Sarawak.

2-1-2 Physical Structure

Topographically, the Study Area can be categorized as follows.

(1) Alluvial plains: areas characterized by flat or very gently sloping land occurring in the lower Baram and Tinjar river system and in the lower Limbang river. Areas of flat or very gently sloping land are limited due to generally rather eroded terraces which, however, occupy only small areas.

Fig. 2-1 LOCATION OF ADMINISTRATIVE BOUNDARY IN THE STUDY AREA



- ① Miri Sub-district
- ② Sibuti S/D
- ③ Bakong S/D
- ④ Baram Tengah S/D
- ⑤ Baram S/D
- ⑥ Baram Ulu S/D
- ⑦ N. Medamit S/D
- ⑧ Limbang S/D

—— District Boundary
- - - Sub-district Boundary

(2) The lowlands: these areas range between sea level and 90m (300 feet) and generally feature slopes which are short to moderately steep with terrain being undulating to rolling. The area consists of mainly land with high agricultural potential.

(3) The uplands: at an altitude ranging between 90m to 180m (300 to 600 feet), this area is characterized by long steep slopes and deep narrow river valleys with terrain being hilly. Only quite limited areas of land have agricultural potential.

(4) Highlands: ranging in altitude from 180m (600 feet) to a maximum of over 2,096m (7,000 feet) in the Tamabu mountain range, the area is characterized by very steep configuration with severe dissection and deeply incised drainage. Terrain, being very hilly to mountainous, contains virtually little land with agricultural potential, the exception being for some limited segments in the Bario areas.

In the boundaries of the Study Area are two major river systems, the Limbang in the north and the Baram in the south of which the latter has tributaries of considerable size, such as the Tinjar, Tutoh/Apoh and Bakong. Most rivers are prone to flash flooding especially in their middle and upper reaches.

Due to the influences of the topographic features outlined above, the distribution of farming lands and communities are spread rather widely in the flat areas while where rivers provide the only means of transport, a concentration of communities along these waterways is mostly found with practice of "shifting cultivation" prevailing among these communities. Roads in Miri, rivers in Baram District and both rivers and roads in Limbang District serve as major transport channels along which agricultural and community developments are observed.

2-2 POPULATION/COMMUNITIES

2-2-1 Population Distribution

According to Table 2-1 showing the results of the 1970 census, the Study Area is populated by about 105,500 persons, representing 10.8% of Sarawak's total population. Although hardly any data is available to determine the exact number of regional inhabitants, other than the census performed every ten years, the population for 1977 was estimated based on statistical data obtained from the Medical Department through its researches into those kampongs where malarial prevalence is suspected. Other material used includes that which was obtained from the District Offices and others.

The population of the Study Area in 1977 was thus estimated at 136,000 persons. This estimate allows a yearly growth rate of 3.7% since the year 1970, which is considerably higher when compared with Sarawak's average growth rate of 2.6%. This is chiefly due to the high rate in Miri. Excluding the Miri sub-district, the Study Area has a growth rate of about 2.9%.

The Study Area, excluding Miri, Sibuti and Limbang sub-districts, where the major parts are served by roads and also the Baram Ulu sub-district that will not have any section of the projected road, the population would be 48,200 persons in 1977 with an average annual growth rate of 2.5%.

2-2-2 Racial Composition

The Study Area is populated by a number of different races with Chinese composing the largest share accounting for 28.5% followed by Ibans at 23.0% and Malays at 18.1%. Together, these amount to about 70% of the total at a ratio similar to that for the whole of Sarawak. The indigenous races prevalent in the area other than the Iban are the Kayan, Kenyah, Bisaya, Kedayan, Penan, Kelabit etc.

Table 2-1 DISTRIBUTION OF POPULATION BY SUB-DISTRICT

Sub-district	Area		Population				Density 1977 (Ps./sq.km.)	Annual Growth Rate (%)
	Sq. km.	(%)	1970	(%)	1977	(%)		
Miri	961	(3.4)	35,702	(33.8)	50,700 ^{1/}	(37.3)	52.8	5.14
Sibuti	997	(3.6)	10,483	(9.9)	12,900 ^{2/}	(9.5)	12.9	3.01
Bakong	5,489	(19.6)	12,602	(11.9)	16,000 ^{3/}	(11.7)	2.9	3.47
Baram Tengah	4,857	(17.4)	7,287	(6.9)	9,000 ^{3/}	(6.6)	1.9	3.06
Baram	4,870	(17.4)	13,768	(13.1)	17,000 ^{3/}	(12.5)	3.5	3.06
Baram Ulu	6,830	(24.4)	5,851	(5.6)	6,200 ^{3/}	(4.6)	0.9	0.83
N. Medamit	2,990	(10.7)	5,300	(5.0)	6,200 ^{3/}	(4.6)	2.1	2.27
Limbang	986	(3.5)	14,507	(13.8)	18,000 ^{3/}	(13.2)	18.3	3.13
Total	27,980	(100.0)	105,500	(100.0)	136,000	(100.0)	4.8	3.69
Excluding Miri, Sibuti, Limbang and Baram Ulu	18,206	(65.1)	38,957	(36.9)	48,200	(35.4)	2.5	3.09

1/ Estimated as follows:

	1970	1977	Annual Growth Rate (%)
Miri/Lutong	27,021	40,000	5.8 *
Other Areas	8,681	10,700	3.0 **
Miri Sub-district	35,702	50,700	5.1

* Actual Growth Rate

** Assumption

2/ Estimated based on the assumed growth rate of 3.0%. Annual growth rate of 4th Division between 1960 and 1970 was 3.5%.

3/ Estimated based on the population survey being carried out by Medical Department.

Regions other than the Study Area have considerable characteristic racial compositions with the major inhabitants being Chinese and Malays in Miri, Ibans followed by other indigenous races such as the Kayan, Kenyah and so on in Baram, and with Malays, Ibans, Chinese, Bisaya and Kedayan in Limbang.

In Sarawak, the races differ in their outlooks on vocation, modes of living and customs.

Table 2-2 POPULATION DISTRIBUTION BY RACE, 1970

Sub-district	Malay	Melanau	Sea Dayak (Iban)	Land Dayak (Bidayuh)	Other Indigenous	Chinese	(%) Others
Miri	26.1	4.4	7.6	0.7	2.9	56.2	2.1
Sibuti	15.2	2.7	48.0	0.2	19.2	14.4	0.3
Baram	5.7	0.3	30.2	0.1	49.7 ^{1/}	13.6	0.4
Bakong							
Baram Tengah							
Baram Ulu							
N. Medamit	30.0	0.2	23.0	0.3	30.2 ^{2/}	16.0	0.3
Limbang							
Study Area (Population):	18.1 (19,100)	1.9 (2,026)	23.0 (24,245)	0.4 (383)	27.1 (28,662)	28.5 (30,097)	0.9 (987)
SARAWAK (Population):	18.7 (182,709)	5.5 (53,234)	31.1 (302,984)	8.5 (83,276)	5.1 (49,960)	30.1 (294,020)	1.0 (9,735)

^{1/} Including Kayan : 17.6%, Kenyah : 16.7%, Kelabit : 5.1% and Peran : 5.6% etc.

^{2/} Including Bisaya : 14.3%, Kedayan : 11.4%, Murut : 2.4% and Kelabit/Tabun : 2.3% etc.

Source : Annual Statistical Bulletin Sarawak and information from District Office.

