

4. PROJECTION OF RESERVOIR VISITORS

4.1 General

Sightseeing is assumed to be the sole purpose of the reservoir visits and no particular recreation facilities are planned in this study. The access roads for the construction of dams and reservoirs are deemed to be sufficient considering the low frequency of the car visits.

Up to now, very limited statistical data for reservoir recreation are available in Malaysia. These for the United States of America, instead, is used for the projection of reservoir visitors, taking into account the difference in number of cars, road condition, per capita GDP, climate and others between the two countries.

The visitors are classified into foreign and domestic ones, considering the difference of the objectives and characteristics of their visits.

4.2 Foreign Visitors

Only Singaporeans who have easy access to Malaysia are considered as potential foreign visitors to dams reservoirs considering the limited scope of reservoir recreation. Based on the statistical data available for the United States, it is assumed that 0.02 visits to reservoirs are generated per one trip-day of Singaporean tourists. The total number of visits per annum is obtained as the product of 0.02 and the number of trip-days per annum.

4.3 Domestic Visitors

It is assumed that the population within one hour drive distance or 50 km from the reservoirs are potential reservoir visitors. In Peninsular Malaysia, this population roughly corresponds to the state population. Based on the statistical data for the United States, it is also assumed that 0.1 visits to the reservoirs are generated per capita per annum.

5. ECONOMIC BENEFIT AND COST FOR RESERVOIR RECREATION

5.1 Methodology

The concept of willingness to pay is used for estimating the economic benefit accrued from reservoir recreation. The out-of-pocket cost of travelling to the reservoirs is used for measuring the willingness to pay of each visitor for the reservoir recreation.

The travelling distance for the foreign visitors is assumed the road distance from state capitals to the reservoirs. For the domestic visitors, one hour drive distance is assumed as travelling distance.

Fuel cost of M\$0.0924/km is used for estimating the travelling cost.

5.2 Estimated Economic Benefit

The economic benefit is estimated for the recommended source development plan and the alternatives B1 through B3 and these under lower economic growth. The annual equivalents of economic benefits at 8% discount rate with the study period of 50 years are estimated for these plans and shown in the Sectoral Report Public Expenditure and Beneficial and Adverse Effects.

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7. SURVEY AND SEMINAR ON METHODOLOGIES OF COST ALLOCATION AND RECREATION BENEFITS OF DAMS RESERVOIR PROJECTS, 1976

TABLES

Table 1 NUMBER OF FOREIGN TOURISTS IN PENINSULAR MALAYSIA (1975)
Unit : 10³ persons

Tourists		Numbers
Singaporeans	by land	541
	by air & sea	107
Thais		95
Sub-total		743
Other foreigners		294
Total		1,037

Table 2 DISTRIBUTION OF VISITOR ARRIVALS BY POINT OF ENTRY (1978)
Unit : 10³ persons

Point of Entry	Singapore		Thailand		Sub-total		Other foreign countries		Grand Total	
AIR Subang	85	(80.2)	8	(53.3)	93	(76.2)	260	(69.5)	353	(71.3)
Penang	20	(18.9)	7	(46.7)	27	(22.3)	110	(29.4)	137	(27.7)
Others	1	(0.9)	-		1	(1.5)	4	(1.1)	5	(1.0)
Total	106	(100.0)	15	(100.0)	121	(100.0)	374	(100.0)	495	(100.0)
SEA Pengerong	22	(73.3)	-		22	(36.1)	2	(9.1)	24	(28.9)
Others	8	(26.7)	31	(100.0)	39	(63.9)	20	(90.9)	59	(71.1)
Total	30	(100.0)	31	(100.0)	61	(100.0)	22	(100.0)	83	(100.0)
ROAD Johor Bahru	1/		13	(4.5)	13	(4.3)	236	(91.1)	249	(44.5)
Changlun	10	(76.9)	34	(11.8)	44	(14.6)	8	(3.1)	52	(9.3)
Rantau Panjang	3	(23.1)	200	(69.4)	203	(67.4)	13	(5.0)	216	(38.6)
Others	-		41	(4.3)	41	(13.7)	2	(0.8)	43	(7.6)
Total	13	(100.0)	288	(100.0)	301	(100.0)	259	(100.0)	560	(100.0)
RAIL Johor Bahru	127	(98.4)	1	(1.1)	128	(57.9)	24	(60.0)	152	(58.2)
Padang Besar	2	(1.6)	91	(98.9)	93	(42.1)	17	(40.0)	110	(41.8)
Total	129	(100.0)	92	(100.0)	221	(100.0)	40	(100.0)	261	(100.0)

Remarks; 1/: Excluding Singaporeans by Johor Bahru Causeway.

Table 3 TOURIST ARRIVALS TO PENINSULAR MALAYSIA BY RESIDENCE (1976-1979)

Unit: 10³ persons

Country of Residence	Average Annual Growth Rate							
	1976	1977	1978	1979	1976-1979			
Singapore ^{1/}	(19.7) 111	(18.0) 115	(16.7) 121	(16.7) 129	3.6	5.2	6.6	5.1
Thailand	(19.6) 110	(20.1) 128	(18.0) 130	(17.7) 137	16.4	1.6	5.4	7.6
Sub-Total	(39.3) 221	(38.1) 243	(34.7) 251	(34.4) 266	10.0	3.3	6.0	6.4
Other foreign countries	(60.7) 341	(61.9) 395	(65.3) 473	(65.6) 506	15.8	19.7	7.0	14.1
Grand Total	(100.0) 562	(100.0) 638	(100.0) 724	(100.0) 772	13.5	13.5	6.6	11.2

Source: Ref. 1

Remarks: ^{1/} The figures excludes Singaporeans by land i.e. by railway and road.

Table 4 PROPORTION OF FOREIGN TOURISTS
BY NATIONALITY (1990, 2000)

Year				Unit: %
	Singaporeans	Thais	Other Foreigners	Total
1990	15.0	15.0	70.0	100.0
2000	13.0	12.0	75.0	100.0

Remarks; Excluding Singaporeans coming by railway and road.

Table 5 NUMBER OF TOURISTS BY NATIONALITY
(1975, 1990, 2000)

Country of Residence				Unit: 10 ³ persons
		1975	1990	2000
Singapore	(a) <u>1/</u>	107	226	318
	(b) <u>2/</u>	526	844	1,029
	(c) <u>3/</u>	15	42	51
	Total	648	1,112	1,398
Thailand		95	225	294
Sub Total	(a) <u>1/</u>	202	451	612
	(b) <u>2/</u>	526	1,069	1,323
	(c) <u>3/</u>	15	267	345
	Total	743	1,337	1,692
Other Foreign Countries		294	1,053	1,838
	(a) <u>1/</u>	496	1,504	2,450
Grand Total	(b) <u>2/</u>	526	2,122	3,161
	(c) <u>3/</u>	15	1,320	2,183
	Total	1,037	2,390	3,530

- Remarks; (1): 1/: Excluding Singaporeans coming by land (i.e. road and rail).
2/: Singaporeans coming by road.
3/: Singaporeans coming by rail.
- (2): The Grand Totals of 1990 and 2000 were projected using a growth rate of 6.0% during 1985 to 1990 and 5.0% during 1990 to 2000 based on the values projected by TDC during 1980 to 1985.
- (3): The Grand Total was then distributed among the various countries according to the past experience during 1976 to 1979.
- (4): Number of tourists in 1975 was estimated based on these in 1976 and 1979 provided by TDC, Malaysia in 1980.

