

HUNTING TECHNICAL SERVICES

Regional Planning Study
of the First Division Sarawak

41577

Volume II

Main report

REGIONAL PLANNING STUDY
OF THE FIRST DIVISION SARAWAK

VOLUME II

MAIN REPORT

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CONVERSION FACTORS

- 1 inch = 2.540 cm
- 1 foot = 0.3043 m
- 1 mile = 1.6093 km
- 1 acre = 0.4047 ha
- 1 sq.mile = 640 acres = 258.9 ha.

- 1 Hoppus ft. = 0.036 m³
- 1 Hoppus ton = 50 H. ft. = 1.8 m³
- 1 cubic ft. = 0.028 m³
- 1 cubic ft.(sawn) = 2 Hoppus feet (round) = 0.072 m³

- 1 Hoppus ft. per acre = 0.09 m³ per ha.
- 1 Hoppus ton per acre = 4.5 m³ per ha.
- 1 cub. ft. per acre = 0.07 m³ per ha.

3 M\$ = 1 US\$

1 picul = 133.3 lbs.

- The following team members took part in the study:
- team leader
 - soil scientist
 - agronomist
 - irrigation and drainage specialist
 - civil engineer
 - agriculturist
 - agricultural economist
 - land tenure specialist
 - rural sociologist
 - general secretary (R.V.B.)
 - secretary

In the early stages of the study team member, S.A. Mekket died on the second of February 1971.

1. INTRODUCTION

The First Division, one of the five Divisions of the State of Sarawak, is situated between latitudes $0^{\circ} 52'$ and $2^{\circ} 04'$ north and longitudes $109^{\circ} 33'$ and $111^{\circ} 00'$ east. The total area covers 2,176,000 acres (3400 square miles, 8700 km²) including the rivers but excluding some small islands. In the south and the west the First Division is separated from Indonesian Borneo (Kalimantan) by a mountainous area with mountains up to 4000 feet (1200 m) forming practically a natural watershed. In the east it borders on Sarawak's Second Division, the borderline also consisting of a natural watershed. In the north it borders on the South China Sea.

In 1969 the Agricultural University of Wageningen undertook a preliminary mission to investigate the possibility of starting a research project on regional planning in Malaysia. In joint consultation with the Economic Planning Unit in Kuala Lumpur and the State Government of Sarawak in Kuching the First Division was chosen as the research object.

In September 1969 the Government of Malaysia and the Agricultural University of Wageningen signed a Memorandum of Understanding. On the basis of this memorandum the Study Team of the Agricultural University in October submitted a "Taxation Report" (Inception Report).

The Agricultural University received the collaboration of the Research Institute for Management Research (R.V.B.) in Delft which provided the general economists H.J. de Nie and H. Rooseboom.

The following team members took part in the study:

D.B.W.M. van Dusseldorp	teamleader
W.A. Blokhuis	soil scientist
M. Flach	agronomist
E.J. Harmsen	irrigation and drainage specialist
G.A. Hekket	civil engineer
I.A. de Hulster	sylviculturist
G.A. Koopstra	agricultural economist
J.W. Kroon	land tenure specialist
B.E.J.C. Lekanne dit Deprez	rural sociologist
H.J. de Nie	general economist (R.V.B.)
J. Verhoog	assistant teamleader

To the deep regret of the Study Team mr. G.A. Hekket died on the second of February 1971.

The Study Team was accompanied by three students of the Agricultural University, P.Th. Engelkamp, H.C. van de Mandele and A.G. Nottelman, who assisted various team members.

The field work was initiated in December 1969 and concluded towards the end of April 1970. The detailed compilation of data and the writing of the final report was started at the Agricultural University in Wageningen in May 1970 and ended in the middle of 1971.

Three Malaysian counterparts, R. Lai Kwet Kiong, A. Bong and Chia Pit Chung, took part in the compilation of the data and the drawing up of the plan under a fellowship assignment in The Netherlands.

The Agricultural University of Wageningen wishes to place on record their sincere appreciation of the assistance rendered by the Economic Planning Unit (EPU) of the Federal Government of Malaysia, the State Government of Sarawak and the many individuals and organizations who contributed to a successful implementation of studies and surveys.

It is impossible to mention the names of all the organizations and persons, but an exception is made for Mr. Thong Yaw Hong and Mr. Abu Hassan of the Economic Planning Unit; Mr. T'en Kuen Foh, State Financial Secretary; Mr. Ling Kim Bang, Mr. Song Thian Hock and Mr. Chai Boon Poh of the State Steering Committee and Mr. R. Lai Kwet Kiong, chief counterpart.

The regional planning study has resulted in a draft Regional plan presented in eight volumes. Volume I gives a summary of the most important conclusions of the plan. Volume II contains the Main Report which indicates the interrelationships between the various aspects of the present and the recommended future situation as well as between the various development programmes and major policies elaborated in seventeen annexes and brought together in the volumes III up to VII. Volume VIII contains the maps.

Subsequently for the entire economy of this Division. The estimates of the growth of the primary sector have been based on the identified resources within the first division, while the projections of the secondary and tertiary sector were made with the aid of assumptions concerning the rate of economic development of Sarawak at a whole and the relative position of the First Division within the State during the plan period.

The study of the First Division consists of two parts. In the first place the present situation has been analysed in order to identify the potentials for development and the bottlenecks which may prevent the attainment of the development goals.

2. METHODOLOGY

Special attention has been given to soils, hydrology, land tenure, agriculture. The structure of the regional plan for the First Division as presented in this report has been determined by three major factors:

1. No development plan of Sarawak indicating the spatial distribution of economic activities and the interrelations between regions is yet available.
2. Notwithstanding the level of statistics and other information in Sarawak in general is satisfactory, specific data on the economy of the separate Divisions, especially on the secondary and tertiary sectors, are either not present or not very reliable.
3. The composition of the Study Team which pointed to a preference to the resource-approach of regional planning.

These three factors together led to the choice of basing the regional plan for the First Division on the possibilities of increasing the utilization-degree of its resources.

It should be noticed here that the resource-approach is not the only starting point for regional planning. Another alternative is to identify the specific functions of a region in the national economy, to strengthen these functions and to integrate them in the national economic pattern. To use this functional approach in the case of the First Division would have meant the inclusion of the other Divisions of Sarawak and the States of Malaysia in this study. It would have been doubtful whether the Study Team in its present composition and considering the time limitations could have made a satisfactory analysis of the interrelations between the First Division and the other Divisions of Sarawak and States of Malaysia. Especially the paucity of data on physical resources outside the First Division would have been a serious impediment.

Although the resource-approach has been chosen for the regional plan for the First Division, in practice it proved not to be possible to apply it consequently for the entire economy of this Division. The estimates of the growth of the primary sector have been based on the identified resources within the First Division, while the projections of the secondary and tertiary sector were made with the aid of assumptions concerning the rate of economic development of Sarawak as a whole and the relative position of the First Division within the State during the plan period.

The study of the First Division consists of two parts. In the first place the present situation has been analysed in order to identify the potentials for development and the bottlenecks which may prevent the attainment of the development goals.

Special attention has been given to soils, hydrology, land tenure, agriculture, forestry, manufacturing, the infrastructure, the distribution of socio-economic services, education, the health services and the public administration in so far as it has a bearing on the organization of the development efforts. The analysis in those fields was done on the basis of existing publications, interviews and investigations carried out by the Study Team itself.

The study of the present situation resulted in the determination of the Gross Regional Product of the First Division and the present state of employment. As a per sector analysis has been used, the production accounts method proved to be the most practical approach to determine the GRP. Per sector the Gross Value Added (GVA) was calculated and the sum of all the GVA's gave the GRP at factor cost of the First Division. To arrive at the GRP at market prices the indirect taxes were added to the GRP at factor cost.

The year 1967 was chosen as the basic year of all the calculations, as it is the most recent year for which the majority of pertinent data were available. To make a relevant analysis of the economic structure of the First Division it was necessary to place this Division in the context of the total economy of the State. Therefore also a calculation of the Gross Domestic Product (GDP) of Sarawak and the contribution of the various sectors to this GDP was made. However, it should be borne in mind that the Sarawak figures have not been checked thoroughly by the Study Team. The figures of the Sarawak economy have been mainly used to provide a rough framework of reference for the analysis of the economic structure of the First Division.

The second part of the study deals with the possible future development of the First Division. As plan period was chosen a period of twenty years, from 1971 up to and including 1990. In the framework of the plan basically two periods have been distinguished, namely 1971 - 1975, being the period of the Second Malaysia Plan and the period 1976 - 1990. The regional plan is in particular meant to provide guidelines for the development of the First Division during the Second Malaysia Plan, but in order to secure a certain degree of continuity in the policy measures it does not suffice to restrict the forecast of the future development only to that period. It is much better to provide a long term outlook and to fit the five-year plans into this broad framework. In this way the function of the five-year plans will be to show in greater detail what policy measures and programmes of action can be more or less realistically carried out given the financial resources and the manpower supply in the period concerned, and will lead to the attainment of the long term development goals.

The long term projections in this regional plan should therefore be taken as very preliminary indications of a possible future development of the First Division in the next twenty years. The figures presented should be handled with considerable caution. They do not present a great measure of accuracy.

Starting point of the forecast of the economic development of the First Division is the assumption regarding the future annual growth rate of the economy of Sarawak as a whole. Without using such an assumption it would have been very difficult to:

- find out whether the economic development of the First Division will keep up with that of the whole State;
- estimate the share of the various sectors of the First Division in the totals of the corresponding Sarawak sectors and by doing so to determine the structural changes in Sarawak as a result of the regional plan of the First Division;
- estimate the industrial growth in the First Division, which is also related to the increase in income in the whole State.

On the basis of the identification of potentials within the First Division the future contributions of agriculture, forestry and marine fisheries to the GRP of this Division for the years 1975 and 1990 have been calculated. The projections of the GVA of manufacturing were made in an indirect way by making use of the assumed increase of the GDP of Sarawak, whereas for the other sectors the estimates were based on several assumptions in which the interrelations between the various sectors have been taken into consideration.

Besides estimating the GRP also the employment implications of the regional plan have been calculated in which the employment in some major sectors is indicated separately.

A rough estimate has been made of both private and public investments needed to carry out the plan. During the compilation of the plan for the First Division no information was available concerning the funds that could be allocated to the development of the First Division. Therefore the public investments mentioned are only indicating what is needed to carry out the plan, not the funds that are in reality available. As not only investments but also qualified manpower is needed to realize the projects which will bring the First Division to the level of development indicated by the regional plan, the future educational system needed to train the manpower has been discussed as also the required infrastructure and the institutional organization. Finally, the future recommended population distribution within the First Division is presented together with the structure of the necessary socio-economic services within the projected centres.

In order to attain a certain measure of realism in the regional plan the proposed policies and their rates of implementation have been confronted with the problem of adaptability of the various ethnic and social groups. The Study Team has tried to conceive the proposals in such a way that the people will become involved in the realization of the regional plan.

From the foregoing it has become clear that the plan presented is a draft Regional Plan.

The share of the tertiary sector (1) in the GRP of this Division is relatively high; 33 per cent of the total GRP of the First Division is contributed by the tertiary sector against 23 per cent in the case of Sarawak as a whole (table 1).

The secondary sector (2) plays a more important role in the First Division than in the rest of Sarawak, notwithstanding the fact that the share of manufacturing in the GRP of the First Division is less than its share in the GRP of the other Divisions taken together. The contribution of the secondary sector to the GRP of the First Division is M\$ 109 million or 47 per cent against M\$ 201 million or 43 per cent in the case of all other Divisions together. Obviously this means that the primary sector (3) plays a less important role in the economy of the First Division if it is compared with its role in the rest of Sarawak. 20 per cent of the GRP of the First Division in 1967 originated from this sector, whereas this percentage was 34 for Sarawak as a whole.

Of the various economic sectors agriculture, manufacturing, wholesale and retail trade, and public administration are the most important ones. In 1967 and 1970 in total nearly 60 per cent of the GRP of the First Division originated from these sectors. Agriculture alone accounted for 15 per cent of the GRP.

From the above it can be concluded that the economic development of the First Division will to a large extent depend on the potentials in the agricultural sector and, as Kuching is the only urban centre of any significance within the First Division where by far most of the secondary and tertiary activities are concentrated, on the future position of this town in the total economy of the State.

-
- (1) Banking, insurance and real estate, ownership of dwellings, public administration and services.
 - (2) Manufacturing, building and construction, utilities, transport and communications, wholesale and retail trade.
 - (3) Agriculture, forestry, marine fisheries, mining and quarrying.

3. PRESENT SITUATION, POTENTIALS AND BOTTLENECKS

3.1. Present economic structure

3.1.1. Main economic characteristics (Annex 16, Regional Accounts)

The structure of the economy of the First Division is determined by the presence of Kuching as the capital of the State of Sarawak within its territory. This means that the share of the tertiary sector (1) in the GRP of this Division is relatively high; 33 per cent of the total GRP of the First Division in 1967 was contributed by the tertiary sector against 23 per cent in the case of Sarawak as a whole (table 1).

Also the secondary sector (2) plays a more important role in the First Division than in the rest of Sarawak, notwithstanding the fact that the share of manufacturing in the GRP of the First Division is less than its share in the GRP of the other Divisions taken together. The contribution of the secondary sector to the GRP of the First Division is M\$ 109 million or 47 per cent against M\$ 292 million or 43 per cent in the case of all other Divisions together. Inevitably this means that the primary sector (3) plays a less important role in the economy of the First Division if it is compared with its role in the rest of Sarawak. 20 per cent of the GRP of the First Division in 1967 originated from this sector, whereas this percentage was 34 for Sarawak as a whole.

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- (1) Banking, insurance and real estate, ownership of dwellings, public administration and services.
 - (2) Manufacturing, building and construction, utilities, transport and communications, wholesale and retail trade.
 - (3) Agriculture, forestry, marine fisheries, mining and quarrying.

Table 1. The Gross Domestic Product and Gross Regional Product of Sarawak and the First Division by industrial origin in 1967 (in M\$ millions and percentages).

Sectors	Sarawak		First Division	
	M\$	%	M\$	%
Agriculture	130	19	35	15
Forestry	97	14	9	4
Marine Fisheries	8	1	3	1
Mining and Quarrying	3	0	1	0
Total Primary Sector	238	34	48	20
Manufacturing	114	17	33	14
Building, Construction	29	4	10	4
Utilities	10	1	7	3
Transport and Communications	50	7	22	10
Wholesale and retail trade	89	14	37	16
Total Secondary Sector	292	43	109	47
Banking, insurance and real estate	13	2	7	3
Ownership of dwellings	47	7	25	11
Public administration	54	8	27	12
Services	43	6	16	7
Total Tertiary Sector	157	23	75	33
Total at factor cost	687	100	232	100
Indirect taxes	75	-	26	-
Total at market prices	762	-	258	-

creation of the GVA. In the primary sector the average GVA created per worker was some M\$ 787 in 1967, while in the other sectors combined this amount was M\$ 4,463. Again taking into consideration the geographical distribution of the activities concerned one comes to the conclusion that generally speaking the average income level between the urban centre and the rural hinterland differs considerably. This is a matter of serious consideration as great income disparities may lead to grave social and political instability which will adversely affect the efforts of economic development.

3.1.2. Employment (Annex 15, Regional Accounts)

The total GRP at market prices of the First Division in 1967 amounted to M\$ 258 million in rounded figures, whereas the GDP at market prices of the whole of Sarawak was estimated at M\$ 762 million. The share of the GRP of the First Division in the total GDP of the State was therefore 34 per cent, which resulted in an equal per caput income for Sarawak and the First Division of approximately M\$ 820. This amount is M\$ 109 less than calculated for Sarawak in the publication "Data for the E.P.U. Mid-Plan Review and the I.M.F. Consultations 1968" (Department of Statistics, Kuala Lumpur, 30th May 1968). The reasons for this difference are the lower estimates of the GVA of the primary sector, building and construction, transport and communications, the exclusion of defence, and a higher estimate of the total population of Sarawak made by the Study Team.

The conclusion which can be drawn from the comparison between the GRP per caput of the First Division and the GDP per caput of Sarawak is that the average income level in the First Division is not lower than the State average, thus from this point of view the First Division does not hold an unfavourable position within Sarawak. However, an analysis of the First Division itself presents a different picture. If the shares of the various sectors to the GRP are compared with the location of these economic activities and the population distribution, it can be noticed that most of the secondary and tertiary activities take place in the urban areas, i.e. mainly in Kuching where 20-30 per cent of the population of the First Division are concentrated. The secondary and tertiary sectors combined contributed some M\$ 184 million to the GRP of the First Division in 1967, whereas the primary sector only some M\$ 48 million. On the other hand about 70-80 per cent of the population are living in those areas where the primary sector is the main source of living. This means that a great disparity must exist between the income level of Kuching and the rest of the Division. This view is also supported by the comparison of the GVA per sector and the number of workers involved in the creation of the GVA. In the primary sector the average GVA created per worker was some M\$ 787 in 1967, while in the other sectors combined this amount was M\$ 4,463. Again taking into consideration the geographical distribution of the activities concerned one comes to the conclusion that generally speaking the average income level between the urban centre and the rural hinterland differs considerably. This is a matter of serious consideration as great income disparities may lead to grave social and political instability which will adversely affect the efforts of economic development.

3.1.2. Employment (Annex 16, Regional Accounts)

Next to the creation of income economic activities also provide employment opportunities. As the two are not always compatible it does not suffice to consider the income effects of the economic activities. The capability of the various sectors to absorb the supply of labour should also be analysed in order to ascertain whether the economy of a region will be able to provide sufficient employment for the population.

The analysis of the present employment situation was seriously hampered by a lack of relevant data. Consequently only preliminary indications of the employment in the First Division can be given and the figures presented should therefore be used with great caution. They do not imply any great measure of accuracy.

If it can be assumed that the economically active part of the population belongs to the age groups of 15 to 60 years, the total supply of labour from the First Division amounts to some 111,000 persons (table 9) of which 69,000 men and 42,000 women. Excluded from these estimates are the school children and the women not seeking jobs. On the other hand, in total some 102,000 persons are employed, of which 67,000 males and 35,000 females. This means a total unemployment rate of 8 per cent of the economically active population. Of the male labour force 97 per cent are employed. The first conclusion also based on general observations might be that in the First Division there is no serious general unemployment problem. However, in reality the situation may be somewhat more serious than suggested by the figures. In the first place it may very well be that the labour force is greater than estimated by the Study Team. People younger than 15 or older than 59 years may either be employed and therefore taking the place of those in the age groups of 15-59 years, or are seeking work and should therefore be included in the labour force.

Secondly, not all employed are working full time. It is known that part time work occurs to a certain degree. As no reliable information on the scale of part time work in the First Division exists, in the Study Team's estimates part time work has been counted as full time work, thereby overestimating the employment figures. Finally, the employment in the agricultural sector was indirectly estimated by taking the number of farm families and assuming that per farm family two persons are fully employed on the farm. This may also be different in the real situation.

When considering the absorption capacity of the various sectors it may be noticed that the primary sector employs 61 per cent of the total number of employed people or 56 per cent of the total economically active population. The secondary sector absorbs 25 per cent of the economically active population whereas this

In general the standard of care and maintenance in farming is low; even on percentage is 12 for the tertiary sector. Taking into consideration the average income level of the First Division and the contribution to this income from the respective sectors it is obvious that the present employment structure is the cause of the income disparity within the First Division as discussed in 3.1.1.

The share of female labour in the total employment was 34 per cent in 1967, which should be considered rather high. Probably the reason for this phenomenon is the influence of the Chinese element in the Sarawak society.

3.1.3. The economic sectors

Agriculture (Annex 7, Agricultural Development)

Acreage

16,000¹⁾

24,000

44,600

10,000

8,500

73,000

7,300

The agricultural sector of the First Division has been characterized as a coexistence of simple subsistence farming and more or less intensive commercial farming, such as pepper growing, horticulture and animal husbandry. Geographically the pattern of farming bears a strong resemblance to the well-known Von Thünen model, i.e. the intensity of farming decreases with the growing distance to the main urban centre(s); the commercialized pepper, horticulture and animal husbandry farms are found in the immediate surroundings of Kuching and along the main roads, whereas in the more remote areas subsistence agriculture - particularly the shifting cultivation of hill padi - still is the prevailing system of farming (see table 2 and map V).