2-2-3 Urban Areas/Communities

(1) Size and Distribution of Communities

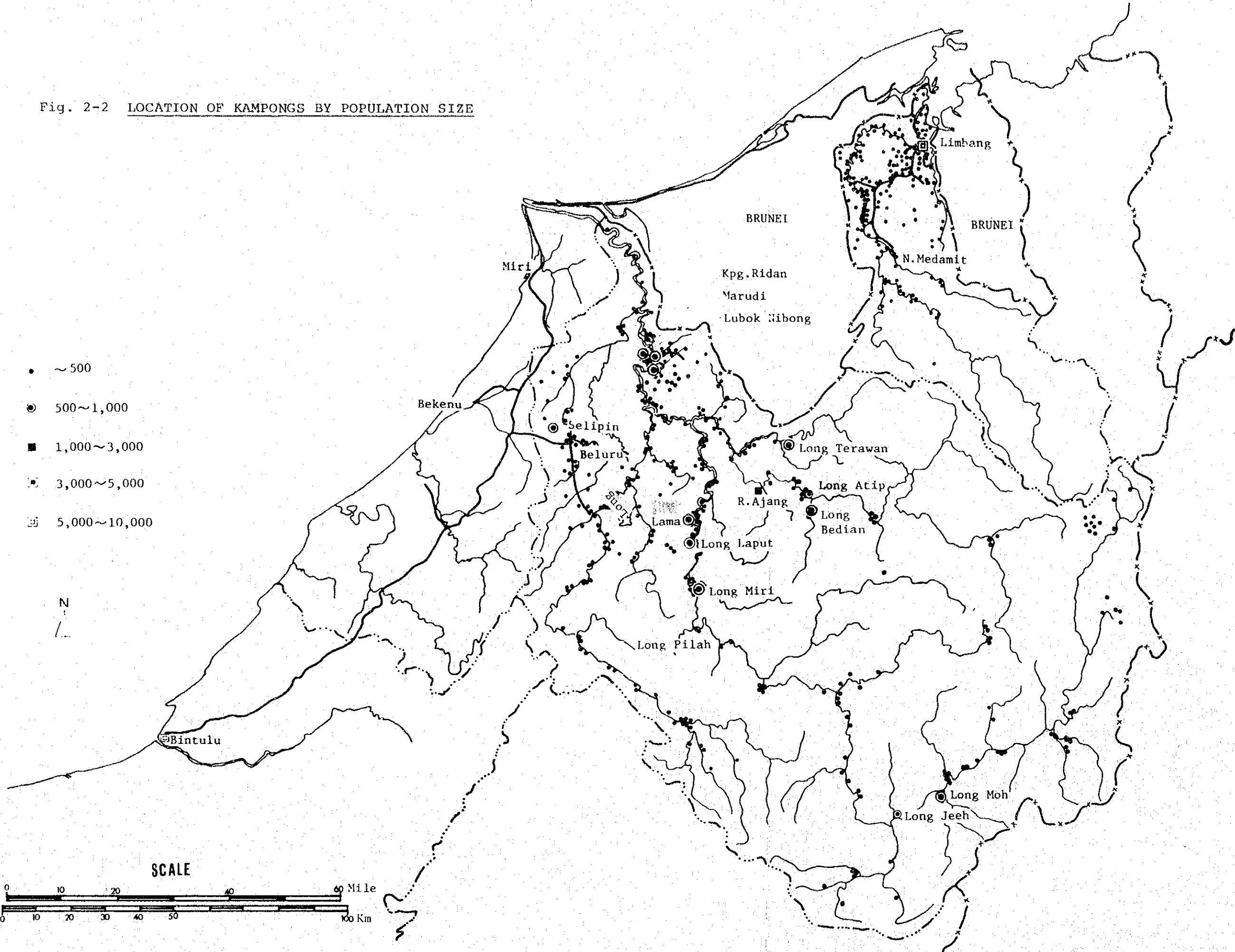
In the Study Area, Miri, Marudi and Limbang are the only three that can be called cities or urban areas in view of their functions and sizes. There are also about three urbanized areas; Long Lama, N. Medamit and Beluru. Other than these areas, most of the communities consist of kampongs or long houses which chiefly function only as a base for farming and habitation. Table 2-3 shows the number of towns/kampongs by population size in Limbang and Baram Districts. According to the table, most of the communities are populated with less than 500 inhabitants, with 45 to 50% of the total number of kampongs having less than 100 inhabitants. Kampongs with a population of 500 or more in Baram District are listed in Appendix Table A-2-2.

Fig. 2-2 shows the distribution of kampongs. Most of them being concentrated along roads or rivers.

Table 2-3 NUMBER OF TOWN/KAMPONGS IN BARAM AND LIMBANG DISTRICTS BY POPULATION SIZE, 1977

Population Size	Baram Dist.		Limbang Dist.	
	Number	(%)	Number	(%)
1 - 99	128	44.3	73	49.3
100 - 199	80	27.7	51	34.5
200 - 299	37	12.8	16	10.8
300 - 399	24	8.3	6	4.1
400 - 499	6	2.1	1	0.7
500 - 599	5	1.7	0	0
600 - 699	3	1.0	0	0
700 - 799	2	0.7	0	0
800 - 999	1	0.3	0	0
1,000 - 2,999	2	0.7	0	0
3,000 - 4,999	0	0	0	0
5,000 - 9,999	1	0.3	1	0.7
10,000 -	0	0	0	0
	289	(100.0)	148	(100.0)

Fig. 2-2 LOCATION OF KAMPONGS BY POPULATION SIZE



(2) Outline of Major Cities

Over the period from 1960 to 1970, Sarawak's urban population has grown from 12.6% to 16.7% of the total. This means in real terms a 1.73-time expansion from 93,810 to 162,396 persons at an annual average growth rate of 5.6%. A similar trend is observed in the Study Area. As Table 2-4 summarizes, the population inflow into Miri has been accelerating since 1970. Even Marudi or Long Lama which are inaccessible by road have higher growth rates than that for the whole of Sarawak.

Table 2-4 POPULATION OF MAJOR CENTRES

Settlement	1960	1970	1977	Annual	Growth ^{10/}
				Rate	%
				1960-70	1970-77
Urban Miri/Lutong	16,222 ^{1/}	27,021 ^{1/}	40,000 ^{2/}	5.2	5.8
Marudi	2,663 ^{1/}	3,910 ^{1/8/}	5,000 ^{3/7/}	3.9 (2.5)	3.6 (0.8)
Limbang	n.a.	n.a.	8,000 ^{4/}	-	-
Semi-Urban Long Lama	496 ^{1/}	631 ^{4/5/}	1,512 ^{9/6/}	2.4 (0)	13.2 (5.9)
N. Medamit	n.a.	100 ^{4/}	378 ^{4/}	-	21.0
Beluru	n.a.	330 ^{4/}	384 ^{4/}	-	2.2
Total		n.a.	55,274		

^{1/} Miri-Bintulu Regional Study

^{2/} Information Office, Miri

^{3/} Estimated on the basis of information collected from District Office, Police Office etc. in Marudi

^{4/} Medical Department, Limbang

^{5/} Including 136 Secondary School Students

^{6/} Including 773 Secondary School Students

^{7/} Including 1,400 Secondary School Students

^{8/} Including 500 Secondary School Students

^{9/} District Office, Marudi

^{10/} Figures in parenthesis is the rate excluding the number of Students

1) Miri

Miri is the third largest city in Sarawak and along with Lutong, which is located nearby, has a total estimated population of about 40,000. Miri has been expanding due to the oil and natural gas developments taking place off its coast. However, due to regional development which has been focusing on agriculture progress, the city has achieved a diversity in its functions and, as such, is playing an increasingly important role as a strategic base for local economy-goods distribution and other commercial activities. From the viewpoint of administration, the Fourth Division's governmental offices are located in the city. The policies in the improvement of Miri are aimed at a balanced regional development by decentralizing the present population and accompanying functions concentrated in limited areas such as at Kuching and Sibul. In accordance with this program, various survey and research activities are being carried out such as construction of a deep sea port at Tg. Kidurung and also hinterland development for the Bintulu area. The port of Miri, experiences as do many other ports in Sarawak, the handicap of sand bars and shallows impeding the port's functions and facilities, and as a result vessels of large sizes are unable to dock, instead having to stay off port for cargo handling. The projected port close by to Bintulu, located some 230km (144 miles) distance by road from Miri, would greatly improve the transport conditions.

The hinterland of Miri abounds in forest resources, with about 50% of the round timber exports for the whole of Sarawak coming from this area. Industrial location of various sectors led by the timber related industries is gradually increasing along with its infrastructures, and it is considered that the population growth, now at a rate of about 5.8%, will continue in the future.

2) Marudi

The town of Marudi serves as the administrative and distributing centre of the Bg. Baram river basin.

With K. Baram situated close to the river mouth, Marudi is located some 110kms (69 miles) further upstream and is active in the out-going distribution of farm products produced in upstream areas and also as a distributor of goods coming into these upstream areas through the present port, facilitating vessels with loading capacities mainly of up to 500 tons, plying between areas of Sarawak and foreign locations.

