TABLES

Table 1 PROPORTION OF FOREIGN AND LOCAL CURRENCY PORTIONS

Sector	Proportion of Foreign Currency
D&I Water Supply	60
Irrigation	45
Dams and Barrages	60
Fish Culture	0
Hydropower/1	80
Sewerage/2	20
Private Purification (Palm & Rubber)	20
River Improvement	40

Remarks; (1): The above figures are only approximations.

/1: Only power facilities excluding dam and ancillary facilities

/2: Central sewerage

Table 2 ASSUMED UNIT CONSTRUCTION COST (1/2)

1. Compensation on Land (M$10^6/km^2)

Irrigated paddy	2.5	Urban area class S	100
Rainfed paddy	1.5	Urban area class A	10
Tree crop field class A	1.5	Urban area class B	5
Tree crop field class B	1.0	Village area class A	5
Tree crop field class C	0.5	Village area class B	1
Forest class A	0.5		
Forest class B	0.1		

S: very good access, A: good access
B: poor access, C: very poor access

2. Resettlement (M$10^3/household)

Urban	30	Rural	10

3. Civilwork

Dam	M$50-70 per m^3 of embankment volume
Canal	M$60-100 m per m^3/s of discharge capacity
Tunnel	M$180-200/m per m^3/s of discharge capacity
Pipeline	M$1,090-2,180/m per m^3/s of discharge capacity
Barrage/Weir	M$1,450/m per m^3/s 100-y maximum capacity
Pumping station	M$8,500-15,700 m^3/s of discharge capacity

4. River Facilities

Channel improvement (M$10^6/km)

200 m^3/s	0.2 - 0.4
500 m^3/s	0.3 - 0.7
1,000 m^3/s	0.4 - 0.9
10,000 m^3/s	1.3 - 3.2

Floodway (M$10^6/km)

200 m^3/s	0.2 - 0.6
500 m^3/s	0.4 - 1.0
1,000 m^3/s	0.6 - 1.3
2,000 m^3/s	0.8 - 2.0

Polder

Protection bund	M$170-770 x 10^3/km
Drainage system	M$590 x 10^3/km
Drainage pump	M$170-420 x 10^3 per m^3/s

Remarks; Unit construction costs include the engineering and administration cost, but the physical contingency is not included.

Table 3 ASSUMED UNIT CONSTRUCTION COST (2/2)

5. D&I Water Supply System

Pipeline	M$470/m per m^3/s of discharge capacity
Treatment plant	M$780 per m^3/d of capacity
Distribution system	M$1,430 per m^3/d of capacity

6. Sewerage System M$173 x 10^6 per 100 x 103 m^3/d

7. D&I Pre-treatment System

Aerated lagoon	M$42 x 10^6 per 100 x 10^3 m^3/d
Rapid sandfilter bed	M$123 x 10^6 per 100 x 10^3 m^3/d

8. Power Facilities

Generating equipment

Rated head more than 140 m	M$300-480 per kW
Rated head 20 - 80 m	M$600-970 per kW
Rated less than 30 m	M$1,450-1,690 per kW
Transmission line	M$180-210 x 10^3 per km

9. Irrigation Facilities

From rainfed paddy to irrigated paddy	M$11,370 per ha
From new reclaimed land to irrigated paddy	M$12,300 per ha
From irrigated single cropped paddy to double	M$6,150 per ha
Tertiary development and rehabilitation	M$5,470 per ha
From rainfed to control drainage scheme	M$3,000

Remarks; Unit construction costs include the engineering and administration cost, but the physical contingency is not included.

Table 4 O&M COSTS

Unit: %

Sector	O&M Cost
D&I Water Supply	2.0
Irrigation	1.5
Dams and Barrages	0.5
Pond Culture	1.0
Cage Culture	2.0
Hydropower/1	2.0
Sewerage/2	4.0
Private Purification (Palm & Rubber)	2.0
River Improvement	2.0

Remarks; (1): % of the investment cost

/1: Only power facilities excluding dam and ancillary facilities

/2: Central sewerage

Table 5 PRINCIPAL FEATURES AND INVESTMENT COST FOR DAMS AND BARRAGES BY PROJECT BY BASIN BY MP FOR RECOMMENDED PLANS

Basin No.	Water Source Facilities	Catchment Area (km^2)	Active Storage Capacity /1 (10^6 m^3)	Net Supply /1 Capacity (10^6 m^3/y)	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH									
207	Tawau dam	38	7	21	79.8	8.9	-	-	89
212	Meliau dam	58	17	48	-	149.8	-	-	150
217	Milau dam	70	5	12	-	7.5	0.8	-	8
218	Wariu dam	123	8	10	6.4	57.2	-	-	64
220	Papar dam	353	15	35	6.7	60.0	-	-	67
	(Sub-total)	(642)	(52)	(126)	(92.9)	(283.4)	(0.8)	-	(378)
SARAWAK									
231	Liku dam	33	5	20	1.5	13.4	-	-	15
Total for Sabah & Sarawak		675	57	146	94.4	296.8	0.8	-	393

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 6 PRINCIPAL FEATURES AND INVESTMENT COST FOR DAMS AND BARRAGES BY PROJECT BY BASIN BY MP FOR ALTERNATIVE B1

Basin No.	Water Source Facilities	Catchment Area (km^2)	Active Storage /1 Capacity (10^6 m^3)	Net Supply /1 Capacity (10^6 m^3/y)	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH									
207	Tawau dam	38	7	21	-	79.8	8.9	-	89
212	Meliau dam	58	17	48	-	149.8	-	-	150
217	Milau dam	70	5	12	-	7.5	0.8	-	8
218	Wariu dam	123	25	65	26.9	242.4	-	-	269
220	Papar dam	353	25	58	7.1	64.2	-	-	71
	(Sub-total)	(642)	(79)	(204)	(34.0)	(543.7)	(9.7)	-	(587)
SARAWAK									
231	Liku dam	33	5	20	1.5	13.4	-	-	15
Total for Sabah & Sarawak		675	84	224	35.5	557.1	9.7	-	602

Remarks; (1): In 1980 end constant price

/1: Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 7 PRINCIPAL FEATURES AND INVESTMENT COST FOR DAMS AND BARRAGES BY PROJECT BY BASIN BY MP FOR ALTERNATIVE B2

Basin No.	Water Source Facilities	Catchment Area (km^2)	Active Storage Capacity /1 (10^6 m^3)	Net Supply Capacity /1 (10^6 m^3/y)	Investment Cost ($M\$10^6$) 4MP	5MP	6MP	7MP	Total
SABAH									
207	Tawau dam	38	4	12	-	51.1	5.7	-	57
212	Meliau dam	58	17	48	-	149.8	-	-	150
217	Milau dam	70	5	12	-	7.5	0.8	-	8
218	Wariu dam	123	17	42	17.9	160.8	-	-	179
220	Papar dam	353	15	35	6.7	60.0	-	-	67
	(Sub-total)	(642)	(58)	(149)	(24.6)	(429.2)	(6.5)	-	(461)
SARAWAK									
231	Liku dam	33	4	15	1.3	11.6	-	-	13
Total for Sabah & Sarawak		675	62	164	25.9	440.8	6.5	-	474

Remarks; (1): In 1980 end constant price

/1 : Total Incremental Capacity of the proposed facilities during 4MP through 7MP

Table 8 PRINCIPAL FEATURES AND INVESTMENT COST FOR DAMS AND BARRAGES BY PROJECT BY BASIN BY MP FOR ALTERNATIVE B3

Basin No.	Water Source Facilities	Catchment Area (km^2)	Active Storage Capacity /1 (10^6 m^3)	Net Supply Capacity /1 (10^6 m^3/y)	Investment Cost ($M\$10^6$) 4MP	5MP	6MP	7MP	Total
SABAH									
212	Meliau dam	58	17	48	-	149.8	-	-	150
217	Milau dam	70	5	12	-	7.5	0.8	-	8
218	Wariu dam	123	8	10	6.4	57.2	-	-	64
220	Papar dam	353	15	35	6.7	60.0	-	-	67
	(Sub-total)	(604)	(45)	(105)	(13.1)	(274.5)	(0.8)	-	(289)
SARAWAK									
231	Liku dam	33	3	13	1.2	10.7	-	-	12
Total for Sabah & Sarawak		637	48	118	14.3	285.2	0.8	-	301

Remarks; (1): In 1980 end constant price

/1 : Total Incremental Capacity of the proposed facilities during 4MP through 7MP

Table 9 PRINCIPAL FEATURES AND INVESTMENT COST FOR DIVERSION FACILITIES BY PROJECT BY BASIN BY MP FOR RECOMMENDED PLANS

Basin No.	Diversion Facilities	Discharge Capacity (m^3/s)/1	Length (km)	Investment cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH								
212	Meliau diversion							
	- Pipeline - 1	0.3	123	79.8	53.2	-	-	133
	- Pipeline - 2	0.6	123	-	223.0	-	-	223
	- Pipeline - 3	0.6	123	-	-	223.0	-	223
217	Milau diversion	0.4	13	8.8	5.8	-	-	15
220	Papar diversion	2	17	4.1	36.9	-	-	42
225	Padas diversion							
	- Pipe line - 1	0.3	82	92	61.3	-	-	153
	- Pipe line - 2	0.3	82	92	61.3	-	-	153
	Total for SABAH		563	276.7	441.5	223.0	-	942

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 10 PRINCIPAL FEATURES AND INVESTMENT COST FOR DIVERSION FACILITIES BY PROJECT BY BASIN BY MP FOR ALTERNATIVE B1

Basin No.	Diversion Facilities	Discharge Capacity (m^3/s)/1	Length (km)	Investment cost ($M\$10^6$) 4MP	5MP	6MP	7MP	Total
SABAH								
212	Meliau diversion							
	- Pipeline - 1	0.3	123	79.8	53.2	-	-	133
	- Pipeline - 2	0.6	123	-	223	-	-	223
	- Pipeline - 3	0.6	123	-	-	223	-	223
217	Milau diversion	0.4	13	8.8	5.8	-	-	15
220	Papar diversion	2	17	4.1	36.9	-	-	41
225	Padas diversion							
	- Pipeline - 1	0.3	82	92	61.3	-	-	153
	- Pipeline - 2	0.3	82	-	92	61.3	-	153
	Total for SABAH		563	184.7	472.2	284.3	-	941

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 11 PRINCIPAL FEATURES AND INVESTMENT COST FOR DIVERSION FACILITIES BY PROJECT BY BASIN BY MP FOR ALTERNATIVE B2

Basin No.	Diversion Facilities	Discharge Capacity (m^3/s)/1	Length (km)	Investment cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH								
212	Meliau diversion							
	- Pipeline - 1	0.3	123	79.8	53.2	-	-	133
	- Pipeline - 2	0.6	123	-	223	-	-	223
	- Pipeline - 3	0.6	123	-	-	223	-	223
217	Milau diversion	0.4	13	8.8	5.8	-	-	15
220	Papar diversion	2	17	4.1	36.9	-	-	41
225	Padas diversion							
	- Pipeline - 1	0.3	82	92.0	61.3	-	-	153
	- Pipeline - 2	0.3	82	-	92.0	61.3	-	153
	Total for SABAH		563	184.7	472.2	284.3	-	941

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 12 PRINCIPAL FEATURES AND INVESTMENT COST FOR DIVERSION FACILITIES BY PROJECT BY BASIN BY MP FOR ALTERNATIVE B3

Basin No.	Diversion Facilities	Discharge Capacity (m^3/s) /1	Length (km)	Investment cost ($M\$10^6$) 4MP	5MP	6MP	7MP	Total
SABAH								
207	Merotai kanan diversion	0.3	23	-	26.3	2.9	0	29
212	Meliau diversion							
	- Pipeline - 1	0.3	123	79.8	53.2	-	-	133
	- Pipeline - 2	0.6	123	-	223.0	-	-	223
	- Pipeline - 3	0.6	123	-	-	223.0	-	223
217	Milau diversion	0.4	13	8.8	5.8	-	-	15
220	Papar diversion	2	17	4.1	36.9	-	-	41
225	Padas diversion							
	- Pipeline - 1	0.3	82	92.0	61.3	-	-	153
	- Pipeline - 2	0.3	82	-	92.0	61.3	-	153
	Total for SABAH		586	184.7	498.5	287.2	-	970

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 13 CAPACITY AND INVESTMENT COST FOR PUBLIC WATER SUPPLY PROJECTS IN URBAN AREA BY CITY BY MP

Basin No.	Code No.	City/Town	TC /1 ($10^3 m^3/d$)	Investment Cost (M$ 10^6) 4MP	5MP	6MP	7MP	Total
Sabah								
207	201	Tawau	45.2	4.8	32.6	49.1	19.6	106.1
208	202	Semporna	4.5	2.2	6.3	8.1	3.2	19.8
209	203	Lahad Datu	28.6	6.6	22.3	29.8	11.9	70.6
212	204	Sandakan	84.3	15.5	53.1	71.3	28.5	168.4
213	205	Ranau	6.6	0.5	4.4	6.8	2.7	14.4
217	206	Kudat	15.4	2.6	10.4	14.4	5.8	33.2
218	207	Kota Belud	6.3	0.0	4.1	6.9	2.7	13.7
220	208	Kota Kinabalu	98.5	14.0	66.3	94.9	38.0	213.2
221	209	Papar	10.2	3.4	7.3	8.4	3.4	22.5
224	210	Keningau	6.0	0.0	4.0	6.7	2.7	13.4
225	211	Labuan	40.4	8.0	28.8	39.1	15.6	91.5
Sub Total			346.0	57.6	239.6	335.5	134.1	766.8
Sarawak								
229	212	Limbang	7.2	2.5	6.2	7.6	3.0	19.3
230	213	Marudi	8.7	1.0	5.1	7.3	2.9	16.3
231	214	Miri	85.8	16.1	56.2	75.8	30.3	178.4
236	215	Bintulu	37.4	15.8	21.8	18.8	7.5	63.9
241	216	Sibu	87.4	28.2	71.8	88.3	35.3	223.6
	217	Sarikei	17.8	8.7	18.6	21.3	8.5	57.1
245	218	Serian	4.8	0.5	3.8	5.7	2.3	12.3
246	219	Kuching	120.3	30.9	94.5	123.2	49.3	297.9
Sub Total			369.4	103.7	278.0	348.0	139.1	868.8
Sabah & Sarawak			715.4	161.3	517.6	683.5	273.2	1635.6

Remarks; (1): In 1980 end constant price

(2): Treated water supply by State PWDs Waterworks Department and Water Authorities.

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 14 CAPACITY AND INVESTMENT COST FOR TREATED WATER SUPPLY IN RURAL AREA BY BASIN BY MP (1/2)

Basin No.	Name	TC /1 ($10^3 m^3/d$)	Investment Cost (M$ 10^6) 4MP	5MP	6MP	7MP	Total
Sabah							
201	Pensiangan	0.6	0	0.7	1.2	0.5	2.4
202	Serudong	1.2	0.9	1.6	1.6	0.6	4.7
203	Kalabakan	1.5	1.4	1.9	1.6	0.6	5.5
204	Brantian	0.9	0	1.0	1.6	0.6	3.2
205	Umas Umas	0.6	0	0.7	1.2	0.5	2.4
206	Merutai Besar	0.9	0	1.0	1.6	0.6	3.2
207	Tawau	0.9	0.9	1.3	1.2	0.5	3.9
208	Kalumpang	6.6	3.7	6.9	7.4	3.0	21.0
209	Silibukan	1.5	0.9	1.8	2.0	0.8	5.5
210	Segama	1.5	0.9	1.8	2.1	0.8	5.6
211	Kinabatangan	2.7	1.9	3.1	3.1	1.2	9.3
212	Segaliud	3.0	1.9	3.4	3.6	1.4	10.3
213	Labuk	3.0	1.4	3.4	4.2	1.7	10.7
214	Sugut	1.2	0.9	1.6	1.6	0.6	4.7
215	Paitan	0.6	0.9	1.1	0.8	0.3	3.1
216	Bengkoka	1.2	0.9	1.6	1.6	0.6	4.7
217	Bongan	3.0	1.4	3.5	4.2	1.7	10.8
218	Kadamaian	2.4	1.4	2.8	3.1	1.2	8.5
219	Tuaran	6.0	7.3	7.0	3.6	1.4	19.3
220	Putatan	2.1	1.4	2.5	2.5	1.0	7.4
221	Papar	2.1	1.4	2.5	2.5	1.0	7.4
222	Kimanis	0.6	0	0.7	1.2	0.5	2.4
223	Membakut	3.3	1.9	3.8	4.2	1.7	11.6
224	Padas	17.2	6.8	16.4	19.8	7.9	50.9
225	Tambuan	0.3	0	0.5	0.8	0.3	1.6
226	Lakutan	2.7	1.4	3.1	3.6	1.4	9.5
Sub Total		67.6	39.6	75.7	81.9	32.4	229.6
Sarawak							
227	Lawas	0.9	0.9	1.3	1.2	0.5	3.9
228	Trusan	0.9	0.9	1.3	1.2	0.5	3.9
229	Limbang	0.6	0.9	1.1	0.8	0.3	3.1
230	Baram	3.6	1.9	4.2	4.8	1.9	12.8
231	Miri	0.6	0.9	1.1	0.8	0.3	3.1
232	Sibuti	0.9	0.9	1.3	1.2	0.5	3.9
233	Niah	1.5	0.9	1.8	2.1	0.8	5.6
234	Suai	1.8	1.9	2.2	1.6	0.6	6.3
235	Similajau	0.3	0	0.5	0.8	0.3	1.6
236	Kemena	1.2	0.9	1.6	1.6	0.6	4.7
237	Tatau	1.5	0.9	1.8	2.0	0.8	5.5
238	Balingian	1.2	0.9	1.6	1.6	0.6	4.7
239	Mukah	3.9	2.5	4.5	4.8	1.9	13.7
240	Oya	1.2	0.9	1.6	1.6	0.6	4.7
241	Rajang	8.4	4.3	8.6	9.6	3.8	26.3

Remarks; (1): In 1980 end constant price

(2): For the public water supply systems of State PWDs, Waterworks Department and Water Authorities

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 15 CAPACITY AND INVESTMENT COST FOR TREATED WATER SUPPLY IN RURAL AREA BY BASIN BY MP (2/2)

Basin No.	Name	TC /1 ($10^3 m^3/d$)	Investment Cost (M$ 10^6) 4MP	5MP	6MP	7MP	Total
242	Kerian	4.4	1.9	4.3	5.1	2.0	13.3
243	Sarabas	3.0	1.4	3.2	3.7	1.5	9.8
244	Lupar	7.1	2.5	6.3	7.8	3.1	19.7
245	Sadong	6.3	3.0	6.5	7.4	3.0	19.9
246	Sarawak	10.5	5.8	11.0	11.9	4.7	33.4
247	Kayan	2.4	1.4	2.8	3.1	1.2	8.5
Sub Total		62.2	35.6	68.6	74.7	29.5	208.4
Sabah & Sarawak		129.8	75.2	144.3	156.6	61.9	438.0

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 16 CAPACITY AND INVESTMENT COST FOR UNTREATED WATER SUPPLY IN RURAL AREA BY BASIN BY MP (1/2)