Especially in the upland areas the shifting cultivation creates serious problems, as - due to the population pressure on the land - the average fallow period has become dangerously short, sometimes only 5 or 6 years. In such a short fallow period the secondary growth obviously does not accumulate enough organic matter so as to permit a good crop yield; consequently the average yields - sometimes down to 400-500 lbs per acre - are far below the level of production which can be reached under optimal conditions of shifting cultivation. As a result of this periods of food shortage are already common in certain parts of the upland areas, while also undernourishment occurs. Because the population in the shifting cultivation areas is growing rapidly, the situation will deteriorate progressively unless certain measures are taken (see Annex 7, chapter 2).

Agriculture in Sarawak is mainly a smallholder's industry; the majority of the commodities produced in the First Division originates from small scale family farms. Apparently there are no clear economic advantages connected to large scale farming as none of the very few existing estates is in good condition, while some of them are even on the verge of breaking up.

the pepper and rubber industry amounted to \$16.2 million, as compared to

In general the standard of care and maintenance in farming is low; even on the more advanced commercial farms management leaves much to be desired. Fertilizers are hardly used in agricultural production, with pepper cultivation as the only exception. The poor standard of crop management a.o. finds expression in the level of yields which is very low such as for hill padi 600 lbs per acre in the First Division compared to 1500 lbs per acre in many other parts of the world and rubber 370 lbs per acre compared to 800 lbs or more per acre elsewhere.

Table 2. Acreages of the main crops in the First Division, 1967.

Crop	Acreage
Hill padi	16,000 ¹⁾
Wet padi	24,000
Coco-nut	44,600
Other food crops	10,000
Fruits and vegetables	8,500
Rubber	73,000 ²⁾
Pepper	7,300 ³⁾

1) yearly cultivated area; the total acreage of cultivable land used for shifting cultivation is estimated at 100,000 - 120,000.

2) excl. some 100,000 acres of unproductive rubber.

The quality of the agricultural commodities produced in Sarawak is generally poor, mainly because of insufficient bad storage and processing; approximately 83 per cent of all the rubber produced in Sarawak during the 1962-1967 period was classified as RSS 3, RSS 4, RSS 5 and RSS 6, while the average oil content of Sarawak copra amounted to 40-48 per cent only.

Despite the fact that climate and soils in Sarawak are far from optimal for agriculture, agriculture still contributes considerably to both the GRP of the First Division and the GDP of the State as a whole. Moreover some 55 per cent of the economically active population of the First Division finds employment in agriculture.

An important part of the GVA of the agricultural sector of the First Division originates from the main export commodities rubber and pepper. Export prices of these products generally fluctuate widely, in particular the price of pepper; moreover the long run trend of the rubber price is on the decline. Owing to the fluctuating export values of rubber and pepper the GVA of agriculture also varies widely as may be illustrated by the following figures: in 1967 the GVA of the pepper and rubber industry amounted to M\$ 16.2 million, as compared to

26.4 million in 1961 and some M\$ 30.0 million in 1969; fluctuations to be attributed mainly to price movements on the export markets. The total GVA of the agricultural sector in the years in question amounted to M\$ 35.5 million, M\$ 41.3 million and M\$ 50.0 million respectively.

The average income - in terms of GVA - per caput of farm population in 1967 was estimated at some M\$ 204, which is approximately equivalent with a yearly income per farm family of some M\$ 1,224. Per farm worker the GVA of the agricultural sector may amount to some M\$ 612. Obviously within the agricultural sector large differences in income occur, in particular between the poor subsistence farm family in the upland areas, whose income may hardly exceed M\$ 800 per annum and the family of the commercial farmer in the surroundings of Kuching with an average yearly income of at least M\$ 3,000 (see paragraph 2.4 of the Annex 7, Agricultural Development).

Forestry (Annex 5, Forestry and Annex 16, Regional Accounts)

For Sarawak as a whole the timber production increased from approximately 94,000 Hoppus tons¹⁾ (169,000 m³) in 1949 to 2,059,753 H. tons (3,707,555 m³) in 1967, or nearly 19 per cent per year. Consequently the Forest Department's surplus increased from M\$ 247,800 in 1950 to M\$ 11,324,932 in 1967 (custom duties on export not included). In the First Division the timber production also increased in the past 18 years. In 1949 the production was 16,800 H. tons (30,240 m³) whereas in 1967 174,243 H tons (313,637 m³) were produced implying an average annual rate of growth of nearly 14 per cent.

The production in the First Division is almost entirely obtained from the peat-swamp forests in the Sadong river basin area. Part of this area (111,510 acres, 44,928 ha) is reserved and exploited under a working cycle of 60 years to obtain a sustained yield; the regeneration treatments are, however, not in balance with the rate of exploitation. Adjoining these working plans a non-reserved area of approximately 80,000 acres (32,376 ha) without any regeneration treatments is nearly logged out. With no other valuable peat-swamp forest of some size available in the First Division, while also the possibilities for economic logging operations in the remaining primary Dipterocarp forest in the uplands are few, the timber production in the First Division will decrease the coming years: In 1975 it is expected to become approx. 77,890 H. tons, in 1980 65,890 H. tons (see paragraph 1.5., Annex 5, Forestry).

1) See the list with conversion factors on page vii of this volume.

The production obtained up till now is predominantly exported as logs. The export of processed wood is chiefly limited to one species. A number of bandmills in operation in the First Division are well equipped, often overpowered, mostly working in one shift only, so that more logs could be converted without a substantial investment.

The GVA of forestry (saw milling excluded) in the First Division in 1967 amounted to M\$ 8.5 million or 4 per cent of the total GRP at factor cost. The share of the First Division in the total forestry sector of Sarawak in 1967 was 9 per cent. In that year some 1,500 persons were employed in this sector in the First Division.

Both from the production and from the employment point of view forestry does not play a dominant part in the economy of the First Division. Its main importance lies in the provision of a valuable material for export which has a ready world market.

Marine fisheries (Annex 6, Marine Fisheries and Annex 16, Regional Accounts)

The information on marine fisheries pertains to 1968 instead of to 1967. However, it has been assumed that no increase in production occurred from 1967 to 1968. No data are available of subsistence fishing, therefore this activity was excluded. The production of marine fish, including crustaceae, amounted to 6,300 tons in the First Division, which is 46 per cent of the total Sarawak production. The GVA of this sector in the First Division is M\$ 3.3 million, while some 1,800 full time fishermen are located in this Division. There is still scope to augment the production. A doubling of the catches seems possible. When more use is made of trawling a further increase of the production will be possible.

Mining and quarrying (Annex 4, Mining and Quarrying and Annex 16, Regional Accounts)

The sector mining and quarrying in the First Division created a GVA of M\$ 1 million in 1967. The number of workers in that year was estimated at some 500 persons.

Manufacturing (Annex 17, Manufacturing and Annex 16, Regional Accounts)

Sarawak is an agricultural state. Its wealth has depended and will in the future largely depend on agriculture. The role of the manufacturing sector is relatively limited. In 1967 manufacturing contributed some 16 per cent to the GDP. Of the 2,368 establishments in 1968, 855 or 36 per cent are located in the First Division creating a GVA of M\$ 33 million, or 29 per cent of the GVA of the Sarawak manufacturing sector.

A number of problems are, however, limiting Sarawak's and therefore also the First Division's industrial development:

The reason, that in terms of contribution to GDP manufacturing in the First Division is less important than in terms of establishments is that most of the larger industries, such as sawmills and the oil refinery, are situated outside the First Division.

The structure of manufacturing in Sarawak is indicative of a sector in its early stages of development. Sarawak's manufacturing is mainly concerned with - the processing of primary products for export, and - the manufacturing of goods for domestic consumption.

The former includes refining of petroleum, sawmilling, plywood production and wood moulding, manufacturing of sago flour and sago products, coco-nut oil and rubber processing.

Industries in the second category are in the fields of beverages, footwear, wearing apparel and textile goods, metal containers, bisquits, soap, roofing and flooring tiles, bricks and pottery, gold and silverware, repair of transport equipment and other repairs.

The most important branches, in terms of value added for the First Division are wood products, food repairs of transport equipment, footwear and textile goods, and printing and publishing.

As regards the industries other than petroleum products and sawmills, it was calculated that in 1967 the First Division contributed half of the GVA of these sectors. This means that the First Division is playing a very important role within Sarawak in so far as these branches are concerned.

Of the industrial establishments within the First Division 87 per cent are located in Kuching which shows the dominant position of Kuching as an industrial centre.

A crude calculation shows that the manufacturing industry might have been employing 27,000 workers in Sarawak in 1967, of which some 10,000 in the First Division.

The main potential for further development appears to be:

- the processing of primary products for export, in particular wood and agricultural produce, and
- import substitution. The following products could be produced or expanded in Sarawak: agro-based industries such as fertilizer mixing, farm tools, food preservation and canning, cement and other building materials, textile goods, clothing, metal goods.

A number of problems are, however, limiting Sarawak's and therefore also the First Division's industrial development:

- the small size of the domestic market;
- a shortage of technical and managerial skills;
- the high prices of land, water and electricity;
- the high cost of transportation;
- the lack of a well-developed infrastructure;
- the strong competition from abroad and from West Malaysia;
- the absence of a consistent national policy aiming at a greater decentralization of industrial activities benefiting East Malaysia.

The industrial growth of the First Division will also be influenced by a decision of the authorities concerned on whether to stimulate the decentralization of industries within Sarawak or to concentrate the industrial development in the Kuching area.

Building and construction (Annex 16, Regional Accounts)

The activities of building and construction can be distinguished into those carried out for the public sector and those done for private employers. This distinction is relevant because no statistics on private building in the First Division are available, therefore the production had to be estimated in an indirect way. The total GVA of this sector in the First Division amounted to M\$ 10 million in 1967 which is 34 per cent of the sector's share in the GDP of Sarawak. About 80 per cent of the total activities in the First Division was either carried out by or for the public authorities.

In total building and construction provides employment for some 3,000 workers in the First Division.

Utilities (Annex 16, Regional Accounts)

In the sector utilities of the First Division are included the Kuching Water Board and the Sarawak Electricity Supply Corporation (SESCO). The total GVA of this sector in the First Division is nearly M\$ 7 million, of which M\$ 5 million contributed by the supply of electricity. Round 70 per cent of the GVA of this sector in Sarawak originates in the First Division indicating the difference in the level of water and electricity supply between the First Division and the rest of Sarawak.

In 1967 some 600 persons were employed by the aforementioned organizations.

Transport and communications (Annex 16, Regional Accounts)

The sector transport and communications is composed of land and water transport, including wharves, other transport, including air transport, postal services and telecommunications. The total GVA of this sector in the First

Division amounts to M\$ 22 million, which accounts for 44 per cent of the GVA of this sector in Sarawak. The share of transport and communications in the GRP of the First Division amounts to 10 per cent. In 1967 in total 6,500 people worked in this sector in the First Division.

Wholesale and retail trade (Annex 16, Regional Accounts)

As the trade sector not only in the First Division but also in the whole State plays a crucial role in the process of transfer from production to consumption, an elaboration on its general characteristics is not out of place.

The trade and commerce of Sarawak lies almost entirely in the hands of two groups of merchants. Branches of a few large European "Agency Houses", well known throughout South-East Asia, control much of the wholesale importation of branded consumer goods for which they usually act as sole local distributors. Each of these firms have branch offices in the larger towns and some conduct business directly with agents in small and remote bazaars. In general, however, these European wholesalers sell to the Chinese merchants who control the retail trade. To a much smaller extent the same European firms buy and export local produce.

In contrast, although some Chinese firms are also engaged in this wholesale import trade on a relatively large scale, it is in the retail and distributive trade and in the export of Sarawak's primary produce that the Chinese merchants and traders hold a very important position. Virtually the whole of the trade of Sarawak passes through their hands at some stage and the commercial life of the State still hinges on a trading-cum-credit hierarchy extending from the large scale merchants of Singapore to the small scale Chinese traders in the isolated settlements of interior Sarawak.

In 1961 there were approximately 2,400 retail businesses in Sarawak of which about 640 were located in Kuching and 320 in Sibul, outside the First Division. These are mainly family concerns. Two-thirds of the Chinese shops in Kuching are separately owned by single individual owners. Some Indians are engaged in the textile trade in the larger towns and there are also occasional Malay-owned shops, but over four-fifths of those engaged in commerce are Chinese. This large Chinese trading community is marked by significant dialect concentrations. Large scale trade is chiefly a Hokkien and Teochew preserve and the latter dominates the importation of groceries. Among the rural shopkeepers on the other hand, there is a close relationship with the dominant dialect group in each locality, although in the smaller bazaars a shop owned by a member of minority dialect group does occur if there are sufficient of his clansmen in the immediate area. It is partly

First Division 5,800 persons were employed by the Federal, State and local authorities.

for this reason that often shops side by side sell identical goods for, as elsewhere in South-Asia, clan association plays a basic role in Chinese trading at all levels.

The total GVA of trade in Sarawak was estimated at M\$ 89 million in 1967; 42 per cent of this amount or M\$ 37 million originated in the First Division. In 1967 in the First Division some 7,400 persons might have been employed in trading activities.

Banking, insurance and real estate (Annex 16, Regional Accounts)

The GVA of this financial sector in the First Division was estimated at M\$ 7 million in 1967. The share of the First Division in the total sector in Sarawak was 50 per cent. This means that Kuching is definitely the financial centre of the State. Approximately 350 persons were employed by this sector in the First Division.

Ownerships of dwellings (Annex 16, Regional Accounts)

As in the sector ownership of dwellings only the exploitation of dwellings is included and practically no people are involved in this activity, no manpower has been calculated for this sector. The GVA of ownership of dwellings in the First Division was M\$ 25 million in 1967, which means that its share in the GRP was 11 per cent. As, however, the calculations were based on the rateable value and this value is rather arbitrarily determined, a great margin of error may be present in the GVA.

Public administration (Annex 16, Regional Accounts)

In the sector of public administration all government departments have been included except for the following:

- The armed forces have been totally excluded as the information concerned is classified.
- Teaching and other school personnel of the Department of Education have been included in the services sector.
- The same applies for the medical personnel of the Department of Health.
- The postal services and telecommunications have been included in the transport and communication sector.
- The Public Works Department have been included in the building and construction sector.

Total GVA of public administration in Sarawak was M\$ 54 million in 1967, of which M\$ 27 million originated in the First Division. The share of this sector in the GRP of the First Division amounted to 12 per cent. In total in 1967 in the First Division 5,600 persons were employed by the Federal, State and local

Services (Annex 16, Regional Accounts) be noticed in the recent past as a result

The sector services is composed of education, health, and other services, such as business services, hotels, recreational and personal services. The total GVA of this sector in 1967 was calculated at M\$ 43 million for Sarawak and M\$ 16 million for the First Division. The latter's share in the Sarawak total was therefore 37 per cent, while its contribution to the GRP of the First Division amounted to 7 per cent. In 1967 6,400 persons were working in this sector in the First Division.

3.2. Human resources

3.2.1. Demographic aspects (Annex 8, Demography)

The population of the First Division in 1970 was estimated at 334,000 persons. In the recent past the population growth has been considerable. It is projected that the average annual rate of growth for the period 1971-1975 will be 3.3 per cent and decline to 3.0 per cent in the period 1986-1990. A population growth of 2.5 per cent as indicated in objective 6.1 does not seem feasible before 1990.

Table 3 shows some of the consequences of these growth rates.

Table 3. Demographic projections for the First Division

	1970	1975	1980	1985	1990
Total population	334,000	393,000	461,000	537,000	622,000
Economically active males 15-59 years	73,000	84,000	97,000	115,000	135,000
Persons 6-11 years	62,000	74,000	86,000	99,000	113,000

Due to the high rate of population growth, in the next two decades the total population will increase with 288,000 persons. This will result in the coming years in a rejuvenation of the population of which in 1960 already 45 per cent was younger than 15 years. The population increase has considerable consequences for health and educational services. In the next twenty years primary schools have to expect an increase of approximately 50,000 persons. Also economic consequences have to be taken into account. Between 1970 and 1990, the labour force will have to absorb only as far as males are concerned, 60,000 persons.

Compared to other Divisions of Sarawak the First Division is the most densely populated: 72 persons per square mile in 1960 compared with 15 persons per sq. mile for the whole of Sarawak.

A start of a rural urban movement is to be noticed in the recent past as a result of which the percentage of the urban population (Kuching 20 per cent in 1960) will have increased. The internal geographic mobility in the First Division up to 1970 was of minor importance.

3.2.2. Social structure (Annex 9, Social Structure)

The most characteristic feature of the society of Sarawak and the First Division is its pluralism i.e. the coexistence of some demographically significant and culturally diverse populations within a single political unit. In 1960 39 per cent of the population of the First Division was Chinese, 27 per cent Malay, 23 per cent Land Dayak, 8 per cent Iban and 3 per cent belonged to other ethnic groups. Characteristic is that the ethnic differences are greatly accentuated by and coincide with other distinctions such as religion, language, geographic locality and most strikingly the socio-economic disparities. These imbalances, the causes of which are complex and deeply rooted, find expression in the level of education, the degree of entrepreneurship, the employment situation, income differences, kind of economic activities, the land tenure situation, etc.

The picture of pluralism is further complicated by the fact that most ethnic groups have - sometimes sharp - internal divisions and that class distinctions arise within and across ethnic groups; the intra-ethnic distinction between haves and have-nots is particularly notable among the Chinese.

The pluralism of the society constitutes the main challenge the developers have to face.

For future development the elementary family of two generations is to be considered the basic social and economic unit. With the Chinese also the clan organization is of importance, probably more markedly in the urban than in the rural setting. The kampongs are not very cohesive social units. But vis-à-vis the administration there is a growing kampong-centrism; people expect to benefit from all kinds of public facilities in their neighbourhood, which tendency may interfere with the required re-organization of the rural countryside (see paragraphs 6.3, 6.4.2 and 9.1). With the exception of the Chinese group, leadership at the local level is not highly developed. The authority of the Tua Kampong (Tuai Rumah), unless sanctioned by the government is limited. Mutual help exists in many forms, but co-operation patterns at kampong level or among large groups within a kampong, be it traditional or modern, are exceptional in the Dayak and Malay communities. The gotong-rojong principle for the co-operation between government and interested group, vigilant as they are already at this moment in all expanding

and kampong does not appear to be viable. The present administrative level of local government tends to be too high to arouse the interest of the local population.

By far the majority of the Dayak and Malay live in the rural areas. Exposure to the urban influences, greatly intensified during the last two decades, is changing the outlook of the rural inhabitants, but the degree of it varies markedly per area. Also government intervention has increased, notably in education. Many government activities at the local level, however, have the image of control and order rather than of change agencies. In the kampongs a growing tendency towards individualization exists, also with respect to land tenure, which - together with the population pressure - has decreased the area for shifting cultivation and consequently the rotation cycle. Many a rubber planting serves no productive function.

As distinct from the Chinese group, Dayak and Malay kampongs have no rigid social strata, but the inequality of income and wealth tends to increase with the acceleration of modern agricultural development. This inequality formerly resulted from concentration of land ownership, but today finds its major cause in the differential use made of the available resources.

The Chinese are the more progressive farmers and constitute the class of rural middlemen. Most Dayak and Malay agriculture is in a - rather early - transitional development stage from subsistence towards a market economy. The economic value system of the Dayak is essentially short term and centred around security; the main concern is with survival, although the need for modern consumption goods is growing. This basic value leads to the emphasis on self-sufficiency in the staple food: padi. The small-scale and relatively simple cultivation of rubber and coco-nut, with its modest but regular flow of cash income to cover the necessary money expenditures, is also part of this pattern of security, although it does not promote high productivity. Other crops, such as pepper, do not fit easily into this pattern. The agricultural economy of the Dayak and Malay is foremost a labour economy, characterized by a high diversity of activities. New activities easily lead to labour competition, since they are mostly additional to the existing activities rather than replacing them. Also this behaviour is directly connected with the central value of security. Capital is scarce in the kampongs, but serious indebtedness is as yet exceptional.

When considering the readiness to accept development or to utilize development possibilities to be offered, it is to be expected that the Chinese will be the most interested group, vigilant as they are already at this moment in all expanding

sectors of the economy. The Dayak and Malay communities will need more guidance in order to profit equally by the development possibilities available to them.

3.2.3. Health and education (Annex 11, Health and Annex 12, Education)

The present health conditions in the First Division do not create major problems for the future development. The subnutrition in certain areas and the poor environmental health conditions, especially in rural areas, causing for instance many cases of worm infestations, could, however, lead to great personnel disconcertance and could affect the working capacity of the population and therefore need special attention.

Literacy and the level of education received is an important indication of the development potential actually available in the existing human resources. Literacy rates have increased considerably in the last decades. In 1947 only 17 per cent was literate, in 1960 25 per cent. Since that year the literacy rates have improved again considerably. It should, however, be realized that in 1980 the age group between 40 and 50 years which often has important functions at the local level, will have a literacy rate (not taking into account the effects of adult education) between 20 and 30 per cent.