With an estimated population of about 5,000, Marudi has apart from its commodity distribution, other economic activities such as rubber culture, agricultural and timber processing industries. In addition Marudi also has a secondary school serving 1,400 students, along with commercial facilities such as hotels, markets and retail shops totaling about fifty. In terms of transportation, express launch services are available to and from K. Baram and Long Lama, with regular flights available to and from Marudi can be expected to expand its services at a constant rate due to the forestry development that is becoming increasingly active in the Baram river basin providing that the realization of the Project Road is not expected. With the Project Road completed, however, Long Lama is expected to take over the present functions of Marudi.

3) Long Lama

Long Lama is located further upstream, about 115km (72 miles) from Marudi and 225km (141 miles) from K. Baram. The township developed from one of the more active longhouses which was located on the other side of the river from the present town. The Bazaar was initiated back in the 1920s, from which the town has grown to its present size. With a population estimated

at around 1,500, the facilities include a branch of Divisional Office, a hospital, primary and secondary schools together with about ten retail shops. The only transportation means to and from other areas is a daily express launch service operating in both directions with each way requiring about five hours in travel time. The town functions as a commodity distribution centre and also provides opportunities for secondary education, but to a lesser extent than Marudi.

Vessels with capacities of 200 to 300 tons can call at Long Lama without difficulty as far as navigation of the river is concerned. In the future Long Lama is expected to grow in importance due to the expansion of forestry development to areas in the interior. In this context, the town will be greatly influenced by the Project Road. When completed, the road will greatly reduce the travel time to Miri, from two days by river at present, to 2 to 3 hours over 132kms (82.5 miles) via the Project Road. It is considered that this will lead to the possibility of Long Lama sharing many of the functions which Marudi possesses, and along with this, will lead to developing anew the requirements of industrial location.

4) Limbang

Limbang although being the administrative center of the Fifth Division, is isolated due to the non-existence of roads while also only having a very limited air service. On the other hand, it is at a distance of only about 20 minutes travel time between Brunei by speedboat, from where a road leads to Miri. With a long history of close relations the two areas have enjoyed an interchange of both commodities and people. Limbang's estimated population is about 8,000, with the town providing inhabitants with various social and economic services through its administrative institutions, schools, hospitals, and various commercial facilities of some 75 shops. Its port, like others

in Sarawak, suffers from the existence of sand bars and shallows limiting the size of vessels which can enter. At present, most of the vessels utilizing the port have capacities of 200 to 300 tons, but even such ships experience great difficulty in entering during the period of the "landas" season.

2-2-4 Estimation of Future Population

This section deals with the future population of the Study Area estimated on the basis of the past trend. The basic concepts and assumption for estimation are as follows.

(1) It was assumed, as Appendix Table A-2-3 shows, that Sarawak as a whole will have different growth rates for three periods; 2.5%/year for 1977-'82, 2.4%/year for 1982-'92 and 2.3%/year for 1992-2002. The population of each division was calculated assuming that it will grow following the trend of the period from 1960 to 1970 and that the total of the estimated, equals the total population of Sarawak, estimated at the above-mentioned rates.

(2) Although the Study Area has a higher growth rate than of the other areas in the Fourth and Fifth Divisions due to the high growth rate of Miri, the share of the Study Area in the Fourth and Fifth divisions will stay constant after 1987 presuming that the population concentration will become accelerated in Bintulu from that time on.

(3) The population of each Sub-district within the Study Area was estimated, based on the assumption that their respective growth rates will remain the same or similar in the future, in the same way as mentioned in (1) above.

According to Table 2-5 showing the estimates thus obtained, the share that Miri bears will increase further

to reach a level of 95,000 in 1992. In the year 2002, it will expand to 137,500 representing about 50% of the total population of the Study Area. Following Miri, the population of Bakong, Baram Tengah, Baram and Limbang is expected to grow at relatively higher rates; N. Medamit having a moderate growth rate while the population of Baram Ulu will most likely not increase.

Table 2-5 FORECASTED POPULATION OF THE STUDY AREA

Sub-district	1977		1982		1987		1992		2002		Average Annual Growth Rate (%)		
	Popul. (000)	(%)	Popul. (000)	(%)	Popul. (000)	(%)	Popul. (000)	(%)	Popul. (000)	(%)	77-82	82-92	92-02
Miri	50.7	(37.3)	63.3	(39.8)	78.6	(42.3)	95.3	(44.6)	137.5	(49.3)	4.54	4.18	3.73
Sibuti	12.9	(9.5)	14.6	(9.2)	16.4	(8.8)	18.1	(8.5)	21.6	(7.7)	2.51	2.17	1.78
Bakong	16.0	(11.7)	18.5	(11.6)	21.3	(11.4)	24.1	(11.3)	30.3	(10.9)	2.95	2.68	2.32
Baram Tengah	9.0	(6.6)	10.2	(6.4)	11.5	(6.2)	12.8	(6.0)	15.5	(5.6)	2.53	2.30	1.93
Baram	17.0	(12.5)	19.2	(12.1)	21.5	(11.6)	23.8	(11.1)	28.5	(10.2)	2.46	2.17	1.82
Baram Ulu	6.2	(4.6)	6.3	(3.9)	6.4	(3.4)	6.4	(3.0)	6.4	(2.3)	0.32	0.16	0.00
N. Medamit	6.2	(4.6)	6.7	(4.2)	7.2	(3.9)	7.6	(3.6)	8.3	(3.0)	1.56	1.27	0.88
Limbang	18.0	(13.2)	20.4	(12.8)	23.0	(12.4)	25.5	(11.9)	30.8	(11.0)	2.53	2.26	1.91
Study Area	136.0	(100.0)	159.2	(100.0)	185.9	(100.0)	213.6	(100.0)	278.9	(100.0)	3.20	2.98	2.70
% to 4 + 5 Division	- 64.2 -		- 65.0 -		- 66.0 -		- 66.0 -		- 66.0 -				
4th + 5th Division	211.8		244.9		281.6		323.7		422.5		2.95	2.83	2.70

Table 2-6 below is intended to give an estimate of future population for major cities. The calculation used applicable rates which were defined taking account of their past growth rates and characteristics.

Table 2-6 FORECASTED POPULATION OF MAJOR POPULATION CENTRES

Settlement	1977	1982	1987	1992	2002	Average Annual Growth Rate (%)		
						77-82	82-92	92-02
Miri/Lutong	40,000	52,300	65,100	81,200	120,200	5.5	4.5	4.0
Marudi	5,000	5,500	5,900	6,400	7,100	2.0	1.5	1.0
Limbang	8,000	9,300	10,500	11,900	14,500	3.0	2.5	2.0
Long Lama	1,500	1,800	2,100	2,500	3,100	4.0	3.0	2.5
Beluru	380	480	580	710	1,000	5.0	4.0	3.5

2-3 AGRICULTURE

Agricultural activities in the Study Area are mostly of small scale operations utilizing widespread traditional agricultural methods except for the oil palm cultivation in Bukit Peninjau and Danau in Limbang area. The areas along the Project Road are mostly located far from markets, being covered to a large extent with jungle, and are sparsely populated, therefore creating a serious handicap to their agricultural development. In this section, the current state of agricultural production in the Study Area is outlined along with the discussion of the feasibility of future development.

2-3-1 Agricultural Production

(1) Paddy

Table 2-7 shows the extent of paddy production in the Study Area. In 1977, wet paddy of about 17,000 tons and hill paddy of about 10,000 tons were produced, each accounting for 17% and 20% respectively of the total production for the whole of Sarawak. Paddy cultivation is concentrated in Baram and Limbang, with 85% of the paddy production in the Study Area coming from the two, being 80% for wet paddy and 90% for hill paddy. The paddy production in these districts shows that the yield per acreage under cultivation was higher than the average for Sarawak by about 30% in both cases of wet paddy and hill paddy.