Table 6 NUMBER OF SINGAPOREAN VISITORS
COMING BY ROAD AND RAILWAY

Unit : 10³

Year	By Road			By Rail
	Causeway	Other	Total	
1976	2,611	11	2,622	74
1977	2,722	10	2,732	119
1978	2,819	13	2,832	129

Source; Ref. 1

Table 7 VISITOR ARRIVALS BY MODE OF TRAVEL
(PENINSULAR MALAYSIA) (1978)

Unit : 10³

Country		Air	Sea	Road	Rail	Total
Singapore*	No. of Visitors	106	30	2,831	129	3,096
	% Distribution	3.4	1.0	91.4	4.2	100.0
Thailand	No. of Visitors	15	31	288	92	426
	% Distribution	3.5	7.3	67.6	21.6	100.0
Sub-Total	No. of Visitors	121	61	3,119	221	3,522
	% Distribution	3.4	1.7	88.6	6.3	100.0
Other Foreign Countries	No. of Visitors	374	22	259	40	695
	% Distribution	53.8	3.1	37.3	5.8	100.0
Total	No. of Visitors	495	83	3,378	261	4,217
	% Distribution	11.7	2.0	80.1	6.2	100.0

Source; Ref. 1

Remarks; * Including Singaporean visitors coming via the Cause way.

Table 8: NUMBER OF TOURISTS BY NATIONALITY AND MODE OF ARRIVAL (1975)

Unit : 10³ persons

Country	Air	Sea	Road	Rail	Total
Singapore	83	24	526	15	648
Thailand	3	7	64	21	95
Sub Total	86	31	590	36	743
Other Foreign Countries	158	9	110	17	294
Total	244	40	700	53	1,037

Remarks; (1): Thailand and Other Foreign Countries:
The grand total projected was distributed using the same percentage distribution of visitors by mode of travel as in 1978.

(2): Singapore:

(a) The number of tourists excluding the tourists coming by road and railway was distributed to those by air and sea according to their proportion in 1978.

(b) The proportion of those coming by road and railway was assumed to be the same as in 1976.

Table 9 NUMBER OF TOURISTS BY NATIONALITY AND MODE OF ARRIVAL (1990)

Unit : 10³ persons

Country	Air	Sea	Road	Rail	Total
Singapore	178	50	843	42	1,113
Thailand	8	16	152	49	225
Sub Total	186	66	995	91	1,338
Other Foreign Countries	566	33	392	61	1,052
Total	752	99	1,387	152	2,390

Remarks; (1): Thailand and Other Foreign Countries:
The grand total projected was distributed using the same percentage distribution of visitors by mode of travel as in 1978.

(2): Singapore:

(a) Number of tourists coming by road via the Causeway was projected based on the past trend and percentage of tourists to total visitors coming via the Causeway.

(b) The difference between the total and the aggregated number of visitors coming by road and rail was distributed to those by air and sea according to their proportion in 1978.

(c) The percentage of those coming by road and rail was assumed to be as follows based on the past trend during 1976 and 1978:

Road	95%
Rail	5%
Total	100%

Table 10

NUMBER OF TOURISTS BY NATIONALITY
AND MODE OF ARRIVAL (2000)Unit : 10³ persons

Country	Air	Sea	Road	Rail	Total
Singapore	248	70	1,029	51	1,398
Thailand	10	21	199	64	294
Sub Total	258	91	1,228	115	1,692
Other Foreign Countries	989	57	686	106	1,838
Total	1,247	148	1,914	221	3,530

- Remarks; (1) Thailand and Other Foreign Countries:
The grand total projected was distributed using the same percentage distribution of visitors by mode of travel as in 1978.
- (2) Singapore:
- (a) Number of tourists coming by road via the Causeway was projected based on the past trend and percentage of tourists to total visitors coming via the Causeway.
- (b) The difference between the total and the aggregated number of visitors coming by road and rail was distributed to those by air and sea according to their proportion in 1978.
- (b) The percentage of those coming by road and rail was assumed to be as follows based on the past trend during 1976 and 1978:

Road	95%
Rail	5%
Total	100%

Table 11 NUMBER OF TOURISTS BY POINT OF ENTRY
(1975)

Unit : 10³ persons

Point of Entry	Singapore	Thailand	Sub-Total	Other Foreign Countries	Total
AIR					
Subang	67	2	69	110	179
Penang	16	1	17	46	63
Others	-	-	-	2	2
Sub Total	83	3	86	158	244
SEA					
Pengerang	16	-	16	1	17
Others	8	7	15	8	23
Sub Total	24	7	31	9	40
ROAD					
Johor Bahru	523	3	526	100	626
Changlun	2	8	10	3	13
Rantau Panjang	1	44	45	6	51
Others	-	9	9	1	10
Sub Total	526	64	590	110	700
RAIL					
Johor Bahru	15	-	15	10	25
Pandang Besar	-	21	21	7	28
Sub Total	15	21	36	17	53
Total	648	95	743	294	1,037

Table 12 NUMBER OF TOURISTS BY POINT OF ENTRY (1990)

Unit : 10³ persons

Point of Entry	Singapore	Thailand	Sub Total	Other Foreign Countries	Total
AIR					
Subang	143	4	147	393	540
Penang	34	4	38	166	204
Others	1	-	1	7	8
Sub-Total	178	8	186	566	752
SEA					
Pengerang	37	-	37	3	40
Others	13	16	29	30	59
Sub-Total	50	16	66	33	99
ROAD					
Johor Bahru	840	7	847	358	1,205
Changlun	3	18	21	12	33
Pantau Panjang	1	105	106	20	126
Others	-	22	22	3	25
Sub-Total	844	152	996	393	1,389
RAIL					
Johor Bahru	41	48	89	37	126
Padang Besar	1	1	2	24	26
Sub-Total	42	49	91	61	152
Total	1,112	225	1,337	1,053	2,392

Table 13 NUMBER OF TOURISTS BY POINT OF ENTRY (2000)

Unit : 10³ persons

Point of Entry	Singapore	Thailand	Sub Total	Other Foreign Countries	Total
AIR					
Subang	199	5	204	687	891
Penang	47	5	52	291	343
Others	2	-	2	11	13
Sub-Total	248	10	258	989	1,247
SEA					
Pengerang	51	-	51	5	56
Others	19	21	40	52	92
Sub-Total	70	21	91	57	148
ROAD					
Johor Bahru	1,024	10	1,034	625	1,659
Changlun	4	23	27	21	48
Rantau Panjang	1	138	139	34	173
Others	-	28	28	6	34
Sub-Total	1,029	199	1,228	686	1,914
RAIL					
Johor Bahru	50	1	51	64	115
Padang Besar	1	63	64	42	106
Sub-Total	51	64	115	106	221
Total	1,398	294	1,692	1,838	3,530

Table 14 TRIPS GENERATED BY TOURISTS ENTERED
BY AIR BY DESTINATION (1978)