Basin No.	Name	SD /1 ($10^6 m^3/d$)	Investment Cost (M$ 10^6) 4MP	5MP	6MP	7MP	Total
Sabah							
201	Pensiangan	0.6	0	0.1	0.4	0.3	0.8
202	Serudong	1.4	0.1	0.7	0.5	0.4	1.7
203	Kalabakan	1.4	0.1	0.4	0.7	0.6	1.8
204	Brantian	0.8	0	0.1	0.4	0.3	0.8
205	Umas Umas	0.6	0	0.1	0.4	0.3	0.8
206	Merutai Besar	0.6	0	0.1	0.4	0.3	0.8
207	Tawau	1.1	0.1	0.4	0.5	0.4	1.4
208	Kalumpang	6.0	0.4	2.2	2.8	2.2	7.6
209	Silibukan	0.8	0.1	0.4	0.4	0.3	1.2
210	Segama	1.7	0.1	0.7	0.7	0.6	2.1
211	Kinabatangan	2.5	0.1	0.8	1.2	1.0	3.1
212	Segaliud	2.7	0.2	1.1	1.2	1.0	3.5
213	Labuk	2.2	0.2	1.0	0.9	0.7	2.8
214	Sugut	1.1	0.1	0.4	0.5	0.4	1.4
215	Paitan	0.5	0.1	0.3	0.2	0.1	0.7
216	Bengkoka	1.4	0.1	0.4	0.7	0.6	1.8
217	Bongan	3.8	0.2	1.2	1.8	1.5	4.7
218	Kadamaian	2.2	0.2	1.0	0.9	0.7	2.8
219	Tuaran	3.6	0.4	1.8	1.2	1.0	4.4
220	Putatan	1.9	0.1	0.7	0.9	0.7	2.4
221	Papar	1.6	0.1	0.5	0.9	0.7	2.2
222	Kimanis	0.5	0	0	0.2	0.1	0.3
223	Membakut	0.8	0.1	0.4	0.4	0.3	1.2
224	Padas	12.1	0.6	3.0	3.2	2.5	9.3
225	Tambuan	0.6	0	0.1	0.4	0.3	0.8
226	Lakutan	0.6	0.1	0.4	0.4	0.3	1.2
Sub Total		53.1	3.5	18.3	22.2	17.6	61.6
227	Lawas	0.3	0	0	0.2	0.1	0.3
228	Trusan	0.8	0.1	0.4	0.4	0.3	1.2
229	Limbang	1.1	0.1	0.4	0.5	0.4	1.4
230	Baram	3.3	0.2	1.2	1.6	1.3	4.3
231	Miri	0.8	0.1	0.4	0.4	0.3	1.2
232	Sibuti	0.8	0.1	0.4	0.4	0.3	1.2
233	Niah	1.1	0.1	0.4	0.5	0.4	1.4
234	Suai	1.4	0.1	0.4	0.7	0.6	1.8
235	Similajau	0.3	0	0	0.2	0.1	0.3
236	Kemena	1.1	0.1	0.4	0.5	0.4	1.4
237	Tatau	0.8	0.1	0.4	0.4	0.3	1.2
238	Balingian	0.8	0.1	0.4	0.4	0.3	1.2
239	Mukah	1.9	0.1	0.4	0.4	0.3	1.2
240	Oya	1.4	0.1	0.4	0.7	0.6	1.8

Remarks; (1): In 1980 end constant price

(2): Untreated water supply under RESP

/1 : Total incremental capacity in terms of source demand of the proposed facilities during 4MP through 7MP

Table 17 CAPACITY AND INVESTMET COST FOR UNTREATED WATER SUPPLY IN RURAL AREA BY BASIN BY MP (2/2)

Basin No.	Name	SD /1 ($10^6 m^3/d$)	Investment Cost (M$ 10^6) 4MP	5MP	6MP	7MP	Total
241	Rajang	11.8	0.8	4.4	5.4	4.3	14.9
242	Kerian	2.3	0.1	0.8	1.1	0.9	2.9
243	Sarabas	4.7	0.2	0.9	1.2	1.0	3.3
244	Lupar	5.1	0.3	1.6	2.4	2.0	6.3
245	Sadong	5.2	0.4	1.9	2.4	2.0	6.7
246	Sarawak	9.3	0.6	3.4	4.4	3.5	11.9
247	Kayan	1.4	0.1	0.7	0.5	0.4	1.7
Sub Total		55.7	3.8	19.3	24.7	19.8	67.6
Sabah & Sarawak		108.8	7.3	37.6	46.9	37.4	129.2

Remarks; (1): In 1980 end constant price

(2): Untreated water supply under RESP

/1 : Total incremental capacity in terms of source demand of the proposed facilities during 4MP through 7MP

Table 18 TREATMENT CAPACITY AND INVESTMENT COST FOR PRE-TREATMENT FACILITIES BY BASIN BY MP

Basin No.	Treatment Capacity /1 ($10^3 m^3$/day)	Investment Cost (M$10^6) 4MP	5MP	6MP	7MP	Total
231	54.0	4	6	6	2	18
Total for Sarawak	54.0	4	6	6	2	18
Total	54.0	4	6	6	2	18

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 19 TREATMENT CAPACITY AND INVESTMENT COST FOR PRE-TREATMENT FACILITIES BY BASIN BY MP FOR ALTERNATIVE P1

Basin No.	Treatment Capacity /1 (10^3m^3/day)	Investment Cost ($M\$10^6$) 4MP	5MP	6MP	7MP	Total
231	54.0	4	6	6	2	18
Total for Sarawak	54.0	4	6	6	2	18
Total	54.0	4	6	6	2	18

Table 20 TREATMENT CAPACITY AND INVESTMENT COST FOR PRE-TREATMENT FACILITIES BY BASIN BY MP UNDER WITHOUT PROJECT CONDITION

Basin No.	Treatment Capacity (10^3m^3/day) /1	Investment Cost ($MS10^6$) 4MP	5MP	6MP	7MP	Total
209	24.0	0	3	5	2	10
Total for Sabah	24.0	0	3	5	2	10
231	54.0	4	6	6	2	18
Total for Sarawak	54.0	4	6	6	2	18
Total	78.0	4	9	11	4	28

Remarks; (1): In 1980 end constant price
/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 21 AREA AND INVESTMENT COST FOR MAJOR IRRIGATION SCHEMES BY SCHEME BY BASIN BY MP

State	Name of Project	Basin No.	Area (ha) /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH	Lower Labuk	213	5,830	-	-	42.1	32.5	74.6
SARAWAK	Limbang Valley	229	8,600	6.4	111.1*	44.0	44.0	205.5
	Binatang Barat	241	4,000	-	-	29.6	29.6	59.2
	Batang Lupor	244	4,000	-	-	29.6	29.6	59.2
	Sadong Krang	245	4,000	7.6	19.0	16.3	16.3	59.2
	Samarahan	246	12,000	8.9	41.5	32.0	34.0	116.4
	Sub-total		32,600	22.9	171.6	151.5	153.5	499.5
SABAH & SARAWAK			38,430	22.9	171.6	193.6	186.0	574.1

Remarks; (1): In 1980 end constant pric

/1 : Total incremental area to be developed during 4MP through 7MP

Table 22 AREA AND INVESTMENT COST FOR MINOR IRRIGATION SCHEMES BY BASIN BY MP

State	Basin No.	Area (ha) /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH	213	338	-	5.4	-	-	5.4
	216	1,018	2.8	5.2	3.8	4.0	15.8
	217	2,069	15.8	14.8	-	-	30.6
	218	1,158	5.6	4.9	5.8	-	16.3
	220	403	3.0	3.0	-	-	6.0
	221	484	3.6	3.6	-	-	7.2
	222	2,350	9.2	26.9	-	-	36.1
	223	1,174	1.6	16.4	-	-	18.0
	224	5,756	14.4	38.9	19.1	15.3	87.7
	Sub-total	14,750	56.0	119.1	28.7	19.3	223.1
SARAWAK	227	408	4.6	1.6	-	-	6.2
	228	1,618	-	8.0	6.0	8.0	22.0
	229	104	-	1.5	-	-	1.5
	230	3,721	-	18.5	18.5	18.0	55.0
	231	108	-	1.6	-	-	1.6
	232	576	-	0.8	0.8	0.8	2.4
	236	2,885	-	14.2	14.2	11.9	40.3
	237	182	-	2.7	-	-	2.7
	238	257	-	-	1.9	1.9	3.8
	239	1,146	-	6.2	1.5	1.5	9.2
	240	836	-	3.9	3.9	1.2	9.0
	241	6,262	22.0	5.3	6.9	6.9	41.1
	242	2,801	5.4	1.9	1.9	1.9	11.1
	243	1,918	-	4.0	2.6	2.6	9.2
	244	5,361	3.0	16.6	16.5	16.5	52.6
	245	1,412	-	7.1	3.7	3.7	14.5
	246	2,123	-	10.5	10.5	10.5	31.5
	247	892	-	4.4	4.4	4.4	13.2
	Sub-total	32,610	35.0	108.8	93.3	89.8	326.9
SABAH & SARAWAK		47,360	91.0	227.9	122.0	109.1	550.0

Remarks; (1): In 1980 end constant price

/1 : Total incremental area to be developed during 4MP through 7MP

Table 23 AREA AND INVESTMENT COST FOR INLAND FISHERY IN CONSTRUCTED PONDS BY STATE BY MP

State	Pond Area /1 (ha)	Investment Cost (M$ 10^6) 4MP	5MP	6MP	7MP	Total
Sabah	539	3.1	3.1	3.1	3.1	12.4
Sarawak	197	0.0	0.0	2.2	2.2	4.4
Total	736	3.1	3.1	5.3	5.3	16.8

Remarks: (1): In 1980 end constant price.

/1 : Total incremental area to be developed during 4MP through 7MP.

Table 24 AREA AND INVESTMENT COST FOR INLAND FISHERY IN RESERVOIRS BY BASIN BY MP

Basin No.	Area /1 (ha)	Investment Cost (M$ 10^6) 4MP	5MP	6MP	7MP	Total
Sabah						
207	10	0.0	0.0	6.5	6.5	13.0
212	10	0.0	0.0	6.5	13.0	19.5
217	10	0.0	0.0	6.5	6.5	13.0
218	10	0.0	0.0	13.0	6.5	19.5
220	10	0.0	0.0	13.0	6.5	19.5
Sub Total	50	0.0	0.0	45.5	39.0	84.5
Sarawak						
231	10	0.0	0.0	13.0	6.5	19.5
241	10	0.0	0.0	13.0	6.5	19.5
244	20	0.0	0.0	0.0	13.0	13.0
Sub Total	40	0.0	0.0	26.0	26.0	52.0
Sabah & Sarawak	90	0.0	0.0	71.5	65.0	136.5

Remarks; (1): In 1980 end constant price

/1 : Total incremental area to be developed during 4MP through 7MP

Table 25 AREA AND INVESTMENT COST FOR INLAND FISHERY IN RESERVOIRS BY BASIN BY MP FOR ALTERNATIVE B1

Basin No.	Area /1 (ha)	Investment Cost (M$ 10^6) 4MP	5MP	6MP	7MP	Total
Sabah						
207	10	0.0	0.0	6.5	6.5	13.0
212	10	0.0	0.0	6.5	13.0	19.5
217	10	0.0	0.0	6.5	6.5	13.0
218	10	0.0	0.0	13.0	6.5	19.5
220	10	0.0	0.0	13.0	6.5	19.5
Sub Total	50	0.0	0.0	45.5	39.0	84.5
Sarawak						
231	10	0.0	0.0	13.0	6.5	19.5
Sabah & Sarawak	60	0.0	0.0	58.5	45.5	104.0

Remarks; (1): In 1980 end constant price

/1 : Total incremental area to be developed during 4MP through 7MP

Table 26 AREA AND INVESTMENT COST FOR INLAND FISHERY IN RESERVOIRS BY BASIN BY MP FOR ALTERNATIVE B2

Basin No.	Area /1 (ha)	Investment Cost (M$ 10^6) 4MP	5MP	6MP	7MP	Total
Sabah						
207	10	0.0	0.0	6.5	6.5	13.0
212	10	0.0	0.0	6.5	13.0	19.5
217	10	0.0	0.0	6.5	6.5	13.0
218	10	0.0	0.0	13.0	6.5	19.5
220	10	0.0	0.0	13.0	6.5	19.5
Sub Total	50	0.0	0.0	45.5	39.0	84.5
Sarawak						
231	10	0.0	0.0	13.0	6.5	19.5
Sabah & Sarawak	60	0.0	0.0	58.5	45.5	104.0

Remarks; (1): In 1980 end constant price

/1 : Total incremental area to be developed during 4MP through 7MP

Table 27 AREA AND INVESTMENT COST FOR INLAND FISHERY IN RESERVOIRS BY BASIN BY MP FOR ALTERNATIVE B3

Basin No.	Area /1 (ha)	Investment Cost ($M\$ 10^6$) 4MP	5MP	6MP	7MP	Total
Sabah						
212	10	0.0	0.0	6.5	13.0	19.5
217	10	0.0	0.0	6.5	6.5	13.0
218	10	0.0	0.0	13.0	6.5	19.5
220	10	0.0	0.0	13.0	6.5	19.5
Sub Total	40	0.0	0.0	39.0	32.5	71.5
Sarawak						
231	10	0.0	0.0	13.0	6.5	19.5
Sabah & Sarawak	50	0.0	0.0	52.0	39.0	91.0

Remarks; (1): In 1980 end constant price

/1 : Total incremental area to be developed during 4MP through 7MP

Table 28 PRINCIPAL FEATURES AND INVESTMENT COST FOR HYDROPOWER PROJECTS BY PROJECT BY BASIN BY MP

Basin No.	Project Name	Catchment Area (km^2)	Active Storage Capacity (10^6 m^3) /1	Installed Capacity (MW) /1	Annual Energy Output (GWH)	Investment Cost ($M\$10^6$) 4MP	5MP	6MP	7MP	Total
SABAH										
	Tanom Pangi Stage III									
	Sook dam & power	1,770	480	40	172	15.0	135.0	-	-	150
	Pangi extension	7,815	-	44	137	15.0	135.0	-	-	150
	Papar multipurpose	353	47	30	130	18.0	162.0	-	-	180
	Pangi No. 2	8,000	-	90	547	-	87.0	203.0	-	290
	Upper Padas	1,893	300	170	742	-	-	870.0	-	870
	(Sub-Total)			(374)	(1,728)	(48.0)	(519.0)	(1,073.0)	-	(1,640)
SARAWAK										
	Konowit	1,250	1,175	110	485	51.0	459.0	-	-	510
	Batang Sekrang	440	451	46	210	-	-	310.0	-	310
	Upper Batang Ai	360	340	48	225	-	276.0	184.0	-	460
	(Sub-Total)			(204)	(920)	51.0	735.0	494.0	-	1,280
	Total			578	2,648	99.0	1,254.0	1,567.0	-	2,920

Remarks; (1): In 1980 end constant price

/1: Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 29 TREATMENT CAPACITY AND INVESTMENT COST FOR PUBLIC SEWERAGE SYSTEMS NOT AFFECTING RIVER WATER QUALITY BY CITY/TOWN BY BASIN BY MP

Basin No.		City/Town	Treatment Capacity /1 (10^3 m^3/d)	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
Coastal City/Town								
207	C201	Tawau	46	8	15	15	6	44
209	C203	Lahad Datu	6	5	8	9	4	26
212	C204	Sandakan	91	16	29	28	11	84
220	C208	Kota Kinabalu	109	20	32	31	12	95
Total for Sabah			252	49	84	83	33	249
236	C215	Bintulu	573	53	146	183	73	455
246	C219	Kuching	120	23	40	41	16	120
Total for Sarawak			693	76	186	224	89	575
Total			945	125	270	307	122	824

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 30 PRINCIPAL FEATURES AND INVESTMENT COST FOR FLOOD MITIGATION PROJECTS BY PROJECT BY BASIN BY MP

Basin No.	Basin Name	Project	Principal Features /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH								
207	Tawau							
		Bypass floodway	3 km	-	-	8.0	-	8.0
217	Bongan							
		River improvement	56 km	22.2	27.6	11.1	-	60.9
218	Kadamaian							
		River improvement	16 km	-	-	-	33.1	33.1
220	Putatan							
		River improvement	12 km	-	-	12.0	-	12.0
Sub-total		River improvement	84 km	22.2	27.6	31.1	33.1	114.0
		Bypass floodway	3 km					
SARAWAK								
231	Miri							
		Bypass floodway	5 km	-	10.7	-	-	10.7
233	Niah							
		Polder	3 km^2	-	-	-	0.8	0.8
236	Kemena							
		River improvement	30 km	-	-	156.1	-	156.1
241	Rajang							
		River improvement	21 km	-	-	-	23.1	23.1
246	Sarawak							
		Bengoh dam	52.5x10^6 m^3	-	-	13.4	-	13.4
		River improvement	142 km	-	-	-	314.7	314.7
Sub-total		Dam	1	-	10.7	169.5	338.6	518.8
		River improvement	193 km					
		Bypass floodway	5 km					
		Polder	3 km^2					
SABAH & SARAWAK								
		Dam	1	22.2	38.3	200.6	371.7	632.8
		River improvement	277 km					
		Bypass floodway	8 km					
		Polder	3 km^2					

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities of the proposed facilities during 4MP through 7MP

Table 31 PRINCIPAL FEATURES AND INVESTMENT COST FOR FLOOD MITIGATION PROJECTS BY PROJECT BY BASIN BY MP FOR ALTERNATIVE F1 (1/2)

Basin No.	Basin Name	Project	Principal Features /1	Investment Cost (M10^6$) 4MP	5MP	6MP	7MP	Total
SABAH								
207	Tawau							
		Bypass floodway	3 km	-	8.0	-	-	8.0
210	Segama							
		River improvement	8 km	-	-	-	24.1	24.1
213	Labuk							
		River improvement	15 km	-	-	-	27.1	27.1
217	Bongan							
		River improvement	56 km	-	31.6	28.4	-	60.0
218	Kadamaian							
		River improvement	15 km	-	-	-	33.3	33.3
219	Tuaran							
		River improvement	13 km	-	-	27.3	-	27.3
220	Putatan							
		River improvement	12 km	-	12.0	-	-	12.0
221	Papar							
		River improvement	17 km	-	-	21.3	-	21.3
222	Bongawan							
		River improvement	15 km	-	-	15.4	-	15.4
224	Padas							
		River improvement	16 km	-	-	-	58.4	58.4
Sub-total		River improvement	167 km	-	51.6	92.4	142.9	286.9
		Bypass floodway	3 km					

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 32 PRINCIPAL FEATURES AND INVESTMENT COST FOR FLOOD MITIGATION PROJECTS BY PROJECT BY BASIN BY MP FOR ALTERNATIVE F1 (2/2)

Basin No.	Basin Name	Project	Principal Features /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SARAWAK								
230	Baram							
		River improvement	41 km	-	607.3	-	-	607.3
231	Miri							
		Bypass floodway	5 km	-	10.7	-	-	10.7
232	Sibuti							
		River improvement	27 km	-	-	-	57.4	57.4
233	Niah							
		River improvement	33 km	-	-	-	90.0	90.0
		Polder	3 km^2	-	0.7	-	-	0.7
236	Kemena							
		River improvement	103 km	-	-	156.1	337.6	493.7
237	Tatau							
		River improvement	63 km	-	-	-	316.7	316.7
241	Rajang							
		River improvement	221 km	-	-	1,079.4	1,541.2	2,620.6
246	Sarawak							
		Bengoh dam	52.5x10^6 m^3	-	-	13.4	-	13.4
		River improvement	142 km	-	-	-	314.7	314.7
247	Kayang							
		River improvement	9 km	-	10.6	-	-	10.6
		Polder	16 km^2	-	6.2	-	-	6.2
Sub-total		Dam	1					
		River improvement	639 km					
		Bypass floodway	5 km	-	635.5	1,248.9	2,657.6	4,542.0
		Polder	19 km^2					
SABAH & SARAWAK								
		Dam	1					
		River improvement	806 km					
		Bypass floodway	8 km	-	687.1	1,341.3	2,800.5	4,828.9
		Polder	19 km^2					

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 33 PRINCIPAL FEATURES AND INVESTMENT COST FOR FLOOD MITIGATION PROJECTS BY PROJECT BY BASIN BY MP FOR ALTERNATIVE F2

Basin No.	Basin Name	Project	Principal Features /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH								
207	Tawau							
		Bypass floodway	3 km	-	-	8.0	-	8.0
217	Bongan							
		River improvement	56 km	22.2	27.6	11.1	-	60.9
218	Kadamaian							
		River improvement	16 km	-	-	-	33.1	33.1
220	Putatan							
		River improvement	12 km	-	-	12.0	-	12.0
Sub-total		River improvement	84 km	22.2	27.6	31.0	33.1	114.0
		Bypass floodway	3 km					
SARAWAK								
231	Miri							
		Bypass floodway	5 km	-	10.7	-	-	10.7
233	Niah							
		Polder	3 km^2	-	-	-	0.8	0.8
236	Kemena							
		River improvement	30 km	-	-	156.1	-	156.1
241	Rajang							
		River improvement	21 km	-	-	-	23.1	23.1
246	Sarawak							
		Bengoh dam	52.5x10^6 m^3	-	-	13.4	-	13.4
		River improvement	142 km	-	-	-	314.7	314.7
Sub-total		Dam	1	-	10.7	169.5	338.6	518.8
		River improvement	193 km					
		Bypass floodway	5 km					
		Polder	3 km^2					
SABAH & SARAWAK								
		Dam	1	22.2	38.3	200.5	371.7	632.8
		River improvement	277 km					
		Bypass floodway	8 km					
		Polder	3 km^2					

Remarks; (1): In 1980 end constant price

/1 : Total Incremental Capacity of the proposed facilities during 4MP through 7MP

Table 34 PRINCIPAL FEATURES AND INVESTMENT COST FOR FLOOD MITIGATION PROJECTS BY PROJECT BY BASIN BY MP FOR ALTERNATIVE F3