At present nearly 50 per cent of the age group of 6 - 11 years is attending primary school. Far more than 30 per cent of the primary school leavers is accommodated on secondary schools. There are no indications that, even with a considerable growth of the secondary and tertiary sectors, there will be a shortage of young people with secondary education. On the contrary, there are indications that, taking into account the development potentials available, there is a certain overproduction of secondary school leavers. Technically trained personnel is, however, only limited available. The vocational school between 1966 and 1968 delivered annually from 10 to 20 school leavers with a three years' training.

A programme of scholarships is underway resulting in a regular flow of graduates to Sarawak. However, certain disciplines (economists, sociologists, etc.) and in many cases experience in the administrative service are lacking at the moment and can become a bottleneck for the development in the next decade.

(iii) off-season crops: maize, groundnuts and soybeans

(iv) fruits and vegetables.

3.3. Natural resources

3.3.1. Climate (Annex 1, Climate)

The major characteristics of the climate are a high annual rainfall, 111-195 inches (2820-4950 mm), a high relative humidity (85 per cent) and a uniform temperature throughout the year, 78° - 80° F (25° - 26° C). According to the climate-classes by Köppen it is a Tropical Rainforest climate (Af), according to Thornthwaite a perhumid climate (A).

Although it is possible to speak of a rainy season (landas season) from November up to March with a rainfall peak in January, a specific dry season does not occur. There is no month in the year with less than 4 inches of rainfall and periods of dry weather are too short and not intensive enough to dry out soils appreciably, thus leaching of soluble and colloidal weathering products is a continuous process.

The duration of sunshine, although fairly normal for such a humid climate, is on the average limited to less than 5 hours per day in the period September-March and to 5.5 hours per day in the period April-August.

The climate in Sarawak is very favourable for forest growth and a number of crops; it poses, however, the following problems:

- (i) The excessive and continuous rainfall
 - prohibits profitable growing of crops requiring a specific dry season
 - makes large and expensive provisions necessary in order to prevent erosion and to improve drainage
 - limits the number of effective working days
 - is more or less prohibitive for complete mechanization
 - favours weeds, pests and diseases and hampers control measures
 - necessitates artificial drying and storage.
- (ii) The short average daily sunshine
 - puts a limit on the yield potential of most annual crops.

Under the pertaining climatic conditions the most important crops are:

- (i) perennial crops: rubber, pepper, coco-nut, cocoa
- (ii) food crops: padi, cassava and sago
- (iii) off-season crops: maize, groundnuts and soybeans
- (iv) fruits and vegetables.

The Nank coastal area is suffering both from a penetration of salt water and from a discharge of acid peat water. Dyking of the area will be endangered in the east by aggressive erosion of the coast by the sea.

3.3.2. Hydrology (Annex 2, Hydrology and Annex 13, Physical infrastructure)

The hydrological situation in the First Division is based on an equilibrium between the enormous amount of rainfall on the one hand and the possibilities to drain this water on the other hand. This co-action can be described most clearly in correlation with the topography.

In the mountainous areas (between the Indonesian border and approx. the 50 ft. contourline) numerous brooklets, streams and tributaries occur, with high gradients, which take care of the draining of the excess rainfall. In the hilly areas (approx. between the 50 and 20 ft. contourlines) the middle courses of the various tributaries and large rivers run through small and medium sized valleys, often flooded, and with still rather high stream velocities. The plain (between the 20 ft. contourline and the South China Sea) contains the lower courses of the now strongly meandering, large rivers, which have an average slope of 3.3-3.6 inches/mile. These parts of the rivers are strongly influenced by tidal movements. The rivers often end in large estuaria, which are restricted by one or more bars.

Four large catchment areas can be distinguished. That of the Btg. Kayan covers an area of 415 sq. miles, that of the S. Sarawak 650 sq. miles, that of the Btg. Samarahan 360 sq. miles and that of the Btg. Sadong 1380 sq. miles. Together they cover three quarters of the surface of the First Division.

The main bottlenecks and potentials from the point of view of the hydrological situation in the First Division for future development are the following:

- Due to the topography and heavy rain intensities during short periods, the areas in the upper and middle catchment areas are subject to flush floods, which may result both in soil erosion and in damages to structures and crops. Permanent forest on steep slopes is therefore of importance to diminish the surface runoff.
- Along the lower courses of the rivers floods of various kinds occur. Low lying river levees may become inundated during high tide, especially when this tide coincides with high upper discharges. Land along the lower courses can also become inundated as a result of insufficient natural drainage capacity and as a result of overland flow from hilly areas.
- On several of the coastal ridges both coastal erosion and salt water penetration occur.
- The Nonok coastal area is suffering both from a penetration of salt water and from a discharge of acid peat water. Dyking of the area will be endangered in the east by aggressive erosion of the coast by the sea.

The 16 mapping units are shown in table 4. The proposed land use indicated in that table is based on the advisory land use as given in the key to the A.L.U.-map; often there are restrictions or specifications of the advise given in the A.L.U.-map.

The area suitable for agriculture was calculated for each A.L.U.-unit by allocating a suitability percentage. The suitability percentages vary between 0 and 75 per cent and are based on soil characteristics, physiography, relief, soil drainage, and flooding and erosion hazards.

From table 4 it appears that of the total land area of the First Division of 2,103,000 acres only 656,000 acres are suitable for agriculture and plantation forestry, this is approximately 30 per cent. And again within this limited area there are large tracks of land with moderate to severe limitations for agriculture. In the upland areas the main limitations are soil depth and topography, in the lowland areas these are soil drainage and flooding, while in general the soils in the First Division have a low chemical fertility. It appears therefore that the agricultural development potentials of the First Division are limited by poor soil conditions.

3.3.4. Mineral resources (Annex 4, Mining and Quarrying)

At present mining in the First Division is of minor importance. It is restricted to the production of small amounts of gold and antimony near Bau. Quarrying is of more importance than mining. The First Division is self-supporting in the production of stone for road construction. Prospecting has shown many occurrences of a large number of ores such as: mercury, lead, copper, zinc, nickel, molybdenum, bauxite and iron ores. So far, however, no deposits of commercial value of these minerals have been found.

In the Telagus area, near the border with the Second Division, a number of kaolinitic clay deposits occur, together containing about 15 million tons. The clay is reported suitable for ceramics, refractory materials and rubber manufacturing. Laboratory tests of samples have shown that the clay of at least some deposits may be suitable for the processing of paper clay of filler and coating grade. If further testing will prove successful, the quarrying or open cast mining of the kaolinitic clay deposits in the Telagus area and the establishing of a processing plant for the production of paper clay seems likely.

A coking coal deposit at Silantek in the Second Division, near the border with the First Division, has been known for some time. A quantity of 7½ million tons has been proved, while indicated reserves may exceed 50 million tons. Since the world demand for coking coal has been increasing at a rapid rate during the

Table 4. Advisory Land Use units and their proposed use

Name and symbol of Advisory Land Unit		Proposed use	Acreage of Advisory Land Units		
symbol	description (A.L.U.)		total acreage	suitable for agriculture %	acreage
U	Steep mountains and ridges with little or no soil cover	Should remain under forest cover or be reforested, permanently unsuitable for agriculture	194,840	0	-
B	Moderately to steeply sloping basaltic mountains and hills	Pepper with soil conservation measures, suitable for forestry	103,010	30	30,910
F	Interior hill land with slopes from 15° to 35°	Suitable for plantation forest and perennial crops such as rubber and cocoa; special conservation measures may be necessary	402,920	60	240,620
G ₁	Interior hill land with slopes generally less than 15° (moderately good soils)	Rubber, regulated shifting cultivation or plantation forest; can also be used for pepper, cacao, citrus and, if large areas are available, for oilpalm	62,620	70	43,820
G ₂	Interior hill land with slopes generally less than 15° (basalt derived soils)	Except for oilpalm the same crops as for G ₁ . Especially recommended for pepper and cacao	24,430	70	17,100
C	"Cuesta-terrain" built by sandstone	Protective forest	207,970	0	-
I	Fans and terraces	Rubber and coco-nut	86,880	50	43,450
A	Coastal ridges and small flats	Coco-nut with animal husbandry	11,270	50	5,630
D	Lower and middle riverain flood plains	Wet padi, double-cropped or with off-season crops, or tree-crops, depending on the drainage and irrigation system	215,710	75	161,800
W	Wet interior valleys and flats	Wet padi, with off-season crops, sago, water-management to be improved	29,020	75	21,690
E	Upper and middle riverain valleys	Wet padi with off-season crops and perennial crops. Flush floods occur in places	38,350	75	28,760
H	Interior valley areas	Rubber, fruit trees, wet padi and off-season crops, on higher lying ground pepper, forestry. Detailed surveying needed before proper land use can be fixed	85,490	70	59,860
P ₁	Deep basin peat	To be left under productive forest and to be treated on a sustained yield basis	358,290	0	-
P ₂	Estuarine areas with saline and potentially acid-sulphate soils	To be left under natural vegetation	111,100	0	-
P ₃	Podzols	To be left under natural vegetation	130,880	0	-
	Complex units		40,160	-	2,000
	Total		2,102,940	30	655,640

last few years and the price on the world market is at record height, it is expected that this coal deposit will be mined in the near future. Although the deposit is situated outside the First Division it will have an important effect on the economy of the First Division (transport, harbour, electricity, labour, etc.).

The First Division has "unlimited" reserves for quarrying of stone and sufficient sand for road construction and building is obtainable. Moreover limestone and argillaceous material suitable for cement production occur at more than one favourable location. The establishment of a cement factory with a capacity of 100,000 tons is under consideration.

3.3.5. Natural vegetation (Annex 5, Forestry)

The climatic conditions - a uniform temperature, a high rainfall throughout the year - being favourable for tree-growth, the main natural vegetation types are forest formations which are luxuriant in composition in despite of the low fertility of the soils.

Along the coast line appear rather narrow strips of beach forest on sandy beaches or mangrove forest under more sheltered conditions and in the estuaries of the rivers. The beach forest contains relatively few species which are rarely of economic importance; in the mangrove forest a succession of types can be recognized from the early pioneer stage to vegetation types resembling inland forest. Mangrove is still of importance as a source of firewood, charcoal, poles and the varied products of the occurring nipah and nibong palms.

Behind the coastal fringe in the eastern part of the First Division the flat basin of the meandering lower course of the Batong Sadong is largely covered with swamp forest growing on peat. These peatswamps are of the raised bog type, from the perimeter to the centre a catenary sequence of vegetation types are found of which the mixed swamp forest is the most developed type, occupying an extensive area. This type contains valuable timber species such as ramin (*Gomystyles bancanus*), jelutong (*Dyera lowii*) and many others, in total 13 Hoppus tons to an acre (58.5 m^3 per ha) of commercial species. The other swamp forest types extend over smaller areas and are of minor importance.

The western part of the First Division is characterized by a vegetation type locally known as kerangas, a lowland heath forest with relatively small trees with little commercial value and which in composition varies with the topography of the terrain, the soil type and the depth of the groundwater level. It extends over a considerable part of the area and is interchanged with lowland Dipterocarp forest. The stands of this lowland Dipterocarp forest will

without much hazard from the present 6,000 tons to over 10,000 tons. contain no more than approx. 6 Hoppus tons to an acre (27 m^3 per ha) of commercial timber. At the expected rate of development, however, this will be reached as early as 1980. It is therefore of the utmost importance that before 1980

Along the banks of the rivers only a few patches of riparian forest are left, as the soil is fertile most of this land is occupied by cultivation. A valuable species of the riparian forest is *Shorea macrophylla*, the producer of the illipe nuts. The employment of trawl fishing at an increasing pace will probably diminish

The interior land behind the peatswamps and kerangas vegetation is rather dissected. Most of the area has an elevation of less than 1000 ft (300 m). The mountainous areas and isolated hills with numerous steep slopes are reaching heights of over 2000 ft (600 m). Originally the terrain was covered with mixed Dipterocarp forest which is a stable vegetation type and which served as a guard against soil deterioration and run-off of the precipitation. Greater parts of the forest have been felled for shifting cultivation. Under the prevalent climatic conditions the forests on the steep slopes should be reserved or restored to prevent flooding of the interior valleys which to a great extent are already used for wet padi cultivation. In the eastern part of the First Division, a part of the upper catchment area of the Btg. Krang, valuable stands of 14 Hoppus tons per area (63 m^3 per ha) still occur. the riverain and coastal

On higher elevations there is a gradual change in vegetation towards a hill Dipterocarp forest which is less mixed in composition, locally also upland heath forest can be found.

Wherever forests are renewable resources they should be treated as such by adequate regeneration techniques and re-forestation, also of quick growing species, a continuous supply of timber and wood products can be ensured which will contribute to industrialization and to the export trade.

3.3.6. Marine resources (Annex 6, Marine Fisheries)

The coastal area of the First Division can be considered good fishing water because

- (i) its coast is part of a more or less protected bay
- (ii) the coast contains large mangrove areas in which especially young prawns mature
- (iii) the many large rivers deposit materials for a rapid growth of micro-organisms.

The potential for development has not yet been assessed, but a comparison with Sabah leads to the provisional estimate that the production can be doubled

without much hazard from the present 6,000 tons to some 11,500 tons.

At the expected rate of development, however, such a production will be reached as early as 1980. It is therefore of the utmost importance that before 1980 a survey on the determination of the potential be completed. For the whole of Sarawak an increase to over three times the present production of 14,000 tons seems possible.

The introduction of trawl fishing at an increasing pace will probably diminish the employment opportunities considerably.

3.3. Institutional Infrastructure (Annex 14, Institutional Infrastructure)

3.4. Physical Infrastructure (Annex 13, Physical Infrastructure and Annex 15, organization of the development Service Centres) through the various Development

Committees, the Red Book system and the State Development Officer provide a framework which will facilitate the production and implementation of regional development plans. The airway network, the two-way flow of information within the administration, requires constant co-ordination. In connection herewith it should be observed that because of climatic conditions and difficult physiography road building and road maintenance in Sarawak are more expensive in comparison with those in other regions of Malaysia.

There are four harbours in the First Division; Sematan for boats up to 400 tons, Lundu for boats up to 600 tons, Simunjan only for small boats and Kuching where ships up to 11,000 tons have anchored. All port development in the First Division will be hampered by bars in the river mouths.

From Kuching Airport centrally situated in the First Division regular services to airfields in and outside Sarawak are maintained. Air services within the First Division can make use of airfields in Sematan, Lundu, Bau and Balai Ringin. Improvement and extension of the road network may reduce the need for air transport in the future.

Public utilities (electricity and water supply) are mainly concentrated in the Kuching area and the large service centres in the districts. It will only be possible to extend these services in an efficient way if a policy of concentrating services is introduced.

3.6. As can be seen from map VII the existing social and economic services (schools, shops, dispensaries etc.) are very much dispersed. This is favourable in the sense that almost all population concentrations are close to at least one social or economic service unit. It has, however, also disfunctional effects because most of the existing service centres (map X) are too small to become viable service centres.

3.5. Institutional infrastructure (Annex 14, Institutional infrastructure)

Sarawak has a well organized governmental administration. Especially the organization of the development administration through the various Development Committees, the Red Book system and the State Development Officer provide a framework which will facilitate the introduction and implementation of regional development plans. The already existing two-way flow of information within the administration, requires however, a more efficient co-ordination.

Special attention is required for a more co-ordinated and integrated preparation and implementation of land development schemes which include reconstruction of the new land. The present structure of the governmental departments and the parastatal institutions are not completely geared to such an approach.

In the past decades rural development has been the main focus for development. The development of the First Division in the future will demand more and more attention for the secondary and tertiary sectors. It is therefore important that more attention be paid to development and promotion of, for instance, industrial development within the framework of the State's development.

The level of education and the number of government officials available are high as compared to other developing countries. Yet a considerable deficiency of personnel specialized in the relevant disciplines and with sufficient experience exists. Shortage of qualified and experienced personnel can become one of the most serious impediments for development in the near future.

The policy of maintaining government officers for at least three years at their posts must be enforced in a more consequent way. Thus more persons who can function more efficiently because they know their specific job as well as the area in which they have to work more intensively than is possible at the moment will become available. At present the replacement of officers is, at least in the First Division, of such a rate that it is seriously hampering efficient administration.

3.6. Land tenure (Annex 10, Land tenure)

Hereafter the main characteristics of land tenure such as are of importance for land development are indicated. The land tenure situation in Sarawak is complicated by the fact that two different systems of land law are in operation: statute law (Land Code) and adat law (native customary law). Only the former provides a suitable basis for the Government to administer land. It would appear that the Government is intending to protect native customary rights. On the other hand the Land Code appears neither to recognize nor to observe native customary rights in land.

As these native customary rights in land are intended to be protected but not officially construed, it is difficult for officers of the Land and Survey Department to carry out the provisions of the Land Code. For the same reason it is difficult for the Government to make land available to landless farmers. The Government's point of view appears to be that native customary rights, as they are understood to be, impede sound agricultural developments. Therefore a policy has been adopted to convert these rights into rights based on concepts of western land law.

Apart from that the land classification provisions in the Code are difficult to apply. Their main purpose is to protect the native communities until such time they can protect themselves. The land classification system provides for measures meant to control the acquisition and the use of land by non-natives (in practice Chinese). Non-natives are only allowed to acquire or use land in areas classified as Mixed Zone Land. However, due to the pressing need of the Chinese for land, the land classification system has not succeeded in preventing Chinese from illegal agreements and other transactions in land with natives. These agreements and transactions are at present connived at by the Government for lack of an alternative.

The main conclusion that may be drawn is that the Land Code apparently is not the appropriate tool to deal with the present complications in the field of land tenure.

Furthermore provisions to support agricultural development based on the needs felt in Sarawak are lacking.

These goals and objectives are, however, still of a general nature, but are providing a set of guidelines according to which the Government's planning activities have taken place.

4. GOALS AND OBJECTIVES

To promote the integration of the people of the First Division as part of the State of Sarawak by working on a Development Plan explicitly designed to

4.1. The national framework

The development of the First Division should take place within the framework of the development planned for the State of Sarawak and for the Federation of Malaysia.

The framework for the national development is provided by the development strategy of the Second Malaysia Plan outlined by the then Deputy Prime Minister Tun Abdul Rasak bin Dato Hussein on February 3rd, 1970.

"Its keynote will be improved economic balance, especially among the races but also among the social groups and regions of the country such as Sabah and Sarawak and those relatively underdeveloped States in West Malaysia".

"To be consistent with the new Economic Policy and as a means of promoting national unity the Deputy Prime Minister suggested that the programmes for the Second Malaysia Plan should lead to:

- (a) a strong economic social and security foundation for overall economic expansion;
- (b) rapid economic growth to raise our national income level and steadily increase the number of employment opportunities for Malaysians;
- (c) the more equitable distribution of wealth and sharing of facilities among the different races;
- (d) the promotion of social and economic integration and increase in the productive capacity of the disadvantaged groups through the provision of education, health, housing and youth development programmes as well as other facilities;
- (e) the Government playing a dynamic and direct role in selected commercial and industrial ventures to promote greater involvement and participation by the less favourable groups in these fields".

(State Plan for Sarawak 1970-1975 p.47-48).

4.2. Goals and objectives for the First Division

The State Government of Sarawak decided to accept the goals and objectives mentioned hereafter (meeting 16-2-1970) which are within the framework of development as indicated in paragraph 4.1.

These goals and objectives are, however, still of a tentative nature, but are providing a set of guidelines according to which the research and planning activities have taken place.

Goal no. 3

To provide steady increase in levels of income and consumption per head.

Objective 3.1. In order to promote the integration of States and regions in the

the Federation it is important that the differences between the average levels of income per State are not too large.

Objective 3.2. To aim at a growth rate of the Gross Regional Product at constant market prices of the First Division of 6 percent per year.

Objective 3.3. To regulate differences of income level, preferably by means of an equitable taxation system and not by neglecting part of the socio-economic development potential at present available in one or more of the communities.

Goal no. 4

To provide productive employment for the population at working age.

Objective 4.1. To provide labour opportunity for the male working population in the 1975 to 1990 period. To this number a relatively increasing number of places for female workers should be added.

Goal no. 5

To promote the physical and spiritual well being of all people and to make the countryside of the First Division a pleasant place to live in.

Objective 5.1. To provide as soon as possible all children of school age (6-11) with primary education.

Objective 5.2. To educate and train inhabitants of the First Division of Sarawak to equip them for effective participation in the progress in economic and social development.