Unit : Trips/100 Tourists

State	Singaporeans	Thai	Other Foreigners
Johor	0.1	0.6	1.0
Kedah/Perlis	0.3	0.0	0.2
Kelantan	0.0	0.0	0.0
Melaka	1.2	1.1	3.0
Negeri Sembilan	0.1	0.0	1.3
Pahang	0.9	0.0	2.4
Perak	9.6	0.0	6.1
Pulau Pinang	25.2	66.8	45.5
Selangor	100.9	61.1	84.2
Trengganu	1.5	0.3	1.0

Source; Ref. 2

Table 15 DESTINATION OF AUSTRALIAN VISITORS
VIA JOHOR CAUSEWAY

Destination	Trips/100 Tourists
Johor Bahru	47
Melaka	14
Kuala Lumpur	32
Pulau Pinang	12
Other Specific Destination	4
No Specific Destination	2

Source; Ref. 3

Table 16 TRIPS GENERATED BY TOURISTS ENTERED
FROM THAILAND BY RAILWAY BY DESTINATION

Unit : Trips/100 Tourists

State	Trips Generated	
	From Thailand Via Pahand Besar	From Singapore Via Causeway
Kedah/Perlis	47	12
Pulan Pinang	32	32
Selangor	12	47

Table 17 NUMBER OF TRIPS BY DESTINATION
(1975, 1990, 2000)

Unit : 10³

State	Number of Trips		
	1975	1990	2000
Johor	272	628	926
Kedah/Perlis	15	35	52
Kelantan	34	78	114
Melaka	85	197	289
Negeri Sembilan	4	9	13
Pahang	44	101	149
Perak	25	58	84
Pulau Pinang	241	555	820
Selangor	509	1,170	1,733
Trengganu	26	61	91
Total	1,255	2,892	4,271

Table 18 DURATION OF STAY BY DESTINATION

Unit : days

State	Duration of Stay
Selangor	3
Pulau Pinang	5
Perak	6
Melaka	8
Kedah/Perlis	10
Negeri Sembilan	10
Johor	11
Pahang	11
Trengganu	11
Kelantan	N.A.

Source; Ref. 4

Table 19 DURATION OF STAY BY MODE (1973)

Unit : days

Mode	Duration of Stay
Air and Sea	5
Road and Rail	4

Source; Ref. 3

Table 20 DURATION OF STAY BY MODE BY DESTINATION

Unit : days/trip

Mode	Selangor	Melaka	Johor, Kedah/Perlis
	Pulau Pinang	Perak	Kelantan, Negeri Sembilan Pahang, Trengganu
Air and Sea	4.0	7.0	10.0
Road and Rail	3.0	4.0	5.0

Table 21 NUMBER OF TRIP-DAYS BY DESTINATION
(1975, 1990, 2000)

Unit: 10³ days

State	Number of Trip-Days		
	1975	1990	2000
Johor	1,457	3,358	4,960
Kedah/Perlis	81	187	270
Kelantan	167	386	570
Melaka	367	846	1,255
Negeri Sembilan	38	87	130
Pahang	248	572	856
Perak	172	398	588
Pulau Pinang	896	2,001	3,015
Selangor	1,847	4,253	6,324
Trengganu	151	348	525
Total	5,397	12,436	18,493

Table 22 PER CAPITA GENERATION OF HOTEL GUESTS

Unit : 10³

Year	Number of Hotel Guests	Population	Per Capital Generation of Hotel Guests
1976	2,382	10,702	0.22
1977	2,182	11,601	0.19
1978	2,286	12,575	0.18

Source; Refs. 5 and 6

Table 23 DISTRIBUTION OF DOMESTIC VISITORS
BY PURPOSE

Unit : %

Purposes of Trip	Domestic
Business	9.3
Business/Pleasure	N.A.
Holiday/Vacation	19.4
Visiting Friends/Relatives	53.5
Social Reasons	12.9
Transit	
Other	4.9
Total	100.0

Table 24 NUMBER OF DOMESTIC TOURISTS
BY DESTINATION

State	1975			1990			2000		
	GDP (%)	Person-Trips (%)	(No.)	GDP (%)	Person-Trips (%)	(No.)	GDP (%)	Person-Trips (%)	(No.)
Johor	13.9	13.3	101.3	14.4	13.7	1,482	15.6	14.7	1,878
Kedah/Perlis	7.2	7.7	587	7.4	7.8	844	8.3	8.6	1,098
Kelantan	3.5	4.5	343	2.8	3.9	422	3.5	4.5	575
Melaka	3.4	4.4	335	3.3	4.3	465	3.5	4.5	575
Negeri Sembilan	5.0	5.8	442	3.5	4.5	487	2.8	3.9	498
Pahang	5.9	6.6	503	6.8	7.3	790	7.4	7.8	996
Perak	15.0	14.1	1,074	9.5	9.6	1,039	8.9	9.1	1,162
Pulau Pinang	8.7	8.9	678	10.7	10.5	1,136	10.3	10.2	1,303
Selangor	34.6	30.8	2,345	39.1	34.7	3,754	37.2	33.0	4,215
Trengganu	2.8	3.9	297	2.5	3.7	400	2.5	3.7	473
Total	100.0	100.0	7,617	100.0	100.0	10,819	100.0	100.0	12,773

Table 25 NUMBER OF TRIP-DAYS OF DOMESTIC
TOURISTS BY DESTINATION
(1975, 1990, 2000)

Unit : 10³ trip-days

State	Number of Trip-Days		
	1975	1990	2000
Johor	1,894	3,129	3,921
Kedah/Perlis	968	1,830	2,292
Kelantan	414	958	1,201
Melaka	922	958	1,021
Negeri Sembilan	669	830	1,039
Pahang	1,271	1,660	2,080
Perak	3,100	1,937	2,426
Pulau Pinang	1,987	2,171	2,720
Selangor	4,590	7,023	8,798
Trengganu	97	788	988
Peninsular Malaysia	15,902	21,284	26,666