Table 2-7 PADDY PRODUCTION IN THE STUDY AREA

	Miri		Baram		Limbang		Total	
	1975/76	1976/77	1975/76	1976/77	1975/76	1976/77	1975/76	1976/77
<u>Wet Paddy</u>								
Area Planted (ha)	1,102	1,214	4,026	4,160	2,311	2,236	7,439	7,610
Area Harvested (ha)	1,034	1,174	3,574	4,100	2,033	1,642 ^{1/}	6,641	6,916
Production (tons)	2,985	3,266	8,984	10,501	4,951	3,422 ^{1/}	16,920	17,189
Yield (ton/ha)	2.89	2.78	2.51	2.56	2.44	2.08 ^{1/}	2.55	2.49
<u>Hill Paddy</u>								
Area Planted (ha)	901	882	5,787	6,077	2,025	2,120	8,713	9,079
Area Harvested (ha)	878	842	5,787	6,077	2,025	2,120	8,690	9,039
Production (tons)	1,024	1,070	6,080	5,429	3,036	3,154	10,140	9,653
Yield (ton/ha)	1.17	1.27	1.05	0.89	1.50	1.49	1.17	1.07
<u>TOTAL</u>								
Area Planted (ha)	2,003	2,096	9,813	10,237	4,336	4,356	16,152	16,689
Area Harvested (ha)	1,912	2,016	9,361	10,177	4,058	3,762	15,331	15,955
Production (tons)	4,009	4,336	15,064	15,930	7,987	6,576	27,060	26,842
Yield (ton/ha)	2.09	2.15	1.61	1.57	1.97	1.75	1.77	1.68
Average Yield of Whole State (ton/ha)	1975/76 ;		Wet Paddy = 1.91 Hill Paddy = 0.80					

Source; District Agricultural Annual Report

^{1/} Significant decrease is due to serious flood.

In the Limbang and Baram areas, rice production equals or exceeds the demand in the respective areas with surpluses being transported to Miri for consumption by urban people. Table 2-8 shows the regional supply and demand balance of paddy estimated from the tonnages produced and imported. The table, shows that the First and Third Division suffer with a deficit while the Fourth and Fifth Division have a supply and demand ratio that is fairly balanced. Further details regarding the paddy position in the Study Area will be discussed later in Section 3, Chapter 4.

Table 2-8 REGIONAL SUPPLY/DEMAND BALANCE OF RICE, 1976

Division	Production (Tons)		Population (No.)	Presumed 2/ Consumption (Tons)	Deficit/ Surplus (Tons)	Import of Rice (Tons)
	Paddy	Rice 1/ Equiv.				
FIRST	17,186	10,655	411,000	56,924	Δ 46,269	36,815 (Kuching)
SECOND	39,660	24,589	156,000	21,606	2,983	-
THIRD	8,827	5,473	192,000	26,592	Δ 21,119	26,348 (Sibu)
FOURTH	36,888	22,871	166,000	22,991	Δ 120	40 (Miri)
FIFTH	10,866	6,737	42,000	5,817	920	-
SIXTH	23,973	14,863	107,000	14,820	43	-
SEVENTH	13,673	8,477	58,000	8,033	444	-
TOTAL	151,073	93,665	1,132,000	156,782	Δ 63,118	63,203

1/ 1 ton of paddy = 0.62 ton of rice

2/ Calculated based on the per capita consumption of 138.5kg.

(2) Rubber

Two rubber plantations are in existence, one in the suburbs of Miri and the other in the suburbs of Limbang. In Baram District where sections of the Project Road lie, no estate type cultivation exists while what rubber there is, mostly is produced by farmers on a very small scale. This limited cultivation is due to the lack of land suitable for the culture, and also the shortage of labour force. Table 2-9 shows the amount and acreage under cultivation in respective areas for 1977. From this, the level of production at present is estimated to be in the range of 6,500 tons, of which the majority is exported. Appendix A-2-4 gives the export tonnage by port. The reasons why the export tonnage is smaller than the production is because some of the product is transported via Kuching.

Table 2-9 RUBBER PRODUCTION IN THE STUDY AREA, 1977

Area	Ordinary				High Yielding			
	Acreage (ha)		Yield	Produ.	Acreage (ha)		Yield	Produc.
	Mature	Immature	(lb/tree)	(tons)	Mature	Immature	(lb/tree)	(tons)
Miri	4,087	n.a.	4 - 6	n.a.	1,963	300	12 - 14	n.a.
Baram	1,497	210	6	810	4,124	1,021	14	1,640
Limbang ^{1/}	4,450	n.a.	6	n.a.	750	n.a.	8	n.a.
Total	10,034	n.a.	4 - 6	n.a.	6,837	1,321	8 - 14	n.a.

Source; District Agricultural Annual Report

^{1/} Figures are those of 1976, production in 1975 was 1,738 tons including both ordinary and high yielding types.

(3) Pepper

Although pepper has a high profitability compared with other farm products, being able to increase the income of an agricultural household, it does require a high labour input resulting in high costs and, furthermore, no income can be gained in the first three years of its planting, therefore its cultivation cannot be attempted without ample funds. In view of this, Governmental plans put emphasis on increasing its production. In particular, farmers without enough funds are subsidized allowing them to purchase tools, materials, and fertilizers as part of the assistance. The amount produced in the Study Area, as shown in Table 2-10, is small, in the range of 1,200 tons, having a share of only a few percentage of the total tonnage from Sarawak. Even so the crop is expected to show an increase from now on, encouraged by the subsidizing schemes and due to the introduction of adequate culture guidance as land once used for "shifting cultivation" is highly suitable for pepper cultivation because potassium and other nutritive elements are present, therefore production in the Study Area, though small now, is gradually increasing.

Table 2-10: PEPPER PRODUCTION IN THE STUDY AREA, 1977

Area	Acreage ^{1/} (ha)			Yield ^{2/} (lb.)	Production (Tons)		
	Mature	Immature	Total		Black	White	Total
Miri	145.7	99.2	244.9	12-16	95	460	555
Baram	155.0	80.1	235.1	13	305	260	565
Limbang	77.6	60.8	138.4	6-8	55 ^{3/}	29 ^{3/}	84 ^{3/}
Total	378.3	240.1	618.4		455	749	1,204

Source; District Agricultural Annual Report

1/ 1 acre = 800 vines or 1 ha = 1977 vines

2/ lb. green berries per mature vine

3/ Figures are those of 1975

(4) Others

Other than the foregoing, the Study Area consists of agricultural crops as listed in Table 2-11. The Agricultural Diversification Scheme was introduced in order to stabilize the consequent fluctuation of agricultural household income and thus control the fluctuation in the revenue by diversifying crops. In accordance with the scheme, SLDP succeeded in introducing oil palms, while the culture of other products such as various perennial and annual crops, cashew nuts, sago palms and fruit crops, was encouraged by the subsidizing system.

Table 2-11 PRODUCTION OF OTHER AGRICULTURE CROPS
IN THE STUDY AREA, 1977

Crops	Miri	Baram	Limbang ^{3/}
<u>Coconut;</u>			
Acreage (ha); Mature	2,873	-	2,592
Immature	830	-	6,646
Yield (No. of nuts per ha)	202	-	80-100
Production (No. of nuts)	71,000	-	128,080
<u>Oil Palm;</u>			
Acreage (ha); Mature	n.a.	-	273
Immature	649 ^{1/}	-	-
Yield (tons fresh fruit/ha)	n.a.	-	n.a.
Production (tons fresh fruit)	n.a.	-	n.a.
<u>Sago;</u>			
Acreage (ha); Mature	-	-	192
Immature	-	-	249
Yield (ton/ha)	-	-	n.a.
Production (tons)	-	-	n.a.
<u>Cocoa;</u>			
Acreage (ha); Mature	70	12	-
Immature		40	3,000 ^{2/}
Yield	n.a.	n.a.	-
Production (tons)	n.a.	n.a.	-
<u>Maize;</u>			
Acreage (ha)	796	534	783
Yield (kg/ha)	(560)	990	n.a.
Production (tons)	50	528	n.a.
<u>Other Crops;</u>			
	Fruit trees, Clove, Cashewnut, Nutmeg, Coffee, Groundnuts, Ginger, Water-melon, Vegetables etc.	Fruit trees, Coffee, Sugarcane, Groundnut etc.	Fruit trees, Clove, Cashew- nut, Nutmeg, Soyabean, Groundnut etc.

Source; District Agricultural Annual Reports

^{1/} Includes small holders only

^{2/} No. of trees

^{3/} Figures are those of 1976

(5) Livestock

Table 2-12 shows the livestock population in Miri, Baram and Limbang Districts including the Study Area. Pigs accounting for 68% of the total are the most important in the section, as they are in the whole of Sarawak, and are raised throughout the Study Area. Cattle, buffaloe and goats are the livestock for which subsidizing schemes have been adopted in the hope of increasing production.