Objective 5.3. To provide all necessary health and other social facilities (security, housing, services).

Objective 5.4. To provide all public facilities (energy, transport facilities, communication services, water supply, etc.).

Objective 5.5. To arrange all socio-economic services and physical elements of the infrastructure into a spatial structure that will guarantee efficiency as well as an optimal service level.

Goal no. 6

To lay the groundwork for less rapid population growth by instituting an effective programme of family planning.

Objective 6.1. The family planning programme must aim at such a decline in the birth rate that the natural increase of the population after 1975 will not exceed 2.5 per cent per year.

Depending on the degree of detail large levels in formulating such ways and means of development may be distinguished:

1. Development strategies - indicating only in a very general nature the course of action that has to be undertaken.
2. Development programmes - indicating in more detail which problems have to be faced and what should be done in order to realize the desired development.
3. Programmes of action - giving a detailed description of the actions to be undertaken in order to attain clearly defined targets.

In chapter 7 the development programmes will be discussed while also some programmes of action will be proposed. In this chapter the development strategies will be laid down. The basis of these are the four alternative tentative strategies proposed in the Taxation (inception) Report of the Study Team. The basic difference between the first strategy and the other three strategies is that the first one aims at providing full employment within the First Division by utilizing all available resources while maintaining a growth rate of GRP of 6 per cent, whereas the other strategies are taking into account the necessity to migrate people from the First Division to other parts of the State in order to obtain the level of the employment and income objectives.

The study of the First Division has shown that it will be possible to adopt as a development strategy for the present regional plan the implementation of measures aiming at the development of agriculture, marine fisheries and manufacturing in such a way that the employment opportunities of objective 4.1 and the income level of objective 3.2 will be realized at the end of the plan period. This means that the aforementioned sectors together with forestry, which will occupy a special place, will be the pushing sectors. The development of the following sectors (construction, transport, trade, services, education, health services, etc.) will mainly be determined by the requirements originating from the development policies for the pushing sectors and the development which will take place outside the First Division.

5. THE DEVELOPMENT STRATEGY

Once the present situation is known and the desired direction of the planned development has been decided upon by means of goals and objectives, ways and means have to be formulated in order to reach the desired situation at the end of the plan period.

Depending on the degree of detail three levels in formulating such ways and means of development may be distinguished:

1. Development strategies - indicating only in a very general nature the course of action that has to be undertaken.
2. Development programmes and policies - indicating in more detail which problems have to be faced and what should be done in order to realize the desired development.
3. Programmes of action - giving a detailed description of the actions to be undertaken in order to attain clearly defined targets.

In chapter 7 the development programmes will be discussed while also some programmes of action will be proposed. In this chapter the development strategies will be laid down. The basis of these are the four alternative tentative strategies proposed in the Taxation (inception) Report of the Study Team. The basic difference between the first strategy and the other three strategies is that the first one aims at providing full employment within the First Division by utilizing all available resources while maintaining a growth rate of GRP of 6 per cent, whereas the other strategies are taking into account the necessity to migrate people from the First Division to other parts of the State in order to obtain the level of the employment and income objectives.

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6. The development of the forestry sector should receive due attention, notwithstanding its declining direct economic role within the plan period. The importance of a well planned forestry development lies both in the ability of this sector to improve the natural conditions of the land on which agriculture is dependant (prevention of erosion, improvement of the hydrological situation, etc.) and to provide valuable raw materials which can be processed by local industries. As for the latter aspects the influence of the regenerative policies will be felt after the plan period.

The strategy leading to more or less full employment is based on the following assumptions:

- GDP at market prices of Sarawak will grow on the long run with an average rate of 6 per cent per annum.

- All natural development potentials within the First Division will be fully used.

A second development strategy adopted in this regional plan is to promote a development of the First Division which will result in more equality between the ethnic and social groups. This means that special attention should be given to the weaker groups in the society of the First Division, thus enabling them to take full part in the activities required by the proposed development and to reap the full benefits of their participation. The creation of opportunities to absorb the traditional groups in the modern economy should preferably be done by providing assistance to these groups and not so much by restricting the development potentials available in other communities to a great extent.

It is assumed that economic growth in itself contributes considerably to national unity.

Finally it was taken as a strategy not to strengthen unduly the economic position of Kuching as the main centre of secondary and tertiary activities within Sarawak. Wherever possible the growth of other urban centres in Sarawak should be stimulated to attain such a pattern of growth poles that the economic and social development will be spread more evenly over the State (than has happened in the past).

These strategies were discussed with the Sarawak authorities concerned during the stay of the Study Team in the First Division and were basically agreed upon. All development programmes and policies are based on these strategies. possibilities for increased development. But possible adverse trends can not be excluded either, therefore an alternative development possibility is indicated in the following paragraph.

(1) Department of Statistics, Data for the E.P.U. Mid-Plan Review and the I.M.F. Consultation 1968, Kuala Lumpur, May 30, 1968.

6. RECOMMENDED FUTURE STRUCTURE

6.1. Introduction

On the basis of the objectives and strategies mentioned before the future structure of the society, required to reach the objectives, can be indicated. In this chapter an outline of the future structure is given as well as an insight in the major relationships between the social, economic and physical aspects of this structure.

6.2. Economic structure

6.2.1. The assumed growth of the Sarawak economy

As already pointed out in chapter 2 the forecast of the economic development of the First Division is based on an assumed growth rate of the economy of the State of Sarawak as a whole during the considered period of twenty years. The difficulty with this approach is to find an annual growth rate which may represent a likely future development of an area of which the larger part does not form part of this study. The development of Sarawak in the past does not provide much to go by as the only time series available ranged from 1961 to 1967. This is too short a period to use as a starting point to calculate a twenty years' trend of growth economy which the Study Team was not supposed to study very carefully. Moreover within this six years' period the confrontation between Malaysia and Indonesia took place, causing an upward break in the trend which had a considerable influence on the average growth rate over the total period. The average annual growth of the Sarawak GDP at market prices amounted to 9.1 per cent in the period 1961-1967 (1). Taking into consideration the experience of other developing countries with long range economic growth, an annual rate of 9 per cent for a twenty years' period seems not very realistic in the case of Sarawak. Therefore it is assumed that in the period 1971-1990 the Sarawak economy will grow at a flat rate of 6 per cent per annum. This will require average annual growth rates of the primary sector of 4 per cent, of the secondary sector of 7 per cent and the tertiary sector of 5 per cent.

On first sight even this rate may be considered high considering the Sarawak situation, but as not much is yet known about the natural resources outside the First Division, it may well be that further investigations will show unexpected possibilities for increased development. But possible adverse trends can not be excluded either, therefore an alternative development possibility is indicated in the following paragraph.

(1) Department of Statistics, Data for the E.P.U. Mid-Plan Review and the I.M.F. Consultation 1968, Kuala Lumpur, May 30, 1968.

Table 5. The Gross Regional Product of the First Division by industrial origin
 6.2.2. The Gross Regional Product of the First Division 1971-1990 of Sarawak by

Table 5 shows the GRP of the First Division and the contribution of the various sectors to the GRP for the years 1967, 1970, 1975 and 1990.

From M\$ 258 million in 1967 the GRP at market prices will increase to M\$ 1,033 million in 1990, which means an average annual growth rate of 6.2 per cent.

Taking into consideration the margin of errors which is likely to be present in the crude projections, it may be concluded that the regional plan of the First Division will enable this Division to keep pace with the assumed growth of Sarawak economy during the plan period. Also during the Second Malaysia Plan, which ranges from 1971 up to an including 1975, the First Division will be able to reach a growth rate of 6 per cent per year.

The feasibility of this growth rate will in particular depend on two factors:

- the projected increase of production in the agricultural sector, and
- the assumed annual growth of the Sarawak economy.

As regards the future agricultural production the proposed development programme implies an average annual increase of the GVA with 6.3 per cent in the plan period. Such a rapid growth over a period of twenty years has, on a national scale, so far not yet been seen registered for agriculture. Although one cannot basically compare the economic situation in a region with that of an entire country, national growth rates may give rough indications of feasible developments. In the case of the First Division the development envisaged for the agricultural sector is technically feasible. However, the programme might be considered ambitious if the human factors are taken into account, such as the adaptation of farmers to new crops and new farming methods, the necessary migration of people within the First Division to new farming areas (which are to be opened up), and the creation of an adequately organized and trained staff of agricultural extension workers. Therefore retardation in the projected pace of implementation may well occur. It is obvious that if the projected rate of development in the agricultural sector of the First Division will not be attained, this will have serious consequences both for the employment opportunities in this sector and for the future income level of the farming population.

Indirect taxes	26	30	42	111
GRP at market prices	258	306	411	1,033
GRP at m.p. per caput (in M\$)	820	915	1,043	1,631

Table 5. The Gross Regional Product of the First Division by industrial origin based on an annual growth of the Gross Domestic Product of Sarawak by 6 per cent and a growth of 6.3 per cent per annum of the agricultural sector in this Division (rounded off in M\$ million)

Sectors	1967	1970	1975	1990
Agriculture	35	45	60	153
Forestry	9	5	3	2
Marine fisheries	3	4	5	10
Mining and quarrying	1	1	1	3
Total primary sector	48	55	69	168
Manufacturing	33	40	56	136
Building and construction	10	12	17	46
Utilities	7	8	11	31
Transport and communications	22	27	38	103
Wholesale and retail trade	37	45	61	148
Total secondary sector	109	132	183	464
Banking, insurance and real estate	7	9	15	73
Ownership of dwellings	30	40	40	96
Public administration	27	31	38	68
Services	16	19	24	53
Total tertiary sector	75	89	117	290
GRP at factor cost	232	276	369	922
Indirect taxes	26	30	42	111
GRP at market prices	258	306	411	1,033
GRP at m.p. per caput (in M\$)	820	915	1,043	1,631

Table 6. The Gross Regional Product of the First Division by industrial origin

Outside agriculture the same holds true if the assumed growth rate of 6 per cent annually of the Sarawak economy will not be reached in the plan period. In that case the manpower requirements (to be discussed in 6.2.4) and the GVA's of both the secondary and tertiary sectors of the First Division will be lower than projected in this plan, causing a decrease in the overall growth rate of the First Division.

The magnitude of the effect on the economy of the First Division of a decrease both of the agricultural development in this region and a slower development of the Sarawak economy is illustrated in table 6. The regional accounts presented in this table are based on an annual growth rate of the Sarawak GDP (at market prices) of 5 instead of 6 per cent and a growth rate of the GVA of the agricultural sector in the First Division which is 2 per cent lower than given in the original projection. If table 5 is compared with table 6, it appears that the combined effect of a slower development of the Sarawak economy and of the agricultural sector of the First Division will result in a decrease in the growth of the GRP of this Division from 6.2 to 4.9 per cent, and that the GRP per caput in 1990 will be 25 per cent lower than projected in table 5.

This example shows the consequences of a lower growth rate for the standard of living of the people in the First Division, thus emphasizing the necessity for an all-out effort to reach the projected growth rate of 6.2 percent per annum.

6.2.3. The development of the various economic sectors in the First Division

The primary sector will grow at an annual rate of 5.7 per cent in the plan period. In absolute figures it means that the total GVA of this sector will increase with M\$ 113 million from 1970 to 1990 (table 5). For the period 1971 - 1975 the average annual growth rate of the primary activities will be 4.7 per cent and therefore this sector will have to expand with 6.1 per cent annually in the period 1976-1990. The slower growth during the Second Malaysia Plan period can be explained by the necessary infrastructural and organizational work which should be carried out before the planned activities can produce their return.

GRP a.p. per caput (in M\$)	1.8	820	895	957	1,226
(a) Assumed					
(b) The original calculation as presented in table 5.					
(c) Based on the growth rate of manufacturing in Sarawak (see Volume VII)					

Table 6. The Gross Regional Product of the First Division by industrial origin based on an annual growth of the Gross Domestic Product of Sarawak of 5 per cent and a growth of 4.3 per cent annum of the agricultural sector in this Division.

(rounded off in M\$ million)

Sectors	Growth rate per annum	1967	1970	1975	1990
Agriculture	4.3 (a)	35	45	56	104
Forestry	(b)	9	5	3	2
Marine fisheries	(b)	3	4	5	10
Mining and quarrying	(b)	1	1	1	3
Primary sector	4.0	48	55	65	119
Manufacturing	4.0 (c)	33	37	45	81
Building and construction	5.0 (a)	10	12	15	31
Utilities	6.0 (a)	7	8	11	27
Transport and communications	5.5 (a)	22	26	34	75
Wholesale and retail trade	5.0 (a)	37	43	55	114
Secondary sector	4.9	109	126	160	328
Banking, insurance and real estate	8.0 (a)	7	9	13	41
Ownership of dwellings	5.0 (a)	25	29	37	77
Public administration	(b)	27	31	38	68
Services: education	(b)				
health	(b)				
other services	5.0				
total		16	18	23	44
Tertiary sector	5.0	75	87	111	230
GRP at factor cost	4.8	232	268	336	677
Indirect taxes	6.0 (c)	26	31	41	99
GRP at market prices	4.9	258	299	377	776
GRP m.p. per caput (in M\$)	1.8	820	895	957	1,226

(a) Assumed

(b) The original calculation as presented in table 5.

(c) Based on the growth rate of manufacturing in Sarawak (see Volume VII)

Within the primary sector agriculture will strengthen its already dominant position. In 1970 it accounted for 82 per cent of the total GVA of this sector, while in 1975 and 1990 this percentage will be respectively 87 and 91.

The main underlying conditions of agricultural growth are (1) the extension of the yearly cultivated area to some 406,000 acres in 1990 as compared with 175,000 acres in 1967, and (2) the intensification of agricultural production by means of (a) the improvement of the standard of care and maintenance and of management in farming, and (b) the introduction on a large scale of off-season cropping on wet padi land, in particular of maize, soybeans and groundnuts (see the Annex Agricultural Development, chapters 5 and 6).

As a result of the development in agriculture - as briefly described above - the production of a number of commodities will be increased considerably. In particular the production of wet padi will grow significantly because of (a) an extension of the acreage to some 112,000 as compared to 24,000 in 1967 and (b) an improvement of the yields; consequently the self sufficiency rate for padi in 1990 could amount to about 77 as compared to 24 in 1967.

The extension of the pepper production necessarily had to be limited although this crop undoubtedly is the most attractive one from an economic point of view. However, the slowly expanding export markets cannot possibly bear a large increase in production. Cocoa is considered to be the best alternative crop for the soils suitable for pepper cultivation. Therefore it is proposed to develop some 25,000 acres of cocoa in the upland and midland areas.

Usually the economics of rubber cultivation are considered doubtful. However, for large areas in the First Division rubber is the only crop which can be grown profitably, provided the standard of crop management is improved. Therefore the production of rubber is projected to grow to some 43,000 tons in 1990 as compared to 8,000 tons in 1967.

Also a remarkable increase in production is expected in the animal husbandry sector, in particular in the field of pig rearing and egg production.

Forestry will decline in the plan period in terms of value added as exploitable wood is becoming increasingly scarce in the First Division. Therefore the main emphasis will be on regeneration of the forests. As this is a long term process no results will show during the plan period.

Marine fisheries may increase with more than 4.5 per cent per year, which means a more than doubling of the production between 1970 and 1990.

The mining sector will continue to play a negligible role in the economy of the First Division, unless important mineral deposits should be discovered in the meantime.

The relative share of the total primary sector to the GRP of the First Division will decrease from 20 per cent to 18 per cent in 1975 and from then on remain at this level to the end of the plan period, as is shown in table 7.

In the period 1971-1990 the secondary sector will increase its contribution to the GRP of the First Division with 2 per cent. In 1970 48 per cent of the GRP was generated by this sector, while the projected GVA of the secondary sector for 1975 will amount to half of the total GRP. Thereafter no further increase of the relative share of this sector in the plan period is expected.

The total production of the secondary sector will grow with nearly 7 per cent annually till 1975 and with some 6.5 per cent in the second part of the plan period. In absolute terms the increase of GVA will be of a magnitude of M\$ 332 million in the period 1971-1990.

Within the secondary sector the two major activities will be manufacturing and trade. In 1975 some 64 per cent of the total GVA of this sector will be generated by these two activities, while in 1990 their contribution will amount to 61 per cent of the total GVA.

Manufacturing will grow with M\$ 16 million from 1970 to 1975 and thereafter with M\$ 80 million to 1990. Its relative position will remain constant, namely 15 per cent of the GRP of the First Division as shown in tables 5 and 7.

6.2.4. The employment in the plan period

The GVA of the tertiary sector will increase with M\$ 28 million from 1970 to 1975 and with M\$ 173 million from the latter year to the end of the plan period. In relative terms the annual growth rate will be respectively 5.6 and 6.2 per cent. The relative position of this sector will also remain constant during the plan period. Some 32 per cent of the GRP of the First Division will be generated by the tertiary sector.

Table 8 shows the average annual growth rates of all the economic sectors for the periods 1967-1970, 1971-1975 and 1976-1990.

Table 7. The percentage share of the various sectors to the GRP at factor cost of the First Division. First Division in percentages

Sectors	First Division			
	1967	1970	1971-1975	1989-1990
Agriculture	15.7	16	5.916	17.5
Forestry	4.8	2	10.81	0.6
Marine fisheries	1.1	2	4.61	1.7
Mining and quarrying	0	0	0	0.6
Total primary sector	20.6	20	4.618	18.1
Manufacturing	14.6	15	7.015	15.1
Building and construction	4.3	4	7.25	5.8
Utilities	3.5	3	6.63	3.1
Transport and communications	10.1	10	7.110	11.9
Wholesale and retail trade	16.7	16	6.317	16.1
Total secondary sector	47.6	48	6.750	50.4
Banking, insurance and real estate	3.5	3	10.84	11.1
Ownership of dwellings	8.3	11	5.911	8
Public administration	4.7	11	4.111	11
Services	7	7	4.87	7
Total tertiary sector	33	32	32	32
GRP at factor cost	4.9	8.9	8.7	

6.2.4. The employment in the plan period

The intention of the attempt to estimate the employment structure of the First Division in the period 1971-1990 is to find out whether the regional plan will offer adequate possibilities to attain the goal of employment. Due to the lack of detailed manpower data for the First Division only very rough indications on the employment situation in the plan period can be given.

Table 8. Average annual growth rates of the various sectors and the Gross Regional Product of the First Division in percentages

Sectors	1967-1970	1971-1975	1976-1990
Agriculture	8.7	5.9	6.5
Forestry	- 21.6	- 10.8	- 2.8
Marine fisheries	10.1	4.6	4.7
Mining and quarrying	0	0	7.6
Total primary sector	4.6	4.6	6.1
Manufacturing	6.6	7.0	6.1
Building and construction	6.3	7.2	6.9
Utilities	4.5	6.6	7.1
Transport and communications	7.1	7.1	6.9
Wholesale and retail trade	6.7	6.3	6.1
Total secondary sector	6.6	6.7	6.4
Banking, insurance and real state	6.5	10.8	11.1
Ownership of dwellings	6.3	5.9	6.0
Public administration	4.7	4.1	4.0
Services	5.9	4.8	5.4
Total tertiary sector	5.9	5.6	6.2
GRP at factor cost	5.9	6.0	6.3
Indirect taxes	4.9	6.9	6.7
GRP at market prices	5.9	6.1	6.3
GRP m.p. per caput	3.7	2.7	3.0

on which the analysis is based hold true. Theoretically there will be no male unemployment for the age group of 15-59 years; the female unemployment, which may have been reached a level of 15 per cent of the economically active female population in 1970, will decrease gradually till in 1990 also for the females more or less full employment will be reached.

(1) The secondary sector, excluding manufacturing and building and construction, plus the tertiary sector.

A second problem facing this exercise was the fact that it was not known what the effect of the economic development of the other Divisions of Sarawak would be on, in particular, the sector "others" (1). The growth of this sector does not only depend on the activities within the First Division, but also on the future functional distribution of activities between the First Division and the rest of Sarawak. As the Study Team has mainly studied the potential development of the First Division based on the resources of this region, it is not in a position to elucidate this matter. Consequently, the position of the sector "others" with regard to the future economic structure within the State has only been sketchily analysed. Only tentative projections of the future growth of this sector, which also has a bearing on the manpower requirements, have been made.

To be able to draw some tentative conclusions on the future employment structure of the First Division two basic assumptions were made:

- The ratios between male and female manpower for the various sectors, as used for the calculations of the 1967 figures, have been maintained, except for the sector "others" (1).
- The regional plan for the First Division will provide full employment for the male component of the economically active population in 1990. As the male employment of all sectors (up to and) including building and construction were estimated independently of this assumption, the sector "others" is assumed to be capable of absorbing the remaining male labour. This has been checked with the growth rate of this sector and the assumed increase of the labour productivity.