Basin No.	Basin Name	Project	Principal Features /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH								
207	Tawau	Bypass floodway	3 km	-	-	8.0	-	8.0
217	Bongan	River improvement	5 km	-	1.1	-	-	1.1
220	Putatan	River improvement	12 km	-	-	-	12.0	12.0
Sub-total		River improvement Bypass floodway	17 km 3 km	-	1.1	8.0	12.0	21.1
SARAWAK								
230	Baram	Polder	24 km^2	-	3.5	-	-	3.5
231	Miri	Bypass floodway	5 km	-	-	-	10.7	10.7
233	Niah	Polder	3 km^2	-	0.7	-	-	0.7
247	Kayang	Polder	16 km^2	-	-	6.2	-	6.2
Sub-total		Bypass floodway Polder	5 km 43 km^2	-	4.2	6.2	10.7	21.1
SABAH & SARAWAK								
		River improvement Bypass floodway Polder	17 km 8 km 43 km^2	-	5.3	14.2	22.7	42.2

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 35 SERVED POPULATION AND INVESTMENT COST FOR FLOOD FORECASTING AND WARNING SYSTEMS BY BASIN BY MP

Basin No.	Basin Name	People Relieved by F/F (10^3) /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP
SABAH						
207	Tawau	8.5	-	-	2.4	-
210	Segama	3.5	-	-	-	4.1
211	Kinabatangan	4.3	4.2	-	-	-
217	Bongan	12.7	-	3.0	-	-
218	Kadamaian	6.5	-	-	2.2	-
221	Papar	14.2	-	2.1	-	-
224	Padas	3.0	-	-	-	5.4
Sub-total		52.7	4.2	5.1	4.6	9.5
SARAWAK						
229	Limbang	2.6	-	-	-	3.6
230	Baram	6.0	-	9.8	-	-
231	Miri	14.0	-	-	2.3	-
233	Niah	5.0	-	-	-	2.6
236	Kemena	11.1	-	-	4.1	-
237	Tatau	2.7	-	-	-	3.8
241	Rajang	16.6	-	-	19.9	-
245	Sadong	5.0	2.7	-	-	-
246	Sarawak	22.9	-	3.4	-	-
Sub-total		85.9	2.7	13.2	26.3	10.0
SABAH & SARAWAK		138.6	6.9	18.3	30.9	19.5

Remarks; (1): In 1980 end constant price

/1 : Total increment of the people served by the proposed facilities during 4MP through 7MP

Table 36 ESTIMATED PUBLIC DEVELOPMENT EXPENDITURE FOR RECOMMENDED PLAN

Unit: $MD10^6$

Sector	SABAH 4MP	SABAH 5MP	SABAH 6MP	SABAH 7MP	SABAH Total	SARAWAK 4MP	SARAWAK 5MP	SARAWAK 6MP	SARAWAK 7MP	SARAWAK Total	SABAH & SARAWAK 4MP	SABAH & SARAWAK 5MP	SABAH & SARAWAK 6MP	SABAH & SARAWAK 7MP	SABAH & SARAWAK Total
Source Development	197	827	294	0	1,318	2	13	0	0	15	199	840	294	0	1,333
Irrigation	36	119	71	52	278	39	280	245	243	807	75	399	316	295	1,085
Inland Fishery	3	3	48	42	96	0	0	28	28	56	3	3	76	70	152
Public Water Supply	101	331	438	184	1,054	143	365	445	187	1,140	244	696	883	371	2,194
Public Water Supply; Pre-treatment facilities	0	0	0	0	0	4	6	6	2	18	4	6	6	2	18
Public Sewerage (Effective for riber water pollution abatement)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Public Sewerage (others)	49	84	83	33	249	76	186	224	89	575	125	270	307	122	824
Flood Mitigation	26	33	36	43	138	3	24	196	349	572	29	57	232	392	710
Hydropower	48	519	1,073	0	1,640	51	459	586	184	1,280	99	978	1,659	184	2,920
Total	460	1,916	2,043	354	4,773	318	1,333	1,730	1,082	4,463	778	3,249	3,773	1,436	9,236

Remarks: (1): In 1980 end constant price
(2): The amount shown for 4MP is the additional budget, assuming that the original budget can provide the capacity necessary up to 1985 for public water supply and irrigation.

Table 37 ESTIMATED PUBLIC DEVELOPMENT EXPENDITURE FOR WATER DEMAND AND SUPPLY BALANCE ALTERNATIVES

Unit: $M\$10^6$

Category	SABAH 4MP	SABAH 5MP	SABAH 6MP	SABAH 7MP	SABAH Total	SARAWAK 4MP	SARAWAK 5MP	SARAWAK 6MP	SARAWAK 7MP	SARAWAK Total	SABAH & SARAWAK 4MP	SABAH & SARAWAK 5MP	SABAH & SARAWAK 6MP	SABAH & SARAWAK 7MP	SABAH & SARAWAK Total
Alternative B1															
Source Development	219	1,016	294	0	1,529	2	13	0	0	15	221	1,029	294	0	1,544
Irrigation	36	119	71	52	278	39	280	245	243	807	75	399	316	295	1,085
Public Water Supply	101	331	438	184	1,054	143	365	445	187	1,140	244	696	883	371	2,194
Inland Fishery	3	3	48	42	96	0	0	28	28	56	3	3	76	70	152
Total	359	1,469	851	278	2,957	184	658	718	458	2,018	543	2,127	1,569	736	4,975
Alternative B2															
Source Development	209	902	291	0	1,402	1	12	0	0	13	210	914	291	0	1,415
Irrigation	36	119	71	52	278	39	280	245	243	807	75	399	316	295	1,085
Public Water Supply	101	331	438	184	1,054	143	365	445	187	1,140	244	696	883	371	2,194
Inland Fishery	3	3	48	42	96	0	0	28	28	56	3	3	76	70	152
Total	349	1,355	848	278	2,830	183	657	718	458	2,016	532	2,012	1,566	736	4,846
Alternative B3															
Source Development	198	774	288	0	1,260	1	11	0	0	12	199	785	288	0	1,272
Irrigation	36	119	71	52	278	39	280	245	243	807	75	399	316	295	1,085
Public Water Supply	101	331	438	184	1,054	143	365	445	187	1,140	244	696	883	371	2,194
Inland Fishery	3	3	48	42	96	0	0	28	28	56	3	3	76	70	152
Total	338	1,227	845	278	2,688	183	656	718	458	2,015	521	1,883	1,563	736	4,703

Remarks; (1): In 1980 end constant price
(2): The amount shown for 4MP is the additional budget, assuming that the original budget can provide the capacity necessary up to 1985 for public water supply and irrigation.

Table 38 ESTIMATED PUBLIC DEVELOPMENT EXPENDITURE FOR FLOOD MITIGATION ALTERNATIVES

Unit: $MD10^6$

Alternative	SABAH					SARAWAK					SABAH & SARAWAK				
	4MP	5MP	6MP	7MP	Total	4MP	5MP	6Mp	7MP	Total	4MP	5MP	6MP	7MP	Total
F1	4	57	97	152	310	3	649	1,275	2,668	4,595	7	706	1,372	2,820	4,905
F2	26	33	36	43	138	26	33	36	43	138	29	57	232	391	709
F3	4	6	13	21	44	3	17	32	21	73	7	23	45	42	117

Remarks; In 1980 end constant price

Table 39 ESTIMATED PUBLIC RECURRENT EXPENDITURE FOR RECOMMENDED PLAN

Unit: $M\$10^6$

Sector	SABAH 4MP	SABAH 5MP	SABAH 6MP	SABAH 7MP	SABAH Total	SARAWAK 4MP	SARAWAK 5MP	SARAWAK 6MP	SARAWAK 7MP	SARAWAK Total	SABAH & SARAWAK 4MP	SABAH & SARAWAK 5MP	SABAH & SARAWAK 6MP	SABAH & SARAWAK 7MP	SABAH & SARAWAK Total
Source Development	0	5	25	33	63	0	0	0	0	0	0	5	25	33	63
Irrigation	0	3	12	17	32	0	3	24	42	69	0	6	36	59	101
Inland Fishery	0	0	2	7	9	0	0	1	4	5	0	0	3	11	14
Public Water Supply	0	21	61	98	180	0	27	68	106	201	0	48	129	204	381
Public Water Supply; Pre-treatment facilities	0	0	0	0	0	0	1	1	2	4	0	1	1	2	4
Public Sewerage (Effective for river water pollution abatement)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Public Sewerage (Others)	0	17	33	47	97	0	29	70	108	207	0	46	103	155	304
Flood Mitigation	0	4	10	14	28	0	1	9	38	48	0	5	19	52	76
Hydropower	0	2	15	41	58	0	3	13	27	43	0	5	28	68	101
Total	0	52	158	257	467	0	64	186	327	577	0	116	344	584	1,044

Remarks; (1): At 1980 constant price
(2): Recurrent expenditure on the capacity, which is to be constructed by the original budget for 4MP, is not included.

Table 40 PRINCIPAL FEATURES AND INVESTMENT COST FOR DAMS AND BARRAGES BY PROJECT BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Water source Facilities	Catchment Area (km^2)	Active Storage Capacity (10^6m3)/1	Net Supply Capacity/1 (10^6m3/y)	Investment cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH									
207	Tawau dam	38	3.7	13.2	-	52.9	5.9	-	59
212	Meliau dam	58	7	28	-	52.4	34.9	-	87
218	Wariu dam	123	8	10	6.4	57.2	-	-	64
220	Papar dam	353	20	33	6.1	55.0	-	-	61
	(Sub-total)	(572)	(38.7)	(84.2)	(12.5)	(217.5)	(40.8)	-	(271)
SARAWAK									
231	Liku dam	33	1.2	7.6	1.0	9.0	-	-	10
	Total for Sabah & Sarawak	605	39.9	91.8	13.5	226.5	40.8	-	281

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 41 PRINCIPAL FEATURES AND INVESTMENT COST FOR DIVERSION FACILITIES BY PROJECT BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Diversion Facilities	Discharge Capacity (m^3/s)/1	Length (km)	Investment cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH								
212	Meliau diversion							
	- Pipeline - 1	0.3	123	79.8	53.2	-	-	133
	- Pipeline - 2	0.6	123	-	133.8	89.2	-	223
217	Milau diversion	0.4	13	8.8	5.9	-	-	15
220	Papar diversion	2	17	2.5	22.5	-	-	25
225	Padas diversion							
	- Pipeline - 1	0.3	82	128.5	85.7	-	-	214
	Total for SABAH		358	219.6	301.0	89.2	-	610

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 42 CAPACITY AND INVESTMENT COST FOR PUBLIC WATER SUPPLY PROJECTS IN URBAN AREA BY CITY BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Code No.	City/Town	TC /1 (10^3 m^3/d)	Investment Cost (M10^6$) 4MP	5MP	6MP	7MP	Total
SABAH								
207	201	Tawau	22.3	3.8	18.5	26.6	10.7	59.6
208	202	Semporna	2.4	0	4.3	7.1	2.8	14.2
209	203	Lahad Datu	16.0	5.9	14.4	17.5	7.0	44.8
212	204	Sandakan	39.7	11.7	30.3	37.4	15.0	94.4
213	205	Ranau	3.6	0.5	3.0	4.4	1.8	9.7
217	206	Kudat	8.4	2.4	6.8	8.6	3.4	21.2
218	207	Kota Belud	3.0	0	2.4	4.0	1.6	8.0
220	208	Kota Kinabalu	66.0	12.0	52.1	73.4	29.4	166.9
221	209	Papar	6.0	2.9	5.1	5.2	2.1	15.3
224	210	Keningau	3.6	0	2.8	4.7	1.9	9.4
225	211	Labuan	25.9	4.3	19.4	27.5	11.0	62.2
Sub-total			196.9	43.5	159.1	216.4	86.7	505.7
SARAWAK								
229	212	Limbang	4.8	1.5	4.2	5.4	2.2	13.3
230	213	Marudi	3.6	0.5	2.7	3.9	1.6	8.7
231	214	Miri	40.1	10.7	32.2	41.8	16.7	101.4
236	215	Bintulu	25.3	7.6	14.4	15.6	6.3	43.9
241	216	Sibu	63.0	23.9	54.1	63.6	25.5	167.1
	217	Sarikei	12.0	6.4	13.4	15.2	6.1	41.1
245	218	Serian	3.0	0	2.4	4.0	1.6	8.0
246	219	Kuching	76.6	23.9	64.3	80.6	32.2	201.0
Sub-total			228.4	74.5	187.7	230.1	92.2	584.5
SABAH & SARAWAK			425.3	118.0	346.8	446.5	178.9	1,090.2

Remarks; (1): In 1980 end constant price

(2): Treated water supply by State PWDs, Waterworks Departments and Water Authorities

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 43 CAPACITY AND INVESTMENT COST FOR TREATED WATER SUPPLY IN RURAL AREA BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Name	TC (10^3 m^3/d) /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH							
201	Pensiangan	0.3	0	0.5	0.8	0.3	1.6
202	Serudong	1.2	0.9	1.6	1.6	0.6	4.7
203	Kalabakan	1.5	0.9	1.8	2.1	0.8	5.6
204	Brantian	0.6	0	0.7	1.2	0.5	2.4
205	Umas Umas	0.3	0	0.5	0.8	0.3	1.6
206	Merutai Besar	0.6	0	0.7	1.2	0.5	2.4
207	Tawau	0.9	0	1.0	1.6	0.6	3.2
208	Kalumpang	6.0	2.5	6.1	7.4	3.0	19.0
209	Silibukan	1.2	0	1.2	2.0	0.8	4.0
210	Segama	1.2	0	1.2	2.1	0.8	4.1
211	Kinabatangan	2.4	1.4	2.8	3.1	1.2	8.5
212	Segaliud	2.4	1.4	2.8	3.1	1.2	8.5
213	Labuk	2.1	0.9	2.4	3.0	1.2	7.5
214	Sugut	0.9	0.9	1.3	1.2	0.5	3.9
215	Paitan	0.3	0.9	0.6	0	0	1.5
216	Bengkoka	0.9	0	1.0	1.6	0.6	3.2
217	Bongan	2.1	0.9	2.4	3.1	1.2	7.6
218	Kadamaian	1.5	0.9	1.8	2.1	0.8	5.6
219	Tuaran	3.3	2.5	3.8	3.6	1.4	11.3
220	Putatan	1.5	0.9	1.8	2.1	0.8	5.6
221	Papar	1.5	0.9	1.8	2.1	0.8	5.6
222	Kimanis	0.3	0	0.5	0.8	0.3	1.6
223	Membakut	1.2	2.5	1.7	0	0	4.2
224	Padas	12.7	3.0	11.8	16.4	6.5	37.7
225	Tambuan	0.3	0	0.5	0.8	0.3	1.6
226	Lakutan	2.4	1.4	2.8	3.1	1.2	8.5
Sub-total		49.6	22.8	55.1	66.9	26.2	171.0
SARAWAK							
227	Lawas	0.6	0.9	1.1	0.8	0.3	3.1
228	Trusan	0.6	0.9	1.1	0.8	0.3	3.1
229	Limbang	0.6	0	0.7	1.2	0.5	2.4
230	Baram	3.3	1.4	3.8	4.8	1.9	11.9
231	Miri	0.6	0.9	1.1	0.8	0.3	3.1
232	Sibuti	0.9	0.9	1.3	1.2	0.5	3.9
233	Niah	1.5	0.9	1.8	2.1	0.8	5.6
234	Suai	2.1	1.4	2.5	2.5	1.0	7.4
235	Similajan	0.3	0	0.5	0.8	0.3	1.6
236	Kemena	0.9	0	1.0	1.6	0.6	3.2
237	Tatau	1.2	0.9	1.6	1.6	0.6	4.7
238	Balingian	0.8	0.9	1.3	1.2	0.5	3.9
239	Mukah	4.2	1.9	5.1	6.3	2.5	15.8
240	Oya	1.2	0.9	1.6	1.6	0.6	4.7
241	Rajang	6.3	1.9	6.2	8.2	3.3	19.6
242	Kerian	3.0	1.4	3.5	4.2	1.7	10.8
243	Sarabas	1.8	0.9	2.2	2.7	1.1	6.9
244	Lupar	3.6	2.5	4.4	4.6	1.8	13.3
245	Sadong	5.1	1.9	5.2	6.5	2.6	16.2
246	Sarawak	9.6	3.7	9.6	11.9	4.7	29.9
247	Kayan	2.1	0.9	2.4	3.1	1.2	7.6
Sub-total		50.3	25.1	58.0	68.5	27.1	178.7
SABAH & SARAWAK		99.9	47.9	113.1	135.4	53.3	349.7

Remarks; (1): In 1980 end constant price
(2): For the public water supply systems of State PWDs, Waterworks Departments and Water Authorities
/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 44 CAPACITY AND INVESTMENT COST FOR UNTREATED WATER SUPPLY IN RURAL AREA BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Name	SD (10^3 m^3/d) /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH							
201	Pensiangan	0.6	0	0.1	0.4	0.3	0.8
202	Serudong	1.1	0.1	0.4	0.5	0.4	1.4
203	Kalabakan	1.4	0	0.2	0.9	0.7	1.8
204	Brantian	0.8	0	0.1	0.5	0.4	1.0
205	Umas Umas	0.6	0	0.1	0.4	0.3	0.8
206	Merutai Besar	0.6	0	0.1	0.4	0.3	0.8
207	Tawau	1.1	0	0.1	0.5	0.4	1.0
208	Kalumpang	6.0	0.3	1.7	3.0	2.4	7.4
209	Silibukan	0.8	0	0.1	0.4	0.3	0.8
210	Segama	1.4	0	0.1	0.7	0.6	1.4
211	Kinabatangan	2.2	0.1	0.5	1.2	1.0	2.8
212	Segaliud	1.9	0.1	0.7	0.9	0.7	2.4
213	Labuk	1.6	0.1	0.5	0.9	0.7	2.2
214	Sugut	0.8	0.1	0.4	0.4	0.3	1.2
215	Paitan	0.3	0.1	0.3	0	0	0.4
216	Bengkoka	1.1	0	0.1	0.5	0.4	1.0
217	Bongan	3.0	0.1	0.9	1.5	1.2	3.7
218	Kadamaian	1.6	0.1	0.5	0.9	0.7	2.2
219	Tuaran	2.7	0.2	1.2	1.1	0.8	3.3
220	Putatan	1.6	0.1	0.5	0.9	0.7	2.2
221	Papar	1.4	0.1	0.4	0.7	0.6	1.8
222	Kimanis	0.6	0	0.1	0.4	0.3	0.8
223	Membakut	0.5	0.1	0.3	0	0	0.4
224	Padas	5.5	0.3	1.9	2.8	2.3	7.3
225	Tambuan	0.8	0	0.0	0.2	0.1	0.3
226	Lakutan	0.6	0	0.1	0.4	0.3	0.8
Sub-total		40.6	1.9	11.4	20.5	16.2	50.0
SARAWAK							
227	Lawas	0	0	0	0	0	0
228	Trusan	0.8	0.1	0.4	0.4	0.3	1.2
229	Limbang	0.8	0	0.1	0.3	0.3	0.7
230	Baram	3.3	0.1	0.9	1.7	1.4	4.1
231	Miri	0.8	0.1	0.4	0.4	0.3	1.2
232	Sibuti	1.1	0.1	0.4	0.5	0.4	1.4
233	Niah	1.4	0.1	0.4	0.7	0.6	1.8
234	Suai	1.6	0.1	0.4	0.7	0.6	1.8
235	Similajau	0.3	0	0.0	0.2	0.1	0.3
236	Kemena	1.1	0	0.1	0.5	0.4	1.0
237	Tatau	0.8	0	0.1	0.5	0.4	1.0
238	Balingian	0.8	0	0.1	0.5	0.4	1.0
239	Mukah	0.8	0	0.1	0.5	0.4	1.0
240	Oya	1.1	0.1	0.4	0.5	0.4	1.4
241	Rajang	9.6	0.6	3.2	4.7	3.8	12.3
242	Kerian	1.7	0.1	0.7	0.7	0.6	2.1
243	Sarabas	1.8	0.1	0.5	1.0	0.8	2.4
244	Lupar	3.3	0.1	0.9	1.7	1.4	4.1
245	Sadong	4.7	0.2	1.3	2.4	2.0	5.9
246	Sarawak	9.3	0.5	2.9	4.7	3.8	11.9
247	Kayan	1.4	0.1	0.4	0.7	0.6	1.8
Sub-total		46.5	2.4	13.7	23.3	19.0	58.4
SABAH & SARAWAK		87.1	4.3	25.1	43.8	35.2	108.4

Remarks; (1): In 1980 end constant price

(2): Untreated water supply under RESP

/1 : Total incremental capacity in terms of source demand of the proposed facilities during 4MP through 7MP