Table 2-12 LIVESTOCK POPULATION IN THE STUDY AREA, 1977

District	Cattle	Buffaloes	Pigs	Goats	Total
Miri	2,683	215 ^{1/}	11,987 ^{2/}	659 ^{3/}	15,544
Baram	434 ^{4/}	1,000 ^{5/}	7,794 ^{2/}	199 ^{3/}	9,427
Limbang	200	3,355	895 ^{2/}	763 ^{3/}	5,213
Total	3,317	4,570	20,676	1,621	30,184

Source: Veterinary Annual Report for 4th & 5th Divisions, 1977.

- 1/ Mostly found in Sibuti areas
- 2/ More or less evenly distributed in the areas
- 3/ Mostly found in coastal areas
- 4/ 90% found in Bario areas
- 5/ Nearly all are found in Bario areas.

2-3-2 Agricultural Development Potentials

(1) Problems in Development

Little information has been obtained regarding the potentialities for agricultural development along the Project Road. The major source of data is the Miri-Bintulu Regional Survey Report giving the results of the soil survey conducted by the Department of Agriculture. In the case of interior areas especially, only limited research has been attempted due to the areas very low accessibility and consequent difficulties. Agricultural Development in such interior areas along the Project Road are greatly handicapped mainly due to the following points.

- a) Restrictions due to topographic features: the areas have hilly and mountainous topography, and are mostly covered with jungles. Flat parts are generally swampy having peat deposits with bad draining conditions. Hilly terrain has slopes with gradients of 10° to 35°, with limited flat portions. Those with steeper gradients have outer layers that are greatly eroded by rain water.
- b) Insufficient nutritive elements in soil: the areas are covered by tropical rain forests having high temperatures and humidity with soil being very acidy in nature as well as lacking in organism.
- c) Underdeveloped transport means: the areas which depend totally on rivers for transportation means, experience great difficulty to transport goods to markets, replenish agricultural inputs, such as fertilizers, chemicals, farming tools etc., and to have agricultural techniques introduced.
- d) Low population density: most of the Study Area suffers from low population density, and large-scale development projects will have serious problems in obtaining sufficient labour force. The oil palm culture in Bukit Peninjau has already encountered difficulties due to this factor. In the case of the Limbang Valley Development Project, this obstacle is also expected to be faced. Moreover modern agricultural methods face problems in being accepted by the tradition bound people in the interior.

(2) Agricultural Development Potential Areas

Distribution of agricultural development potential areas in the Study Area particularly those along the Project Road is discussed in two reports; one of the Department

of Agriculture and the other being the Miri - Bintulu Regional Study Report. In the former report the agricultural potential areas are selected by carrying out field surveys based on aerial photos taken in 1964, by semi-detailed soil surveys and by excluding areas unsuitable for cultivation such as swamps and hilly/mountainous terrains with slope gradients steeper than 35°.

Fig. 2-3 shows the location of the agricultural development potential blocks out of which those being located in the areas along the Project Road are outlined in the Table 12-13. Further description of the blocks selected by the Department of Agriculture such as Nos. 8 through 10 and 12 through 18 is presented in the Appendix Table A-2-5 and Appendix Fig. A-2-1. Though some blocks are at present being cultivated to some extent, most of them are left untouched due to their very poor accessibility.

The Limbang Valley Development Project aims at developing approximately 27,000 hectares of potential land for wet paddy cultivation by introducing good drainage and irrigation systems. Since August 1978, a feasibility study has been underway by the Belgium Survey Team. Although the details of the Project will not be known until the completion of the study, due to it requires about two years to finish, it can be said that this flat alluvial land sandwiched in/between the Sg. Limbang and Brunei river is expected to be suitable for paddy cultivation according to the results of the field survey also carried out by the Survey Team.

Table 2-13-(1) POTENTIAL AREAS FOR AGRICULTURAL DEVELOPMENTS
IN THE PROJECT ROAD INFLUENCE AREA IDENTIFIED
BY DEPT. OF AGRICULTURE

Block No.	Name of Block	Arable Area (ha.)	Present Cultivation	Suitable Cultivation
8.	Bain-Lama	8,782; 53% under primary forest	Largely hill rice, partly rubber gardens close to villages	Cultivation of dry land, annual and perennial crops
9.	Selemen-Aroh	3,480; 28% under primary forest	Mainly hill rice with seedling rubber gardens close to villages	- do -
10.	Maloi-Tabih	3,035; 91% under primary forest	Mainly hill rice and rubber	- do -
14.	Berei Selemat-West	2,914; 85% under primary forest	Hill rice in the west	- do -
15.	Berei Selemat-East	607; all under primary forest	nil.	Cultivation of dry land, annual and perennial crops but mostly marginal
12.	Terawan-East	1,012; 96% under primary forest	Hill rice in the north	- do -
13.	Gak	1,457; 94% under primary forest	nil.	- do -
16.	Ulu Terawan	890; all under primary forest	nil.	Cultivation of irrigated crops
17.	Ulat-North	486; all under primary forest	nil.	Cultivation of dry land, annual and perennial crops but mostly marginal
18.	Ulat-South	890; all under primary forest	nil.	- do -
Total		23,533		

Table 2-13-(2) POTENTIAL AREAS FOR AGRICULTURAL DEVELOPMENTS
IN THE PROJECT ROAD INFLUENCE AREA IDENTIFIED
BY OTHER SOURCES

Block No.	Name of Block	Area (ha.)	Suitable Cultivation
24		750	(Rubber)
25		1,050	(- do -)
26		1,200	(- do -)
27		2,100	
28		7,000	Improvement
29		19,100	Potential
30	Limbang Valley	27,000	(Wet Paddy)