The tables 9 and 10 present the results of the estimates of supply and demand of labour in the plan period. The main conclusion from the study of the future employment situation in the First Division is that no large scale unemployment needs to be expected in the coming twenty years, if the assumptions of the projected rate of growth and the modest increase in the labour productivity on which the analysis is based hold true. Theoretically there will be no male unemployment for the age group of 15-59 years; the female unemployment, which may have been reached a level of 15 per cent of the economically active female population in 1970, will decrease gradually till in 1990 also for the females more or less full employment will be reached.

(1) The secondary sector, excluding manufacturing and building and construction, plus the tertiary sector.

Table 9. The employment structure of the First Division in the years 1967, 1970, 1975 and 1990.

	1967		1970		1975		1990	
	Total	Male	Total	Male	Total	Male	Total	Male
1. Population in the age group 15-59 years (x 1,000)	148	74	162	81	188	94	310	155
2. Economically active population in the age group 15-59 years (x 1,000)	111	69	119	73	137	84	220	135
3. Employment per sector (x 1,000)								
a. Agriculture, forestry and marine fisheries	61	35	26	38	28	43	33	50
b. Mining	1	1	-	1	-	1	-	-
c. Manufacturing	10	8	2	9	2	12	2	4
d. Building and construction	3	3	-	3	-	4	-	-
e. "Others"	27	20	7	22	9	24	14	31
4. Total employment (x 1,000)	102	67	35	73	39	84	49	85
5. Unemployment (x 1,000)	9	2	7	0	7	0	4	0
6. Unemployment as a percentage of (2)	8	3	17	0	15	0	8	0
7. Share of the sectors in employment in percentages:								
a. Agriculture, forestry and marine fisheries	60	52	74	52	72	51	67	59
b. Mining	1	2	-	2	-	1	-	-
c. Manufacturing	10	12	6	12	5	14	4	5
d. Building and construction	3	4	-	4	-	5	-	-
e. "Others"	26	30	20	30	23	29	29	36

Apart from what already has been commented on in 3.1.2. the outcome of the manpower estimates has also been influenced by the assumed increase of the labour productivity in the various sectors. In this study low estimates of the increase have been used, especially in the sectors manufacturing, building and construction, and "others" (1). In reality, therefore, the manpower absorption of the said sector may be lower than indicated in table 9.

Table 10. Total expected increase of manpower requirements in the First Division, table 11, 1971-1990 (x 1,000)

Sectors	1971-1975		1976-1990		1971-1990	
	Total	Male	Total	Male	Total	Male
Agriculture, forestry, marine fisheries	10	5	41	24	51	29
Mining	-	-	-	-	-	-
Manufacturing	3	3	8	6	11	9
Building and construction	1	1	4	4	5	5
"Others"	7	2	34	17	41	19
Total	21	11	87	51	108	62

Another matter is the availability of the skills needed to execute the plan. Observations of the Study Team made it clear that in this field serious problems can be expected.

From table 9 an insight can also be gained into the employment structure within the First Division during the plan period. The relative share of the primary sector will gradually decrease. As the share of manufacturing and building and construction will practically remain constant, the importance of the "others" will consequently increase.

The employment situation in the First Division will change drastically to the worse if the projected development of its economy will not be achieved. Based on a slower development of the agricultural sector and a lower annual growth rate of the Sarawak economy, such as presented in 6.2.2. and table 6, the capability of the various sectors to absorb labour will be some 10 per cent lower than projected for 1990. This means that the unemployment rate will also be some 10 per cent of the economically active population. In absolute terms some 22,000 people will then be unemployed.

As such a situation might occur if some unforeseen factor should hamper the rate of development, the possibilities to migrate people from the First Division to other areas of Sarawak should be seriously taken into consideration. If work opportunities can be found outside the First Division during the plan period, and people can be induced to accept the necessity to move out of the First Division, the chances to achieve the projected development will be greatly enhanced. Moreover, as has been assumed in the calculation of employment in table 11, that the absorption capacity of the agricultural sector will not be affected by its slower development, moving people from agriculture in the First Division to the same activity elsewhere in Sarawak will significantly increase the average income level in this sector.

Table 11. The employment in the First Division 1967-1990 based on an annual growth rate of 4.9 per cent of the Gross Regional Product at market prices (x 1,000)

Sectors	1967		1970		1975		1990	
	Total	Male	Total	Male	Total	Male	Total	Male
Agriculture, forestry, and marine fisheries(a)	61	35	66	38	76	43	117	67
Mining and quarrying	1	1	1	1	1	1	1	1
Manufacturing	10	8	11	9	12	10	14	11
Building and construction	3	3	3	3	4	4	6	6
"Others" (b)	27	20	30	30	36	36	60	60
Total	102	67	111	111	129	129	198	198
Unemployment in percentages of the economically active population	8		7		6		10	

(a) It has been assumed that despite the slower growth in agriculture the employment as originally calculated in table 12 can be maintained.

(b) Based on the assumption of an average annual growth rate of the GVA of 5.1 per cent.

The following table shows the differences in GVA per worker in the agricultural sector including forestry and marine fisheries between the projected development and the minimum growth in this sector as illustrated by table 12, assuming that in the latter case the same number of people will be employed.

As such a situation might occur if some unforeseen factor should hamper the rate of development, the possibilities to migrate people from the First Division to other areas of Sarawak should be seriously taken into consideration. If work opportunities can be found outside the First Division during the plan period, and people can be induced to accept the necessity to move out of the First Division, the chances to achieve the projected development will be greatly enhanced. Moreover, as has been assumed in the calculation of employment in table 11, that the absorption capacity of the agricultural sector will not be affected by its slower development, moving people from agriculture in the First Division to the same activity elsewhere in Sarawak will significantly increase the average income level in this sector.

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Sectors	1967		1970		1975		1990	
	Total	Male	Total	Male	Total	Male	Total	Male
Agriculture, forestry, and marine fisheries(a)	61	35	66	38	76	43	117	67
Mining and quarrying	1	1	1	1	1	1	1	1
Manufacturing	10	8	11	9	12	10	14	11
Building and construction	3	3	3	3	4	4	6	6
"Others" (b)	27	20	30		36		60	
Total	102	67	111		129		198	
Unemployment in percentages of the economically active population	8		7		6		10	

(a) It has been assumed that despite the slower growth in agriculture the employment as originally calculated in table 12 can be maintained.

(b) Based on the assumption of an average annual growth rate of the GVA of 5.1 per cent.

The following table shows the differences in GVA per worker in the agricultural sector including forestry and marine fisheries between the projected development and the minimum growth in this sector as illustrated by table 12, assuming that in the latter case the same number of people will be employed.

Table 12. Gross Value Added per worker in agriculture, forestry and marine fisheries in the First Division, 1970-1990

Years	Annual growth rate of agriculture	
	6.3%	4.3%
1970	818	818
1975	894	842
1990	1,410	991

In 1990 the GVA per worker in these sectors will be 30 per cent lower if the growth rate of agriculture will be 2 per cent lower than projected. If nevertheless the GVA per worker according to the projection is desired it will mean that these sectors can only absorb some 83,000 workers in 1990. Inevitably the open unemployment will then increase with 35,000 people to in total 57,000 people, or 26 per cent of the economically active population. From these calculations it will become clear that migration to other areas in Sarawak will then become the only possibility to mitigate the unemployment problem in the First Division.

6.2.5. The place of the First Division in the economy of Sarawak

Primarily this study has not been conceived so as to include the relationship between the First Division and the other Divisions of Sarawak. Nevertheless, an attempt has been made to give some indications on the expected position of the First Division in the Sarawak economy in the plan period.

The impression acquired is that the function of the First Division will be in particular to act as the national trade and services centre. In other words, the position of Kuching will determine the future of the First Division.

As it is the opinion of the Study Team that a certain degree of decentralization should occur in the Sarawak economy in order to attain a more balanced structure which may also result in a more equal distribution of income among the various ethnic and social groups, for certain sectors the decentralization idea has already been built in the assumptions used for the projections. This has been done for manufacturing, for which it has been assumed that the government will not concentrate the industrial development of Kuching alone, but will pay special attention to the stimulation of industrial activities in the two other urban centres of Sarawak, Sibu and Miri. Also in the case of the public administration a policy to decentralize government services was implicitly built in.

On the other hand, it was felt that Kuching should retain its position as a trade- and financial centre.

The ultimate position of the First Division in the Sarawak economy after the next twenty years will depend on the development potentials within the First Division, which have been investigated by the Study Team, on the development potentials outside the First Division, and on the degree of decentralization of the various economic activities which the government of Sarawak wishes to attain.

6.3. Social structure

The proposed economic structure results in a pattern of employment that is indicated in table 9. From this table it becomes clear that a steady decline can be expected of the population working in the primary sector from an estimated 60 per cent in 1967 to 53 per cent in 1990. There will be an increase of the percentage of the population working in building and construction and in "other sectors"¹⁾, from 29 per cent in 1967 to 37 per cent in 1990. If the economic structure proposed in paragraph 6.2. is realized, it can be concluded that no spectacular changes in the employment structure have to be expected in the coming 20 years. One of the most important reasons that the employment structure will not result in a greater degree of urbanization of the First Division as could be expected, is the proposed strategy that Kuching's relative position in the State of Sarawak should be kept more or less at the same level and that full employment should be obtained by using all the available natural resources.

The most important characteristic of the social structure of the First Division e.g. its pluralism, will still exist in 1990 and many decades thereafter. It is, however, necessary that the major policies result in a plural society in which the harmonization between the various groups will gradually increase. This can be achieved by stimulation of the disadvantaged groups with special attention for a more equal distribution of the groups over the economic sectors resulting in a decrease of income disparities. It is of great importance that the various policies will result in a mutual better understanding between and acceptance of the ethnic groups.

In order to create a better living climate in the rural areas a strengthening of the social and organizational structure at the local level by creating villages is proposed. The strengthening of the village level is necessary in order to create viable rural communities which can be involved in the proposed rural development programmes at the local level. This will in several cases require a grouping of the present kampongs in such a way that administrative units are obtained consisting of approximately 2,000 - 4,000 persons. This proposal has several consequences for the physical infrastructure (paragraph 6.4.2.) but it will effect the present settlement pattern only in the sense that socio-economic services are concentrated in the centre of the administrative village areas (primary centres).

1) The secondary sector excluding manufacturing, building and construction, plus the tertiary sector.

6.4. Physical structure

6.4.1. Recommended land use (Annex 3, Physiography and Soils; Annex 7, Agricultural Development)

The proposed socio-economic development is closely related with a certain land use. In determining the land use of the main land consumers (forestry and agriculture), physical, economic and social criteria have been taken into consideration.

The physical criteria were: climate, geology, physiography and relief, hydrology and soils. On the basis of these criteria only 657,000 acres, 30 per cent of the total surface of the First Division, are suitable for agriculture and plantation forestry. This includes an area of 140,000 acres (an additional 30 per cent of the Advisory Land Use unit F and another 20 per cent of the Advisory Land Use unit B), which are only marginally suitable (from a physical point of view) for agriculture. This land should only be used for agriculture if there are pressing socio-economic reasons for taking it into cultivation. If this is the case special precautionary measures are necessary for soil and water conservation. On the basis of physical criteria a first selection was made of the crops that could be grown in the First Division. In table 4 the various Advisory Land Use units and their suitability for forestry and agriculture are indicated.

The main economic criterion for the determination of the recommended agricultural land use was a maximum growth of the Gross Value Added of the agricultural sector. To a lesser extent also the income distribution within this sector and the growth of agricultural employment were taken into account. As the farm is the smallest operational unit for programmes of action a number of tentative farm types were designed for various subregions of development.

The achievement of the projected economic growth and the increase of employment necessarily implied the agricultural use of soils physically only marginally suitable for agriculture, in particular 120,000 acres of land of the ALU unit F, with steeper slopes, and some 20,000 acres of ALU unit B. The exclusion of these acreages for agricultural use would imply a loss of some 80,000 acres of rubber and about 20,000 acres of cocoa. In terms of Gross Value Added roughly M\$ 22 million per annum. As a result of this the agricultural employment would decline with some 20,000 economically active persons. This means that, if the projected level of income in agriculture is to be maintained, approximately 10,000 families have to find their source of living outside the agricultural sector of the First Division.

Social criteria were also taken into consideration. Most of the proposed crops and several of the recommended farm types are already existing at the moment. There are no clear indications that the realization of the recommended land use will encounter major social difficulties, provided the various development programmes mentioned in chapter 7 are timely implemented. However, special attention must be given to the change from shifting cultivation to permanent agriculture and plantation forestry, the introduction of double cropping and the improvement of the managing capacity of farmers accepting new crops.

The considerations briefly outlined above have been the basis for the land use in so far as forestry and agriculture are concerned. The criteria on the basis of which the national parks and tourist resorts are chosen are of a physical as well as of a social nature. The choice of urban areas is mainly based on the existing concentration of services and economic criteria.

As with each land use a certain group of programmes of action is closely related, the areas with a more or less homogenous land use can be indicated as subregions for development. Hereafter the subregions for development indicated on map IX (volume VIII) are briefly discussed.

Protective forest areas. These are areas with a considerable danger of soil erosion. They are chosen on the basis of the contourlines of the 1 : 250,000 topographic map, and are not based on soil conditions.

Productive forest areas. These areas include all the existing forest reserves. Where they are not under forest reserve it is recommended to make all deep peat areas productive forest areas. In these areas, under supervision of the Forest Department, timber for commercial purposes can be obtained (Annex 5, Forestry).

National parks. These areas coincide with the existing national parks and the areas under consideration for national parks, e.g. Bako, Matang and Bukit Gading. The main purpose is to preserve the existing flora and fauna. Small parts of the national parks can be used for tourism. This requires, however, special measures in order not to endanger the main purpose of national parks.

Tourist resorts. These are areas with tourist potentials mainly based on such criteria as scenery, bathing facilities etc. Furthermore small parts of the national parks, the Sematan beaches, the Santubong peninsula and the mountains near Serian have tourist potentials. Tourism can be combined with other types of land use.

Urban areas. Three urban areas are indicated: Greater Kuching, Serian and Bau. The greater Kuching area is based on the master plan for Kuching made by the Department of Lands and Surveys. The Serian and Bau areas are only roughly indicated. The urban areas will be mainly used for buildings etc. The secondary and primary centres are not indicated because their surface is too small and in most cases the definite location is not yet known (Annex 15, Service centres).

Upland areas. In general the topography of the upland areas is more rugged than that of the midland areas, while the infrastructure is less developed. Especially the road system in the upland areas is poorly developed compared to the midland areas; moreover the main urban centres and markets are located in the midland areas. The most important land use recommended for the upland areas is the cultivation of wet padi with off-season crops, cash crops such as rubber, pepper and cocoa, and of hill padi in combination with forestry (taungya). In total 44 per cent of the area is suitable for agriculture. This implies that next to the protective forest recommended for the Advisory Land Use units U and C there are large tracks of land in the upland areas that should be left under forest or should be reafforested, including areas suitable for agriculture but unfavourably situated for development for agriculture.

Midland areas. The recommended dominant land use amounts to the cultivation of wet padi and off-season crops, cash crops such as rubber, cocoa and pepper. Furthermore horticulture and animal husbandry apparently have good chances in the midland areas. Only 55 per cent of the acreage is suitable for agriculture. As in the upland areas a considerable acreage should be left to forestry.

Riverain areas. These areas consist mainly of the river levees and the levee-basin transitions at the middle and lower courses of the three major rivers, Kayan, Samaharan and Sadong and their tributaries. The most important crops recommended for future development are wet padi, off-season crops and coco-nut. 66 per cent of the area is suitable for agriculture.

Deltaic-estuarine areas. These areas consist of clay soils at the mouths of the major rivers. They are divided into two geographic entities:

- a) Gley Soil area. This area is largely suitable for agriculture. The most important recommended crops are wet padi, off-season crops and coco-nut.
 - b) Saline Gley Soil area. This area coincides roughly with the Advisory Land Use unit P 2. It is regarded unsuitable for agriculture unless a solution is found to prevent the formation of acid sulphate soils which will probably form as a result of draining the soil.
- 25 per cent of the deltaic-estuarine areas is suitable for agriculture.

Coastal ridges. These areas coincide with the Advisory Land Use unit A and the Sematan physiographic unit. They are suitable for coco-nut and animal husbandry. 50 per cent of the area is suitable for agriculture.

The geographical indication of proposed future land use is of importance for at least three fields of government policies:

- a) On the basis of the proposed land use it is possible to estimate the desirable population density. This indicates the internal migration necessary to obtain the proposed socio-economic structure and the related land use.
- b) The indication of the future distribution of the rural population gives a geographical basis for the location of future socio-economic services.
- c) On the basis of the proposed land use indicated on map IX, a geographical location of the various programmes of action connected with the proposed land use becomes possible.

6.4.2. Physical structure (Annex 13, Physical infrastructure; Annex 15, Service centres)

The proposed socio-economic structure and the land use derived from it give an indication of the future distribution of the population. It is expected that in 1990 approximately 60 per cent of the population will live in rural areas. Within the rural areas the greatest population densities are expected in the mid-land areas, the riverain areas and the deltaic-estuarine areas. At the same time the proposed land use map (Map IX) gives an indication of the type of activities and their geographical distribution that can be expected in the First Division. On the basis of this information the settlement pattern, the location and number of services and the road system, necessary to realize this proposed development, can be estimated.

It is not expected that in the rural areas considerable changes in the at-present dominant settlement pattern, where people are living in kampongs, will take place. However, in areas with intensive agriculture (animal husbandry, horticulture) farmers may have a tendency to prefer to live on their land instead of in the kampong.

In order to make the rural areas a pleasant place to live in and to create a physical infrastructure that will promote the development of a modern agricultural society, it is proposed to concentrate the social and economic services in centres. Several types of centres placed in a hierarchical order have been distinguished. It is recommended to have in the First Division approximately 140

primary centres which will provide the daily needs of the rural population. Also 12 secondary and 4 district centres are indicated. The recommended pattern of centres should function as a physical framework that will give a sound territorial basis for creating viable rural communities.

The centres are connected with a road network that can also serve the social and economic needs of the rural population. Both services centres and the road network are indicated on map X. The most important urban centre in the First Division will remain Kuching because it does not have the function of a divisional centre only but it is also the capital of Sarawak. In the next 20 years it is expected that its population will double if not triple. Special attention is therefore needed to guarantee a proper development of this main urban centre of Sarawak, so that it can timely cope with the expected population increase. As was indicated already earlier in chapter 5, measures have to be taken to prevent an over-concentration of public administration facilities and industries in Kuching.

Besides Kuching only two smaller urban centres are expected in the First Division in 1990, eg. Serian and Bau. It is not expected that Bau will have a great development potential due to its location close to Kuching, unless the mining should become more important.

In order to obtain a better distribution of urban activities it is proposed to create a second growth pole in the First Division. Serian seems to be the most likely place for the development of such a growth pole. It is well situated between Kuching and Semanggang, it is in the middle of an area with a great development potential and it has as the third centre after Kuching and Bau already a considerable concentration of social and economic services within its boundaries. It is therefore recommended to pay special attention to the urban development of Serian both by improving its physical infrastructure and by locating, whenever possible, governmental services in this centre and by stimulating private enterprise to place industrial activities in Serian.

6.5. Institutional structure (Annex 14, Institutional infrastructure)

For the realization of the socio-economic and physical structure a great number of development activities that are the responsibility of government agencies as well as of private enterprise are necessary, but they have to be stimulated and co-ordinated by the government. The present institutional infrastructure should be improved and expanded in order to cope with the development programmes (chapter 7) and the implementation of the major policies (chapter 9).

First attention will be given to improvements and extensions necessary in the the administrative machinery of the government in order to perform the guiding and co-ordinating role assigned to her in the process of planned regional development. Various new administrative units are necessary to strenghten the present administrative structure.

It is recommended to establish a State Planning Unit with the following terms of reference:

- a) to prepare the State plan within the framework of the national plan, and the divisional plans within the framework of the State plan
- b) to prepare guidelines along which the divisional development committees and for the various departments and statutorial bodies can prepare their proposals or programmes of action
- c) to co-ordinate in close co-operation with the State Development Officer the inventory work for the preparation of the State Plan and the divisional plan.
- d) to advise the State Development Planning Committee on the preparation of the annual development budget
- e) to undertake in close co-operation with the State Development Officer the internal evaluation of the regional and sector plans under implementation
- f) to adjust, if necessary, the State plan and the divisional plans according to the results of the evaluation.