Table 45 TREATMENT CAPACITY AND INVESTMENT COST FOR PRE-TREATMENT FACILITIES BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Treatment Capacity ($10^3 m^3$/day) /1	Investment Cost (M10^6)				
		4MP	5MP	6MP	7MP	Total
231	41.0	4	4	4	2	14
Total for Sarawak	41.0	4	4	4	2	14
Total	41.0	4	4	4	2	14

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 46 TREATMENT CAPACITY AND INVESTMENT COST OF PRE-TREATMENT FACILITIES BY BASIN BY MP UNDER WITHOUT PROJECT CONDITION UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Treatment Capacity (10^3 m^3/d) /1	Investment Cost (M10^6)				
		4MP	5MP	6MP	7MP	Total
209	18.0	0	2	2	1	5
Total for Sabah	18.0	0	2	2	1	5
231	41.0	4	4	4	2	14
Total for Sarawak	41.0	4	4	4	2	14
Total	59.0	4	6	6	3	19

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 47 AREA AND INVESTMENT COST FOR INLAND FISHERY IN RESERVOIRS BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Area /1 (ha)	Investment Cost (M10^6$)				
		4MP	5MP	6MP	7MP	Total
SABAH						
207	10	0.0	0.0	6.5	6.5	13.0
212	10	0.0	0.0	6.5	6.5	13.0
217	10	0.0	0.0	6.5	6.5	13.0
218	10	0.0	0.0	13.0	6.5	19.5
220	10	0.0	0.0	13.0	6.5	19.5
Sub-total	50	0.0	0.0	45.5	32.5	78.0
SARAWAK						
231	10	0.0	0.0	13.0	6.5	19.5
241	10	0.0	0.0	13.0	6.5	19.5
244	20	0.0	0.0	0.0	13.0	13.0
Sub-total	40	0.0	0.0	26.0	26.0	52.0
SABAH & SARAWAK	90	0.0	0.0	71.5	58.5	130.0

Remarks; (1): In 1980 end constant price

/1 : Total incremental area to be developed during 4MP through 7MP

Table 48 PRINCIPAL FEATURES AND INVESTMENT COST FOR HYDROPOWER PROJECTS BY PROJECT BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Project Name	Catchment Area (km^2)	Active Storage Capacity (10^6 m^3) /1	Installed Capacity /1 (MW)	Annual Energy Output (GWH)	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
SABAH										
	Tanom Pangi Stage III									
	Sook dam & power	1,770	480	40	150	15.0	135.0	-	-	150
	Pangi extension	7,815	-	44	150	15.0	135.0	-	-	150
	Papar Multipurpose	353	147	30	180	18.0	162.0	-	-	180
	Pangi No. 2	8,000	-	90	290	-	29.0	261.0	-	290
	(Sub-Total)		(627)	(204)	(770)	(48.0)	(461.0)	(261.0)	-	(770)
SARAWAK										
	Batang Sekrang	440	451	46	210	-	-	310.0	-	310
	Total			250	980	48.0	461.0	571.0		1,080

Remarks; (1): In 1980 end constant price
/1: Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 49 TREATMENT CAPACITY AND INVESTMENT COST FOR PUBLIC SEWERAGE SYSTEMS NOT AFFECTING RIVER WATER QUALITY BY CITY/TOWN BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.		City/Town	Treatment Capacity /1 (10^3 m^3/d)	Investment Cost ($M\$10^6$) 4MP	5MP	6MP	7MP	Total
Coastal City/Town								
207	C201	Tawau	20	4	7	8	3	22
209	C203	Lahad Datu	12	3	4	5	2	14
212	C204	Sandakan	35	7	13	13	5	38
220	C208	Kota Kinabalu	17	9	17	18	7	51
Total for Sabah			84	23	41	44	17	125
236	C215	Bintulu	81	38	60	59	23	180
246	C219	Kuching	18	13	24	24	10	71
Total for Sarawak			99	51	84	83	33	251
Total			183	74	125	127	50	376

Remarks; (1) In 1980 end constant price

/1: Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 50 PRINCIPAL FEATURES AND INVESTMENT COST FOR FLOOD MITIGATION PROJECTS BY PROJECT BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Basin Name	Project	Principal Features /1	Investment Cost ($M\$10^6$) 4MP	5MP	6MP	7MP	Total
SABAH								
207	Tawau							
		Bypass floodway	3 km	-	-	8.0		8.0
217	Bongan							
		River improvement	56 km	22.2	27.6	11.1	-	60.9
220	Putatan							
		River improvement	12 km	-	-	12.0	-	12.0
Sub-total		River improvement	68 km	22.2	27.6	31.1	-	80.9
		Bypass floodway	3 km					
SARAWAK								
231	Miri							
		Bypass floodway	5 km	-	10.7	-	-	10.7
233	Niah							
		Polder	3 km^2	-	-	-	0.8	0.8
236	Kemena							
		River improvement	30 km	-	-	156.1	-	156.1
241	Rajang							
		River improvement	21 km	-	-	-	23.1	23.1
246	Sarawak							
		Bengoh dam	52.5x10^6 m^3	-	-	13.4	-	13.4
		River improvement	142 km	-	-	-	314.7	314.7
Sub-total		Dam	1	-	10.7	169.5	338.6	518.8
		River improvement	193 km					
		Bypass floodway	5 km					
		Polder	3 km^2					
SABAH & SARAWAK								
		Dam	1	22.2	38.3	200.6	338.6	599.7
		River improvement	261 km					
		Bypass floodway	8 km					
		Polder	3 km^2					

Remarks: (1): In 1980 end constant price

/1 ; Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 51 SERVED POPULATION AND INVESTMENT COST FOR FLOOD FORECASTING AND WARNING SYSTEMS BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Basin Name	People Relieved by F/F (10^3) /1	Investment Cost ($M\$10^6$) 4MP	5MP	6MP	7MP
SABAH						
207	Tawau	7.3	-	-	2.4	-
210	Segama	4.1	-	-	-	4.1
211	Kinabatangan	5,2	4.2	-	-	-
217	Bongan	13.6	-	3.0	-	-
218	Kadamaian	6,4	-	-	2.2	-
221	Papar	10.7	-	2.1	-	-
224	Padas	3,1	-	-	-	5.4
Sub-total		50.4	4.2	5.1	4.6	9.5
SARAWAK						
229	Limbang	2.8	-	-	-	3.6
230	Baram	7.7	-	9.8	-	-
231	Miri	13.2	-	-	2.3	-
233	Niah	6.9	-	-	-	2.6
236	Kemena	10.9	-	-	4.1	-
237	Tatau	3,1	-	-	-	3.8
241	Rajang	15.7	-	-	19.9	-
245	Sadong	5.4	2.7	-	-	-
246	Serawak	28.6	-	3.4	-	-
Sub-total		93.7	2.7	13.2	26.3	10.0
SABAH & SARAWAK		144.1	6.9	18.3	30.9	19.5

Remarks; (1): In 1980 end constant price

/1 : Total increment of the people served by proposed facilities during 4MP through 7MP

Table 52 ESTIMATED PUBLIC DEVELOPMENT EXPENDITURE UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: $MD10^6$

Sector	SABAH 4MP	SABAH 5MP	SABAH 6MP	SABAH 7MP	SABAH Total	SARAWAK 4MP	SARAWAK 5MP	SARAWAK 6MP	SARAWAK 7MP	SARAWAK Total	SABAH & SARAWAK 4MP	SABAH & SARAWAK 5MP	SABAH & SARAWAK 6MP	SABAH & SARAWAK 7MP	SABAH & SARAWAK Total
Source Development	232	519	131	0	882	1	9	0	0	10	233	528	131	0	892
Irrigation	36	119	71	52	278	39	280	245	243	807	75	399	316	295	1,085
Inland Fisher	3	3	42	29	77	0	0	28	28	56	3	3	70	57	133
Public Water Supply	67	224	302	128	721	102	259	321	137	819	169	483	623	265	1,540
Public Water Supply; Pre-treatment facilities	0	0	0	0	0	4	4	4	2	14	4	4	4	2	14
Public Sewerage (Effective for river water pollution abatement)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Public Sewerage (others)	23	41	44	17	125	51	84	83	33	251	74	125	127	50	376
Flood Mitigation	5	24	28	47	104	3	24	196	349	572	8	48	224	396	675
Hydropower	48	461	261	0	770	0	186	124	0	310	48	647	385	0	1,080
Total	414	1,391	879	273	2,957	200	846	1,001	792	2,839	614	2,237	1,880	1,065	5,796

Remarks; (1): In 1980 end constant price
(2): The amount shown for 4MP is the additional budget, assuming that the original budget can provide the capacity necessary up to 1985 for public water supply and irrigation.

Table 53 ESTIMATED PUBLIC RECURRENT EXPENDITURE UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: $MD10^6$

Sector	SABAH					SARAWAK					SABAH & SARAWAK				
	4MP	5MP	6MP	7MP	Total	4MP	5MP	6MP	7MP	Total	4MP	5MP	6MP	7MP	Total
Source Development	0	6	19	22	47	0	0	0	0	0	0	6	19	22	47
Irrigation	0	3	12	17	32	0	3	24	42	69	0	6	36	59	101
Inland Fishery	0	0	2	5	7	0	0	1	4	5	0	0	3	9	12
Public Water Supply	0	14	41	67	122	0	20	49	76	145	0	34	90	143	267
Public Water Supply; Pre-treatment facilities	0	0	0	0	0	0	1	1	1	3	0	1	1	1	3
Public Sewerage (Effective for river water pollution abatement)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Public Sewerage (others)	0	8	16	24	48	0	17	34	47	98	0	25	50	71	146
Flood Mitigation	0	2	7	11	20	0	1	9	38	48	0	3	16	49	68
Hydropower	0	2	13	19	34	0	0	5	0	13	0	2	18	27	47
Total	0	35	110	165	310	0	42	123	216	381	0	77	233	381	691

Remarks; (1): At 1980 constant price
(2): Recurrent expenditure on the capacity, which is to be constructed by the original budget for 4MP, is not included.

Table 54 INVESTMENT COST FOR PRIVATE WATER SUPPLY BY BASIN BY MP

Unit: $M\$10^6$

Basin No.	4MP	5MP	6MP	7MP	Total
SABAH					
201-206	-	-	-	-	-
207	0.6	7.8	26.7	21.4	56.5
208	0.0	0.8	4.1	3.3	8.2
209	0.4	4.6	15.8	12.6	33.4
210	-	-	-	-	-
211	-	-	-	-	-
212	1.3	19.8	72.6	58.1	151.8
213	0.0	0.9	4.7	3.7	9.3
214-216	-	-	-	-	-
217	0.3	3.1	10.3	8.2	21.9
218	0.0	0.9	4.7	3.7	9.3
219	0.2	0.7	0.0	0.0	0.9
220	1.3	18.1	64.0	51.2	134.6
221	0.0	1.3	6.6	5.3	13.2
222	-	-	-	-	-
223	-	-	-	-	-
224	0.2	1.6	4.6	3.7	10.1
225	1.3	7.9	13.0	10.4	32.6
226	-	-	-	-	-
Sub Total	5.6	67.5	227.1	181.6	481.8
SARAWAK					
227	-	-	-	-	-
228	-	-	-	-	-
229	0.0	0.1	0.8	0.7	1.6
230	0.0	2.0	10.0	8.0	20.0
231	1.0	21.8	88.5	70.8	182.1
232-235	-	-	-	-	-
236	5.6	27.3	24.3	19.5	76.7
237-240	-	-	-	-	-
241	0.0	4.3	21.3	17.1	42.7
242	0.0	0.1	0.2	0.2	0.5
243	0.0	0.2	0.3	0.3	0.8
244	0.0	0.1	0.7	0.6	1.4
245	0.0	0.3	1.4	1.1	2.8
246	0.3	7.7	33.0	26.4	67.4
247	-	-	-	-	-
Sub Total	6.9	63.9	180.5	144.7	396.0
SABAH & SARAWAK	12.5	131.4	412.6	326.3	882.8

Remarks; (1): In 1980 end constant price

(2): Including domestic and manufacturing water supply as well as processing water supply for palm oil mills and rubber factories

Table 55 PRIVATE INVESTMENT COST FOR SEWERAGE SYSTEMS NOT AFFECTING RIVER WATER QUALITY BY BASIN BY MP

Basin No.	Treatment Capacity ($10^3 m^3$/day)	Investment Cost (M10^6)				
		4MP	5MP	6MP	7MP	Total
207	46	4	12	16	6	38
209	6	2	7	9	4	22
212	91	7	24	31	12	74
220	109	14	30	35	14	93
Total for Sabah	252	27	73	91	36	227
236	573	63	161	197	78	499
246	120	10	28	35	14	87
Total for Sarawak	693	73	189	232	92	586
Total	945	100	262	323	215	813

Remarks; (1): In 1980 end constant price
(2): Private investment cost comprises the private constribution to the construction cost of sewerage systems for house connection and branch sewers.

Table 56 TREATMENT CAPACITY AND INVESTMENT COST OF PRIVATE PURIFICATION FACILITIES (PALM AND RUBBER) BY BASIN BY MP

Basin No.	Palm & Rubber	Treatment Capacity (10^3 m^3/d) /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
209	Palm	1.3	0	2	2	1	5
217	Palm	0.4	1	0	0	0	1
Total for Sabah		1.7	1	2	2	1	6
234	Palm	0.5	1	1	0	0	2
Total for Sarawak		0.5	1	1	0	0	2
Total		2.2	2	3	2	1	8

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 57 TREATMENT CAPACITY AND INVESTMENT COST FOR PRIVATE PURIFICATION FACILITIES (PALM AND RUBBER) BY BASIN BY MP FOR ALTERNATIVE P1

Basin No.	Palm & Rubber	Treatment Capacity ($10^3 m^3$/day) /1	Investment Cost (M10^6) 4MP	5MP	6MP	7MP	Total
209	Palm	1.3	0	1	2	1	5
217	Palm	0.4	1	0	0	0	1
Total for Sabah		1.7	1	1	2	1	6
234	Palm	0.5	1	1	0	0	2
Total for Sarawak		0.5	1	1	0	0	2
Total		2.2	2	2	2	1	8

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 58 ESTIMATED PRIVATE INVESTMENT COST FOR RECOMMENDED PLAN

Unit: $M\$10^6$

	SABAH					SARAWAK					SABAH & SARAWAK				
	4MP	5MP	6MP	7MP	Total	4MP	5MP	6MP	7MP	Total	4MP	5MP	6MP	7MP	Total
Private Water Supply/1	6	68	227	182	483	7	64	181	145	397	13	132	408	327	880
Sewerage: Affecting river water quality/2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sewerage: Not affecting river water quality/2	27	73	91	36	227	73	189	232	92	586	100	262	323	128	813
Palm & Rubber Purification Facilities	1	2	2	1	6	1	1	0	0	2	2	3	2	1	8
Total	34	143	320	219	716	81	254	413	237	985	115	397	733	456	1,701

Remarks: (1): In 1980 end constant price.
/1 : Including domestic and manufacturing water supply as well as processing water supply for palm oil mills and rubber factories.
/2 : Private investment cost comprises the private contribution to the construction cost of sewerage systems for house connection and branch sewers.

Table 59 INVESTMENT COST FOR PRIVATE WATER SUPPLY BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: M10^6

Basin No.	4MP	5MP	6MP	7MP	Total
SABAH					
201-206	-	-	-	-	-
207	0.4	2.5	5.0	4.0	11.9
208	0.0	0.0	0.0	0.0	0.0
209	0.4	2.1	2.9	2.3	7.7
210	-	-	-	-	-
211	-	-	-	-	-
212	0.8	6.1	14.5	11.6	33.0
213	0.0	0.1	0.7	0.6	1.4
214	0.0	0.1	0.7	0.6	1.4
215	-	-	-	-	-
216	-	-	-	-	-
217	0.0	0.5	2.4	1.9	4.8
218	0.0	0.1	0.7	0.6	1.4
219	0.2	0.7	0.0	0.0	0.9
220	0.5	4.6	12.5	10.0	27.6
221	0.0	0.3	1.3	1.1	2.7
222	-	-	-	-	-
223	-	-	-	-	-
224	0.1	0.7	1.3	1.1	3.2
225	0.4	3.5	9.2	7.3	20.4
226	-	-	-	-	-
Sub Total	2.8	21.3	51.2	41.1	116.4
SARAWAK					
227	-	-	-	-	-
228	-	-	-	-	-
229	0.0	0.0	0.1	0.1	0.2
230	0.0	0.4	2.0	1.6	4.0
231	0.8	6.8	18.9	15.1	41.6
232	-	-	-	-	-
233	-	-	-	-	-
234	0.0	0.0	0.0	0.0	0.0
235	-	-	-	-	-
236	1.3	8.3	15.0	12.0	36.6
237-240	-	-	-	-	-
241	0.0	1.1	5.4	4.3	10.8
242	-	-	-	-	-
243	0.0	0.0	0.1	0.1	0.2
244	0.0	0.0	0.2	0.1	0.3
245	0.0	0.1	0.7	0.6	1.4
246	0.0	1.3	6.6	5.3	13.2
247	-	-	-	-	-
Sub Total	2.1	18.0	49.0	39.2	108.3
SABAH & SARAWAK	4.9	39.3	100.2	80.3	224.7

Remarks; (1): In 1980 end constant price
(2): Including domestic and manufacturing water supply as well as processing water supply for palm oil mills and rubber factories

Table 60 PRIVATE INVESTMENT COST FOR SEWERAGE SYSTEMS NOT AFFECTING RIVER WATER QUALITY BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Treatment Capacity (10^3 m^3/d)	Investment Cost (M10^6)				
		4MP	5MP	6MP	7MP	Total
207	20	2	5	6	2	15
209	12	1	3	4	1	9
212	35	5	8	10	4	27
220	17	9	16	17	7	49
Total for Sabah	84	17	32	37	14	100
236	81	44	71	69	28	212
246	18	7	15	17	7	46
Total for Sarawak	99	51	86	86	35	258
Total	183	68	118	123	49	358

Remarks; (1): In 1980 end constant price

(2): Private investment cost comprise the private contribution to the construction cost of sewerage systems for house connection and branch sewers.

Table 61 TREATMENT CAPACITY AND INVESTMENT COST OF PRIVATE PURIFICATION FACILITIES (PALM AND RUBBER) BY BASIN BY MP UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Palm & Rubber	Treatment Capacity (10^3 m^3/d) /1	Investment Cost ($M\$10^6$) 4MP	5MP	6MP	7MP	Total
209	Palm	1.3	0	2	2	1	5
217	Palm	0.4	1	0	0	0	1
Total for Sabah		1.7	1	2	2	1	6
234	Palm	0.5	1	1	0	0	2
Total for Sarawak		0.5	1	1	0	0	2
Total		2.2	2	3	2	1	8

Remarks; (1): In 1980 end constant price

/1 : Total incremental capacity of the proposed facilities during 4MP through 7MP

Table 62 ESTIMATED PRIVATE INVESTMENT COST UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: M$10^6

	Sabah					Sarawak					Sabah & Sarawak				
	4MP	5MP	6MP	7MP	Total	4MP	5MP	6MP	7MP	Total	4MP	5MP	6MP	7MP	Total
Private Water Supply /1	3	21	51	41	116	2	18	49	39	108	5	39	100	80	224
Sewerage: Affecting river water quality /2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sewerage: Not affecting river water quality /2	17	32	37	14	100	51	86	86	35	258	68	118	123	49	358
Palm & Rubber Purification Facilities	1	2	2	1	6	1	1	0	0	2	2	3	2	1	8
Total	21	55	90	56	222	54	105	135	74	368	75	160	225	130	590

Remarks; /1: Including domestic and manufacturing water supply as well as processing water supply for palm oil mills and rubber factories

/2: Private investment cost comprises the private contribution to the construction cost of sewerage systems for house connection and branch sewers.