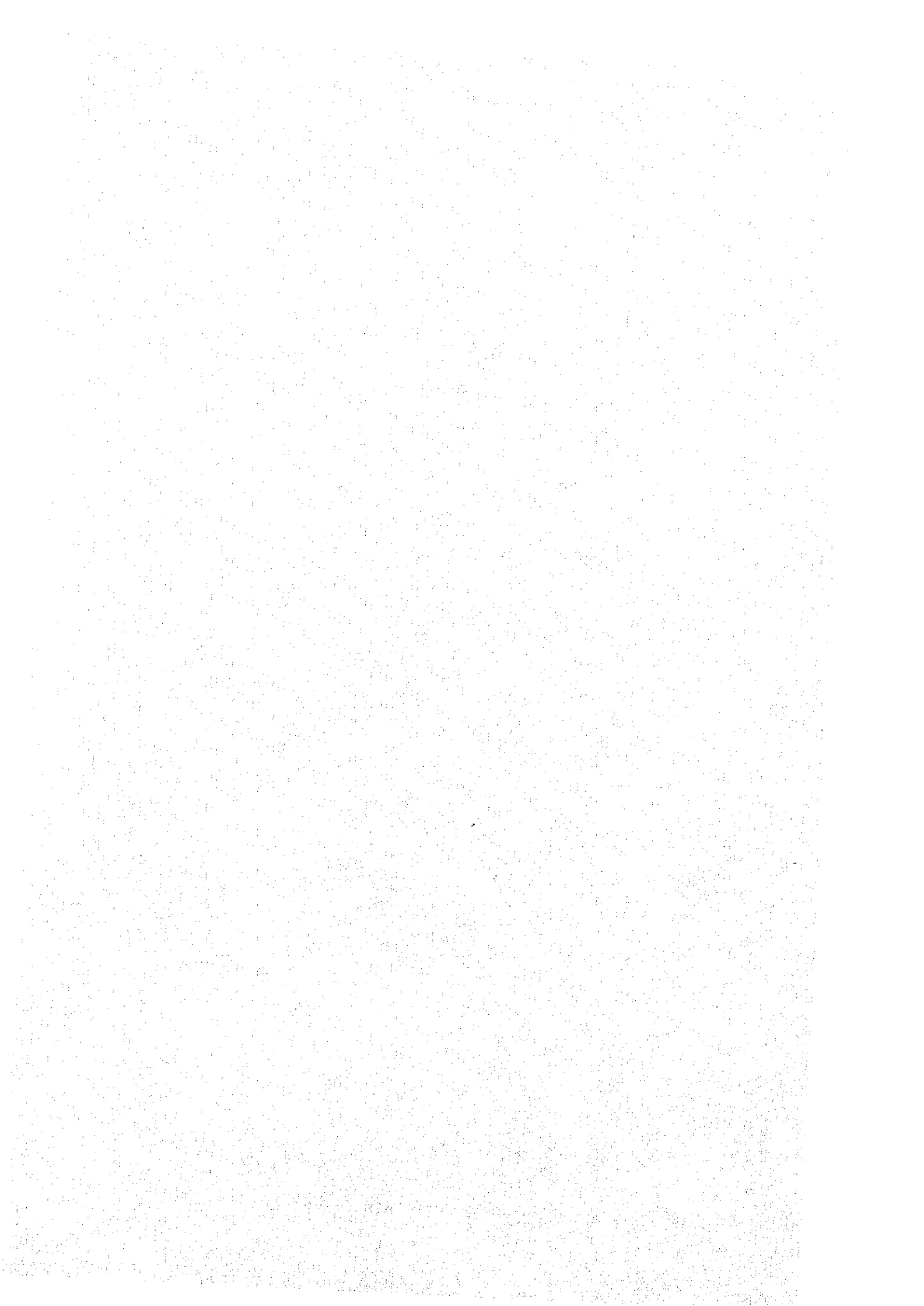
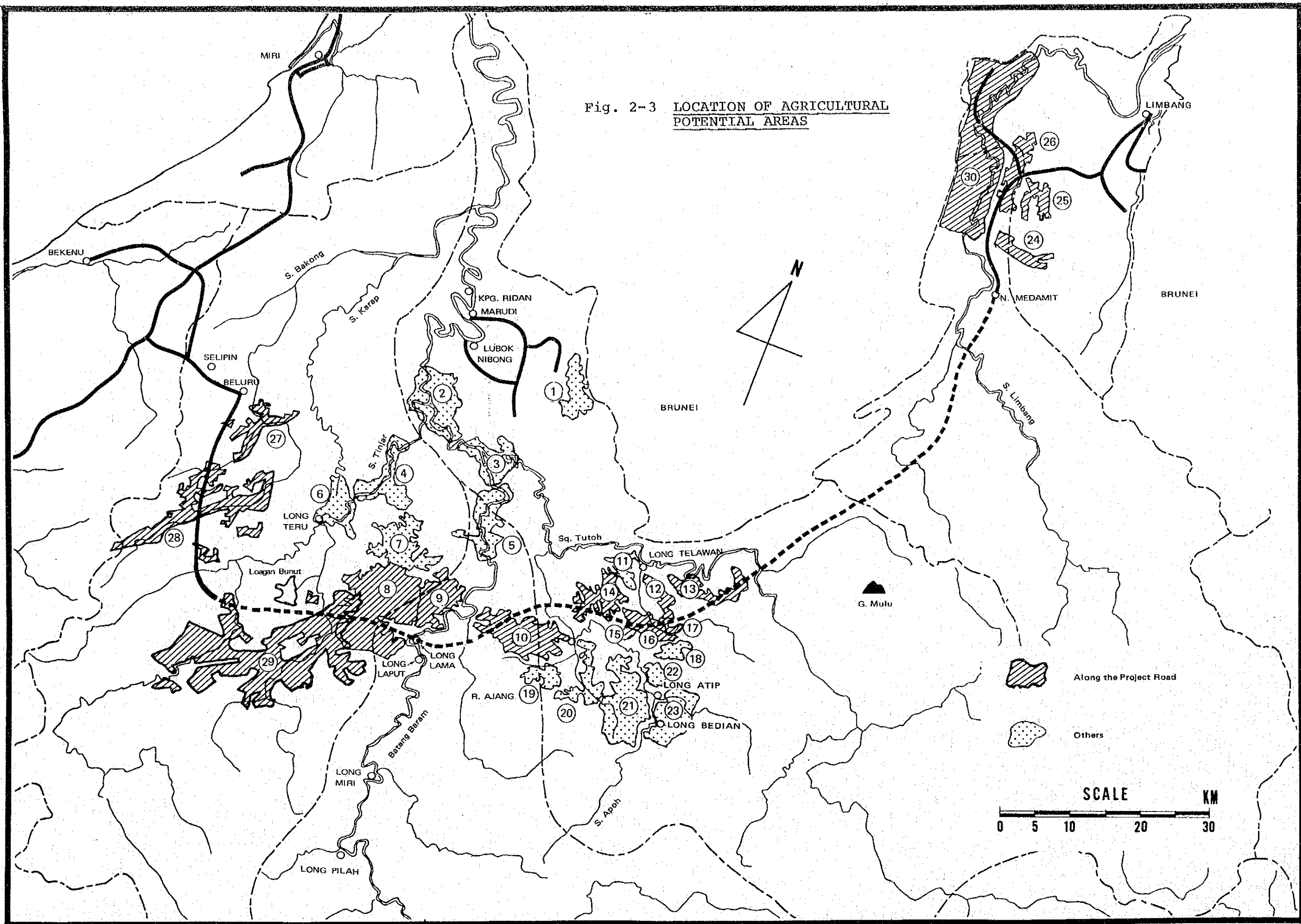


Fig. 2-3 LOCATION OF AGRICULTURAL POTENTIAL AREAS



2-3-3 Forecast of Agricultural Production

Agricultural production in the Study Area is forecasted in both cases of "with" and of "without" the Project Road. In the "without" case, the future production was estimated taking account of past trend, probable increase in yields due to the diffusion of various subsidy schemes and technical training, and also the expansion of cultivation areas. In the "with" case, estimate was made assuming that the potential blocks, previously mentioned, will be able to be opened up for cultivation in addition to the production of the "without" case.

(1) The Case of "Without" the Project Road

Tables 2-14 and 2-15 give the estimate of rice products in the Study Area. Regarding wet paddy, it was assumed that the acreage will increase at 5% over the three years from 1977 to 1980, and at an annual rate of 1% then after, with the yield expected to increase a little as well. As to hill paddy, it was assumed that the acreage and yield will not increase due to the consideration that the existing "shifting cultivation", is not beneficial in that it is not recommendable from the viewpoint of the preservation of forest resources, although it is expected to be controlled more strictly in the future.

Table 2-14 FORECASTED ACREAGE AND PRODUCTION OF WET PADDY IN THE STUDY AREA

Area			Base year				
			1977	1982	1987	1992	2002
Miri	Acreage (ha)	<u>1/</u>	1,150	1,209	1,270	1,335	1,475
	Yield (ton/ha)		2.80	2.85	2.90	3.00	3.00
	Production (tons)		3,220	3,446	3,683	4,005	4,425
	Rice Equiv. (tons)	<u>2/</u>	1,996	2,137	2,394	2,603	2,876
Baram	Acreage (ha)	<u>1/</u>	4,100	4,309	4,529	4,760	5,258
	Yield (ton/ha)		2.50	2.55	2.60	2.70	2.80
	Production (tons)		10,250	10,988	11,775	12,852	14,722
	Rice Equiv. (tons)	<u>2/</u>	6,355	6,813	7,654	8,354	9,569
Limbang	Acreage (ha)	<u>1/</u>	2,000	2,102	2,209	2,322	2,565
	Yield (ton/ha)		2.30	2.35	2.40	2.50	2.70
	Production (tons)		4,600	4,940	5,302	5,805	6,926
	Rice Equiv. (tons)	<u>2/</u>	2,852	3,063	3,446	3,773	4,502
Total	Production, Rice (tons)		11,203	12,013	13,494	14,730	16,947

1/ Acreage is estimated based on the following increase rate; 1.0% per year.

2/ Rice Equivalent ratio is assumed as follow; 0.62 for 1982 and 0.65 then after due to improved practice.

Table 2-15 FORECASTED ACREAGE AND PRODUCTION OF HILL PADDY IN THE STUDY AREA

Area			1977	1982	1987	1992	2002	Yield
								(ton/ha)
Miri	Acreage (ha)		860	860	860	860	860	1.22
	Production (tons)		1,049	1,049	1,049	1,049	1,049	
	Rice Equiv. (tons)	<u>1/</u>	650	650	650	650	650	
Baram	Acreage (ha)		5,900	5,900	5,900	5,900	5,900	1.00
	Production (tons)		5,900	5,900	5,900	5,900	5,900	
	Rice Equiv. (tons)	<u>1/</u>	3,658	3,658	3,658	3,658	3,658	
Limbang	Acreage (ha)		2,070	2,070	2,070	2,070	2,070	1.50
	Production (tons)		3,105	3,105	3,105	3,105	3,105	
	Rice Equiv. (tons)	<u>1/</u>	1,925	1,925	1,925	1,925	1,925	
Total	Production, Rice (tons)		6,233	6,233	6,233	6,233	6,233	

1/ Rice Equivalent ratio of 0.62 is assumed for whole years.