FIGURES

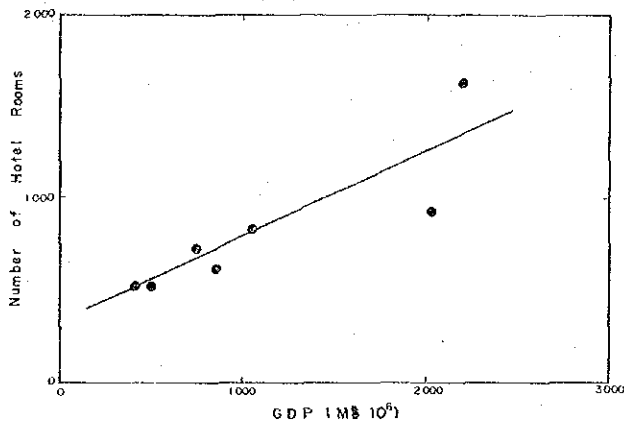


Fig.1 Correlation Between the Total GDP and the Number of Hotel Rooms

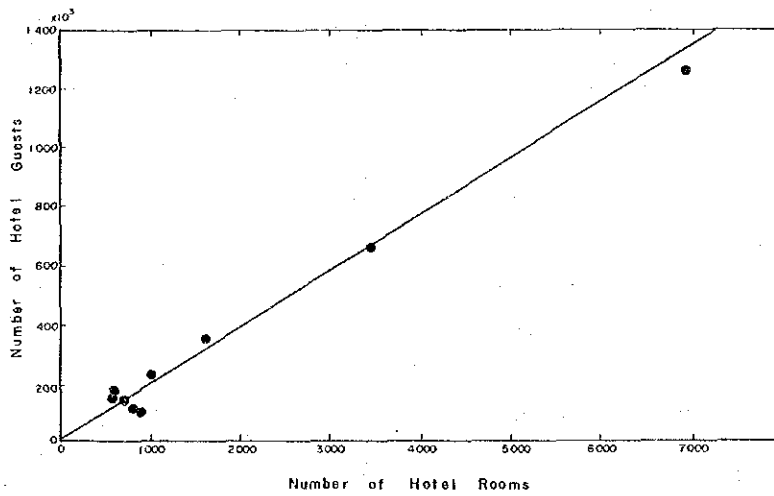


Fig.2 Correlation Between the Number of Hotel Rooms and the Hotel Guests

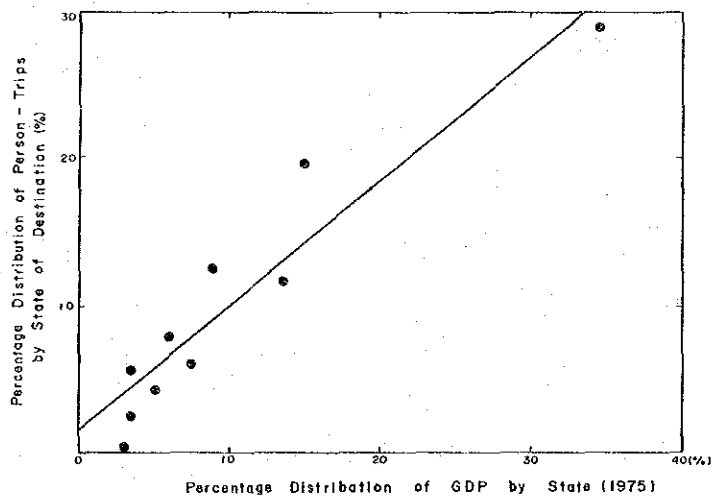


Fig.3 Correlation Between Percentage Distribution of GDP and Person . Trips by State of Destination

WATER-RELATED RECREATION

PART 2

***SABAH AND
SARAWAK***

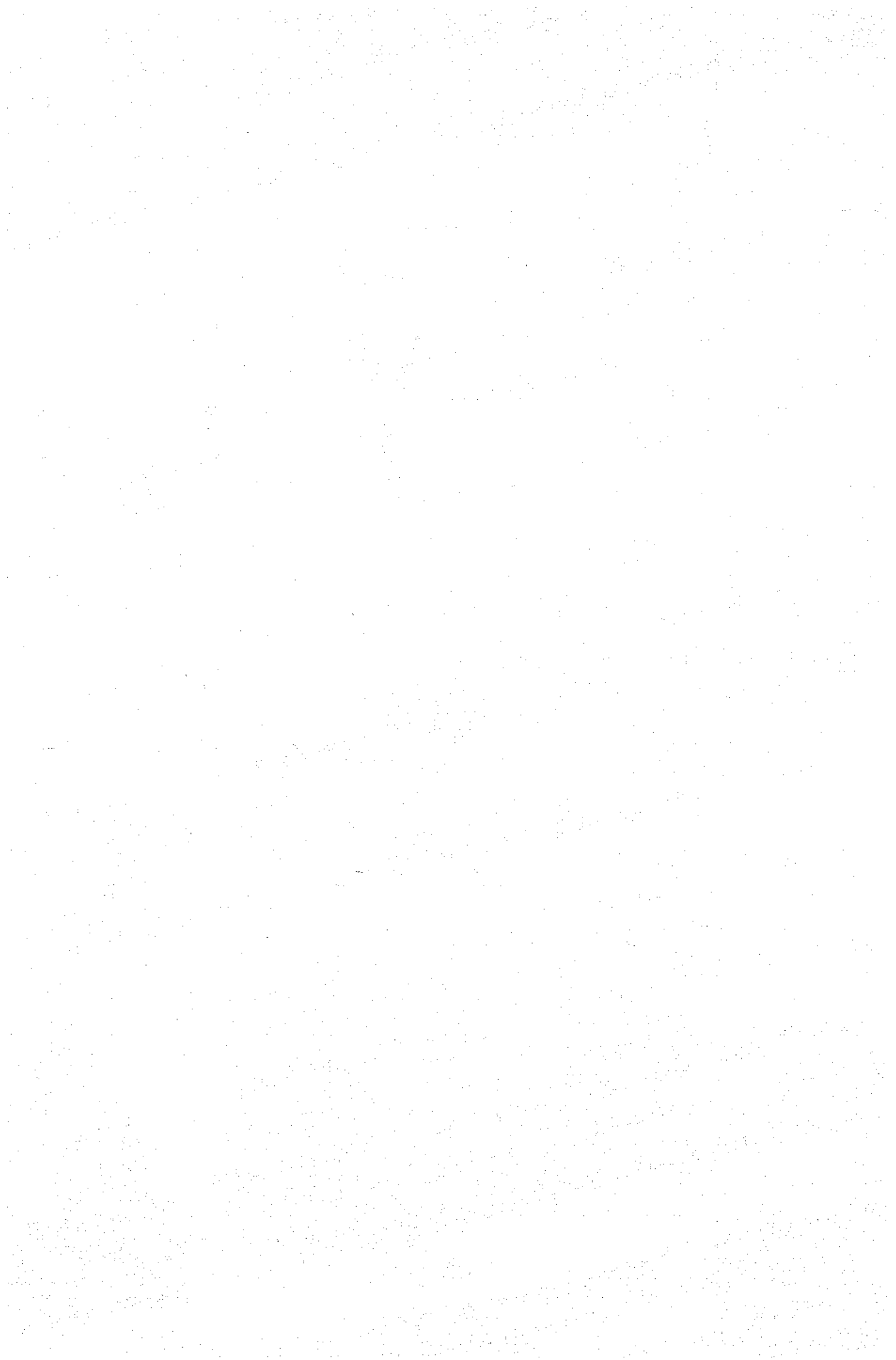


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1. INTRODUCTION

The objective of the water-related recreation study is to project the number of foreign and domestic tourists to Sabah and Sarawak in 1990 and 2000.

Tourist arrivals during the period from 1980 to 1995 are projected by Tourist Development Corporation (TDC) in its tourism master plans for Sabah and Sarawak (Refs. 1 and 2). The number of tourists in 2000 was projected under the Study, by assuming that the average annual growth rate between 1995 and 2000 will keep the same level between 1990 and 1995.

In the Study, the number of local tourists was projected on the basis of the methodology applied to the Phase II Study for Peninsular Malaysia.

In this Sectoral Study, the projected numbers of tourist arrivals and local tourists show only a potential tourist demand on water-related recreation in Sabah and Sarawak. They will be allocated to the respective tourist resources after decision of location, scale and available activities of tourists.

2. PRESENT CONDITION

2.1 Hotel Facilities

According to the Sabah and Sarawak Tourism Master Plans prepared by TDC, the estimated number of hotel rooms in 1980 is 1,201 in Sabah and 1,018 in Sarawak.