Table 63 ESTIMATED MANPOWER REQUIREMENT FOR RECOMMENDED WATER DEMAND AND SUPPLY BALANCE PLAN

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Engineer	40	72	75	75	35	58	60	63	75	130	135	138
Technical Assistant	42	93	93	96	42	80	89	94	84	173	182	190
Technician	46	248	267	285	54	209	245	275	100	457	512	560
Others	54	1,546	1,867	2,088	78	1,263	1,546	1,836	132	2,809	3,413	3,925
Total Government Staff	182	1,959	2,302	2,544	209	1,610	1,940	2,268	391	3,569	4,242	4,812

Remarks; Manpower requirement for construction and O&M of the facilities

Table 64 ESTIMATED MANPOWER REQUIREMENT FOR WATER DEMAND AND SUPPLY BALANCE ALTERNATIVES

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Alternative B1												
Engineer	40	70	75	75	35	58	60	63	75	130	135	138
Technical Assistant	42	93	93	96	42	80	89	94	84	173	182	190
Technician	46	248	267	285	54	209	245	275	100	457	512	560
Others	54	1,546	1,867	2,088	78	1,263	1,546	1,836	132	2,809	3,413	3,924
Total Gov. Staff	182	1,959	2,302	2,544	209	1,610	1,940	2,268	391	3,569	4,242	4,812
Alternative B2												
Engineer	40	72	73	74	35	58	60	63	75	130	133	137
Technical Assistant	42	93	91	95	42	80	89	94	84	173	180	189
Technician	46	248	264	284	54	209	245	275	100	457	509	559
Others	54	1,546	1,860	2,084	78	1,263	1,546	1,836	132	2,809	3,406	3,920
Total Gov. Staff	182	1,959	2,288	2,537	209	1,610	1,940	2,268	391	3,569	4,228	4,805
Alternative B3												
Engineer	40	72	73	74	35	58	60	63	75	130	133	137
Technical Assistant	42	93	91	95	42	80	89	94	84	173	180	189
Technician	46	248	264	284	54	209	245	275	100	457	509	559
Others	54	1,546	1,860	2,084	78	1,263	1,546	1,836	132	2,809	3,406	3,920
Total Gov. Staff	182	1,959	2,288	2,537	209	1,610	1,940	2,268	391	3,569	4,228	4,805

Remarks; Manpower requirement for construction and O&M of the facilities

Table 65 ESTIMATED MANPOWER REQUIREMENT FOR RECOMMENDED HYDROPOWER DEVELOPMENT PLAN

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Engineer	0	6	5	6	0	2	1	5	0	8	6	11
Technical Assistant	0	12	10	12	0	4	2	10	0	16	12	22
Technician	0	9	6	7	0	3	1	7	0	12	7	14
Others	0	21	19	23	0	7	4	18	0	28	23	41
Total Government Staff	0	48	40	48	0	16	8	40	0	64	48	88

Remarks; Manpower requirement for construction and O&M of the facilities

Table 66 ESTIMATED MANPOWER REQUIREMENT FOR RECOMMENDED WATER POLLUTION ABATEMENT PLAN

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Engineer	4	8	8	9	2	6	8	11	6	14	16	20
Technical Assistant	4	8	9	10	2	6	11	14	6	14	20	24
Technician	4	11	22	31	2	17	41	66	6	28	63	97
Others	4	14	26	39	2	21	55	87	6	35	81	126
Total Government Staff	16	41	65	89	8	50	115	178	24	91	180	267

Remarks; Manpower requirement for construction and O&M of the facilities

Table 67 ESTIMATED MANPOWER REQUIREMENT FOR RECOMMENDED FLOOD MITIGATION PLAN

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Engineer	3	6	8	10	2	1	24	33	5	7	32	43
Technical Assistant	5	10	16	18	4	2	33	48	9	12	49	66
Technician	10	16	15	21	4	1	51	70	14	17	66	91
Others	12	16	34	21	10	1	43	68	22	17	77	89
Total Government Staff	30	48	73	70	20	5	151	219	50	53	224	289

Remarks; Manpower requirement for construction and O&M of the facilities

Table 68 ESTIMATED MANPOWER REQUIREMENT FOR FLOOD MITIGATION ALTERNATIVES

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Alternative F1												
Engineer	0	9	19	27	0	37	58	131	0	46	77	158
Technical Assistant	0	16	32	45	0	51	79	176	0	67	111	221
Technician	0	23	54	70	0	78	119	280	0	101	173	350
Others	0	34	56	70	0	77	96	222	0	111	152	292
Total Gov. Staff	0	82	161	212	0	243	352	809	0	325	513	1,021
Alternative F2												
Engineer	3	6	8	10	2	1	24	33	5	7	32	43
Technical Assistant	5	10	16	18	4	2	33	48	9	12	49	66
Technician	10	16	15	21	4	1	51	70	14	17	66	91
Others	12	16	34	21	10	1	43	68	22	17	77	89
Total Gov. Staff	30	48	73	70	20	5	151	219	50	53	224	289
Alternative F3												
Engineer	0	2	3	4	0	4	4	5	0	6	7	9
Technical Assistant	0	4	6	8	0	8	8	10	0	12	14	18
Technician	0	4	5	6	0	8	6	7	0	12	11	13
Others	0	10	11	12	0	20	12	13	0	30	23	25
Total Gov. Staff	0	20	25	30	0	40	30	35	0	60	55	65

Remarks; Manpower requirement for construction and O&M of the facilities

Table 69 ESTIMATED MANPOWER REQUIREMENT FOR WATER DEMAND AND SUPPLY UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Engineer	40	72	73	73	35	58	60	62	75	130	133	135
Technical Assistant	42	93	91	93	42	80	88	93	84	173	179	186
Technician	46	246	260	276	54	209	241	268	100	455	501	544
Others	54	1,546	1,830	2,024	78	1,263	1,516	1,776	132	2,809	3,346	3,800
Total Government Staff	182	1,957	2,254	2,466	209	1,610	1,905	2,199	391	3,567	4,159	4,665

Remarks; Manpower requirement for construction and O&M of the facilities

Table 70 ESTIMATED MANPOWER REQUIREMENT FOR RECOMMENDED HYDROPOWER DEVELOPMENT PLAN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Engineer	0	6	5	4	0	0	0	2	0	6	5	6
Technical Assistant	0	12	10	8	0	0	0	4	0	12	10	12
Technician	0	9	6	4	0	0	0	3	0	9	6	7
Others	0	21	19	16	0	0	0	7	0	21	19	23
Total Government Staff	0	48	40	32	0	0	0	16	0	48	40	48

Remarks; Manpower requirement for construction and O&M of the facilities

Table 71 ESTIMATED MANPOWER REQUIREMENT FOR WATER POLLUTION ABATEMENT UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Engineer	4	8	8	8	2	4	5	6	6	12	13	14
Technical Assistant	4	8	8	8	2	5	6	7	6	13	14	15
Technician	4	9	14	18	2	12	21	30	6	21	35	48
Others	4	10	15	21	2	15	27	39	6	25	42	60
Total Government Staff	16	35	45	55	8	36	59	82	24	71	104	137

Remarks; Manpower requirement for construction and O&M of the facilities

Table 72 ESTIMATED MANPOWER REQUIREMENT FOR FLOOD MITIGATION UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: persons

Category	Sabah				Sarawak				Sabah and Sarawak			
	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP	4MP	5MP	6MP	7MP
Engineer	3	6	8	10	2	1	24	33	5	7	32	43
Technical Assistant	5	10	16	18	4	2	33	48	9	12	49	66
Technician	10	16	15	21	4	1	51	70	14	17	66	91
Others	12	16	34	21	10	1	43	68	22	17	77	89
Total Government Staff	30	48	73	70	20	5	151	219	50	53	224	289

Remarks; Manpower requirement for construction and O&M of the facilities

Table 73 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC COST FOR WATER SOURCE DEVELOPMENT BY BASIN

Unit: $M\$10^6$

Basin No.	Recommended	B1	B2	B3
SABAH				
207	2.4	2.4	1.6	0.8
212	20.5	20.5	20.5	20.5
217	0.7	0.7	0.7	0.7
218	0.8	8.6	5.7	2.0
220	3.4	3.6	3.4	3.4
225	9.6	9.6	9.6	9.6
Sub-total	36.6	36.8	34.8	35.0
SARAWAK				
231	0.5	0.5	0.4	0.4
SABAH & SARAWAK	37.1	37.3	35.2	35.4

Table 74 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR D&I WATER SUPPLY BY BASIN (1/2)

Basin No.	Annual Equivalents (M10^6$)				
	Benefit				
	Recommended	B1	B2	B3	Cost
SABAH					
201	0.1	0.1	0.1	0.1	0.1
202	0.4	0.4	0.4	0.4	0.4
203	0.4	0.4	0.4	0.4	0.4
204	0.2	0.2	0.2	0.2	0.2
205	0.1	0.1	0.1	0.1	0.1
206	0.2	0.2	0.2	0.2	0.2
207	8.6	8.6	7.6	6.8	5.9
208	2.5	2.5	2.5	2.5	2.5
209	4.1	4.1	4.1	4.1	4.1
210	0.4	0.4	0.4	0.4	0.4
211	0.7	0.7	0.7	0.7	0.7
212	34.4	34.4	34.4	34.4	11.8
213	1.5	1.5	1.5	1.5	1.5
214	0.3	0.3	0.3	0.3	0.3
215	0.2	0.2	0.2	0.2	0.2
216	0.3	0.3	0.3	0.3	0.3
217	3.9	3.9	3.9	3.9	2.7
218	1.3	1.3	1.3	1.3	1.3
219	1.4	1.4	1.4	1.4	1.4
220	14.9	15.0	14.9	14.9	12.5
221	1.8	1.8	1.8	1.8	1.8
222	0.1	0.1	0.1	0.1	0.1
223	0.6	0.6	0.6	0.6	0.6
224	3.5	3.5	3.5	3.5	3.5
225	15.3	15.3	15.3	15.3	4.7
226	0.5	0.5	0.5	0.5	0.5
Sub-total	97.7	97.8	96.7	95.9	58.2

Table 75 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR D&I WATER SUPPLY BY BASIN (2/2)

Basin No.	Annual Equivalents				
	Benefit				
	Recommended	B1	B2	B3	Cost
SARAWAK					
227	0.2	0.2	0.2	0.2	0.2
228	0.3	0.3	0.3	0.3	0.3
229	1.1	1.1	1.1	1.1	1.1
230	2.1	2.1	2.1	2.1	2.1
231	13.1	13.1	13.0	12.9	12.5
232	0.3	0.3	0.3	0.3	0.3
233	0.3	0.3	0.3	0.3	0.3
234	0.4	0.4	0.4	0.4	0.4
235	0.1	0.1	0.1	0.1	0.1
236	6.1	6.1	6.1	6.1	6.1
237	0.3	0.3	0.3	0.3	0.3
238	0.3	0.3	0.3	0.3	0.3
239	0.7	0.7	0.7	0.7	0.7
240	0.3	0.3	0.3	0.3	0.3
241	14.9	14.9	14.9	14.9	14.9
242	0.8	0.8	0.8	0.8	0.8
243	0.7	0.7	0.7	0.7	0.7
244	1.3	1.3	1.3	1.3	1.3
245	1.9	1.9	1.9	1.9	1.9
246	16.0	16.0	16.0	16.0	16.0
247	0.5	0.5	0.5	0.5	0.5
Sub-total	61.7	61.7	61.6	61.5	61.1
SABAH & SARAWAK	159.4	159.5	158.3	157.4	119.3

Table 76 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR MAJOR IRRIGATION SCHEMES BY BASIN

State	Scheme	Basin No.	Annual Equivalents ($M\$10^6$)	
			Benefit	Cost
Ssbah	Lower Babuk	213	3.8	1.8
Sarawak	Limbang	229	10.0	10.1
	Binatang Barat	241	2.3	1.4
	Batang Lupor	244	2.1	1.4
	Sadong Krang	245	3.2	2.1
	Samarahan	246	5.5	3.9
	Sub-total		23.1	18.9
Sabah & Sarawak			26.9	20.7

Table 77 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR MINOR IRRIGATION SCHEMES BY BASIN

State	Basin No.	Annual Equivalents (M10^6) Benefit	Cost
SABAH	213	0.3	0.2
	216	1.1	0.6
	217	3.1	1.6
	218	1.8	0.7
	220	0.5	0.3
	221	0.9	0.4
	222	3.4	1.7
	223	1.3	0.8
	224	4.3	3.4
	Total for Sabah	16.7	9.7
SARAWAK	227	0.8	0.4
	228	1.3	0.7
	229	0.1	0.1
	230	3.4	1.7
	231	0.1	0.0
	232	0.1	0.1
	236	2.5	1.2
	237	0.2	0.0
	238	0.2	0.1
	239	0.6	0.3
	240	0.6	0.3
	241	5.5	1.9
	242	3.6	0.5
	243	0.5	0.3
	244	3.1	1.7
	245	1.1	0.5
	246	1.9	0.9
	247	0.8	0.4
	Total for Sarawak	26.4	11.1
SABAH & SARAWAK		43.1	20.8

Table 78 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR INLAND FISHERY IN CONSTRUCTED PONDS BY STATE

State	Annual Equivalents (M10^6) Cost	Benefit
Sabah	0.5	0.6
Sarawak	0.1	0.1
Total	0.6	0.7

Table 79 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR INALND FISHERY IN RESERVOIRS BY BASIN

Basin No.	Annual Equivalents (M10^6) Cost	Benefit
SABAH		
207	0.6	0.6
212	0.7	0.7
217	0.6	0.6
218	0.8	0.7
220	0.8	0.7
Sub Total	3.5	3.3
SARAWAK		
231	0.8	0.7
241	0.8	0.7
244	0.8	0.8
Sub Total	2.4	2.2
SABAH & SARAWAK	5.9	5.5

Table 80 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR INLAND FISHERY IN RESERVOIRS BY BASIN FOR ALTERNATIVE B1

Basin No.	Annual Equivalents (M10^6) Cost	Benefit
SABAH		
207	0.6	0.6
212	0.7	0.7
217	0.6	0.6
218	0.8	0.7
220	0.8	0.7
Sub Total	3.5	3.3
SARAWAK		
231	0.8	0.7
SABAH & SARAWAK	4.3	4.0

Table 81 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR INLAND FISHERY IN RESERVOIRS BY BASIN FOR ALTERNATIVE B2

Basin No.	Annual Equivalents ($M\$10^6$)	
	Cost	Benefit
SABAH		
207	0.6	0.6
212	0.7	0.7
217	0.6	0.6
218	0.8	0.7
220	0.8	0.7
Sub Total	3.5	3.3
SARAWAK		
231	0.8	0.7
SABAH & SARAWAK	4.3	4.0

Table 82 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR INLAND FISHERY IN RESERVOIRS BY BASIN FOR ALTERNATIVE B3

Basin No.	Annual Equivalents ($M\$10^6$)	
	Cost	Benefit
SABAH		
212	0.7	0.7
217	0.6	0.6
218	0.8	0.7
220	0.8	0.7
Sub Total	2.9	2.7
SARAWAK		
231	0.8	0.7
SABAH & SARAWAK	3.7	3.4

Table 83 ESTIMATED ANNUAL EQUIVALENT OF ECONOMIC BENEFIT FOR RESERVOIR RECREATION BY BASIN

	Annual Equivalents of Economic Benefit (M10^6)			
	Recommended	B1	B2	B3
SABAH				
207	0.2	0.2	0.2	-
212	1.0	1.0	1.0	1.0
217	0.8	0.8	0.8	0.8
218	0.6	0.6	0.6	0.6
220	0.3	0.3	0.3	0.3
Sub Total	2.9	2.9	2.9	2.9
SARAWAK				
231	0.1	0.1	0.1	0.1
SABAH & SARAWAK	3.0	3.0	3.0	3.0

Table 84 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR HYDROPOWER PROJECTS BY BASIN

Project Name	Installed Capacity (MW)	Annual Equivalent of Economic Benefit and Cost ($M\$10^6$) Benefit	Cost
Sabah			
Tenom Pangi Stage III			
- Sook dam & power	40	13.3	4.8
- Pangi extension	44	11.0	4.8
Papar multipurpose	30	10.0	5.8
Pangi No.2	90	30.1	6.8
Upper Padas	170	36.1	17.5
Sub-total	374	100.5	39.7
Sarawak			
Kanowit	110	37.4	16.3
Batang Sekrang	46	10.2	6.3
Upper Batang Ai	48	9.3	8.0
Sub-total	204	56.9	30.5
Total	578	157.9	70.3

Table 85 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR PUBLIC SEWERAGE SYSTEMS NOT AFFECTING RIVER WATER QUALITY BY BASIN

Basin No.		City/Town	Annual Equivalents (M10^6) Economic Benefit	Economic Cost
207	C201	Tawau	1	2
209	C203	Lahad Datu	1	1
212	C204	Sandakan	2	4
220	C208	Kota Kinabalu	2	5
Total for Sabah			6	12
236	C215	Bintulu	4	21
246	C219	Kuching	4	6
Total for Sarawak			8	27
Total			14	39

Table 86 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR WATER POLLUTION ABATEMENT PLAN BY BASIN FOR ALTERNATIVE P1

Basin No.	City/Town	Annual Equivalents (M10^6) Economic Benefit: Saving in Sewerage	Saving in Pre-treatment	Sub-total	Economic Cost: Sewerage	Palm and Rubber Purification	Pre-treatment	Sub-total
209		0	0	0	0	0	0	0
217		0	0	0	0	0	0	0
Total for Sabah		0	0	0	0	0	0	0
231		0	1	1	0	0	1	1
234		0	0	0	0	0	0	0
Total for Sarawak		0	1	1	0	0	1	1
Total		0	1	1	0	0	1	1

Table 87 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST BY BASIN FOR ALTERNATIVE P2

Basin No.	City/Town	Annual Equivalents (M10^6$) Economic Benefit: Sewerage	Saving in Pre-treatment	Sub-total	Economic Cost: Sewerage	Palm and Rubber Purification	Pre-treatment	Sub-total
209		0	0	0	0	0	0	0
Total for Sabah		0	0	0	0	0	0	0
234		0	1	1	0	0	1	1
Total for Sarawak		0	1	1	0	0	1	1
Total		0	1	1	0	0	1	1

Table 88 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST AND EIRR FOR FLOOD MITIGATION PROJECTS BY BASIN

Basin No.	Basin Name	Annual Equivalents (M10^6$) Benefit	Cost	EIRR (%)
SABAH				
207	Tawau	0.7	0.2	16.0
217	Bongan	2.1	2.9	6.6
218	Kadamaian	0.1	0.7	NA
220	Putatan	0.5	0.3	10.6
Sub-total		3.4	4.1	
SARAWAK				
231	Miri	0.9	0.5	11.8
233	Niah	0.3	0.0	26.1
236	Kemena	0.4	4.5	NA
241	Rajang	0.1	0.5	NA
246	Sarawak	5.8	6.5	7.3
Sub-total		7.5	12.0	
SABAH & SARAWAK		10.9	16.1	

Table 89 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST AND EIRR FOR FLOOD MITIGATION PROJECTS BY BASIN FOR ALTERNATIVE F1

Basin No.	Basin Name	Annual Equivalents (M10^6) Benefit	Cost	EIRR (%)
SABAH				
207	Tawau	0.8	0.3	12.9
210	Segama	0.2	0.5	2.2
213	Labuk	0.0	0.5	NA
217	Bongan	0.5	2.1	1.8
218	Kadamaian	0.0	0.6	NA
219	Tuaran	0.1	0.8	NA
220	Putatan	0.6	0.5	8.8
221	Papar	0.2	0.6	2.8
222	Bongawan	0.1	0.4	0.9
224	Padas	0.1	1.1	NA
Sub-total		2.6	7.4	
SARAWAK				
230	Baram	0.7	25.9	NA
231	Miri	0.8	0.5	11.0
232	Sibuti	0.2	1.1	0.5
233	Niah	2.3	1.8	9.6
236	Kemena	0.6	11.0	NA
237	Tatau	0.0	6.2	NA
241	Rajang	1.5	60.9	NA
246	Sarawak	4.9	6.5	6.4
247	Kayang	0.4	0.7	5.5
Sub-total		11.4	114.6	
SABAH & SARAWAK		14.0	122.0	

Table 90 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST AND EIRR FOR FLOOD MITIGATION PROJECTS BY BASIN FOR ALTERNATIVE F2

Basin No.	Basin Name	Annual Equivalents (M10^6) Benefit	Cost	EIRR (%)
SABAH				
207	Tawau	0.7	0.2	16.0
217	Bongan	2.1	2.9	6.6
218	Kadamaian	0.1	0.7	NA
220	Putatan	0.5	0.3	10.6
Sub-total		3.4	4.1	
SARAWAK				
231	Miri	0.9	0.5	11.8
233	Niah	0.3	0.0	26.1
236	Kemena	0.4	4.5	NA
241	Rajang	0.1	0.5	NA
246	Sarawak	5.8	6.5	7.3
Sub-total		7.5	12.0	
SABAH & SARAWAK		10.9	16.1	

Table 91 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST AND EIRR FOR FLOOD MITIGATION PROJECTS BY BASIN FOR ALTERNATIVE F3