Table 2-16 gives the estimates for rubber and pepper production. It was assumed that rubber will not have its acreage increased while pepper will have an increase in its acreage of about 1.5% per year and that both will have an increase in yield of 2% per year.

Table 2-16 FORECASTED ACREAGE AND PRODUCTION OF RUBBER AND PEPPER IN THE STUDY AREA

Crop	Area		1977	1982	1987	1992	2002
Rubber	Miri	Acreage (ha)	6,500	6,500	6,500	6,500	6,500
		Production (tons)	2,000	2,208	2,438	2,692	3,281
	Baram	Acreage (ha)	6,850	6,850	6,850	6,850	6,850
		Production (tons)	2,500	2,760	3,047	3,365	4,102
	Limbang	Acreage (ha)	6,000	6,000	6,000	6,000	6,000
		Production (tons)	1,750	1,932	2,133	2,355	2,871
	Sub-total	Production (tons)	6,250	6,900	7,618	8,412	10,254
Pepper	Miri	Acreage (ha)	245	264	284	306	355
		Production (tons)	555	659	783	930	1,312
	Baram	Acreage (ha)	235	253	273	294	341
		Production (tons)	565	671	797	947	1,335
	Limbang	Acreage (ha)	138	149	160	173	200
		Production (tons)	85	392	466	553	780
	Sub-total	Production (tons)	1,205	1,722	2,046	2,430	3,427

(2) The case of "With" the Project Road

It is very difficult to estimate the extent of agricultural development due from the realization of the Project Road judging from the particular conditions of the Study Area described as follows:

- a) Complicated land tenure system custom and traditions varying from race to race;
- b) Traditional way of life and production system relying on rivers;
- c) Psychological resistance to the introduction of new (and unfamiliar) technology and capability to master techniques;

c) Availability and stock of capital fund and labour force required for agricultural development; and so on.

Any regional development projects in Sarawak are destined, more or less, to face or be subjected to the influence of socio-economic factors, with these being more distinct in the Study Area due to its backwardness and also the fact that the infrastructures are greatly inadequate.

On the other hand, however, it is quite certain that such beliefs are gradually being changed by virtue of extending education and improving communication. Also the Government is exerting its effort to modernize agriculture through various subsidy schemes and technical training etc.

Accordingly, though the realization of the Project Road does not necessarily guarantee that the agricultural development in these development potential blocks will progress automatically, it is quite certain that the regional developments to be promoted with the Government's leadership will make it easier for development to take place with agriculture being at the core. As it is expected that the population growth will continue at 2 to 2.5% per year throughout the 1980s and with adequate controls in the cutting of forest resources for the purpose of "shifting cultivation" becoming more and more strict, the expansion of arable land as well as an increase in yields will become vital factors. If the proper development policies/strategies are associated, it can be expected that the agricultural development along the Project Road can be encouraged and progressed considerably.

Taking into consideration that the total acreage of paddy (hill and wet), pepper and rubber in the whole of the Baram District is 16,640ha. (Paddy 9,800ha., rubber 6,600ha., pepper 240ha.), the area that can be developed will be approximately 5,000ha. at most.

Table 2-17 ASSUMED PRODUCTION DUE TO THE AGRICULTURAL DEVELOPMENT OF THE POTENTIAL AREAS

Area	Potential Block	Area (ha)	Crop	Assumed Yield (ton/ha)	1982	1987	1992	2002
Long Lama	8,9	2,500			-	-	2,933	2,933
		1,750	H. Paddy	1.0	-	-	1,750	1,750
		500	Rubber	0.54	-	-	270	270
		250	Pepper	3.65	-	-	913	913
Apoh/Tutoh	10,14,12 13,15,16,17	2,500			-	-	1,467	2,933
		1,750	H. Paddy	1.0	-	-	875	1,750
		500	Rubber	0.54	-	-	135	270
		250	Pepper	3.65	-	-	457	913
Limbang Valley	30	22,000	W.Paddy	3.0	-	-	33,000	66,000

2-4 FORESTRY

2-4-1 Current Status of Forestry Production

The Study Area is included, in terms of the forestry administration, in Miri Section, which comprizes the Fourth and Fifth Divisions. Accordingly, though the production of the Study Area is not known precisely, a total amount of about 900 thousand tons/cf was estimated judging from the exports at the ports of Limbang, Marudi and Miri. Originally, forestry production in the area began with the development of swamp forests. Since then, however, hill forests have been progressively utilized year by year so that production of hill timber equalled the share in 1976, of that of swamp timber, while in 1977 the former had a share of about 60%. The total production of timber in 1977 recorded its highest level. Appendix Table A-2-4 shows the exports of timber by port indicating that Miri shares roughly 50% of the total exports of round timber of Sarawak.

As for the species, Meranti, Alan and Kapor are the three major types sharing in total about 70% of the whole production.

Saw milling, and production of moulding and dowels are the only timber processing industries presently found in the Study Area. There are no facilities for producing veneer, plywood, laminated wood and others. Miri Section has at present about 37 sawmills, but all these have low rates of operation, employing about 900 workers and producing about 42,000 tons. Moulding and doweling plants are increasing in number but are still quite limited in terms of production.

Table 2-18 TIMBER PRODUCTION IN THE STUDY AREA

		1976		1977	
		Fourth Div.	Fifth Div.	Fourth Div.	Fifth Div.
		000 T/CF			
Hill Timber	; Export	- n.a. -	-	622.7	94.1
	Sawmill	- n.a. -	-	7.2	3.6
	Total	517.6	(49.9)	629.9	(56.4)
Swamp Timber	; Export	- n.a. -	-	384.9	4.2
	Sawmill	- n.a. -	-	102.6	5.0
	Total	519.3	(50.1)	487.5	(43.6)
TOTAL	; Export	- n.a. -	-	1,007.6	98.3
	Sawmill	- n.a. -	-	109.8	8.6
	Total	1,036.9	(100%)	1,117.4	(100%)
Export	Sawlogs	800.3 ^{1/}	47.9 ^{3/}	- n.a. -	-
	Sawn Timber	6.4 ^{1/} +2.2 ^{2/}	0.4 ^{3/}	- n.a. -	-

Source; Forest Department Annual Report, 1977, Miri Section

- 1/ Export through Miri
- 2/ Export through Marudi
- 3/ Export through Limbang

2-4-2 Production Outlook

The forestry production is largely affected by the supply-demand relation in the international market. In particular, production of round timber shows sensitive reaction to fluctuations in its price. Accordingly, Southeast Asian countries including Sabah set out to attempt to restrict the export of logs and to strengthen policies in order to lessen such adverse influences and to increase the value added. In Sarawak also, the licence conditions state sawmill operation has to be

started 25 months after initiating production, with the operation rate to be raised to at least 70% in the following 36 months, while obligating the enterpriser to submit his production plan and schedule for moulding, veneer and plywood, and also to further increase the rate to 80% after a period of 60 months. These license conditions however are not necessarily fully endorsed either by the Government or by the timber companies due to the fact that the necessary infrastructures for industrialization in the timber business are so backward that timber companies tend to loose profits in doing so. In this sense the export of logs from Sarawak, though unsteady, will possibly increase among most of the countries that are strengthening bans or regulations on export of logs.

The results of the FAO survey are available as to Sarawak's forest resources. According to the survey, Sarawak is ensured to gain considerable potentialities if the transport conditions are improved. Most of the resource areas including the FAO units in the Baram river basin have already been licenced and production level is mainly determined by supply-demand relations in the international market. Future production of timber in the Study Area was assumed as shown in Table 2-19.

Table 2-19 FORECASTED TIMBER PRODUCTION IN THE STUDY AREA

Area	Type	1977	1982	1987	1992	2002
Baram :	Swamp Timber	250	250	250	250	250
	Hill Timber	600	600	625	650	700
Limbang:	Hill Timber	45	50	75	100	100
Total :		895	900	950	1,000	1,050
	Export (%)	86	80	75	70	60
	Saw mill (%)	14	20	25	30	40

2-5 TOURISM

2-5-1 Outline of Current Situation

In 1976 approximately 100,000 persons visited Sarawak and out of this total about 75% were made up of tourists on vacation or of others coming for the purpose of leisure.