2.2 Visitor Arrivals and Local Tourists

2.2.1 Visitor arrivals to Sabah and Sarawak

Foreign and Malaysian visitors to these two States are classified by their citizenship, permanent place of residence, place of embarkation and etc. in the visitor arrival statistics issued by each State Government (Refs. 3 to 6).

(1) Number of visitor arrivals

The number of visitor arrivals to Sabah increased from 78.4×10^3 in 1975 to 142.4×10^3 in 1980 and that to Sarawak from 86.2×10^3 in 1975 to 146.6×10^3 in 1980. The visitors with Malaysian citizenship amounted to 67.8×10^3 in 1980 and occupied 48% of the whole visitors to Sabah. In Sarawak, the Brunei visitors of 49.7×10^3 arrived during 1980 and their share was 34%, while the Malaysian visitors were 38.7×10^3 with the share of 26%. Tables 1 and 2 show the historical record of visitor arrivals to Sabah and Sarawak by citizenship and mode of travel.

(2) Point by entry of visitor arrivals

The main point of entry in Sabah is Kota Kinabalu having visitor arrivals of 85.1×10^3 and sharing 60% throughout 1980 as shown in Table 3. Other major points are Labuan and Tawau with the total persons disembarked of 56.0×10^3 in 1980, corresponding to 39%. In Sarawak, there are four major entry points, i.e., Kuching, Miri, Limbang and Sungai Tujuh. The last two points are closely located along the Sarawak - Brunei border, totalling 86.2×10^3 of persons arrived from Brunei and sharing 59% of all persons disembarked in 1980. The total number of visitor arrivals to Kuching and Miri during 1980 is recorded to be 56.6×10^3 corresponding to 39% of the whole visitors.

(3) Visitor arrivals by purpose and by length of stay

According to the statistics, visitor arrivals as tourist in 1980 is reported to be 53.7×10^3 or 38% of the total in Sabah and 104.7×10^3 or 71% in Sarawak as shown in Table 4. Average stay of visitors in Sabah and Sarawak is also as shown in Table 4. In 1980, 60.5×10^3 visitors or 61% of the total stayed in Sabah for 7 to 14 days, while 104.6×10^3 persons or 71% stayed in Sarawak within three days.

(4) Visitor arrivals by residency

The number of visitors by residency to Sabah throughout 1980 comprised 48.9×10^3 from Peninsular Malaysia, 24.0×10^3 from Indonesia, 18.5×10^3 from Sarawak, 12.8×10^3 from Brunei, 9.7×10^3 from Singapore and the remaining 28.5×10^3 from Australia and other foreign countries. That to Sarawak in 1980 was 62.3×10^3 from Brunei, 31.2×10^3 from Peninsular Malaysia, 15.1×10^3 from Singapore, 7.4×10^3 from Sabah and the remaining 30.6×10^3 from United Kingdom and other foreign countries.

(5) Visitors by accommodation

During 1980, almost all of visitors to Sabah got accommodation for one night and longer, while, in Sarawak, 99.1×10^3 out of the total visitors of 146.6×10^3 to Sarawak spent one night and more and the remaining 47.5×10^3 returned on the same day. Among the visitors stayed, 34.3×10^3 or 24% used hotel accommodation in Sabah and 46.1×10^3 or 47% in Sarawak.

2.2.2 Local tourists

A preliminary survey on domestic tourism was jointly conducted by TDC and DOS among 6,518 Malaysian interviewees of 15 years old and above during the period from January to March, 1977. The survey indicated an average of 0.73 trip per person per annum.

Under the Study, number of domestic tourists was estimated by using the following formula:

$$TG = A \cdot P$$

where, TG: Total number of local tourist trips generated
A : Per capita tourist trip generated
P : Population

The average number of trips per person per annum above-mentioned was taken up as the value of A in this formula. This value was assumed to be constant until 2000.

Historical number of local tourists was estimated to be 477×10^3 in 1970 and $1,099 \times 10^3$ in 1980 for Sabah, and 713×10^3 in 1970 and 960×10^3 in 1980 for Sarawak based on the said formula.

In the TDC master plans for Sabah and Sarawak, it is estimated that residents of Sabah, Sarawak and Brunei occupy 30% of the total hotel guests in Sabah, and those share 40% in Sarawak. Taking in consideration the number of visitor arrivals by residency described in Sub-section 2.2.1 (4), it was assumed that local residents shared 15% of the total hotel guests in each State. Based on this assumption and the number of non-resident hotel guests, the total number of hotel guests in 1980 was estimated to be 40.4×10^3 in Sabah and 54.2×10^3 in Sarawak. The number of resident hotel guests was, therefore, estimated to be 6.1×10^3 in Sabah and 8.1×10^3 in Sarawak.

3. PROJECTION OF TOURISTS

3.1 Projection of Foreign Tourists

3.1.1 Projection of tourist arrivals

The visitor arrivals during 1980 and 1995 are projected by the tourism master plans for Sabah and Sarawak. According to these projections, visitor arrivals to Sabah will be 283.6×10^3 in 1990 and 456.7×10^3 in 1995 with an annual growth rate of 10% and those to Sarawak will be 194.7×10^3 in 1990 and 260.5×10^3 in 1995 with the annual growth rate of 7%.

Based on the assumption on the average annual growth rate of visitor arrivals between 1995 and 2000 which was 10% for Sabah and 6% for Sarawak, the number of visitor arrivals in 2000 was projected to be 735.5×10^3 to Sabah and 348.6×10^3 to Sarawak as shown in Table 5.

Under the Study, tourists were defined as visitors with purposes of leisure, business/leisure and visiting relatives or friends. The share of tourists to visitor arrivals was assumed to keep constant level of 1978 with 58% in Sabah and 33% in Sarawak for 2000. The projected number of tourists in 2000 is 426.6×10^3 to Sabah and 115.0×10^3 to Sarawak as shown in Table 5.

3.1.2 Projection of tourist arrivals by citizenship

Share of tourist by citizenship for 1990 and 2000 was assumed to be on the same level with that of visitor arrivals by citizenship in 1980 as mentioned in Sub-section 2.2.1 (1). The projected number of tourist arrivals by citizenship in 2000 is 213.3×10^3 for Malaysian, 42.7×10^3 for Brunei and 170.6×10^3 for others in Sabah, while that in Sarawak is 28.8×10^3 for Malaysian, 45.9×10^3 for Brunei and 40.3×10^3 for others as shown in Table 6.

3.1.3 Projection of trip-days of tourist arrivals

According to the TDC's tourism master plans, the average length of stay of tourist arrivals is estimated to be 5.4 days for tour purpose in 1978. The total trip-days of tourist arrivals were projected to be 888.3×10^3 days for 1990 and $2,303.6 \times 10^3$ days for 2000 to Sabah and 347.2×10^3 days for 1990 and 621.0×10^3 days for 2000 to Sarawak by assuming that the average length of stay of tourists would keep the constant level of 5.4 days in 1980.

3.2 Projection of Local Tourists

In consideration of the average annual trips per person of 0.73, the number of trips by residents within the State was estimated to be 1.10×10^6 in 1990 and 1.52×10^6 in 2000 for Sabah, and 1.32×10^6 in 1990 and 1.81×10^6 in 2000 for Sarawak as shown in Table 7.