Basin No.	Basin Name	Annual Equivalents (M10^6) Benefit	Cost	EIRR (%)
SABAH				
207	Tawau	0.7	0.2	16.0
217	Bongan	0.1	0.0	12.1
220	Putatan	0.4	0.2	12.4
Sub-total		1.2	0.4	
SARAWAK				
230	Baram	0.6	0.2	19.3
231	Miri	0.6	0.2	15.3
233	Niah	0.4	0.0	26.1
247	Kayang	0.3	0.2	11.4
Sub-total		1.9	0.6	
SABAH & SARAWAK		3.1	1.0	

Table 92 ESTIMATED ANNUAL EQUIVALENT OF ECONOMIC COST FOR WATER SOURCE DEVELOPMENT BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

State	Basin No.	Annual Equipment of Economic Cost ($M\$10^6$)
SABAH	207	1.6
	212	12.8
	217	2.5
	218	-
	220	2.8
	225	8.0
	Sub-total	27.7
SARAWAK	231	0.3
SABAH & SARAWAK		28.0

Table 93 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR D&I WATER SUPPLY BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH (1/2)

Basin No.	Annual Equivalents (M10^6) Benefit	Cost
SABAH		
201	0.1	0.1
202	0.4	0.4
203	0.4	0.4
204	0.2	0.2
205	0.1	0.1
206	0.2	0.2
207	4.7	2.9
208	2.1	2.1
209	2.4	2.4
210	0.4	0.4
211	0.7	0.7
212	19.6	5.5
213	1.1	1.1
214	0.3	0.3
215	0.2	0.2
216	0.3	0.3
217	2.4	1.8
218	0.9	0.9
219	1.4	1.4
220	9.5	7.6
221	1.2	1.2
222	0.1	0.1
223	0.6	0.6
224	3.2	3.2
225	11.9	3.1
226	0.5	0.5
Sub-total	64.9	37.7

Table 94 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR D&I WATER SUPPLY BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH (2/2)

Basin No.	Benefit Annual Equivalents ($M\$10^6$) Benefit	Cost
SARAWAK		
227	0.2	0.2
228	0.3	0.3
229	0.8	0.8
230	1.3	1.3
231	5.9	5.5
232	0.3	0.3
233	0.4	0.4
234	0.4	0.4
235	0.1	0.1
236	3.4	3.4
237	0.3	0.3
238	0.3	0.3
239	0.7	0.7
240	0.3	0.3
241	11.1	11.1
242	0.8	0.8
243	0.7	0.7
244	1.3	1.3
245	1.7	1.7
246	10.7	10.7
247	0.5	0.5
Sub-total	41.5	41.1
SABAH & SARAWAK	106.4	78.8

Table 95 ESTIMATED ANNUAL EQUIVALENT OF ECONOMIC BENEFIT AND COST FOR INLAND FISHERY IN RESERVOIRS BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Annual Equivalents (M10^6) Cost	Benefit
SABAH		
207	0.6	0.6
212	0.6	0.6
218	0.8	0.7
220	0.8	0.7
Sub Total	2.8	2.6
SARAWAK		
231	0.8	0.7
241	0.8	0.7
244	0.8	0.8
Sub Total	2.4	2.2
SABAH & SARAWAK	5.2	4.8

Table 96 ESTIMATED ANNUAL EQUIVALENT OF ECONOMIC BENEFIT AND COST FOR HYDROPOWER PROJECTS BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Project Name	Installed Capacity (MW)	Annual Equivalents of Economic Benefit and Cost (M10^6) Benefit	Cost
Sabah			
Tenom Pangi Stage III			
- Sook dam & power	40	13.3	4.8
- Pangi extension	44	11.0	4.8
Papar multipurpose	30	10.0	5.8
Pangi No.2	90	30.1	6.8
Sub-total	204	69.9	22.2
Sarawak			
Batang Sekrang	46	10.2	6.3
Total	250	79.6	28.5

Table 97 ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST FOR PUBLIC SEWERAGE SYSTEMS NOT AFFECTING RIVER WATER QUALITY BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.		City/Town	Annual Equivalents (M10^6) Economic Benefit	Economic Cost
207	C201	Tawau	1	1
209	C203	Lahad Datu	0	1
212	C204	Sandakan	1	2
220	C208	Kota Kinabalu	1	3
Total for Sabah			3	7
236	C215	Bintulu	2	9
246	C216	Kuching	2	4
Total for Sarawak			4	13
Total for Sabah & Sarawak			7	20

Table 98 ESTIMATED ANNUAL EQUIVALENTS OF ECONOMIC BENEFIT AND COST AND EIRR FOR FLOOD MITIGATION PROJECTS BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Basin Name	Annual Equivalents (M10^6) Benefit	Cost	EIRR (%)
SABAH				
207	Tawau	0.6	0.3	12.1
217	Bongan	1.7	1.7	7.8
220	Putatan	0.4	0.2	11.9
Sub-total		2.7	2.2	
SARAWAK				
229	Limbang	-	-	-
231	Miri	0.3	0.5	6.3
233	Niah	0.4	0.0	26.1
236	Kemena	0.3	4.5	NA
241	Rajang	0.0	0.5	NA
246	Sarawak	4.6	6.5	5.5
Sub-total		5.6	12.0	
SABAH & SARAWAK		8.3	14.2	

Table 99 SAFE SUPPLY PERIOD AND SAFE RIVER MAINTENANCE FLOW PERIOD WITH RECOMMENDED STRUCTURAL MEASURES AND WITHOUT STRUCTURAL MEASURES IN 1990

Unit: days

Basin No.	Basin Name	Safe Supply Period With Structure	Safe Supply Period Without Structure	Safe Maintenance Flow Period With Structure	Safe Maintenance Flow Period Without Structure
SABAH					
207	Tawau	365	260	365	254
218	Kadamaian	301	270	295	260
221	Papar	351	330	340	301
SARAWAK					
231	Miri	365	319	365	309

Table 100 SAFE SUPPLY PERIOD AND SAFE RIVER MAINTENANCE FLOW PERIOD WITH RECOMMENDED STRUCTURAL MEASURES AND WITHOUT STRUCTURAL MEASURES IN 2000

Unit: days

Basin No.	Basin Name	Safe Supply Period		Safe Maintenance Flow Period	
		With Structure	Without Structure	With Structure	Without Structure
SABAH					
207	Tawau	365	254	365	244
218	Kadamaian	298	265	290	260
221	Papar	350	330	330	296
SARAWAK					
231	Miri	365	298	365	278

Table 101 SAFE SUPPLY PERIOD AND SAFE RIVER MAINTENANCE FLOW PERIOD WITH ALTERNATIVE STRUCTURAL MEASURES AND WITHOUT STRUCTURAL MEASURES IN 1990

Unit: days

Basin No.	Basin Name	Safe Supply Period				Safe Maintenance Flow Period			
		B1	B2	B3	Without Structure	B1	B2	B3	Without Structure
SABAH									
207	Tawau	365	297	271	260	365	285	261	254
218	Kadamaian	365	358	301	270	365	325	295	260
221	Papar	365	356	351	330	365	350	340	301
SARAWAK									
231	Miri	365	365	350	319	365	349	319	309

Table 102 SAFE SUPPLY PERIOD AND SAFE RIVER MAINTENANCE FLOW PERIOD WITH ALTERNATIVE STRUCTURAL MEASURES AND WITHOUT STRUCTURAL MEASURES IN 2000

Unit: days

Basin No.	Basin Name	Safe Supply Period				Safe Maintenance Flow Period			
		B1	B2	B3	Without Structure	B1	B2	B3	Without Structure
SABAH									
207	Tawau	365	295	268	254	365	282	255	244
218	Kadamaian	365	358	298	265	365	325	290	260
221	Papar	365	357	350	330	365	331	330	296
SARAWAK									
231	Miri	365	365	345	298	365	329	310	278

Table 103 SURFACE AREA OF RESERVOIR CREATED IN 1990 AND 2000 BY SOURCE FACILITIES BY BASIN FOR THE STATES OF SABAH AND SARAWAK

Basin No.	Name of Facilities	Surface Area 1990	Surface Area 2000
SABAH			
207	Tawau dam	0	0.5
213	Meliau dam	0	1
217	Milau dam	0	6
218	Wariu dam	0.3	0.3
221	Papar dam	2	2
SARAWAK			
231	Liku dam	3	3
SABAH & SARAWAK		5.3	12.8

Table 104 SURFACE AREA OF RESERVOIR CREATED IN 1990 AND 2000 BY SOURCE FACILITIES BY BASIN FOR ALTERNATIVE B1

Basin No.	Name of Facilities	Surface Area 1990	Surface Area 2000
SABAH			
207	Tawau dam	0	0.5
213	Meliau dam	0	1
217	Milau dam	0	9
218	Wariu dam	0.6	0.6
221	Papar dam	3	3
SARAWAK			
-	-	-	-
SABAH & SARAWAK		3.6	14.1

Table 105 SURFACE AREA OF RESERVOIR CREATED IN 1990 AND 2000 BY SOURCE FACILITIES BY BASIN FOR ALTERNATIVE B2

Basin No.	Name of Facilities	Surface Area 1990	Surface Area 2000
SABAH			
207	Tawau dam	0	0.4
213	Meliau dam	0	1
217	Milau dam	0	9
218	Wariu dam	0.4	0.4
221	Papar dam	2	2
SARAWAK			
-	-	-	-
SABAH & SARAWAK		2.4	12.8

Table 106 SURFACE AREA OF RESERVOIR CREATED IN 1990 AND 2000 BY SOURCE FACILITIES BY BASIN FOR ALTERNATIVE B3

Basin No.	Name of Facilities	Surface Area 1990	Surface Area 2000
SABAH			
213	Meliau dam	0	1
217	Milau dam	0	9
218	Wariu dam	0.3	0.3
221	Papar dam	2	2
SARAWAK			
-	-	-	-
SABAH & SARAWAK		2.3	12.3

Table 107 SURFACE AREA OF RESERVOIR CREATED IN 1990 AND 2000 BY HYDROPOWER FACILITIES BY BASIN

Basin No.	Name of Facilities	Surface Area (km^2) 1990	2000
SABAH			
221	Papar dam	5	5
224	Sook dam	27	27
224	Pangi extension	0	0
224	Pangi No.2 dam	0	2
224	Upper Padas dam	0	9
		32	43
SARAWAK			
241	Konowit dam	71	71
244	Batang Sekrang dam	0	15
244	Upper Batang Ai dam	0	8
		71	94
SABAH & SARAWAK		103	137

Table 108 LENGTH OF RIVER STRETCH WHERE BOD CONCENTRATION IS NOT MORE THAN 5 PPM IN 2000 COMPARED WITH WITHOUT PROJECT CONDITION BY BASIN (1/2)

Basin No.	Basin Name	Studied Length (km)	Length of River Stretch/1 (km)
201	Pensiangan	95	95/95
202	Serudong	88	88/88
203	Kalabakan	35	35/35
205	Umas-Umas	15	15/15
206	Merutai Besar	12	12/12
207	Tawau	10	10/10
208	Kalumpuang	37	37/37
209	Silibukan	18	18/8
210	Segama	130	130/130
211	Kinabatangan	343	343/343
213	Labuk	220	220/220
214	Sugut	150	150/150
215	Paitan	27	27/27
216	Bengkoka	66	66/66
217	Bongan	15	15/5
218	Kadamaian	18	18/18
219	Tuaran	12	12/12
220	Putatan	13	13/13
221	Papar	65	65/65
223	Membakut	18	18/18
224	Padas	208	208/208
Total for Sabah		1,600	1,600/1,580

Remarks; /1: (Length of river stretch with project)/ (Length of river stretch without project)

Table 109 LENGTH OF RIVER STRETCH WHERE BOD CONCENTRATION IS NOT MORE THAN 5 PPM IN 2000 COMPARED WITH WITHOUT PROJECT CONDITION BY BASIN (2/2)

Basin No.	Basin Name	Studied Length (km)	Length of River Stretch /1 (km)
227	Lawas	15	15/15
228	Trusan	30	30/30
229	Limbang	82	82/82
230	Baram	124	124/124
231	Miri	33	33/33
232	Sibuti	28	28/28
233	Niah	40	40/40
234	Suai	91	91/81
235	Similajau	7	7/7
236	Kemena	28	28/28
237	Tatau	25	25/25
238	Balingian	70	70/70
239	Mukah	61	61/61
240	Oya	91	91/91
241	Rajang	419	419/419
242	Kerian	73	73/73
243	Sarabas	98	98/98
244	Lupar	175	175/175
245	Sadong	170	170/170
246	Sarawak	86	86/86
247	Kayau	64	64/64
Total for Sarawak		1,810	1,810/1,800
Total for Sabah & Sarawak		3,410	3,410/3,380

Remarks; /1: (Length of river stretch with project)/
(Length of river stretch without project)

Table 110 LENGTH OF RIVER STRETCH WHERE BOD CONCENTRATION IS NOT MORE THAN 5 PPM IN 2000 COMPARED WITH WITHOUT PROJECT CONDITION BY BASIN FOR ALTERNATIVE P1 (1/2)

Basin No.	Basin Name	Studied Length (km)	Length of River Stretch/1 (km)
201	Pensiangan	95	95/95
202	Serudong	88	88/88
203	Kalabakan	35	35/35
205	Umas-Umas	15	15/15
206	Merutai Besar	12	12/12
207	Tawau	10	10/10
208	Kalumpuang	37	37/37
209	Silibukan	18	18/8
210	Segama	130	130/130
211	Kinabatangan	343	343/343
213	Labuk	220	220/220
214	Sugut	150	150/150
215	Paitan	27	27/27
216	Bengkoka	66	66/66
217	Bongan	15	15/5
218	Kadamaian	18	18/18
219	Tuaran	12	12/12
220	Putatan	13	13/13
221	Papar	65	65/65
223	Membakut	18	18/18
224	Padas	208	208/208
Total for Sabah		1,600	1,600/1,580

Remarks; /1: (Length of river stretch with project)/ (Length of river stretch without project)

Table 111 LENGTH OF RIVER STRETCH WHERE BOD CONCENTRATION IS NOT MORE THAN 5 PPM IN 2000 COMPARED WITH WITHOUT PROJECT CONDITION BY BASIN FOR ALTERNATIVE P1 (2/2)

Basin No.	Basin Name	Studied Length (km)	Length of River Stretch /1 (km)
227	Lawas	15	15/15
228	Trusan	30	30/30
229	Limbang	82	82/82
230	Baram	124	124/124
231	Miri	33	33/33
232	Sibuti	28	28/28
233	Niah	40	40/40
234	Suai	91	91/81
235	Similajau	7	7/7
236	Kemena	28	28/28
237	Tatau	25	25/25
238	Balingian	70	70/70
239	Mukah	61	61/61
240	Oya	91	91/91
241	Rajang	419	419/419
242	Kerian	73	73/73
243	Sarabas	98	98/98
244	Lupar	175	175/175
245	Sadong	170	170/170
246	Sarawak	86	86/86
247	Kayau	64	64/64
Total for Sarawak		1,810	1,810/1,800
Total for Sabah & Sarawak		3,410	3,410/3,380

Remarks; /1; (Length of river stretch with project)/ (Length of river stretch without project)

Table 112 LENGTH OF RIVER STRETCH WHERE BOD CONCENTRATION IS NOT MORE THAN 5 PPM IN 2000 COMPARED WITH WITHOUT PROJECT CONDITION BY BASIN FOR ALTERNATIVE P2 (1/2)

Basin No.	Basin Name	Studied Length (km)	Length of River Stretch /1 (km)
201	Pensiangan	95	95/95
202	Serudong	88	88/88
203	Kalabakan	35	35/35
205	Umas-Umas	15	15/15
206	Merutai Besar	12	12/12
207	Tawau	10	10/10
208	Kalumpuang	37	37/37
209	Silibukan	18	8/8
210	Segama	130	130/130
211	Kinabatangan	343	343/343
213	Labuk	220	220/220
214	Sugut	150	150/150
215	Paitan	27	27/27
216	Bengkoka	66	66/66
217	Bongan	15	5/5
218	Kadamaian	18	18/18
219	Tuaran	12	12/12
220	Putatan	13	13/13
221	Papar	65	65/65
223	Membakut	18	18/18
224	Padas	208	208/208
Total for Sabah		1,600	1,580/1,580

Remarks; /1: (Length of river stretch with project)/ (Length of river stretch without project)

Table 113 LENGTH OF RIVER STRETCH WHERE BOD CONCENTRATION IS NOT MORE THAN 5 PPM IN 2000 COMPARED WITH WITHOUT PROJECT CONDITION BY BASIN FOR ALTERNATIVE P2 (2/2)

Basin No.	Basin Name	Studied Length (km)	Length of River Stretch (km)
227	Lawas	15	15/15
228	Trusan	30	30/30
229	Limbang	82	82/82
230	Baram	124	124/124
231	Miri	33	33/33
232	Sibuti	28	28/28
233	Niah	40	40/40
234	Suai	91	81/81
235	Similajau	7	7/7
236	Kemena	28	28/28
237	Tatau	25	25/25
238	Balingian	70	70/70
239	Mukah	61	61/61
240	Oya	91	91/91
241	Rajang	419	419/419
242	Kerian	73	73/73
243	Sarabas	98	98/98
244	Lupar	175	175/175
245	Sadong	170	170/170
246	Sarawak	86	86/86
247	Kayau	64	64/64
Total for Sarawak		1,810	1,800/1,800
Total for Sabah & Sarawak		3,410	3,380/3,380

Table 114 BENEFICIAL EFFECTS OF RECOMMENDED FLOOD MITIGATION PROJECTS IN 1990 BY BASIN

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
217	Bongan	47	31	269
SARAWAK				
229	Limbang	-	5	262
231	Miri	5	28	542
Sub-total		5	33	804
SABAH & SARAWAK		52	64	1,073

Table 115 BENEFICIAL EFFECTS OF FLOOD MITIGATION PROJECTS IN 1990 BY BASIN FOR ALTERNATIVE F1

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
207	Tawau	3	17	18
217	Bongan	36	18	250
220	Putatan	12	22	7
Sub-total		51	57	275
SARAWAK				
230	Baram	41	11	402
231	Miri	5	28	542
233	Niah	-	1	3
247	Kayang	9	1	45
Sub-total		55	41	992
SABAH & SARAWAK		106	98	1,267

Table 116 BENEFICIAL EFFECTS OF FLOOD MITIGATION PROJECTS IN 1990 BY BASIN FOR ALTERNATIVE F2

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
217	Bongan	47	21	269
Sub-total		47	21	269
SARAWAK				
231	Miri	5	28	542
Sub-total		5	28	542
SABAH & SARAWAK		52	49	811

Table 117 BENEFICIAL EFFECTS OF FLOOD MITIGATION PROJECTS IN 1990 BY BASIN FOR ALTERNATIVE F3

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
217	Bongan	5	3	56
Sub-total		5	3	56
SARAWAK				
230	Baram	-	3	24
233	Niah	-	1	3
Sub-total		-	4	27
SABAH & SARAWAK		5	7	83

Table 118 BENEFICIAL EFFECTS OF RECOMMENDED FLOOD MITIGATION PROJECTS IN 2000 BY BASIN

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
207	Tawau	3	17	18
217	Bongan	56	25	315
218	Kadamaian	16	13	63
220	Putatan	12	22	7
Sub-total		87	77	403
SARAWAK				
229	Limbang	-	5	262
231	Miri	5	28	542
233	Niah	-	1	3
236	Kemena	30	17	178
241	Rajang	21	9	266
246	Sarawak	142	62	425
Sub-total		198	122	1,676
SABAH & SARAWAK		285	199	2,079

Table 119 BENEFICIAL EFFECTS OF FLOOD MITIGATION PROJECTS IN 2000 BY BASIN FOR ALTERNATIVE F1

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
207	Tawau	3	17	18
210	Segama	8	3	10
213	Labuk	15	2	26
217	Bongan	56	25	315
218	Kadamaian	15	13	63
219	Tuaran	13	5	35
220	Putatan	12	22	7
221	Papar	17	25	23
222	Kimanis	15	1	14
224	Padas	16	3	87
Sub-total		170	116	598
SARAWAK				
230	Baram	41	11	402
231	Miri	5	28	542
232	Sibuti	27	4	190
233	Niah	33	8	291
236	Kemena	103	31	884
237	Tatau	63	4	364
241	Rajang	221	104	1,236
246	Sarawak	142	69	425
247	Kayang	9	1	45
Sub-total		640	260	4,379
SABAH & SARAWAK		810	376	4,977