It is recommended to establish an Agricultural Planning Unit with the following terms of reference:

- a) to prepare the agricultural sector plan within the framework of the State plan
- b) to prepare the annual development budget for the Department of Agriculture
- c) to assist various branches of the department to prepare local and project plans
- d) to undertake internal evaluation of the plans under implementation, in close co-operation with branches and sections of the Department of Agriculture and the State Development Officer
- e) to adjust the agricultural sector plan, if necessary, on the basis of the results of the internal evaluation.
- f) handling all the requests for assistance provided by the Investment Incentives

The responsibility for the agricultural development that takes place via the integrated development of new land or the transformation of old land should be given to the Land Development Authority.

Other agencies that require special attention in order to realize the proposed agricultural development are: a) the establishment of a specialized rural credit organization that can result from a strengthening and transformation of the

present Sarawak Development Finance Co-operation, and b) the Sarawak branch of the Federal Agricultural Marketing Authority which should be expanded considerably.

It is recommended to formulate the terms of reference of the existing Planning Branch of the Department of Lands and Surveys as follows:

- a) to prepare the proposals for future land use maps at State and divisional level under the co-ordination of the State Planning Unit and in close co-operation with the Departments of Agriculture and Forestry
- b) to indicate the location of future service centres, such as villages and towns as well as their position in the road network
- c) to prepare detailed town plans for service centres in rural areas as well as for towns
- d) to evaluate with the relevant departments the results of the plans implemented or under implementation
- e) to adjust, whenever necessary, its own plans.

It is proposed to appoint planning officers in all other departments involved in development activities, who can prepare departmental or sector plans in close co-operation with the State Planning Unit.

Within the domain of semi-governmental agencies the following recommendations are made.

- For the promotion of industrial development an Industrial Development Agency (I.D.A.) is recommended that should be responsible for:
- a) the preparation and planning of promotion of industries and their location
 - b) the co-ordination, in co-operation with the State Development Officer, of all activities of government, para-statal and other organizations concerning industrial development
 - c) the making of industrial potential studies, which will indicate the fields of industrial expansion
 - d) providing interested parties with market information
 - e) a smooth contact between potential investors and the investment possibilities offered by Sarawak and the First Division by acting as an intermediary
 - f) handling all the requests for assistance provided by the Investment Incentives Act by acting as the government's agent
 - g) the preparation of project studies
 - h) the evaluation and, if necessary, adjustment of plans concerning industrial development.

The second organization proposed for the promotion of industrial development is the Sarawak Industrial Extension Service (S.I.E.S.) with the following terms of reference:

- a) it should act as an industrial extension service
- b) it should provide technological assistance to industrial enterprises
- c) it should organize short training courses for managers and staff of industrial enterprises
- d) it should on request make feasibility studies for industrial projects
- e) on request of the financial organizations it should carry out loan appraisals.

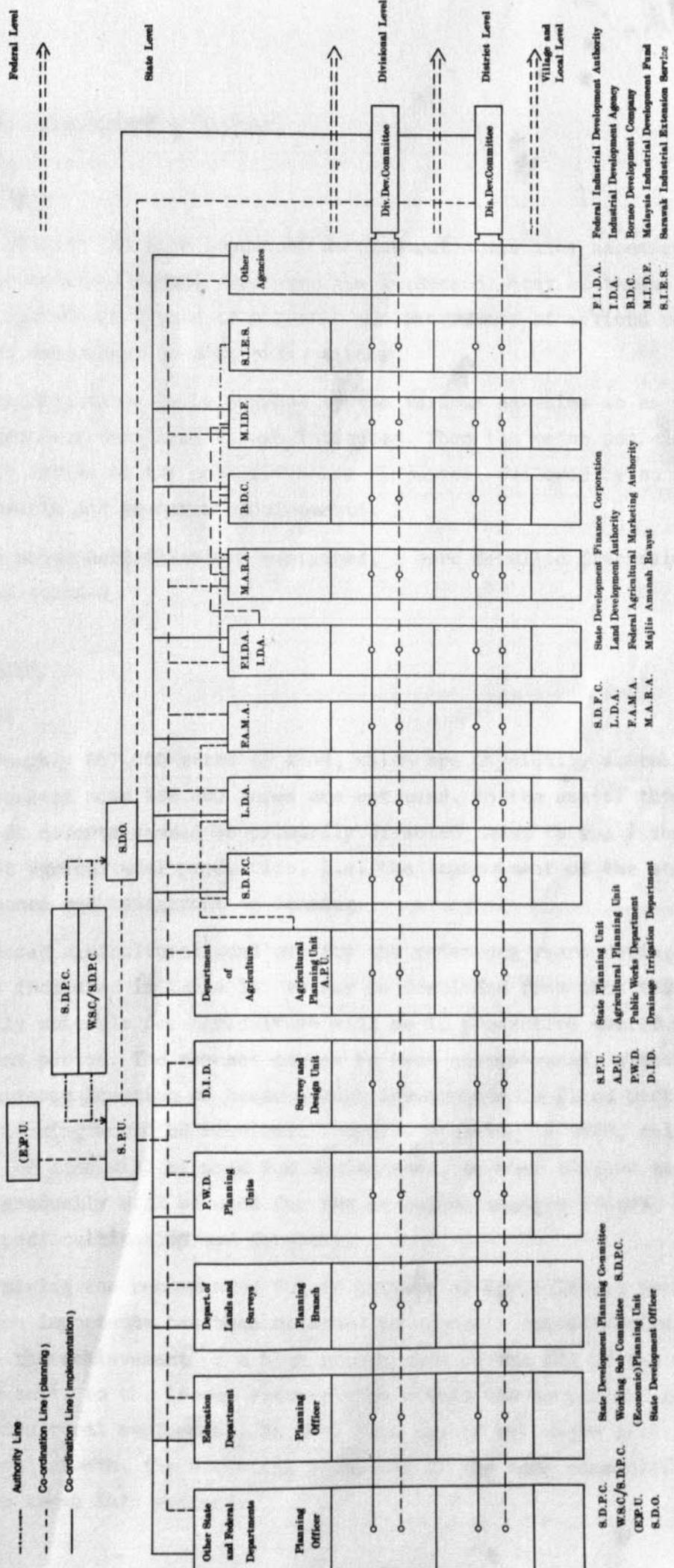
It is proposed to make the existing State Industrial Development Committee a permanent working sub-committee of the S.D.P.C.

The place of the agencies mentioned above in the existing administrative structure and the major co-ordination lines between the government agencies charged with planning and implementation are indicated in figure 1.

An important part of the government task is to stimulate, to guide and to co-ordinate all development activities relevant in the proposed regional development plan. The greatest direct contribution to development of the proposed future socio-economic structure is to be made by the population. There are two groups which play a crucial role in the proposed development, viz. the entrepreneurs who should realize the proposed industrial development and the middle men who fulfil an important function in the supply of inputs and credits for agricultural development, and in the marketing system. The government should pay attention that this part of the institutional structure is organized and working in such a way that the proposed socio-economic structure will be realized at the end of the plan period.



Existing and proposed major co-ordination lines for planning and implementation in Sarawak *)



*) Not all departments and agencies are indicated separately

7. RECOMMENDED DEVELOPMENT PROGRAMMES

7.1. Introduction

In this chapter the most important development activities necessary to realize the recommended future structure are discussed. Most of these activities are brought together in groups of policies and programmes of actions concerning one government department or a specific agency.

First the objectives to be reached by the various agencies so as to contribute to the proposed development, are indicated. Then the major policies to be implemented to arrive at the objectives are discussed, followed by an estimate of the investments and manpower requirements.

Only the major activities are mentioned, a more detailed discussion is given in the various annexes.

7.2. Agriculture

7.2.1. General

Of the roughly 657,000 acres of land, which are physically suitable for agriculture, at present some 338,000 acres are not used. To the use of those acres the development efforts should be primarily directed, next to the intensification of the present agricultural production, i.e. the improvement of the standard of care, maintenance and management in farming.

The proposed agricultural land use for the reference years during the period 1967-1990, is indicated in table 13. As may be concluded from this table all the land physically suitable for agriculture will be in productive use at the end of the development period. The remnant cannot be used economically, either because of a very scattered location or because high investments in flood protection and/or heavy fertilizing would be required. Properly speaking in 1990, only some 454,000 acres of land will be used for agriculture, as some 102,000 acres in the upland areas gradually will be used for the so-called taungya system, a combination of hill padi cultivation and forestry.

In determining the recommended future pattern of agricultural production, ultimately much importance has been attached to economic considerations, in particular to the achievement of a high growth rate of the GVA of the sector and, to a lesser extent, to the income distribution within the sector and to the increase of agricultural employment. As they form one of the major limiting factors for agricultural growth, the marketing prospects of the main commodities necessarily had to be taken into account.

Table 13. Net acreages of cultivable land for the reference years during the period 1967-1990

Crop	1967	1975	1980	1985	1990
Wet padi ¹⁾	24,000	30,000	40,000	75,000	112,000
Dry padi (yearly cultivated area)	16,000	16,000	13,000	10,000	9,000 (11,000) ³⁾
Rubber	73,000	90,000	120,000	140,000	155,000
Coco-nut	44,600	46,000	46,000	47,000	47,000
Pepper	7,300	10,100	11,900	13,000	14,000
Cocoa	500	2,000	5,000	15,000	25,000
Other crops ²⁾	10,000	12,000	20,000	30,000	42,000
Total yearly cultivated area ¹⁾	175,400	206,100	255,900	330,000	404,000 (406,000) ³⁾
Fallow land for shifting cultivation including land used fore the taungya system	94,000	112,000	117,000	120,000	126,000 (150,000) ³⁾
Total area used for agriculture ¹⁾	269,400	318,100	372,900	450,000	530,000 (556,000) ³⁾
Gross area suitable for agriculture	657,000	657,000	657,000	657,000	657,000
Internal road, bunds, farm yards, etc.	48,000	56,000	66,000	79,000	93,000
Area suitable for agriculture but not yet used	340,000	283,000	218,000	128,000	34,000 (8,000) ³⁾

1) excluding the off-season cropping of maize, groundnuts, soybeans, vegetables, etc.
 2) including sago and fruit trees.

3) it can be expected that in the upland areas an acreage of 102,000 gradually is going to be used for the so-called taungya system; the introduction of this type of forestry and agriculture will change the land use figures; for 1990 these changed figures are placed between brackets, for the other reference years these figures cannot possibly be given.

7.2.2. Development programmes per agricultural industry (Annex 7, chapters 5 and 6)

Dry padi

At present the fallow period of the shifting cultivation as an average is dangerously short; because of the rapidly growing population in the shifting cultivation areas the situation is likely to deteriorate progressively, i.e. the already existing situation of undernourishment will be aggravated and the periods of acute food shortage extended, unless development efforts are directed towards an improvement of the shifting cultivation and a change towards permanent agriculture.

Obviously the shifting cultivation of hill padi is an activity with a very low profitability; even at an improved standard of cultivation the NPV* per acre would be as low as M\$ 100 - M\$ 125. It stands therefore to reason that, in so far as economics are concerned, the cultivation of dry padi should be limited to the very minimum. However, it is generally accepted to be a prerequisite for a successful development that a farmer in the upland and midland areas should be able to grow enough padi to supply his family. It is therefore of the utmost importance to promote the cultivation of wet padi in the interior valleys in order to relieve the population pressure on the land in the shifting cultivation areas. Unfortunately the acreage of potential wet padi land available is not sufficient to stop completely the cultivation of hill padi. Nevertheless the development of the interior valleys for the cultivation of wet padi could contribute considerably to the achievement of an improved shifting cultivation, i.e. an extended fallow period of 12-15 years as well as to the introduction of perennial crops. partly could be better used for the cultivation of wet padi.

Wet padi

In view of the aforementioned consideration it is envisaged to concentrate Owing to a large internal market, wet padi is an important crop for the growth of the agricultural sector of the First Division. Population growth and, to a lesser extent, the increase of the per caput income will induce a growth of the total demand for padi to some 81,000 tons in 1975 and to approximately 135,000 tons in 1990, as compared with 59,000 tons in 1967. At present the First Division is only 24 per cent self-sufficient as for padi, while the production of wet padi amounts to 11,800 tons only. To become completely self-sufficient in 1990, an increase of the wet padi production as much as twelvefold of that in 1967 would be required.

Large opportunities for an expansion of the wet padi production exist by means of the construction of drainage facilities, in particular in the riverain areas, but also in the deltaic-estuarine areas and in the interior valleys. The total acreage of wet padi is envisaged to increase from nearly 24,000 in 1967 to approximately 112,000 in 1990. At the same time the yields should grow from only 1,100 lbs per acre in 1967 to some 3,000 lbs per acre in 1990. As a result of this rather ambitious programme, a self-sufficiency rate of 77 may be attained for padi.

At present the off-farm padi price is officially guaranteed at M\$ 16 per picul¹⁾, whereas in the few cases that padi was sold, average prices of M\$ 20 per

* NPV = Net Production Value = Gross Production Value minus non factor costs.

1) See for conversion factors page vii of this volume.

picul were recorded. Owing to the rapidly growing production of padi in all the countries of South-East Asia, off-farm prices in Sarawak may go down to M\$ 12 per picul, unless a policy of import levying would be applied. Such a policy, as to maintain the off-farm price at the level of at least M\$ 16 per picul, is strongly recommended in order to ensure the wet padi farmers of a reasonable income and to safeguard a successful implementation of the whole development programme.

Coco-nut

The profitability of coco-nut growing is poor; at an average yield level of 7 piculs of copra the NPV per acre may fluctuate around M\$ 100. In other words a farm family, being able to handle 5-10 acres, would earn only M\$ 500 - M\$ 1,000 per year. To obtain higher yields would require the construction of costly drainage facilities. Preliminary cost-benefit studies made it clear that these investments would not pay; the more so because the land suitable for coc-nut growing, partly could be better used for the cultivation of wet padi.

In view of the aforementioned consideration it is envisaged to concentrate the coco-nut cultivation on those soils which cannot profitably be used for other cultivations, such as the coastal ridges and some parts of the riverain and deltaic-estuarine areas. Consequently the development efforts with regard to coco-nut growing should not be directed to an increase of the acreage, but primarily to an improvement of the standard of crop management and of storage and processing.

Rubber

Undoubtedly rubber is the most profitable crop which can be grown in the First Division, particularly not at the present low yield level. Moreover the long term price prospects for rubber are very unfavourable; the producer's prices of RSS1 are estimated to drop another 25-30 per cent as compared to the 1967 post war low record of M\$ 55,85 per picul. Nevertheless the NPV per acre could be increased to some M\$ 200, provided the average yields per acre are improved to some 800 lbs as compared to 370 lbs in 1967.

Because of its regularly spread labour requirements rubber easily fits in a number of farm types. As a farm family may be able to handle - for example in combination with wet padi cultivation - some 6-8 acres rubber, an average additional income of M\$ 1,200 - M\$ 1,600 appears to be possible. However, it should be emphasized that rubber cannot possibly compete with high income crops, such as pepper, cocoa and fruit trees. Therefore it is recommended to adopt a development policy to locate new plantings and replantings on the soils less suitable for other crops.

Because the growth of the pepper acreage necessarily has to be restrained, a policy should be adopted to promote cocoa cultivation. Although cocoa definitely

Summarizing the development efforts with regard to rubber should be directed towards (1) the extension of the rubber cultivation by means of new planting of 80,000 acres on land less suitable for other crops, (2) the improvement of the yields, by means of replantings of high yielding varieties and by stimulating better crop management, including fertilizing and an increased tapping intensity, and (3) the improvement of the standard of processing so as to increase the production of high quality rubber (RSS1, RSS2).

Pepper

Pepper cultivation definitely is the activity with the highest income earning potential; with the present average yield level, which is still below the economic optimum, a NPV per acre of M\$ 1,600 can easily be obtained. Despite the fact that the off-farm prices of pepper may drop slightly during the development period - to approximately M\$ 100 per picul of white pepper and M\$ 73,50 per picul of black pepper - the NPV per acre is envisaged to increase to some M\$ 2,900 and over because of improved crop management. As a farm family can handle 1-1.5 acre of pepper, annual income of M\$ 3,000 - M\$ 4,000 and incidentally of M\$ 4,000 - M\$ 6,000 could be possible.

Unfortunately the production of pepper in the First Division cannot possibly be expanded at libitum, since Sarawak only already accounts for 20-25 per cent of the total world export for pepper. It appears therefore a sound policy to limit the expansion of the pepper production, both in the State as a whole and in the First Division. According to an estimate, made in the Annex Agricultural Development chapter 4, during the development period an annual growth rate of 5 per cent probably is the maximum to be allowed. Obviously there is even less scope for an extension of the acreage, because the yields are expected to grow considerably. Theoretically it would be possible to mitigate the expansion of the pepper production by means of raised export duties. However, it could be advisable to stimulate the participation of the poorer, e.g. Dayak and Malay, farmers in the cultivation of this high income crop. Therefore it might appear preferable to introduce a system of production licences in the pepper cultivation.

Another development policy, with regard to pepper, urgently to be adopted is to promote price stabilization; both the internal and the international causes of price fluctuations should be fought vigorously, for example by means of a pepper marketing board and the promotion of a world pepper agreement.

Cocoa

With regard to the soils suitable for pepper cultivation, but not used for this crop because the growth of the pepper acreage necessarily has to be restrained, a policy should be adopted to promote cocoa cultivation. Although cocoa definitely

is the best alternative crop to pepper, its income earning potential is far lower; heavy capital investments in cocoa cultivation, such as the construction of costly drainage facilities and very expensive terracing, appear not to pay, as may be concluded from preliminary cost-benefit studies. Moreover, the farmers in the First Division are not yet familiar with cocoa cultivation. Therefore it is recommended to start the cultivation of this crop on the most suitable soils e.g. ALU unit G₂.

Other crops

Off-season cropping of maize, groundnuts, soybeans and vegetables is envisaged to increase considerably, because of the expected expansion of the wet padi acreage. In 1990 some 75,000 acres may be double-cropped. The cultivation of off-season crops could improve the wet padi farmer's income appreciably; a farm family cropping 2 acres of maize and 1 acre of groundnuts would easily earn an additional M\$ 800. Moreover, in view of the rapidly growing internal demand as a result of the expansion of the animal husbandry sector, an increase in maize production will prove to be badly required.

In order to meet the growth of the internal demand for fruit, it is estimated that the present acreage of some 8,000 should at least be extended to approximately 16,000 acres. However, little information on the economics of commercial fruit production is available. Much more research is also needed on crops such as sago, illipe nuts and lowland tea, and to a lesser extent oilpalm, before they can be recommended for introduction in the First Division at a sizeable scale.

Animal husbandry

Owing to the growth of the population and to the increase of the per caput income, the demand in the First Division for animal produce, such as pork, beef and veal, hen eggs and poultry undoubtedly will grow progressively. Moreover the demand from foreign markets, especially Singapore, may expand as well. According to very conservative estimates, there should be scope for at least 1,000 pig production units, with 10 sows per unit, and 400 poultry farms for egg production, with 1,000 birds each.

At present the standard of management in commercial animal husbandry is poor. It is therefore of the utmost importance to direct all the development efforts with regard to animal husbandry especially towards the improvement of management, both technically and economically. A farm family on a properly managed small scale animal husbandry farm may easily earn a labour income of some M\$ 8,000 - M\$ 1,000 per annum.

Neither the economics of a beef farm, nor the profitability of specialized units for broiler production are very clear. Therefore it is recommended to establish a pilot beef farm of 30-50 acres which should provide the required data for a detailed feasibility study, while also research on the profitability of broiler production should be encouraged. For the time being grazing of cattle under coco-nut could be promoted wherever possible.

As may be concluded from a preliminary feasibility study, the economics of dairy farming could be rather attractive.

7.2.3. Contribution to the economy (Annex 7, chapter 6)

The total GVA of the agricultural sector of the First Division shows a significant increase from about M\$ 35.3 million in 1967, to some M\$ 153 million in 1990 (excluding price subsidies of M\$ 146.3 million). Also the GVA per agricultural worker will grow appreciably, viz. from some M\$ 610 per annum during 1965-1969 period, to some M\$ 1,340 in 1990. However, it should be noted that GVA is not wholly identical with income.

As a result of the implementation of the development programmes with regard to agriculture the number of labourers employed (males and females) should increase from approximately 54,000 in 1967, to some 114,000 in 1990.