Based on the share of residents to the total hotel guests and the proportion of hotel guests to visitor arrivals assumed in Sub-section 2.2.2, the number of resident hotel guests was projected to be 6.2×10^3 in 1990 and 10.8×10^3 in 2000 for Sabah, and 3.5×10^3 in 1990 and 6.2×10^3 in 2000 for Sarawak.

4. PROJECTION OF RESERVOIR VISITORS

4.1 General

Sightseeing is assumed to be the sole purpose of the reservoir visits and no particular recreation facilities are planned in this study. The access roads for the construction of dams and reservoirs are deemed to be sufficient considering the low frequency of the car visits.

Up to now, very limited statistical data for reservoir recreation are available in Malaysia. These for the United States of America, instead, is used for the projection of reservoir visitors, taking into account the difference in number of cars, road condition, per capita GDP, climate and others between the two countries.

The visitors are classified into outside and domestic ones, considering the difference of the objectives and characteristics of their visits.

4.2 Outside Visitors

Tourists from Malaysia excluding Sabah and Sarawak and these from Brunei and other foreign countries are considered as potential outside visitors to dams reservoirs considering the limited scope of reservoir recreation. Based on the statistical data available for the United States, it is assumed that 0.02 visits to reservoirs are generated per one trip-day of outside tourists. The total number of visits per annum is obtained as the product of 0.02 and the number of trip-days per annum.

4.3 Domestic Visitors

It is assumed that the population within one hour drive distance or 50 km from the reservoirs are potential reservoir visitors. Based on the statistical data for the United States, it is also assumed that 0.1 visits to the reservoirs are generated per capita per annum.

5. ECONOMIC BENEFIT AND COST FOR RESERVOIR RECREATION

5.1 Methodology

The concept of willingness to pay is used for estimating the economic benefit accrued from reservoir recreation. The out-of-pocket cost of travelling to the reservoirs is used for measuring the willingness to pay of each visitor for the reservoir recreation.

The travelling distance for the outside visitors is assumed the road distance from the major towns to the reservoirs. For the domestic visitors, one hour drive distance is assumed as travelling distance.

Fuel cost of M\$0.102/km is used for estimating the travelling cost.

5.2 Estimated Economic Benefit

The economic benefit is estimated for the recommended source development plan and the alternatives B1 through B3 and these under lower economic growth. The annual equivalents of economic benefits at 8% discount rate with the study period of 50 years are estimated for these plans and shown in the Sectoral Report Public Expenditure and Beneficial and Adverse Effects.

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3. MONTHLY STATISTICS SABAH, February 1981, DOS
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5. BULLETIN OF STATISTICS SARAWAK, 3RD QUARTER 1980, DOS
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7. SURVEY AND SEMINAR ON METHODOLOGIES OF COST ALLOCATION AND RECREATION BENEFITS OF DAMS RESERVOIR PROJECTS, 1976

TABLES

Table 1 HISTORICAL RECORD OF VISITOR ARRIVALS
TO SABAH AND SARAWAK BY CITIZENSHIP

Unit: 10³ persons

Citizenship	1970	1972	1975	1980
<u>Sabah</u>				
Malaysia	24.1 (44.1)	31.3 (36.6)	41.1 (52.4)	67.8 (47.6)
Brunei	5.2 (9.5)	9.1 (10.6)	5.9 (7.5)	12.5 (8.8)
Other foreign countries	25.4 (46.4)	45.1 (52.8)	31.4 (40.1)	62.1 (43.6)
Total	54.7(100.0)	85.5(100.0)	78.4(100.0)	142.4(100.0)
<u>Sarawak</u>				
Malaysia	NA	16.9 (23.8)	21.7 (25.2)	38.7 (26.4)
Brunei	NA	20.6 (29.0)	26.1 (30.3)	49.7 (33.9)
Other foreign countries	NA	33.6 (47.2)	38.4 (44.5)	58.2 (39.7)
Total	NA	71.1(100.0)	86.2(100.0)	146.6(100.0)

Remarks; Figures in parentheses show the proportion in percent.
NA: Not available.

Source; Refs. 1 to 6

Table 2 VISITOR ARRIVALS TO SABAH AND SARAWAK BY MODE OF TRAVEL

Unit: 10³ persons

Mode	1970	1972	1975	1980
<u>Sabah</u>				
Air	31.7 (58.0)	45.2 (52.8)	63.8 (81.4)	99.2 (69.6)
Sea	22.6 (41.3)	39.4 (46.1)	13.9 (17.7)	42.3 (29.7)
Land	0.4 (0.7)	0.9 (1.1)	0.7 (0.9)	0.9 (0.7)
Total	54.7(100.0)	85.5(100.0)	78.4(100.0)	142.4(100.0)
<u>Sarawak</u>				
Air	NA	24.7 (34.7)	35.5 (41.2)	56.2 (38.3)
Sea	NA	27.4 (38.4)	18.4 (21.4)	39.8 (27.2)
Land	NA	19.1 (26.9)	32.2 (37.4)	50.6 (34.5)
Total	NA	71.1(100.0)	86.2(100.0)	146.6(100.0)

Remarks; Figures in parentheses show the proportion in percent.
NA: Not available.

Source; Refs. 1 to 6

Table 3 VISITOR ARRIVALS TO SABAH AND SARAWAK BY POINT OF ENTRY

Unit: 10³ persons

Point of Entry	1972	1975	1980
<u>Sabah</u>			
Kota Kinabalu	41.4 (48.4)	49.6 (63.3)	85.1 (59.7)
Labuan	15.3 (17.9)	17.7 (22.6)	32.3 (22.7)
Tawau	26.6 (31.1)	10.1 (12.9)	23.7 (16.6)
Others	2.2 (2.6)	1.0 (1.2)	1.3 (1.0)
Total	85.5(100.0)	78.4(100.0)	142.4(100.0)
<u>Sarawak</u>			
Kuching	21.4 (30.1)	27.4 (31.8)	40.5 (27.6)
Sungei Tujoh	28.8 (40.5)	31.5 (36.5)	50.1 (34.2)
Limbang	13.9 (19.5)	13.8 (16.0)	36.1 (24.6)
Miri	4.1 (5.8)	9.5 (11.0)	16.1 (11.0)
Others	1.5 (2.1)	2.8 (3.3)	3.8 (2.6)
Total	71.1(100.0)	86.2(100.0)	146.6(100.0)

Remarks; Figures in parentheses show the proportion in percent.