Table 120 BENEFICIAL EFFECTS OF FLOOD MITIGATION PROJECTS IN 2000 BY BASIN FOR ALTERNATIVE F2

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
207	Tawau	3	17	18
217	Bongan	56	25	315
218	Kadamaian	16	13	63
220	Putatan	12	22	7
Sub-total		87	77	403
SARAWAK				
231	Miri	5	28	542
233	Niah	-	1	3
236	Kemena	30	17	178
241	Rajang	21	9	266
246	Sarawak	142	62	425
Sub-total		198	117	1,414
SABAH & SARAWAK		285	194	1,817

Table 121 BENEFICIAL EFFECTS OF FLOOD MITIGATION PROJECTS IN 2000 BY BASIN FOR ALTERNATIVE F3

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
207	Tawau	3	17	18
217	Bongan	5	3	56
220	Putatan	12	22	7
Sub-total		20	42	81
SARAWAK				
230	Baram	-	3	24
231	Miri	5	28	542
233	Niah	-	1	3
247	Kayang	-	1	6
Sub-total		5	33	585
SABAH & SARAWAK		25	75	666

Table 122 SAFE SUPPLY PERIOD AND SAFE RIVER MAINTENANCE FLOW WITH/WITHOUT RECOMMENDED STRUCTURAL MEASURES UNDER THE CONDITION OF LOWER ECONOMIC GROWTH IN 1990

Unit: days

Basin No.	Basin Name	Safe Supply Period		Safe Maintenance Flow Period	
		With Structure	Without Structure	With Structure	Without Structure
SABAH					
207	Tawau	365	271	365	259
218	Kadamaian	301	272	295	260
221	Papar	352	331	341	303
SARAWAK					
231	Miri	365	319	365	310

Table 123 SAFE SUPPLY PERIOD AND SAFE RIVER MAINTENANCE FLOW WITH/WITHOUT RECOMMENDED STRUCTURAL MEASURES UNDER THE CONDITION OF LOWER ECONOMIC GROWTH IN 2000

Unit: days

Basin No.	Basin Name	Safe Supply Period		Flow Maintenance Flow Period	
		With Structure	Without Structure	With Structure	Without Structure
SABAH					
207	Tawau	365	260	365	252
218	Kadamaian	298	265	292	261
221	Papar	351	330	331	296
SARAWAK					
231	Miri	365	303	365	288

Table 124 SURFACE AREA OF RESERVOIR CREATED IN 1990 AND 2000 BY SOURCE FACILITIES BY BASIN FOR THE STATES OF SABAH AND SARAWAK UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Name of Facilities	Surface Area 1990	Surface Area 2000
SABAH			
207	Tawau dam	0	0.4
213	Meliau dam	0	0.6
218	Wariu dam	0.3	0.3
221	Papar dam	2.7	2.7
SARAWAK			
231	Liku dam	2	2
SABAH & SARAWAK		5	6

Table 125 SURFACE AREA OF RESERVOIR CREATED IN 1990 AND 2000 BY HYDROPOWER FACILITIES BY BASIN FOR THE STATES OF SABAH AND SARAWAK UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Name of Facilities	Surface Area (km^2) 1990	2000
SABAH			
221	Papar dam	5	5
224	Sook dam	27	27
224	Pangi extension	0	0
224	Pangi No.2 dam	0	2
		32	34
SARAWAK			
244	Batan Sekrang dam	0	15
SABAH & SARAWAK			
		32	49

Table 126 LENGTH OF RIVER STRETCH WHERE BOD CONCENTRATION IS NOT MORE THAN 5 PPM IN 2000 COMPARED WITH WITHOUT PROJECT CONDITION BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH (1/2)

No.	Basin Name	Studied Length (km)	Length of River Stretch /1 (km)
201	Pensiangan	95	95/95
202	Serudong	88	88/88
203	Kalabakan	35	35/35
205	Umas-Umas	15	15/15
206	Merutai Besar	12	12/12
207	Tawau	10	10/10
208	Kalumpuang	37	37/37
209	Silibukan	18	18/8
210	Segama	130	130/130
211	Kinabatangan	343	343/343
213	Labuk	220	220/220
214	Sugut	150	150/150
215	Paitan	27	27/27
216	Bengkoka	66	66/66
217	Bongan	15	18/5
218	Kadamaian	18	18/18
219	Tuaran	12	12/12
220	Putatan	13	13/13
221	Papar	65	65/65
223	Membakut	18	18/18
224	Padas	208	208/208
Total for Sabah		1,600	1,600/1,580

Remarks; /1: (Length of river stretch with project)/ (Length of river stretch without project)

Table 127 LENGTH OF RIVER STRETCH WHERE BOD CONCENTRATION IS NOT MORE THAN 5 PPM IN 2000 COMPARED WITH WITHOUT PROJECT CONDITION BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH (2/2)

No.	Basin Name	Studied Length (km)	Length of River Stretch (km)
227	Lawas	15	15/15
228	Trusan	30	30/30
229	Limbang	82	82/82
230	Baram	124	124/124
231	Miri	33	33/33
232	Sibuti	28	28/28
233	Niah	40	40/40
234	Suai	91	91/81
235	Similajau	7	7/7
236	Kemena	28	28/28
237	Tatau	25	25/25
238	Balingian	70	70/70
239	Mukah	61	61/61
240	Oya	91	91/91
241	Rajang	419	419/419
242	Kerian	73	73/73
243	Sarabas	98	98/98
244	Lupar	175	175/175
245	Sadong	170	170/170
246	Sarawak	86	86/86
247	Kayau	64	64/64
Total for Sarawak		1,810	1,810/1,800
Total for Sabah & Sarawak		3,410	3,410/3,380

Table 128 BENEFICIAL EFFECTS OF FLOOD MITIGATION PROJECTS IN 1990 BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
207	Tawau	3	14	18
217	Bongan	13	11	89
Sub-total		16	25	107
SARAWAK				
229	Limbang	-	5	262
231	Miri	5	37	542
Sub-total		5	42	804
SABAH & SARAWAK		21	67	911

Table 129 BENEFICIAL EFFECTS OF FLOOD MITIGATION PROJECTS IN 2000 BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Basin Name	Length of Improved River Stretch (km)	Number of Protected People (10^3)	Area Relieved (km^2)
SABAH				
207	Tawau	3	14	18
217	Bongan	54	27	315
220	Putatan	12	20	7
Sub-total		69	61	340
SARAWAK				
229	Limbang	-	5	262
231	Miri	5	37	542
233	Niah	-	1	3
236	Kemena	30	15	178
241	Rajang	21	17	266
246	Sarawak	142	76	425
Sub-total		198	151	1,676
SABAH & SARAWAK		267	212	2,016

Table 130 NUMBER OF PEOPLE SERVED BY PROPOSED PUBLIC WATER SUPPLY PROJECTS IN 1990 AND 2000 BY CITY/RURAL BY BASIN (1/3)

Unit: 10^3 persons

Basin No.	City/Town/Rural		No. of People Served 1990	2000
SABAH				
201		Rural	7.6	12.3
202		Rural	13.6	23.8
203		Rural	16.3	28.5
204		Rural	8.9	15.6
205		Rural	6.7	11.7
206		Rural	6.7	11.7
207	C201	Tawau	69.4	149.8
		Rural	10.3	18.2
		Total	79.7	168.0
208	C202	Semporna	8.7	15.3
		Rural	67.0	118.5
		Total	75.7	133.8
209	C203	Lahad Datu	30.2	83.8
		Rural	10.7	17.9
		Total	40.9	101.7
210		Rural	19.1	32.0
211		Rural	28.8	48.8
212	C204	Sandakan	114.2	221.6
		Rural	32.9	52.7
		Total	147.1	274.3
213	C205	Ranau	9.4	19.1
		Rural	29.8	46.6
		Total	39.2	65.7
214		Rural	13.0	20.2
215		Rural	4.2	6.7
216		Rural	18.0	28.3
217	C206	Kudat	17.1	42.6
		Rural	39.0	60.8
		Total	56.1	103.4
218	C207	Kota Belud	11.3	20.4
		Rural	30.0	46.8
		Total	41.3	67.2
219		Rural	37.3	58.1
220	C208	Kota Kinabalu	210.7	364.1
		Rural	22.7	38.2
		Total	233.4	402.3

Remarks; Sum of the population served by State PWDs, Waterworks Departments, Water Authorities and RESP

Table 131 NUMBER OF PEOPLE SERVED BY PROPOSED PUBLIC WATER SUPPLY PROJECTS IN 1990 AND 2000 BY CITY/RURAL BY BASIN (2/3)

Unit: 10^3 persons

Basin No.	City/Town/Rural		No. of People Served 1990	2000
221	C209	Papar	21.6	35.4
		Rural	23.8	38.2
		Total	45.4	73.6
222		Rural	9.1	14.0
223		Rural	11.6	18.4
224	C210	Keningau	13.2	22.3
		Rural	74.7	119.3
		Total	87.9	141.6
225	C211	Labuan	36.6	93.3
		Rural	6.6	10.8
		Total	43.2	104.1
226		Rural	9.8	15.5
		SABAH Total	1,100.6	1,981.3
SARAWAK				
227		Rural	4.4	6.6
228		Rural	11.2	16.8
229	C212	Limbang	20.5	35.1
		Rural	10.4	15.3
		Total	30.9	50.4
230	C213	Marudi	9.3	20.3
		Rural	45.0	69.6
		Total	54.3	89.9
231	C214	Miri	79.6	177.4
		Rural	9.0	15.1
		Total	88.6	192.5
232		Rural	10.6	18.0
233		Rural	15.1	25.6
234		Rural	16.2	27.5
235		Rural	5.3	8.4
236	C215	Bintulu	27.4	51.2
		Rural	16.6	25.1
		Total	44.0	76.3
237		Rural	14.2	21.5
238		Rural	14.6	21.6
239		Rural	15.3	22.5
240		Rural	18.2	27.9
241	C216	Sibu	169.3	336.1
	C217	Sarikei	32.8	67.3
		Rural	187.9	276.3
		Total	390.0	679.7

Remarks; Sum of the population served by State PWDs, Waterworks Departments, Water Authorities and RESP

Table 132 NUMBER OF PEOPLE SERVED BY PROPOSED PUBLIC WATER SUPPLY PROJECTS IN 1990 AND 2000 BY CITY/RURAL BY BASIN (3/3)

Unit: 10^3 persons

Basin No.	City/Town/Rural		No. of People Served 1990	2000
242		Rural	28.0	40.5
243		Rural	31.9	46.8
244		Rural	63.1	90.9
245	C218	Serian	7.2	17.0
		Rural	81.3	121.8
		Total	88.5	138.8
246	C219	Kuching	302.3	520.8
		Rural	134.5	206.7
		Total	436.8	727.5
247		Rural	18.9	28.8
		SARAWAK Total	1,400.1	2,358.5
		SABAH & SARAWAK	2,500.7	4,339.8

Remarks; Sum of the population served by State PWDs, Waterworks Departments, Water Authorities and RESP

Table 133 NUMBER OF FARM HOUSEHOLDS BENEFITED BY PROPOSED MAJOR IRRIGATION DEVELOPMENT IN 1990 AND 2000

Basin No.	Name of Scheme	Area (ha) /1	Benefited Farms 1990	2000
SABAH				
213	Lower Labuk	5,830	-	3,090
	Sub-Total	5,830	-	3,090
SARAWAK				
229	Limbang	8,600	1,276	3,540
241	Binatang Barat	4,000	-	3,200
244	Batang Lupor	4,000	-	3,200
245	Sadong Krang	4,000	1,440	3,200
246	Samarahan	12,000	3,600	8,434
	Sub-Total	32,600	6,316	21,574
Total of SABAH & SARAWAK		38,430	6,316	24,664

Remarks; /1: Total incremental area to be developed during 4MP through 7MP

Table 134 NUMBER OF FARM HOUSEHOLDS BENEFITED BY PROPOSED MINOR IRRIGATION DEVELOPMENT IN 1990 AND 2000

Basin No.	Name of Basin	Area (ha) /1	Benefited Farms 1990	Benefited Farms 2000
SABAH				
201-212	Pensiangan +	-	-	-
213	Labuk	338	139	139
214-215	Sugut +	-	-	-
216	Bengkoka	1,018	335	537
217	Bongan	2,069	1,655	1,655
218	Kadamaian	1,158	433	712
219	Tuaran	-	-	-
220	Putatan	403	323	323
221	Papar	484	388	388
222	Kimanis	2,350	1,450	1,450
223	Membakut	1,174	753	753
224	Padas	5,756	2,881	3,769
225-226	Labuan +	-	-	-
	Sub-Total	14,750	8,357	9,726
SARAWAK				
227	Lawas	408	279	279
228	Trusan	1,618	432	1,294
229	Limbang	104	83	83
230	Baram	3,721	1,002	2,977
231	Miri	108	86	86
232	Sibuti	576	154	462
233-235	Niah +	-	-	-
236	Kemana	2,885	770	2,309
237	Tatau	182	146	146
238	Balingian	257	-	205
239	Mukah	1,146	334	916
240	Oya	836	213	669
241	Rajang	6,262	3,704	5,010
242	Kerian	2,801	1,471	2,242
243	Saribas	1,918	511	1,534
244	Lupar	5,361	1,815	4,289
245	Sadong	1,412	398	1,130
246	Sarawak	2,123	566	1,699
247	Kayan	892	238	714
	Sub-Total	32,610	12,202	26,044
Total of SABAH & SARAWAK		47,360	20,559	35,770

Remarks; /1: Total development area during 4MP through 7MP

Table 135 NUMBER OF PEOPLE SERVED BY PROPOSED PUBLIC SEWERAGE SYSTEMS NOT AFFECTING RIVER WATER QUALITY IN 1990 AND 2000 BY SYSTEM BY BASIN

Basin No.	City/Town		Number of Served Population (10^3) 1990	2000
207	C201	Tawau	45	63
209	C203	Lahad Datu	27	41
212	C204	Sandakan	71	82
220	C208	Kota Kinabalu	69	116
Total for Sabah			212	302
236	C215	Bintulu	13	15
246	C219	Kuching	120	243
Total for Sarawak			133	258
Total for Sabah & Sarawak			345	560

Table 136 POPULATION SERVED BY PROPOSED FLOOD FORECASTING AND WARNING SYSTEMS IN 1990 AND 2000 BY BASIN

Unit: 10^3 persons

Basin No.	Basin Name	1990	2000
SABAH			
207	Tawau	-	8.5
210	Segama	-	3.5
211	Kinabatangan	4.3	4.3
217	Bongan	12.7	12.7
218	Kadamaian	-	6.5
221	Papar	14.2	4.2
224	Padas	-	3.0
Sub-total		31.2	52.7
SARAWAK			
229	Limbang	-	2.6
230	Baram	6.0	6.0
231	Miri	-	14.0
233	Niah	-	5.0
236	Kemena	-	11.1
237	Tatau	-	2.7
241	Rajang	-	16.6
245	Sadong	5.0	5.0
246	Sarawak	22.9	22.9
Sub-total		33.9	85.9
SABAH & SARAWAK		65.1	138.6

Table 137 NUMBER OF PEOPLE TO BE REMOVED FOR CONSTRUCTION OF RECOMMENDED SOURCE FACILITIES IN 2000 BY FACILITIES BY BASIN

Unit: Persons

Basin No.	Name of Facilities	Number of People to be removed
SABAH		
207	Tawau dam	50
213	Meliau dam	50
217	Milau dam	300
218	Wariu dam	50
221	Papar dam	105
SARAWAK		
231	Liku dam	50
SABAH & SARAWAK		605

Table 138 NUMBER OF PEOPLE TO BE REMOVED FOR CONSTRUCTION OF SOURCE FACILITIES IN 2000 BY FACILITIES BY BASIN BY ALTERNATIVE

Unit: Persons

Basin No.	Name of Facilities	Number of People to be removed		
		B1	B2	B3
SABAH				
207	Tawau dam	50	50	-
213	Meliau dam	50	50	50
217	Milau dam	300	300	300
218	Wariu dam	50	50	50
221	Papar dam	105	105	105
SARAWAK				
-	-	-	-	-
SABAH & SARAWAK		555	555	505

Table 139 NUMBER OF PEOPLE TO BE REMOVED FOR CONSTRUCTION OF HYDROPOWER FACILITIES IN 2000 BY BASIN

Basin No.	Name of Facilities	Number of People to be removed
SABAH		
221	Papar dam	525
224	Sook dam	3,000
224	Pangi extension	-
224	Pangi No. 2 dam	75
224	Upper Padas dam	50
		3,650
SARAWAK		
241	Konowit dam	2,500
244	Batang Sekrang dam	125
244	Upper Batang Ai dam	0
		2,625
SABAH & SARAWAK		6,275

Table 140 NUMBER OF PEOPLE TO BE REMOVED FOR CONSTRUCTION OF RECOMMENDED FLOOD MITIGATION PROJECTS BY 2000 BY BASIN

Basin No.	Basin Name	People Removed
SABAH		
207	Tawau	200
217	Bongan	2,400
218	Kadamaian	1,700
220	Putatan	4,200
	Total	8,500
SARAWAK		
231	Miri	500
233	Niah	100
236	Kemena	1,200
241	Rajang	100
246	Sarawak	2,300
	Total	4,200

Table 141 NUMBER OF PEOPLE TO BE REMOVED FOR CONSTRUCTION OF FLOOD MITIGATION PROJECTS BY 2000 BY BASIN BY ALTERNATIVE

Basin No.	Basin Name	People Removed F1	F2	F3
SABAH				
207	Tawau	200	200	200
210	Segama	1,400	-	-
213	Labuk	0	-	-
217	Bongan	2,400	2,400	300
218	Kadamaian	1,700	1,700	-
219	Tuaran	1,100	-	-
220	Putatan	4,200	4,200	4,200
221	Papar	2,200	-	-
222	Bongowan	600	-	-
224	Padas	400	-	-
	Total	14,200	8,500	4,700
SARAWAK				
230	Baram	500	-	100
231	Miri	1,000	500	500
232	Sibuti	1,000	-	-
233	Niah	2,300	100	100
236	Kemena	7,400	1,200	-
237	Tatau	2,500	-	-
241	Rajang	5,600	100	-
246	Sarawak	2,300	2,300	-
247	Kayang	100	-	-
	Total	22,700	4,200	700

Table 142 NUMBER OF PEOPLE SERVED BY PROPOSED PUBLIC WATER SUPPLY PROJECTS IN 1990 AND 2000 BY CITY/RURAL BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH (1/3)

Unit: 10^3 persons

Basin No.	City/Town/Rural		No. of People Served 1990	2000
SABAH				
201		Rural	6.3	10.3
202		Rural	11.3	19.8
203		Rural	13.6	23.8
204		Rural	7.4	13.0
205		Rural	5.6	9.8
206		Rural	5.6	9.8
207	C201	Tawau	65.7	111.8
		Rural	8.6	15.2
		Total	74.3	127.0
208	C202	Semporna	8.3	12.7
		Rural	55.8	98.8
		Total	64.1	111.5
209	C203	Lahad Datu	26.9	62.5
		Rural	9.0	14.9
		Total	35.9	77.4
210		Rural	16.0	26.7
211		Rural	24.0	40.7
212	C204	Sandakan	108.2	174.6
		Rural	27.4	44.0
		Total	135.6	218.6
213	C205	Ranau	8.9	15.9
		Rural	24.8	38.9
		Total	33.7	54.8
214		Rural	10.8	16.8
215		Rural	3.5	5.6
216		Rural	15.0	23.6
217	C206	Kudat	16.2	33.5
		Rural	32.5	50.7
		Total	48.7	84.2
218	C207	Kota Belud	10.8	17.3
		Rural	25.0	39.0
		Total	35.8	56.3
219		Rural	31.1	48.4
220	C208	Kota Kinabalu	208.6	345.8
		Rural	19.0	31.8
		Total	227.6	377.6

Remarks; Sum of the population served by State PWDs, Waterworks Departments, Water Authorities and RESP

Table 143 NUMBER OF PEOPLE SERVED BY PROPOSED PUBLIC WATER SUPPLY PROJECTS IN 1990 AND 2000 BY CITY/RURAL BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH (2/3)

Unit: 10^3 persons

Basin No.	City/Town/Rural		No. of Poeple Served 1990	2000
221	C209	Papar	21.0	31.1
		Rural	19.9	31.8
		Total	40.9	62.8
222		Rural	7.6	11.7
223		Rural	9.7	15.3
224	C210	Keningau	12.8	20.5
		Rural	62.3	99.5
		Total	75.1	120.0
225	C211	Labuan	34.7	73.5
		Rural	5.5	9.0
		Total	40.2	82.5
226		Rural	8.2	12.9
		SABAH Total	987.6	1,661.0
SARAWAK				
227		Rural	4.0	5.8
228		Rural	10.4	15.0
229	C212	Limbang	19.8	31.3
		Rural	9.6	13.6
		Total	29.4	44.9
230	C213	Marudi	8.8	16.0
		Rural	41.6	61.8
		Total	50.4	77.8
231	C214	Miri	71.0	139.7
		Rural	8.3	13.4
		Total	79.3	153.1
232		Rural	9.8	16.0
233		Rural	13.9	22.7
234		Rural	14.9	24.4
235		Rural	4.9	7.4
236	C215	Bintulu	24.4	38.3
		Rural	15.3	22.3
		Total	39.7	60.6