The proposed development programmes with regard to agriculture in 1975 obviously will hardly have resulted in increased agricultural employment, nor in a growth of the GVA. Due to the expected growth of the employment in the other sectors of the economy, in 1975 there will remain a population of 228,000 for which farming undoubtedly will be the only means of support. In other words agriculture will have to absorb, within a period of 7 years, an additional population of 55,000. It is obvious that this will depress the growth of the per caput income in agriculture.

7.2.4. Development programmes with regard to the subregions for development

General (Annex 7, paragraphs 7.1-7.3)

Because both the present system of agriculture and the potentials for development and the main impediments to development in the subregions vary widely, it is obvious that the overall development programme with regard to agriculture will have very different consequences for these subregions.

Although many differences occur, one major similarity between the development in the subregions exists: it is generally accepted, that for the time being the agricultural production will mainly take place on small family farms. It is

particularly social change takes time. For all these reasons a policy of concentrated improvement appears to be the most suited for the upland areas.

Because it is very unlikely that an intensive campaign for the promotion of permanent agriculture for the whole subregion can be implemented, while also in-

All development efforts with regard to the upland areas should be directed towards the promotion of a change from the present system of subsistence agriculture to a system of commercial agricultural production. Virtually this policy implies: (1) development of 9,000 acres of interior valley land for wet padi cultivation, so as to relieve the pressure on the land in the shifting cultivation areas; (2) gradual substitution of the present system of hill padi cultivation by the so-called taungya system; (3) promotion of cash cropping, particularly of rubber, pepper, cocoa and off-season crops, such as maize, groundnuts and vegetables. The realization of this policy requires considerable changes from the population such

as the change to permanent agriculture, the change from a subsistence to a market economy, changes in the present land tenure situation, etc. It is recommended to pursue the attainment in 1990 of the following agricultural land use situation:

wet padi	9,000 acres
rubber	80,000 acres
pepper	8,000 acres
cocoa	17,000 acres
miscellaneous crops	16,000 acres
hill padi (taungya)	102,000 acres

In total in 1990 an acreage of approximately 232,000 will be used for agricultural production (incl. taungya), which is about 85 per cent of the total area suitable for agriculture and only 26 per cent of the total acreage. The recommended development in the upland areas will result in a total agricultural employment for some 16,000 farm families, or about 32,000 male and female labourers.

Owing to the heterogeneity of the physical and economic conditions many types of farms may occur. Nevertheless a development policy should be adopted to promote primarily the major farm types indicated in chapter 5 of the Annex Agricultural Development. These farms will enable the farm families to earn an average annual income of about M\$ 2,000 - M\$ 3,000, as compared to only M\$ 1,200 in 1967.

Evidently those policies for development should be implemented which are the most suited to the attainment of the recommended development and particularly to the removal of the main impediments to development, viz. the poorly developed infrastructure and the social structure of the population in the region. It stands to reason that the population in the upland areas will not be able to cope with the problems involved in modern development, unless they are guided and supported;

miscellaneous crops	24,000 acres
hill padi (shifting cultivation)	80,000 acres

particularly social change takes time. For all these reasons a policy of concentrated improvement appears to be the most suited for the upland areas.

Because it is very unlikely that an intensive campaign for the promotion of permanent agriculture for the whole subregion can be implemented, while also insufficient resources are available for the creation of a progressive infrastructure in the whole upland areas, it is recommended to follow a pilot area approach. These pilot areas should be selected very carefully. On the basis of the criteria, indicated in paragraph 7.4.3.2. of the Annex Agricultural Development, the recommendation is to start with two pilot areas in, or in the surroundings of, each of the following villages: Tebedu, Tebakang and Muara Mongkos. More details about the policy of concentrated improvement with regard to the upland areas can be found in the Annex Agricultural Development, paragraph 7.4.

It has been estimated that the whole development programme for the first pilot areas should be finished during the third five year plan period, sometime between 1975 and 1980; afterwards these areas should be left to the usual extension services while new areas for the concentrated improvement approach should be selected. At the same time a less intensive extension programme for the remainder of the upland areas should continue.

In a few of the kampong areas within the subregion insufficient development potential is available. In these areas a programme stimulating emigration should be given high priority.

The midland areas (Annex 7, paragraph 7.5)

With regard to physical conditions the midland areas differ little from the upland areas. Other conditions are, however, far more favourable; by far the greater part of the farm population already is familiar with intensive permanent agriculture, rapidly expanding markets are within easy reach, owing to a well-developed road system, and the sufficient availability of social and economic services.

The development programme preferably to be adopted with regard to the midland areas should be directed towards the improvement of the present standard of commercial agriculture. In some areas within the subregion shifting cultivation is still practised. Obviously for these areas the same development efforts should be implemented as for the upland areas. It has been indicated, that the following agricultural land use pattern should be preferred:

wet padi	15,000 acres
rubber	70,000 acres
pepper	6,000 acres
cocoa	8,000 acres
miscellaneous crops	24,000 acres
hillpadi (shifting cultivation)	60,000 acres

In this ideal situation, to be attained in 1990, some 85 per cent of the total suitable acreage will be in agricultural use. At the same time the animal husbandry sector should be expanded appreciably.

Properly managed commercial farms in this subregion could provide the farmer with an annual income varying between at least M\$ 2,000 - M\$ 3,000 and at most M\$ 8,000 - M\$ 10,000.

If developed in accordance with the programmes briefly indicated above, the agricultural sector in the midland areas in 1990 could employ some 36,000 male and female labourers. Consequently it can be concluded that a great number of the future active population will have to find employment in the other sectors of the economy and/or will have to leave the subregion.

A part of the population in the midland areas is prevented from obtaining land by the existing law. However, the necessity of providing land to small Chinese farmers must be emphasized. Lack of agricultural land could easily force the Chinese in the midland areas to leave agriculture and enter the secondary and tertiary sectors of the economy. Such a development would enhance the already existing partition of the population into a poor agricultural and a more wealthy non-agricultural urban part, coinciding with the division in ethnic groups, i.e. the Malay and the Land Dayaks on the one hand and the Chinese on the other. Therefore the adoption of a land policy which would enable the small Chinese farmer to obtain land, but at the same time would protect the Land Dayak against land grabbing is strongly recommended (see the Annex 10, Land Tenure).

The same policy of concentrated improvement recommended for the upland areas should be implemented for the shifting cultivation areas within the midland areas; suitable pilot areas can be found in the Stinggang-Stungkor area. In the remainder of the midland areas autonomous growth already would achieve a considerable development. However, such a policy only, will lead to a further polarization between the poor and the rich farmers. Of all the policies available improvement appears the most suitable for the development in these parts of the midland areas.

The riverain areas (Annex 7, paragraph 7.6)

With their considerable potentials for wet padi cultivation and off-season cropping, the riverain areas belong to the major sources of agricultural growth in the First Division. Out of the total suitable acreage of about 111,000, some 70,000 acres should be developed for wet padi cultivation. The remnant, a net cultivable acreage of 24,000, should be used for coco-nut growing. It is not recommended to promote double cropping of wet padi, although an acreage of 36,600 is technically suitable for this type of agriculture; preliminary cost-benefit

studies show that the additional capital funds, to be invested in irrigation provisions, on the average would not be profitable.

As long as the economics of small scale mechanization in wet padi cultivation and off-season cropping are doubtful, an average farm size of 3 acres of wet padi - and off-season crops - and some coco-nut appears the most optimal. On these farms an average farm family could earn a yearly income of M\$ 2,000 - M\$ 2,500. Because of the increasing labour costs in the long run small scale mechanization undoubtedly will become profitable. In that situation the average farm may consist of a larger acreage of wet padi and a smaller acreage of coco-nut.

In the riverain areas, if properly developed, a total farm population of 88,000 could be employed which is far more than the expected growth during the period 1967-1990 of the local population. Therefore migration from other subregions to the riverain areas should be promoted. In order to avoid capital losses on the expensive drainage facilities, to regulate immigration and to promote intensive annual cropping among farmers who are not accustomed to this type of agriculture, a policy of transformation with regard to the riverain areas should be adopted. Because immigration apparently is a prerequisite for an optimal development of the riverain areas, it is of the utmost importance to start the development in those parts of this subregion closely located to the overpopulated midland and deltaic-estuarine areas. Therefore it is recommended to make a beginning with two projects along the Samarahan, near Muara Tuang, and two along the Sadong, near Gedong. Each of the four projects should consist of 1,200 acres.

The deltaic-estuarine areas (Annex 7, paragraph 7.7)

Because of the population pressure in the deltaic-estuarine areas, all the land suitable for agriculture is already in productive use; the population even has been forced to start farming in the peat swamps, a development which raises serious drainage problems for the whole subregion. Moreover the present agricultural land use apparently is far too extensive, i.e. the acreage of coco-nut is too large considering the population pressure in this subregion.

It is strongly recommended to direct all development efforts regarding the deltaic-estuarine areas towards the attainment of a more optimal land use, i.e. the acreage of coco-nut should gradually be decreased to some 18,000 as compared with about 25,000-30,000 acres in 1967; at the same time the acreage of wet padi and off-season crops should be extended to approximately 18,000. Even in the ideal land use situation a farm population of only 33,000 at the very maximum could be employed in the deltaic-estuarine areas. Consequently it appears impossible to employ the whole natural increase of the population in farming.

be improved.

7.2.5. Migration to other areas in or outside the First Division should be strongly stimulated. In order to enable a part of the population to find employment outside agriculture, an education programme for the deltaic-estuarine areas should be implemented. Such a programme must promote the establishment of lower secondary schools and of a trade school. Special attention should be paid to the Chinese population of the deltaic-estuarine areas, as this ethnic group at present lives under very poor conditions.

The proposed development in the deltaic-estuarine areas requires considerable funds to be invested in the construction of drainage facilities and in the improvement of the physical infrastructure. These investments preferably should be incorporated in a land consolidation scheme. Therefore the continuation of the large scale development programme already under implementation in the Nonok peninsula, should be promoted. However, the existing plan should be revised urgently because this plan leaves much to be desired, both from a technical and from a socio-economic point of view. The revised programme should be planned comprehensively while more attention should be paid to the co-operation of the local population, the position of the fishermen in the subregion and the implementation of a reallocation programme (see for more details Annex 7, paragraph 7.7.3.2.).

The coastal ridges (Annex 7, paragraph 7.8)

The potentials for agricultural growth on the coastal ridges are limited; coco-nut is the only crop which can be grown profitably. As almost the whole suitable area of about 5,000 acres already is under coco-nut, the development programme should be focused on the improvement of the present standard of cultivation.

Obviously the allocation of scarce resources to this scattered subregion, with only a small population should be cut down to the very minimum. Special care should be taken of

- the improvement of less economic holdings through new planting an/or replanting of coco-nut
- the improvement of the grass cover under the coco-nut palms, in order to promote cattle grazing
- the establishment of cattle distribution centres and of appropriate veterinary services
- the establishment of one or two demonstration farms
- the improvement of drinking water facilities both for human and animal consumption.

However, primarily the present system of transport in this subregion should be improved.

7.2.5. Institutional aspects of the recommended policies (Annex 7, chapter 8)

The implementation of the development programmes mentioned in paragraph 7.2.4. requires a considerable amount of services which have to be provided by various government departments, semi-governmental organizations and private enterprise.

The improvement of agricultural production requires both farm inputs such as fertilizer and insecticides, and a good marketing organization. It is therefore recommended to strengthen the organization at the Sarawak Branch of the Federal Agricultural Marketing Authority (FAMA) considerably and to establish Marketing Boards for the most important crops, especially for pepper. Also other measures (storage facilities) are recommended which will lead to the avoidance of seasonal price fluctuations. These measures are of great importance because a successful implementation of agricultural development programmes can only be expected if the farmers are ensured of a reasonable price for their products.

There are several indications that the present credit programme in the First Division does not meet all the prerequisites for a successful implementation of the development programme. It is recommended to make the Sarawak Development Finance Co-operation (SDFC) the agency for all agricultural credit programmes. Straight subsidies should be replaced, if necessary, by indirect subsidies such as providing farm inputs below cost price. A system of so-called supervised credit which operates in close co-operation with the agricultural extension service, appears to be indicated.

Private enterprise in the future will play an important role in providing farm inputs, marketing and credit facilities. The government should stimulate private enterprise in such a way that the services indicated are provided in time and at reasonable conditions. In order to avoid a monopsony position of shopkeepers or local traders the development of farmer organizations must be carefully promoted. Also a sound licences policy is necessary.

The proposed development of the riverain areas and wet valleys in the upland areas will require an extension and strengthening of the existing organization of the Drainage and Irrigation Department.

An effective extension service organization is of a great importance for the proposed agricultural development. It is recommended to lay more emphasis on the integrated farm development approach. A Village Agricultural Assitant (VAA) should be made responsible for the co-ordination of extension activities at the farm and the local level. Specialized extension services should be provided by subject matter specialists, preferably of the level of Assistant Agricultural Officer (AAO).

period 1971-1990, of approximately M\$ 290 - M\$ 300 million. By far the greater part of these investments - roughly estimated about M\$ 230 million - will have to be financed by public funds. The government budget will furthermore be burdened

Subject matter specialists should be administratively pooled at divisional level but be working at district level. An upgrading of the Junior Agricultural Assistants to Agricultural Assistants and of the subject matter specialists is proposed.

Agricultural vocational training must be available at the level of secondary centres by a nine months' course at Farmers Training Centres, spread over three years in three periods of three months each. For the period 1971-1975 three Farmers Training Centres are proposed in Tebakang, Muara Tuang and Nonok. detailed data

The Natural Resources Training Centre (NRTC) will play a crucial role in providing qualified manpower. It is estimated that its present number of students, in the course basic agriculture, must be quadrupled to provide the estimated required number of AA's. It is recommended to appoint an ad hoc committee to prepare a detailed development programme for the NRTC before the end of 1971.

It is recommended to charge an independent semi-government organization (Land Development Authority, LDA) separated from the SDPC with the policies of transformation and reclaiming of virgin land. An exception is made for the Nonok area where the co-ordination between the various agencies already involved should be improved. and 1 Agricultural Officer (AO) at divisional level will be required,

The programme of the Research Branch of the Department should be adapted to the needs of the agricultural development programme. Special attention should be given to wet padi, dry padi, dry land cultivation in the upland areas, pepper, cocoa, coco-nut, illipe-nut and sago.

As far as soils are concerned more detailed research is desired concerning the agricultural use possibilities of the saline gley soils, the areas with podzols and the peat soils. at least two experienced marketing officers and 3-4 field officers. An inventory of the hydrological situation of the riverain areas and the wet valleys in the upland areas is necessary.

Research in agricultural economics should be focused on the economic of farm management. FAMA should concentrate on the research of the aspects of marketing and processing.

Some of the organizational aspects of agricultural development have been discussed in paragraph 6.5., while manpower requirements and manpower policies are mentioned in the paragraphs 7.2.7. and 9.3.

It is at least doubtful whether the Natural Resources Training Centres will be able to supply of the required qualified manpower. Therefore

7.2.6. Required capital investments
 It has been estimated that the recommended development programmes with regard to agriculture would require a total amount of capital to be invested during the period 1971-1990, of approximately M\$ 290 - M\$ 300 million. By far the greater part of these investments - roughly estimated about M\$ 230 million - will have to be financed by public funds. The government budget will furthermore be burdened

with the recurrent costs of the development programmes, e.g. the salaries of staff, and the cost of a comprehensive credit programme. The investments in road construction and improvement are not included in the total amount of M\$ 290 - M\$ 300 million.

The question whether a certain percentage of the public investments in agriculture should be repaid by the farmers and if so which percentage, cannot possibly be answered in this report; this would require much more detailed data than are available at the moment.

Approximately M\$ 66 - M\$ 70 million should be invested in agriculture during the Second Five Year Plan period 1971-1975.

7.2.7. Manpower requirements

Initial forest development 1971-1975 (Annex 5 Forestry, paragraphs 2.1.-2.4.)

The number of staff required by the Field Branch of the Department of Agriculture in 1975 has been estimated at 124 Agricultural Assistants (AA) and 34 Senior Agricultural Assistants (SAA). This is the number of staff in charge with the First Division only. Moreover 5 Assistant Agricultural Officers (AAO) at district level and 1 Agricultural Officer (AO) at divisional level will be required, next to 6 SAA's and 12 AA's for the Farmers' Training Centres and 3 AO's for the APU. Compared with the present number of staff below AO level this would require a staff extension with 74 AA's and 12 SAA's. Obviously after 1975 a further extension will be needed.

In order to be able to implement the appropriate programmes with regard to agricultural marketing, the divisional section of the Sarawak branch of FAMA should be staffed with at least two experienced marketing officers and 3-4 field officers, preferably at AA level. The implementation of the credit programmes may require a similar number of additional staff.

Finally the divisional section of the Drainage and Irrigation Department should be staffed with at least 1 drainage and irrigation specialist, a number of Engineering Assistants (EA) and Junior Technical Assistants (JTA) to be charged with the supervision on maintenance and operation of the various schemes and projects, an EA in charge of the supervision of the projects under construction, a number of TA's and finally a number of auxiliary staff.

It is at least doubtful whether the Natural Resources Training Centres will be able to guarantee a timely supply of the required qualified manpower. Therefore it is recommended to ease the manpower demand by contracting the planning and implementation of the proposed transformation of the riverain areas to land development consultants (see 9.3.).

7.3. Forestry

Objectives

The main objectives of the forestry development programme are:

- to regenerate the exploited forest stands to regain the timber production which at present is decreasing rapidly
- to establish plantation forestry which will contribute in a substantial way to raise the production of a raw material as a basis for industrialization
- to ensure and increase the role which forests have as a protection against run-off, and
- to promote the export of more finished woodproducts by converting the timber in the country.

Initial forest development 1971-1975 (Annex 5 Forestry, paragraphs 2.1.-2.4.)

In the First Division the timber production, especially from the peatswamp forest, will diminish considerably; wherever the rate of regeneration is not in balance with the exploitation the regeneration of the arrear areas in the peat-swamps of the First Division should be speeded up to ensure a continuous supply of timber in the future. Regeneration treatments require a very low investment and are economically justified. The growth of swamp species and alternative re-generation treatments should be studied, which can give possibilities to treatment operations even of a higher rate of return.

With the growing demand in South-East Asia for industrial wood - especially for pulp and paper - and the favourable conditions for growing trees in the First Division, trials with quick growing species should be established. On this basis species and sites should be selected so that in the successive stage plantation forestry can be practised on a regular and fair scale.

The total costs of the forestry development will therefore amount to M\$ 18,196,000 of which M\$ 910,000 is for the upland areas forests are significant in a hydrological sense in diminishing flood hazards. They are to be restored and reserved and should be treated as protection forest.

Export of processed wood should be given preference over the shipping of logs. The logs should be converted into the dimensions in demand with the buyers overseas and should be graded and controlled by an independent organization.

Successive forest development 1976-1990 (Annex 5 Forestry, paragraphs 2.5.-2.7.)

It is of prime urgency that Sarawak should start practising plantation forestry, which is the normal way of timber production and in which many of the countries in South-East Asia already have obtained experience. Preliminary studies show (Annex 5 Forestry, Appendix 6) that plantation forestry is economically feasible. Growing

trees in short rotations can be combined with the cultivation of an agricultural crop, so that the taungya system can be practised instead of shifting cultivation. The farmer will be able to obtain annually a regular additional income, moreover by restoring the fallow cycle and applying fertilizers the yields will increase.

In the First Division full advantage can be obtained of plantation forestry by starting operations in 8 units - each with a net area of 10,500 acres - and located in different regions. After 3 years 1400 farm families will obtain regular employment in plantation forestry; the income of the farm family will gradually amount to M\$ 2,680 from the 16th year after planting.

7.4 To assure a justified development experienced plantation forest officers should be employed and the operation has to be conducted by a board of local representatives of the group of kampongs concerned.

When in full operation the combined units (total area 102,000 acres) can produce a sustained yield annually of 11,760,100 cub.ft. ($336,000 \text{ m}^3$), a quantity sufficient to supply a pulpmill of 150,000 tons' capacity (see for more details Annex 5, paragraph 2.7 and Appendix 7).

Cost

To realize the above mentioned future development the following costs are involved:

- for protection forest reserves in total M\$ 66,000 during the plan period, of which M\$ 6,000 in the period 1971-1975
- for swamp forest regeneration treatment and research in total M\$ 1,587,000 of which M\$ 579,500 in the period 1971-1975
- for plantation forestry in total M\$ 16,543,000 during the plan period of which M\$ 325,000 for trial plantations in the period 1971-1975.

The total costs of the forestry development will therefore amount to M\$ 18,196,000 of which M\$ 910,500 in the period 1971-1975.