Source; Refs. 1 to 6

Table 4 VISITOR ARRIVALS TO SABAH AND SARAWAK BY PURPOSE AND THEIR AVERAGE STAY IN 1980

Unit: 10³ persons

Purpose	Sabah	Sarawak	Length	Sabah	Sarawak
Business	34.9	34.5	Less than 1 day	0.1	47.4
Holiday/Social	53.7	104.7	1 day	2.6	26.6
Transit	0.9	3.5	2 to 3 days	13.7	30.6
Education	1.8	0.2	4 to 6 days	8.8	14.8
Official	3.7	2.5	7 days	20.2	4.4
Others	47.4	1.2	8 to 14 days	40.3	11.7
			15 to 30 days	15.4	6.1
Total	142.4	146.6	Over 1 month	5.3	5.0
			Not stated	36.0	-
			Total	142.4	146.6

Source; Refs. 3 to 6

Table 5 PROJECTED VISITOR ARRIVALS IN SABAH AND SARAWAK FOR 1990 AND 2000

	Unit: 10 ³ persons				
	1970	1975	1980	1990	2000
<u>Sabah</u>					
Visitor Arrival					
Tourist	31.7	45.5	82.6	164.5	426.6
Non-tourist	23.0	0	59.8	119.1	308.9
Total	54.7	78.4	142.4	283.6	735.5
Annual Growth Rate (%)	-	6.6	5.1	9.9	10.0
<u>Sarawak</u>					
Visitor Arrival					
Tourist	18.1	28.4	48.4	64.3	115.0
Non-tourist	36.6	57.8	98.2	130.4	233.6
Total	54.7	86.2	146.6	194.7	348.6
Annual Growth Rate (%)	-	7.5	3.8	7.5	6.0

Source; Refs. 1, 2, 3 & 5

Table 6 PROJECTED TOURIST ARRIVALS BY CITIZENSHIP

	Unit: 10 ³ persons				
	1970	1975	1980	1990	2000
<u>Sabah</u>					
Malaysia	14.0 (44.1)	23.8 (52.4)	41.3 (50.0)	82.2 (50.0)	213.3 (50.0)
Brunei	3.0 (9.5)	3.4 (7.5)	8.3 (10.0)	16.5 (10.0)	42.7 (10.0)
Others	14.7 (46.4)	18.3 (40.1)	33.0 (40.0)	65.8 (40.0)	170.6 (40.0)
Total	31.7(100.0)	45.5(100.0)	82.6(100.0)	164.5(100.0)	426.6(100.0)
<u>Sarawak</u>					
Malaysia	4.3 (23.8)	7.2 (25.2)	12.1 (25.0)	16.1 (25.0)	28.8 (25.0)
Brunei	5.2 (29.0)	8.6 (30.3)	19.4 (40.0)	25.7 (40.0)	45.9 (40.0)
Others	8.6 (47.2)	12.6 (44.5)	16.9 (35.0)	22.5 (35.0)	40.3 (35.0)
Total	18.1(100.0)	28.4(100.0)	48.4(100.0)	64.3(100.0)	115.0(100.0)

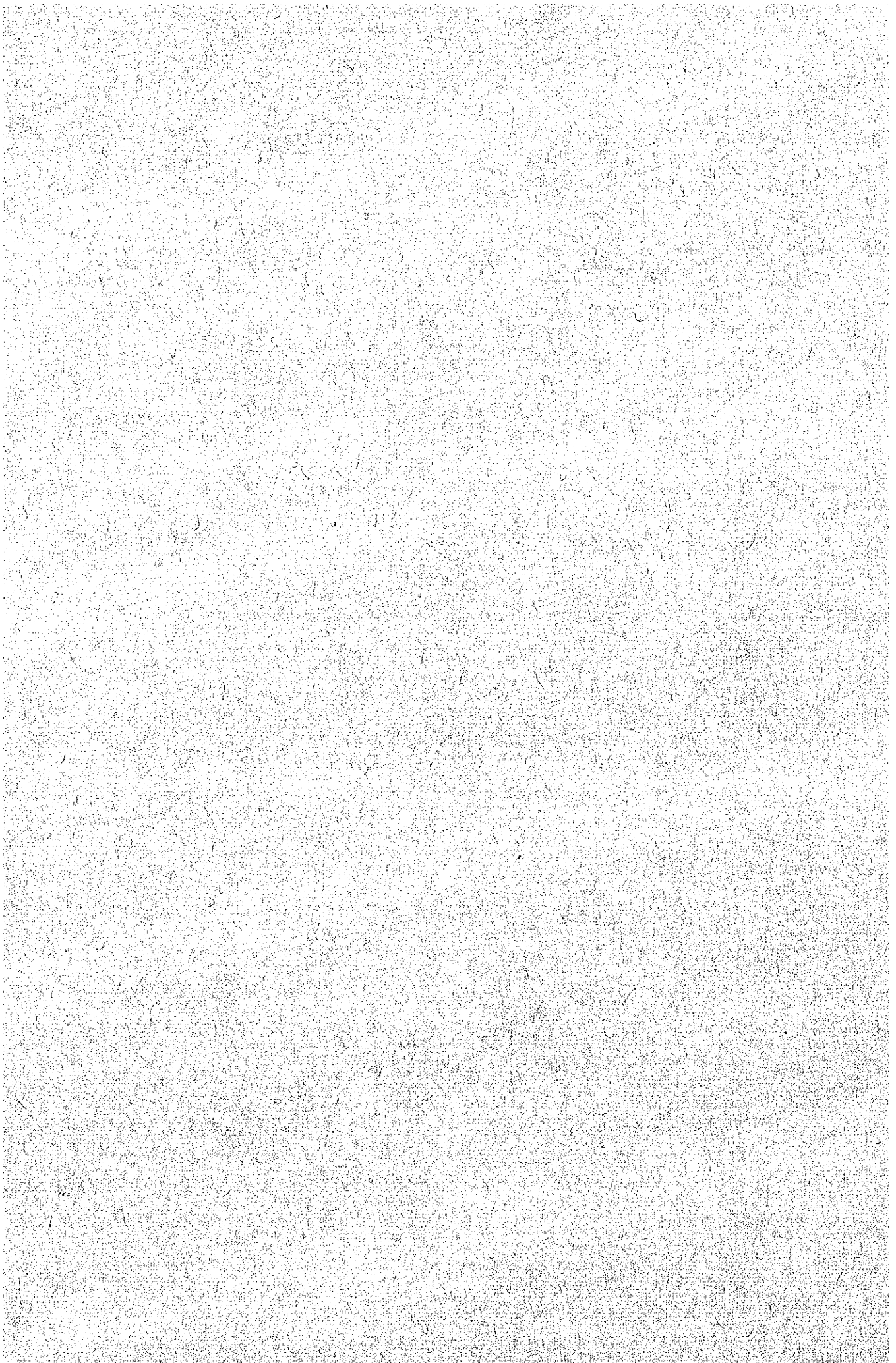
Remarks; Figures in parentheses show the proportion to the total.