Remarks; Sum of the population served by State PWDs, Waterworks Departments, Water Authorities and RESP

Table 144 NUMBER OF PEOPLE SERVED BY PROPOSED PUBLIC WATER SUPPLY PROJECTS IN 1990 AND 2000 BY CITY/RURAL BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH (3/3)

Unit: 10^3 persons

Basin No.	City/Town/Rural		No. of People Served 1990	2000
237		Rural	13.1	19.1
238		Rural	13.5	19.2
239		Rural	14.1	20.0
240		Rural	16.8	24.8
241	C216	Sibu	164.6	290.5
	C217	Sarikei	31.3	56.6
		Rural	173.4	245.6
		Total	204.7	302.2
242		Rural	25.8	36.0
243		Rural	29.4	41.6
244		Rural	58.2	80.8
245	C218	Serian	6.8	13.4
		Rural	75.1	108.2
		Total	81.9	121.6
246	C219	Kuching	288.3	440.9
		Rural	124.1	183.8
		Total	412.4	624.7
247		Rural	17.4	25.6
		SARAWAK Total	1,308.6	2,033.8
		SABAH & SARAWAK	2,296.2	3,694.8

Remarks; Sum of the population served by State PWDs, Waterworks Departments, Water Authorities and RESP

Table 145 NUMBER OF PEOPLE SERVED BY PROPOSED PUBLIC SEWERAGE SYSTEMS NOT AFFECTING RIVER WATER QUALITY IN 1990 AND 2000 BY SYSTEM BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	City/Town		Number of Served Population (10^3) 1990	2000
207	C201	Tawau	22	68
209	C203	Lahad Datu	13	45
212	C204	Sandakan	30	96
220	C208	Kota Kinabalu	32	115
Total for Sabah			97	324
236	C215	Bintulu	12	20
246	C219	Kuching	71	232
Total for Sarawak			83	252
Total for Sabah & Sarawak			180	576

Table 146 POPULATION SERVED BY PROPOSED FLOOD FORECASTING SYSTEMS AND WARNING IN 1990 AND 2000 BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: 10^3 persons

Basin No.	Basin Name	1990	2000
SABAH			
207	Tawau	-	7.3
210	Segama	-	4.1
211	Kinabatangan	5.2	5.2
217	Bongan	13.6	13.6
218	Kadamaian	-	6.4
221	Papar	10.7	10.7
224	Padas	-	3.1
Sub-total		29.5	50.4
SARAWAK			
229	Limbang	-	2.8
230	Baram	7.7	7.7
231	Miri	-	13.2
233	Niah	-	6.9
236	Kemena	-	10.9
237	Tatau	-	3.1
241	Rajang	-	15.7
245	Sadong	5.4	5.4
246	Sarawak	28.0	28.0
Sub-total		41.1	93.7
SABAH & SARAWAK		70.6	144.1

Table 147 NUMBER OF PEOPLE TO BE REMOVED FOR CONSTRUCTION OF SOURCE FACILITIES IN 2000 BY FACILITIES BY BASIN FOR THE STATES OF SABAH AND SARAWAK UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Unit: Persons

Basin No.	Name of Facilities	Number of People to be removed
SABAH		
207	Tawau dam	50
213	Meliau dam	50
218	Wariu dam	50
221	Papar dam	105
SARAWAK		
231	Liku dam	50
SABAH & SARAWAK		305

Table 148 NUMBER OF PEOPLE TO BE REMOVED FOR CONSTRUCTION OF HYDROPOWER FACILITIES IN 2000 BY BASIN FOR THE STATES OF SABAH AND SARAWAK UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Name of Facilities	Number of People to be removed
SABAH		
221	Papar dam	525
224	Sook dam	3,000
224	Pangi extension	-
224	Pangi No. 2 dam	75
		3,600
SARAWAK		
244	Batang Sekrang dam	125
SABAH & SARAWAK		3,725

Table 149 NUMBER OF PEOPLE TO BE REMOVED FOR CONSTRUCTION OF FLOOD MITIGATION PROJECTS BY 2000 BY BASIN UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Basin No.	Basin Name	People Removed
SABAH		
207	Tawau	200
217	Bongan	2,300
220	Putatan	4,100
	Total	6,600
SARAWAK		
231	Miri	400
233	Niah	200
236	Kemena	1,100
241	Rajang	100
246	Sarawak	2,800
	Total	4,600

Table 150 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED WATER DEMAND AND SUPPLY BALANCE PLAN IN SABAH

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Irrigation	($M\$10^6$)	18
D&I water supply	($M\$10^6$)	98
Fish culture	($M\$10^6$)	4
Reservoir recreation	($M\$10^6$)	3
Total	($M\$10^6$)	123
1.2 Economic Cost		
Irrigation	($M\$10^6$)	10
D&I water supply	($M\$10^6$)	58
Fish culture	($M\$10^6$)	4
Dams, barrages & diversion facilities	($M\$10^6$)	39
Total	($M\$10^6$)	111
1.3 EIRR	(%)	9
2. Environmental Quality		
2.1 Beneficial Effect		
Safe maintenance flow period (2000)		See Table
Surface area of lake created	(km^2)	10
2.2 Adverse Effect		
Possible reduction in kind of fish immediately downstream of dams and barrages	(nos. of site)	5
3. Social Well-being		
3.1 Beneficial Effect		
Number of farm households benefited by proposed irrigation in 2000	(10^3)	13
Number of people served by proposed public water supply in 2000	(10^3)	1,958
Safe supply period (2000)		See Table
3.2 Adverse Effect		
Number of people to be removed for construction of facilities	(10^2)	20

Remarks; All effects by proposed hydropower project are not shown except irrigation, D&I water supply and lake recreation benefit.

Table 151 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED HYDROPOWER DEVELOPMENT PLAN IN SABAH

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Power generation	($M\$10^6$)	101
1.2 Economic Cost		
Dam & power facilities	($M\$10^6$)	40
1.3 EIRR	(%)	16
2. Environmental Quality		
2.1 Beneficial Effect		
Surface area of lake created	(km^2)	43
2.2 Adverse Effect		
Possible reduction in kind of fish in immediately downstream of dam	(nos. of site)	4
3. Social Well-being		
3.1 Adverse Effect		
Number of people to be removed for construction of facilities	(10^3)	4

Remarks; Economic benefit other than power generation benefit is not shown here, but included in the water demand and supply account.

Table 152 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED WATER POLLUTION ABATEMENT PLAN IN SABAH

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Sewerage	(M10^6$)	6
Saving in pre-treatment for D&I water supply	(M10^6$)	0
Total	(M10^6$)	6
1.2 Economic Cost		
Sewerage	(M10^6$)	13
Private purification facilities	(M10^6$)	0
Pre-treatment for D&I water supply	(M10^6$)	0
Total	(M10^6$)	13
2. Environmental Quality		
2.1 Beneficial Effects		
Length of river stretch where BOD concentration is not more than 10 mg/lit in 2000 compared with without project condition (Study length = 1,600 km)	(km)	1,600/1,580 /1
Length of river stretch where BOD concentration is not more than 5 mg/lit in 2000 compared with without project condition (Study length = 1,600 km)	(km)	1,600/1,580 /1
2.2 Adverse Effect		-
3. Social Well-Being		
3.1 Beneficial Effects		
Number of people served by proposed sewerage system in 2000	(10^3)	582
3.2 Adverse Effect		-

Remarks; /1: (Length of river stretch with Project)/ (Length of river stretch without Project)

Table 153 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED FLOOD MITIGATION PLAN IN SABAH

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Damage reduction	(M$10^6)	3.4
1.2 Economic Cost		
Flood mitigation work	(M$10^6)	4.1
1.3 EIRR	(%)	7.1
2. Environmental Quality		
2.1 Beneficial Effect		
Length of improved stretch	(km)	87
2.2 Adverse Effect		-
3. Social Well-being		
3.1 Beneficial Effect		
Number of protected people by proposed facilities in 2000	(10^3)	77
Population served by proposed flood warning system in 2000	(10^3)	53
Area relieved from flood hazards	(10^3 ha)	40
3.2 Adverse Effect		
Number of people to be removed for construction of facilities	(10^3)	9

Table 154 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED WATER DEMAND AND SUPPLY BALANCE PLAN IN SARAWAK

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Irrigation	(M10^6$)	47
D&I water supply	(M10^6$)	62
Fish culture	(M10^6$)	2
Reservoir recreation	(M10^6$)	1
Total	(M10^6$)	112
1.2 Economic Cost		
Irrigation	(M10^6$)	29
D&I water supply	(M10^6$)	61
Fish culture	(M10^6$)	2
Dams, barrages & diversion facilities	(M10^6$)	1
Total	(M10^6$)	93
1.3 EIRR	(%)	11
2. Environmental Quality		
2.1 Beneficial Effect		
Safe maintenance flow period (2000)		See Table
Surface area of lake created	(km^2)	3
2.2 Adverse Effect		
Possible reduction in kind of fish immediately downstream of dams and barrages	(nos. of site)	1
3. Social Well-being		
3.1 Beneficial Effect		
Number of farm households benefited by proposed irrigation in 2000	(10^3)	60
Number of people served by proposed public water supply in 2000	(10^3)	2,337
Safe supply period (2000)		See Table
3.2 Adverse Effect		
Number of people to be removed for construction of facilities	(10^2)	10

Remarks; All effects by proposed hydropower project are not shown except irrigation, D&I water supply and lake recreation benefit.

Table 155 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED HYDROPOWER DEVELOPMENT PLAN IN SARAWAK

Item			Amount
1. National Economic Development			
1.1	Economic Benefit		
	Power generation	(M10^6)	57
1.2	Economic Cost		
	Dam & power facilities	(M10^6)	30
1.3	EIRR	(%)	14
2. Environmental Quality			
2.1	Beneficial Effect		
	Surface area of lake created	(km^2)	94
2.2	Adverse Effect		
	Possible reduction in kind of fish in immediately downstream of dam	(nos. of site)	3
3. Social Well-being			
3.1	Adverse Effect		
	Number of people to be removed for construction of facilities	(10^3)	3

Remarks; Economic benefit other than power generation benefit is not shown here, but included in the water demand and supply account.

Table 156 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED WATER POLLUTION ABATEMENT PLAN IN SARAWAK

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Sewerage	($M\$10^6$)	8
Saving in pre-treatment for D&I water supply	($M\$10^6$)	1
Total	($M\$10^6$)	9
1.2 Economic Cost		
Sewerage	($M\$10^6$)	27
Private purification facilities	($M\$10^6$)	0
Pre-treatment for D&I water supply	($M\$10^6$)	1
Total	($M\$10^6$)	28
2. Environmental Quality		
2.1 Beneficial Effects		
Length of river stretch where BOD concentration is not more than 10 mg/lit in 2000 compared with without project condition (Study length = 1,810 km)	(km)	1,810/1,800 /1
Length of river stretch where BOD concentration is not more than 5 mg/lit in 2000 compared with without project condition (Study length = 1,810 km)	(km)	1,810/1,800 /1
2.2 Adverse Effect		-
3. Social Well-Being		
3.1 Beneficial Effects		
Number of people served by proposed sewerage system in 2000	(10^3)	438
3.2 Adverse Effect		-

Remarks; /1: (Length of river stretch with Project)/ (Length of river stretch without Project)

Table 157 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED FLOOD MITIGATION PLAN IN SARAWAK

Item			Amount
1.	National Economic Development		
	1.1 Economic Benefit		
	Damage reduction	(M10^6)	7.7
	1.2 Economic Cost		
	Flood mitigation work	(M10^6)	12.0
	1.3 EIRR	(%)	5.7
2.	Environmental Quality		
	2.1 Beneficial Effect		
	Length of improved stretch	(km)	198
	2.2 Adverse Effect		-
3.	Social Well-being		
	3.1 Beneficial Effect		
	Number of protected people by proposed facilities in 2000	(10^3)	122
	Population served by proposed flood warning system in 2000	(10^3)	86
	Area relieved from flood hazards	(10^3 ha)	168
	3.2 Adverse Effect		
	Number of people to be removed for construction of facilities	(10^3)	4

Table 158 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED WATER DEMAND AND SUPPLY BALANCE PLAN IN SABAH UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Irrigation	($M\$10^6$)	18
D&I water supply	($M\$10^6$)	61
Fish culture	($M\$10^6$)	3
Reservoir recreation	($M\$10^6$)	2
Total	($M\$10^6$)	84
1.2 Economic Cost		
Irrigation	($M\$10^6$)	10
D&I water supply	($M\$10^6$)	34
Fish culture	($M\$10^6$)	3
Dams, barrages & diversion facilities	($M\$10^6$)	28
Total	($M\$10^6$)	75
1.3 EIRR	(%)	10
2. Environmental Quality		
2.1 Beneficial Effect		
Safe maintenance flow period (2000)		See Table
Surface area of lake created	(km^2)	4
2.2 Adverse Effect		
Possible reduction in kind of fish immediately downstream of dams and barrages	(nos. of site)	4
3. Social Well-being		
3.1 Beneficial Effect		
Number of farm households benefited by proposed irrigation in 2000	(10^3)	13
Number of people served by proposed public water supply in 2000	(10^3)	1,759
Safe supply period (2000)		See Table
3.2 Adverse Effect		
Number of people to be removed for construction of facilities	(10^2)	20

Remarks; All effects by proposed hydropower project are not shown except irrigation, D&I water supply and lake recreation benefit.

Table 159 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED HYDROPOWER DEVELOPMENT PLAN IN SABAH UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Item			Amount
1.	National Economic Development		
	1.1 Economic Benefit		
	Power generation	(M$10^6)	70
	1.2 Economic Cost		
	Dam & power facilities	(M$10^6)	22
	1.3 EIRR	(%)	20
2.	Environmental Quality		
	2.1 Beneficial Effect		
	Surface area of lake created	(km^2)	34
	2.2 Adverse Effect		
	Possible reduction in kind of fish in immediately downstream of dam	(nos. of site)	3
3.	Social Well-being		
	3.1 Adverse Effect		
	Number of people to be removed for construction of facilities	(10^3)	4

Remarks; Economic benefit other than power generation benefit is not shown here, but included in the water demand and supply account.

Table 160 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED WATER POLLUTION ABATEMENT PLAN IN SABAH UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Sewerage	(M10^6)	3
Saving in pre-treatment for D&I water supply	(M10^6)	0
Total	(M10^6)	3
1.2 Economic Cost		
Sewerage	(M10^6)	6
Private purification facilities	(M10^6)	0
Pre-treatment for D&I water supply	(M10^6)	0
Total	(M10^6)	6
2. Environmental Quality		
2.1 Beneficial Effects		
Length of river stretch where BOD concentration is not more than 10 mg/lit in 2000 compared with without project condition (Study length = 1,600 km)	(km)	1,580/1,580 /1
Length of river stretch where BOD concentration is not more than 5 mg/lit in 2000 compared with without project condition (Study length = 1,600 km)	(km)	1,600/1,580 /1
2.2 Adverse Effect		-
3. Social Well-Being		
3.1 Beneficial Effects		
Number of people served by proposed sewerage system in 2000	(10^3)	391
3.2 Adverse Effect		-

Remarks; /1: (Length of river stretch with Project)/ (Length of river stretch without Project)

Table 161 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED FLOOD MITIGATION PLAN IN SABAH UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Item			Amount
1.	National Economic Development		
	1.1 Economic Benefit		
	Damage reduction	(M$10^6)	2.8
	1.2 Economic Cost		
	Flood mitigation work	(M$10^6)	2.3
	1.3 EIRR	(%)	9.3
2.	Environmental Quality		
	2.1 Beneficial Effect		
	Length of improved stretch	(km)	71
	2.2 Adverse Effect		-
3.	Social Well-Being		
	3.1 Beneficial Effect		
	Number of protected people by proposed facilities in 2000	(10^3)	61
	Population served by proposed flood warning system in 2000	(10^3)	50
	Area relieved from flood hazards	(km^2)	340
	3.2 Adverse Effect		
	Number of people to be removed for construction of facilities	(10^3)	7

Table 162 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED WATER DEMAND AND SUPPLY BALANCE PLAN IN SARAWAK UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Irrigation	($M\$10^6$)	47
D&I water supply	($M\$10^6$)	39
Fish culture	($M\$10^6$)	2
Reservoir recreation	($M\$10^6$)	1
Total	($M\$10^6$)	92
1.2 Economic Cost		
Irrigation	($M\$10^6$)	29
D&I water supply	($M\$10^6$)	39
Fish culture	($M\$10^6$)	2
Dams, barrages & diversion facilities	($M\$10^6$)	1
Total	($M\$10^6$)	71
1.3 EIRR	(%)	12
2. Environmental Quality		
2.1 Beneficial Effect		
Safe maintenance flow period (2000)		See Table
Surface area of lake created	(km^2)	2
2.2 Adverse Effect		
Possible reduction in kind of fish immediately downstream of dams and barrages	(nos. of site)	1
3. Social Well-being		
3.1 Beneficial Effect		
Number of farm households benefited by proposed irrigation in 2000	(10^3)	60
Number of people served by proposed public water supply in 2000	(10^3)	2,180
Safe supply period (2000)		See Table
3.2 Adverse Effect		
Number of people to be removed for construction of facilities	(10^2)	10

Remarks; All effects by proposed hydropower project are not shown except irrigation, D&I water supply and lake recreation benefit.

Table 163 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED HYDROPOWER DEVELOPMENT PLAN IN SARAWAK UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Power generation	($M\$10^6$)	10
1.2 Economic Cost		
Dam & power facilities	($M\$10^6$)	6
1.3 EIRR	(%)	12
2. Environmental Quality		
2.1 Beneficial Effect		
Surface area of lake created	(km^2)	15
2.2 Adverse Effect		
Possible reduction in kind of fish in immediately downstream of dam	(nos. of site)	1
3. Social Well-being		
3.1 Adverse Effect		
Number of people to be removed for construction of facilities	(10^3)	0.1

Remarks; Economic benefit other than power generation benefit is not shown here, but included in the water demand and supply account.

Table 164 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED WATER POLLUTION ABATEMENT PLAN IN SARAWAK UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Item		Amount
1. National Economic Development		
1.1 Economic Benefit		
Sewerage	($M\$10^6$)	4
Saving in pre-treatment for D&I water supply	($M\$10^6$)	1
Total	($M\$10^6$)	5
1.2 Economic Cost		
Sewerage	($M\$10^6$)	13
Private purification facilities	($M\$10^6$)	0
Pre-treatment for D&I water supply	($M\$10^6$)	1
Total	($M\$10^6$)	14
2. Environmental Quality		
2.1 Beneficial Effects		
Length of river stretch where BOD concentration is not more than 10 mg/lit in 2000 compared with without project condition (Study length = 1,810 km)	(km)	1,810/1,800 /1
Length of river stretch where BOD concentration is not more than 5 mg/lit in 2000 compared with without project condition (Study length = 1,810 km)	(km)	1,810/1,800 /1
2.2 Adverse Effect		
3. Social Well-Being		
3.1 Beneficial Effects		
Number of people served by proposed sewerage system in 2000	(10^3)	300
3.2 Adverse Effect		-

Remarks; /1: (Length of river stretch with Project)/ (Length of river stretch without Project)

Table 165 BENEFICIAL AND ADVERSE EFFECTS OF RECOMMENDED FLOOD MITIGATION PLAN IN SARAWAK UNDER THE CONDITION OF LOWER ECONOMIC GROWTH

Item			Amount
1.	National Economic Development		
	1.1 Economic Benefit		
	Damage reduction	(M$10^6)	5.9
	1.2 Economic Cost		
	Flood mitigation work	(M$10^6)	12.0
	1.3 EIRR	(%)	3.6
2.	Environmental Quality		
	2.1 Beneficial Effect		
	Length of improved stretch	(km)	198
	2.2 Adverse Effect		-
3.	Social Well-Being		
	3.1 Beneficial Effect		
	Number of protected people by proposed facilities in 2000	(10^3)	151
	Population served by proposed flood warning system in 2000	(10^3)	94
	Area relieved from flood hazards	(km^2)	1,676
	3.2 Adverse Effect		
	Number of people to be removed for construction of facilities	(10^3)	5