The most prominent travel origin of the tourist is Brunei contributing a share of 61.2% of visitors coming for holiday and leisure purposes followed by West Malaysia (11.3%), Singapore (6.8%), Sabah (5.1%) and neighbouring regions and countries that altogether account for 84.4%. Minorities include U.S.A. (2.5%), U.K. (2.0%), West Germany (1.3%), Australia (1.2%) and France (1.0%) etc. Visitors from Japan, although having a share of about 2% are made up only 1.0% for the purpose of sight-seeing. The transportation means of tourists to Sarawak is shared by air, sea and land services representing 23%, 29% and 48% respectively.

For the tourist travelling by air, Kuching is the busiest point of entry followed by Miri. In the case of travelling by waterways, Limbang is the busiest trans-shipment point. Travel by land is, in most cases, via Sungei Tujoh.

Tourism resources in Sarawak are characterized with traditional culture of various indigenous races and ecology claiming superiority over those of other Asian countries. Even though these resources are rather special tourism objective considerations, the problems of them being scattered over vast areas mostly only served by inadequate transport systems and infrastructures, the expectation is, that Sarawak will not be able to achieve any large scale gain in this market.

It is expected that the ongoing Tourism Master Plan Study for Sarawak will make clear the direction of tourism development to be taken in the future.

2-5-2 Tourism Activities in the Study Area

The following are the major tourism resources available in the Study Area.

- a) Niah Cave; historic inheritance, nature, cave viewing
- b) Miri ; amusement, shopping and as the Areas sightseeing base.-
- c) Limbang ; amusement
- d) Lambir ; natural landscape
- e) Baram ; traditional ethnic culture, natural beauty

Among these, Niah Cave and the Baram river are attracting foreign tourists. The others are mainly visited by locals, people from Brunei and other neighbouring regions. Except for Miri, however, the places are not so well facilitated that the number of visitors is limited.

Tables 2-20 and 2-21 show the visitor numbers as well as the percentage of overnight visitors to the Niah Cave located about 50 miles south of Miri. These statistics, however, are not based on reliable surveys but by compiling based on a visitor book. A survey is now under way by the Department of Forestry Miri, in order to gain a clearer picture on visitors to Niah. According to the estimation by the officer in charge, the present number of visitors is roughly between 3,000 to 4,000, of which 20 to 50% (depending on the year) are foreigners, other than from Brunei. It is considered that Niah Cave will be able to attract more tourists provided that its environment is improved in view of the present accessibility to Miri, the poor road conditions from Miri to Niah, the lack of tourist accommodation facilities at Niah (having only one hostel), the present negligible promotion activities and so on.

Table 2-20 NUMBER OF VISITORS TO NIAH

Origin	1973		1974		1975		1976	
	Persons	(%)	Persons	(%)	Persons	(%)	Persons	(%)
Sarawak	182	(48.9)	525	(68.5)	597	(65.2)	320	(34.3)
Brunei	80	(21.5)	44	(5.7)	125	(13.7)	79	(8.5)
Sabah/Semenanjung	10	(2.7)	64	(8.4)	27	(3.0)	69	(7.4)
Others	100	(26.9)	133	(17.4)	166	(18.1)	464	(49.8)
TOTAL	372	(100.0)	766	(100.0)	915	(100.0)	932	(100.0)

Table 2-21 VISITOR PATTERNS OF NIAH, 1978

Origin	Day Visitors	Overnight Visitors	(%)
Sarawak	31.5	19.4	
Brunei	7.8	10.3	
Sabah/Semenanjung	6.6	9.4	
Others	54.1	60.9	
TOTAL	100.0	100.0	
	73.1	26.9	

Source; Department of Forestry, National Park Section Miri

Tourism activities along the Baram river are dealt with by a local travel agent having operation bases at Marudi and Long Lama. Trip itineraries include to first go upstream by longboat and visit a number of longhouses, a trip having a duration of 5 to 10 days depending on the visitors' requests and river conditions. The longboats, in some cases, go up as far as Lio Mato, this being the farthest point they can reach. Since the last four or five years, approximately 10 Swiss groups (100 to 150 persons per year) have visited the area. Although the tours are not necessarily easy or comfortable it is expected that such tours will become more popular in

the future as travel purposes and tourism objectives have become diversified while the needs for adventurous specialized tours have been growing in the developed countries.

The points requiring further studies are as follows:

- (1) The feasibility of tourism in the Baram river basin;
- (2) Development of G. Mulu for recreational/tourism purposes
- (3) Provision of recreational opportunities for the people in the Limbang area

It is considered that Logun Bunut has only limited tourist attraction because the landscape is of little value for tourism purpose.

2-6 EDUCATION AND MEDICAL SERVICES

2-6-1 Educational Activities

Educational activities are positively promoted not only from the academic viewpoint but also from the standpoints of vocational training, technical education and agriculture training. The existing educational institutions are as follows:

- a) Primary Education;
- b) Secondary Education;
- c) Teacher Training;
- d) Vocational Training;
- e) Agriculture Training
- f) Adult Education

Above all, the emphasis is placed on the spread of primary and secondary education, with efforts being taken in building more schools, reconstructing obsolete facilities and improving the curriculum as are indicated in the Tables 2-22 and 2-23.

Table 2-22 INCREASE IN PRIMARY SCHOOL ENROLMENT

Year	Enrolment	Increase (%)
1970	150,111	-
1971	152,284	1.5
1972	154,932	1.7
1973	162,289	4.8
1974	168,658	3.9
1975	177,100	5.1

Table 2-23 INCREASE IN PRIMARY SCHOOL ENROLMENT AND FACILITIES

Year	Classroom		Science Laboratory		Hostel		Teacher's Quarters	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1971	12	9	5	6	9	-	6	-
1972	80	30	4	1	10	1	20	-
1973	70	23	17	2	19	-	43	1
1975	96	26	27	4	18	2	71	1

Year	Enrolment	Increase (%)
1971	23,392	-
1972	26,177	11.9
1973	30,360	15.9
1974	39,142	28.9
1975	54,880	62.6

Baram and Limbang Districts in the Study Area have a total of 12 schools as shown in Table 2-24. Other than these, major cities have Chinese schools.

Table 2-24 PRIMARY AND SECONDARY SCHOOLS IN BARAM AND LIMBANG DISTRICTS, 1978

District	Secondary School			Primary School				
	No. of School	No. of Classes	Enrolment	No. of Teachers	No. of School	No. of Classes	Enrolment	No. of Teachers
Baram	3	96	2,373	64	82	267	8,462	291
Limbang	2	41	1,623	64	35	139	4,149	137
TOTAL	5	137	3,996	128	117	406	12,611	428

The efforts and costs required in providing the people in the interior with such opportunities for education are extremely great. Construction materials and educational tools are usually transported by longboats and sometimes even by helicopters. Accordingly, construction costs are doubled or even trebled compared with ordinary costs. Maintenance costs thus become higher as well.

2-6-2 Medical Activities

Poor infrastructures and communication facilities handicap medical activities. Medical services are provided based on the following systems.

- a) District Health Center (in the form of general hospital);
- b) Health sub-center;
- c) Community Health Center;
- d) Dispensary;
- e) Sub-dispensary;
- f) Flying Doctor Service;
- g) Traveling Dispensary

The District Health Center being the base for medical services in each district is usually a general hospital. In the rural areas the Health sub-center or Community Health Center or Dispensary are the bases of medical services. Two are in Limbang District (N. Medamit and Batu Danau), and six in Baram District (Long Teru, Bario, Long Loyong, Long Bemang, Lio Mato and Long Lama) each being equipped with a number of beds, first-aid medical facilities and maternity facilities. No doctors are stationed but 3 to 5 people including hospital assistants and others serve as permanent staff depending on the local conditions.

The Sub-dispensary, smaller in scale than the dispensary is run by a few staff. As the population is widely scattered over vast areas the medical services in these areas are supplemented by the Traveling Dispensary and Flying Doctor Service systems. A doctor and assistant visit the designated areas regularly either by long boat or by helicopter. Table 2-25 shows the number of cases dealt with by Flying Doctor Service for Baram District.

Table 2-25 FLYING DOCTOR SERVICES (BASED IN MARUDI)

Month	Year		
	1976	1977	1978
Jan.	448	213	182
Feb.	188	465	260
March	554	183	353
April	279	423	312
May	597	136	589
June	216	298	-
July	714	313	-
Aug.	427	387	-
Sept.	424	188	-
Oct.	543	259	-
Nov.	105	328	-
Dec.	649	126	-
TOTAL	5,144	3,319	(1,696)

Source; Medical Dept. Marudi