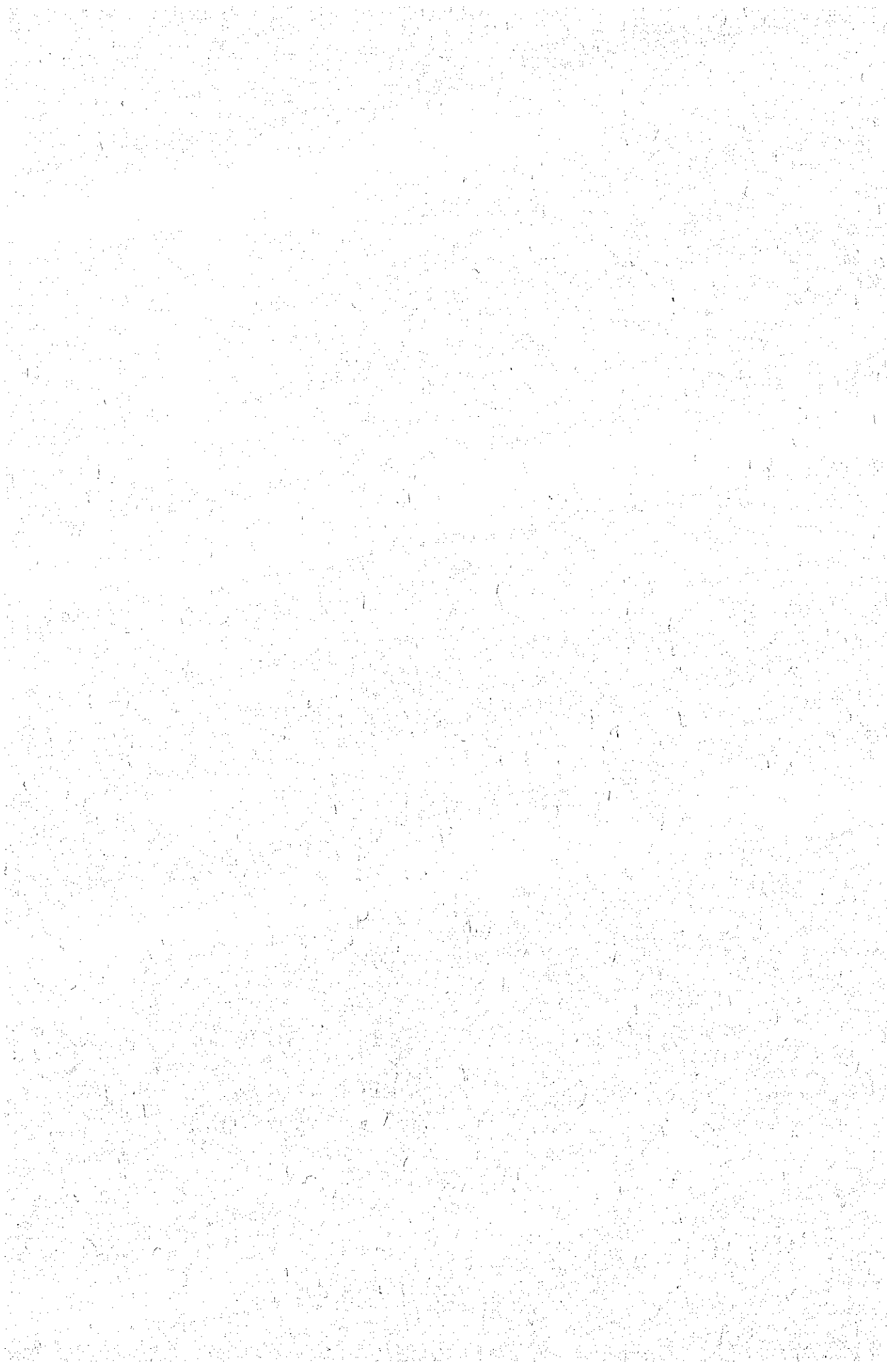
Source; Refs. 1 & 2

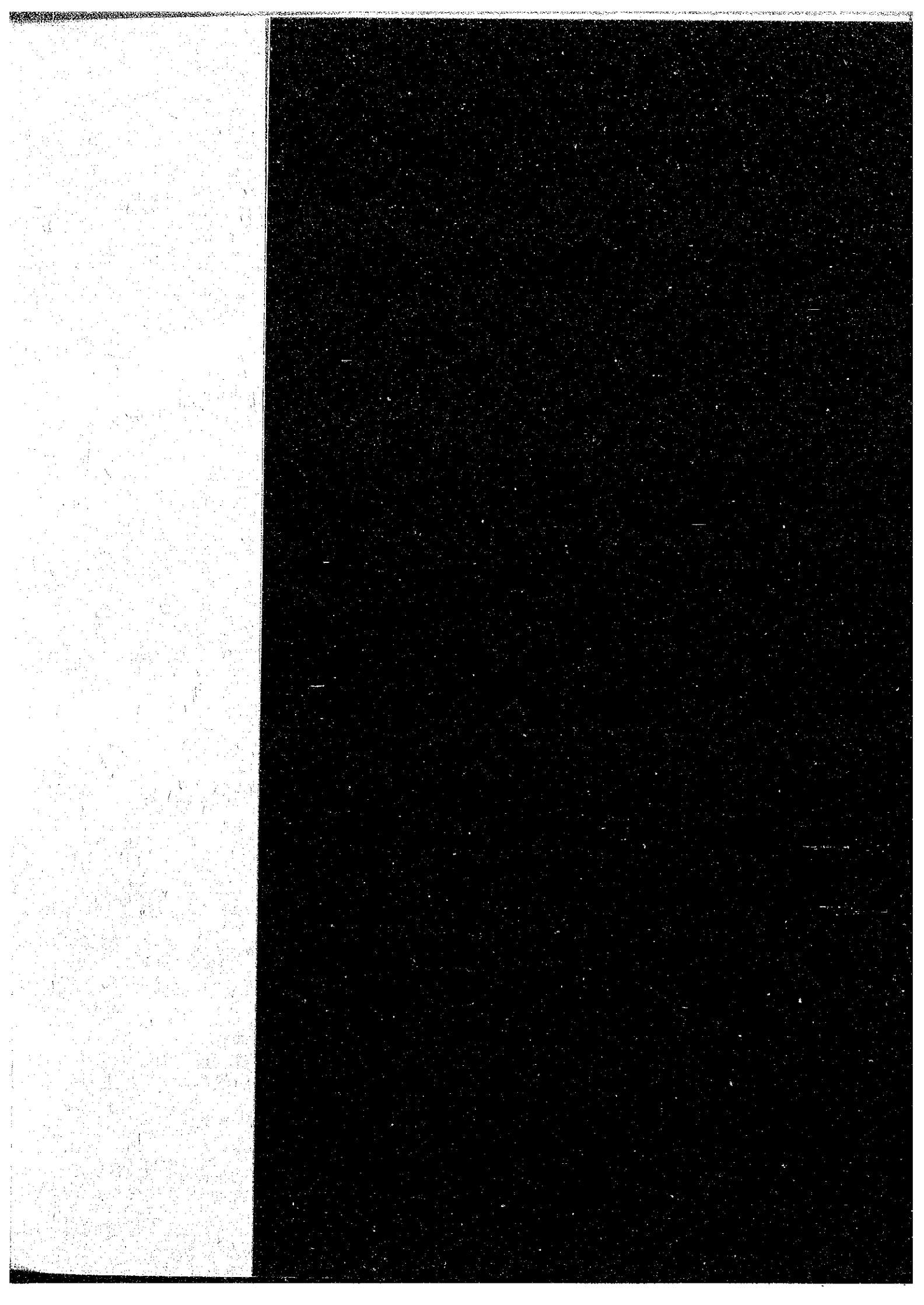
Table 7 PROJECTED TRIPS OF LOCAL TOURISTS

Unit: 10³

Population/Trips	1970	1980	1990	2000
<u>Sabah</u>				
Total Population	653.6	1,097.8	1,513.4	2,078.0
No. of Trips	477.1	801.4	1,104.8	1,516.9
<u>Sarawak</u>				
Total Population	976.3	1,314.4	1,809.6	2,482.0
No. of Trips	712.7	959.5	1,321.0	1,811.9







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