The royalties from forest reserves are estimated at in total M\$ 9,300,000 in the period 1971-1975. The benefits from plantation forestry will be from 1994 onwards annually M\$ 5,000,000, with an annual cost of M\$ 1,600,000.

Manpower

The annual manpower requirement in the period 1971-1975 will be for

logging - 580

protection and swamp forest treatment - 60

plantation forestry - 30

and in the period 1971-1990: of fishing it becomes more and more important that the Malay logging series is extended to Sarawak. 500 was already proposed, and that this protection and swamp forest treatment - 50
 Cost plantation forestry - 2830

The staff of the Forest Department needs to be enlarged with 2 senior forest officers, 3 sub-alterns and 4 forest guards in the period 1971-1975, and 2 senior forest officers, 4 forest officers, 8 sub-alterns and 16 forest guards in the period 1976-1990.

Manpower

7.4. Marine fisheries (Annex 6, Marine Fisheries) it is expected that the number

Objectives

A first rough estimate of the marine fishing potential in the First Division indicates that a considerable increase in fishing may be possible. It is the objective to expand the exploitation of this natural resource in such a way that the contribution of marine fisheries to the Regional Product will increase from M\$ 3.7 million in 1970 to M\$ 10.3 million in 1990.

Development programme

7.5. The following steps have to be taken to reach the objectives:

- To avoid overfishing a more detailed assessment of the fishing potential is necessary. It is therefore recommended that the recently completed multipurpose fishing vessel conducts several surveys in Sarawak waters.
- As the largest expansion of production for the moment is expected from the rapidly increasing trawl fishing, this development should receive due attention and, if necessary, aid.
- Such aid should not only be extended to the existing large private enterprise, but also to the smaller scale fishing industry.
- In order to give the existing small scale fishing industry an opportunity to improve its production capacity, the training programme at the Marine Fisheries School on Labuan should be implemented at the earliest possibility, while other training programmes are continued.
- Financial aid required for the development of the small scale fishing industry should be channelled either through co-operative societies or through the Sarawak Development Finance Corporation.
- As a result of the increasing production extension and improvement of the existing storage and marketing facilities are required. Special attention should be given to mobile cold storage with a fixed schedule of meeting fishermen at sea, and to the provision of ice plants.

-- With the increasing density of fishing it becomes more and more important that the Malaysian Fisheries Act is extended to Sarawak, as was already proposed, and that this act is actually enforced.

Cost

For the realization of the proposed programme it is assumed that 30 per cent of the estimated development cost for Sarawak (M\$ 3,335,000) in the period 1971 - 1975 are needed for the First Division, amounting to M\$ 1,111,000.

Manpower

Due to the rapid development of trawl fishing it is expected that the number of full time fishermen will decrease from 1,700 persons in 1968/1969 to 1,200 persons in 1990. The number of part time fishermen is expected to remain at its present level of 400 persons.

For an effective implementation of the proposed measures the staff of the Marine Fisheries Department in the First Division should be expanded with 4 professional staff members and 1 technical staff member in the period 1971 - 1975.

7.6. Manufacturing (Annex 12, Manufacturing)

7.5. Mining (Annex 4, Mining and Quarrying)

Objectives

Of the many mineral deposits known in the First Division only the kaolinitic clay in the Telagus area offers interesting prospects; more investigation is, however, required before an estimate can be made of its potential contribution to the G.R.P. of the First Division. The mining potential of the coal deposit near Silantek will influence the development of the First Division because it is expected that the coal, if exploited, will be exported via the transport facilities of the First Division.

The contribution of the mining sector to the development of the First Division is based on the assumption that there will be a slight decline in the production of gold and antimony and an increase of 5 per cent of the production of sand and stone. It is the objective that the Gross Value Added of mining and quarrying will increase from M\$ 1.15 million in 1970 to M\$ 2.74 million in 1990.

Development programme

-- As mining can be used as a lever of the economy it is important to know as soon as possible the mineral resources available in an area. It is therefore suggested to carry out an aero-geophysical survey covering the more promising parts of Sarawak.

- The government should play an active role in the promotion of the mining industry by promoting feasibility studies and seeking advice where needed from foreign experts before entering in negotiations with mining companies.
 - To perform these tasks in an efficient way close co-operation and, if possible, a merger of the Department of Mines and the Geological Survey is recommended.
- Investments and recurrent cost

As there are no identified projects in the mining sector it is advised to include a pro re nata post in the development budget. Due to the small size of the departments concerned no separate estimate of the recurrent cost is made; this is included in the estimate made for the public sector.

Manpower

It is estimated that the employment in this sector will increase from 500 to 800 persons in the period 1971-1990. A strengthening of the present staff of the Department of Mines and the Geological Survey is required in order to implement the recommended development programme.

7.6. Manufacturing (Annex 17, Manufacturing)

Objectives

The major objective of industrial development in the First Division is to produce industrial goods required for the internal market and to realize the export of specialized goods at the end of the plan period. Translated into terms of value added this objective means that the GVA of the manufacturing sector will have to increase from M\$ 40 million in 1970 to M\$ 56 million in 1975, and to M\$ 136 million in 1990.

The expansion of the industrial production can be achieved by establishing new industrial enterprises on the one hand and by expanding the activities and improving the efficiency of already existing industries on the other hand. The main fields of industrial development are

- the processing of primary products for export, in particular wood and agricultural produce;
- import substitution; a total value of M\$ 16 million of at present imported goods may gradually be produced in the First Division;
- the manufacturing of part of the requirements needed to execute the proposed development of Sarawak and the First Division.

Development programme

The development programme for the manufacturing sector is not specifically tailored for the First Division. Instead, it is meant to stimulate the industrialization of the whole State and it is limited to the creation of two organizations which should provide a systematic framework for industrial promotion and the assistance to existing enterprises.

In the first place, it is proposed to have an office of the Federal Industrial Development Authority (FIDA) in Sarawak indicated as the Industrial Development Agency (IDA), of which the terms of reference are indicated in paragraph 6.5.

The second organization which the Study Team proposes is the Sarawak Industrial Extension Service. The SIES should be established as an independent body and should be financed by the State Government, the Borneo Development Corporation, the Malaysia Industrial Development Finance Snd.Bh. and MARA. The three latter organizations offer financial facilities to industrial enterprises and provide advisory services at a limited scale. By joining forces in the establishment of the SIES they can become more effective in their contribution to a sound industrial sector.

Cost

The total investment cost of the industrial development of the First Division will be of the magnitude of approximately M\$ 70 million for the period 1971 - 1975, and M\$ 300 million for the period 1976 - 1990.

Practically all the investments will be made by the private sector, unless the government participates directly in building its own factories or by investing in joint ventures with the private sector. Not included in the afore-mentioned investments is the cost of preparing industrial estates. These investments are included in the total cost of the physical infrastructure.

No estimates have been made of the investment and recurring costs of the two proposed organizations.

Manpower

As the Study Team realizes that one of the major problems of the development of Sarawak is the availability of qualified people, only the minimum staff requirements for the two proposed industrial organizations are mentioned.

For FIDA these will be:

- 1 industrial economist
- 2 industrial engineers
- 1 market analyst
- 1 industrial promotor

For SIES staff requirements are as follows: Development programme are indicated as follows:

- 1 manager (industrial economist)
- 1 management specialist
- 1 industrial cost accountant
- 1 industrial engineer
- 2 engineers with experience in various industrial processes
- 1 training specialist

It is hoped that these posts will be filled gradually in a period of three years. In the meantime, the possibilities to attract foreign advisers should be seriously considered so as not to delay the execution of the plan.

The development of the manufacturing sector as envisaged in the regional plan of the First Division will provide employment to 22,000 people in 1990.

The total additional manpower requirements of this sector during the plan period are estimated at 11,000 people of which 9,000 are male workers. For the period 1971 - 1975 an increase of 3,000 jobs in manufacturing is expected.

period 1971 - 1975.

7.7. Health (Annex 11, Health)

Objectives

In order to realize the major objective of the Medical Department, namely to maintain the good health of the population, the following criteria have been set.

Investments

In so far as curative care is concerned there must be one general hospital in each Division, one district hospital in each district, one rural dispensary should be available for 7,000 - 40,000 persons, and one rural medical unit for 2,000 - 7,000 persons. In 1990 there must be 1 doctor for every 6,000 persons and one hospital bed to 270 persons.

With a view to preventive care one rural health unit has to be available for every 2,000 - 7,000 persons.

Development programme

Although the quality and quantity of health units available to the population of the First Division are below the average of West Malaysia, the present health conditions do not create major problems for the future development. It is recommended in the future to change the emphasis from curative towards preventive care. Special attention must be given to the preventive care in areas where considerable changes in the natural environment can be expected, such as at the concentrated improvement policy in the upland and midland areas and at the transformation policy in the riverain and deltaic-estuarine areas.

The most important points of the development programme are indicated as follows:

- During the period 1971 -1975 the main emphasis, in so far as investments are concerned, will remain on curative care. With the completion of the General Hospital in Kuching and the building of two district hospitals in Serian and Simunjan an important part of the criteria for curative care can be fulfilled as early as in 1975.
- In the period 1971 - 1975 the building of two rural dispensaries and 6 rural medical units are proposed. In the period 1976 - 1990 another 8 rural dispensaries and 50 medical units have to be built to reach the criteria. However, when there are rural dispensaries in all the secondary centres and an improving health situation in the rural areas as result of the health units, the building of medical units at local level can be given a low priority.
- In order to reach the criteria of one hospital bed to 270 persons an increase of 1960 beds will be required in the period 1976 - 1990.
- It is recommended to build 19 new health units for preventive care in the period 1971 - 1975.
- The medical services mentioned above must be integrated in the physical infrastructure indicated on map X. In the period 1971 - 1975 priority in the location of medical services must be given to those areas where the government is concentrating its development efforts.

Investments

To realize the proposed development programme the following investments are required in the period 1971 - 1975 in M\$ 1,000.-.

General hospital	4,873.-
2 District hospitals	730.-
2 Rural dispensaries	76.-
6 Medical units	126.-
19 Rural health units	247.-
Other cost	1,504.-
Total	7,556.-

If for financial reasons this programme cannot be completely implemented it is recommended to temporize, if technically possible, the third stage of the General Hospital. For the period 1971 - 1975 this would result in a more balanced distribution of investments over rural and urban areas and over preventive and curative care.

Manpower

There are no indications that the Medical Department will have to face serious manpower problems in the realization of the proposed development programme, on condition that the existing educational programmes are extended. However, special attention must be given to the increased demands for health officers resulting from the greater emphasis on preventive care.

The building of health facilities in rural areas will only result in better health care when qualified and devoted medical personnel is available and willing to live in the rural areas. This will require special attention in the various training programmes and necessitates a certain quality and quantity of living quarters for medical personnel in the rural areas.

7.8. Education (Annex 12, Education)

Objectives

- The location and the construction of the physical facilities of these school types must be of such a nature that they can be easily transformed for the accommodation of comprehensive courses.
- The major objectives for the educational sector are
- to make the people realize that all are citizens of one nation with equal rights and duties
 - to provide as soon as possible all children of school age (6-11) with primary education
 - to educate and train the population so as to equip them for effective participation in the projected socio-economic development.

Development programme

In order to realize these objectives the following development of the educational system is recommended. The period 1971-1975 should be used for research

- The enrollment ratio of children of 6-11 years of age should gradually increase from 85 per cent in 1970 to 95 per cent in 1990. This means that the primary school population in the First Division will increase from + 53,000 pupils in 1970 to 107,000 pupils in 1990.
- Based on a combination of the manpower approach and the social demand approach the following development for secondary education is recommended:
 - To expand and differentiate the existing vocational education on the basis of the manpower requirements for the projected development.
 - To expand the output of the general secondary schools above the level required in the manpower approach in order to (I) meet considerable social demand for secondary education and (II) promote national unity.

- A research programme is recommended to study the major problems the educational system has to cope with.

Translated into quantitative objectives this means that in the period 1971-1980 junior secondary education should be available for 60 per cent of the primary school leavers and that 50 per cent of the junior secondary school leavers can attend upper secondary education. In the period 1981-1990 it is recommended to extend junior secondary education in such a way that in 1990 places will be available for 80-90 per cent of the primary school leavers. This will result in an increase of the average annual secondary school population estimated for the period 1971-1975 at 9,000 pupils, to an estimated number of 20,000 pupils for the period 1986-1990.

- Before 1980 a decision must be made whether at the junior secondary level education will be given in (a) general courses (present junior secondary schools) and vocational courses (trade school or junior vocational school and agricultural courses) or (b) in comprehensive courses. Before a final decision is made it is recommended to introduce two new school types in the existing school system, viz. the junior vocational school and the three years' agricultural course. The location and the construction of the physical facilities of these school types must be of such a nature that they can be easily transformed for the accomodation of comprehensive courses.
- Special attention should be given to the improvement of the technical abilities of the manpower already in the labour force by means of in-service training, evening classes etc.
- The introduction of school leavers of vocational schools and especially of junior vocational schools into the labour force will require an extensive system of apprenticeships.
- A gradual integration of unaided schools and government schools and government aided schools is recommended. The period 1971-1975 should be used for research and consultation in order to prepare a realistic programme for gradual integration in the period 1976-1990.
- Considerable attention should be given to the improvement of the content of the various curricula as well as of the teaching methods, thus creating an efficient educational system that can contribute to the objectives of economic growth and national unity.
- The location of the schools should be based on the proposed hierarchy of service centres, primary schools in primary centres and centres of a higher order; junior secondary schools and three years' agricultural courses and trade schools, if relevant, in secondary centres. This will result in a decrease of the cost of boarding as a percentage of the cost of education.
- A research programme is recommended to study the major problems the educational system has to cope with.

Investments and recurrent costs

An estimate of the investments and recurrent cost resulting from the recommended educational development are indicated in table 14.

The considerable increase of the educational budget is only partly due to the requirements resulting from the projected economic development. The social objectives are the main issues responsible for this increase. Accepting the overriding importance of the social objectives, this increase seems acceptable.

If, however, for financial reasons this proposed educational development programme cannot be realized it is recommended to consider general secondary education as the first object for economizing.

Table 14 - Estimate of investments and recurrent cost required by the Department of Education for the development of the educational system in the First Division, 1971-1990. 1)

Development programme

	1971-1975	1976-1980	1981-1985	1986-1990
Annual average recurrent cost primary education	7	8	10	12
Annual average recurrent cost secondary education (vocational and secondary)	5	6	12	16
Other annual average recurrent cost	2	3	4	3
Total average annual recurrent cost over the period	14	17	26	31
Investments over the period	6	5	8	10

This will require careful zoning and if necessary building regulations of areas 1) such as the Sematan beaches and the Santubong peninsula. This should be the task of the Land and Survey Department. The development and management of the tourist potential of the National Parks should be placed under the responsibility of the Forest Department, which must take care that the nature of the National Parks will not be destroyed.

As a result of the proposed development of the educational system the number of primary school teachers will increase from 2,000 in 1970 to over 4,000 in 1990 (based on a pupil-teacher ratio of 30).

The number of secondary school teachers will increase from an average of more than 400 in the period 1971-1975 to an average of nearly 1,400 in the period 1986-1990.

to the transport facilities to these areas.

The greatest bottlenecks for the educational development are expected in the number of teachers available for the lower vocational schools. Therefore high priority should be given to the training of this type of teacher. If necessary technical assistance in the first two plan periods should be applied for.

7.9. Tourism

Due to the modest task recommended for the government in the development of tourism only a limited amount of manpower is needed. Besides a tourist officer

The major objective of this sector is to provide timely the tourist facilities for which a growing demand can be expected with the increase of the urban population. Besides the promotion of internal tourism, attention must be paid to an optimal exploitation of the limited potentials of the First Division for international tourism, namely the historical background of the country such as longhouses, its flora and fauna and landscapes.

Development programme

- The government should limit its role in the development of the tourism sector as much as possible to promoting and, if necessary, regulating private activity.
- To promote external tourism, the main tourist assets of Sarawak must be advertised through the existing tourist agencies of the Federation.
- In close co-operation with the Malaysia-Singapore-Airlines the possibilities of short stop-overs of tourists visiting the major tourist resorts in The Far East and South-East Asia must be facilitated.
- To perform the tasks of promotion and co-ordination mentioned above the government should nominate a tourist officer.
- The tourist resorts indicated on map X must be properly developed and managed. This will require careful zoning and if necessary building regulations of areas such as the Sematan beaches and the Santubong peninsula. This should be the task of the Land and Survey Department. The development and management of the tourist potential of the National Parks should be placed under the responsibility of the Forest Department, which must take care that the nature of the National Parks will not be affected.
- Private enterprise must be promoted in such a way that for international tourism at least one of the existing hotels in Kuching will become a first class hotel according to international standards. As far as internal tourism is concerned the building of resthouses, bungalows, restaurants etc. must be promoted in accordance with the expected increasing demand. This, if necessary, also applies to the transport facilities to these areas.

Investments and recurrent cost

These are not estimated separately but as a part of the services sector and the investments in construction.

Manpower

Due to the modest task recommended for the government in the development of tourism only a limited amount of manpower is needed. Besides a tourist officer with a small administrative staff, a small extension of management staff of the National Parks will be required. Government should stimulate private enterprise in the training of personnel capable of managing the internal and external tourism.

In the period 1961-1967 the average gross capital formation in Sarawak amounted to 22 per cent of the GNP at market prices. If this percentage is applied to the First Division and if furthermore it is assumed that no changes are expected in the future, the total gross capital formation in the First Division for the period 1971-1975 will be M\$ 403 million, and for 1976-1990 M\$ 2,285 million.

It is also interesting to note a distinction between the private gross capital formation and the formation which will take place in the public sector. In the period 1961-1967 30 per cent of the total capital formation occurred in the public sector of Sarawak. When applying this percentage to the First Division and on the assumption that it will be possible to increase the share of the public sector in the capital formation to 35 per cent, the public gross capital formation in the First Division can be estimated at M\$ 281 million for the period 1971-1975 and at M\$ 800 million from 1976 to the end of the plan period.

8.2. The identified investments

Table 15 shows in rounded figures the gross investments which are needed to execute the development programmes of the various sectors. The detailed information on these investments is included in the respective annexes.

Dealing with the investments for the physical infrastructure the problem arose whether or not to include under the investments in building and construction projects proposed by the First Division to become part of the Second Malaysia Five-Year Plan, and which are to be located in the First Division. These projects include building for the State and State departments, the prison, the general hospital, etc. To enable comparison between the investment programme of the regional plan of the First Division and the total investment which may be expected from the increase of the GNP of the First Division in the plan period, the aforementioned public investments should not be included in the First Division; the comparison would then be distorted.

8. CAPITAL FORMATION

illustrations are presented in the tables 15 and 16. The first one includes the investments for the physical infrastructure as they have been

8.1. Gross capital formation 1971-1990

The necessary gross investments in the plan period could not be identified for all the economic sectors in the First Division. Therefore it was not possible to calculate the gross capital formation by adding up the total investment requirements of the sectors. However, in order to check the feasibility of the proposed investment programme it is useful to obtain an idea of the magnitude of the total gross capital formation in the First Division for the periods 1971-1975 and 1976-1990.

In the period 1961-1967 the average gross capital formation in Sarawak amounted to 22 per cent of the GDP at market prices. If this percentage is applied to the First Division and if furthermore it is assumed that no changes are expected in the future, the total gross capital formation in the First Division for the period 1971-1975 will be M\$ 403 million, and for 1976-1990 M\$ 2,285 million. (x M\$ million)

It is also interesting to make a distinction between the private gross capital formation and the formation which will take place in the public sector. In the period 1961-1967 30 per cent of the total capital formation occurred in the public sector of Sarawak. When applying this percentage to the First Division and on the assumption that it will be possible to increase the share of the public sector in the capital formation to 35 per cent, the public gross capital formation in the First Division can be estimated at M\$ 141 million for the period 1971-1975 and at M\$ 800 million from 1976 to the end of the plan period.

8.2. The identified investments

Table 15 shows in rounded figures the gross investments which are needed to execute the development programmes of the various sectors. The detailed information on these investments is included in the respective annexes.

Dealing with the investments for the physical infrastructure the problem arose whether or not to include fully the investments in building and construction projects proposed by the State Government to become part of the Second Malaysia Five-Year Plan, and which will be located in the First Division. Those projects include building for the Federal and State departments, the prison, the general hospital, etc. To enable comparison between the investment programme of the regional plan of the First Division and the capital formation which may be expected from the increase of the GRP of the Division in the plan period, the aforementioned public investments should not be wholly allocated to the First Division; the comparison would then be distorted.

Three different calculations are presented in the tables 15 and 16. The first one includes the investments for the physical infrastructure as they have been proposed for the Second Malaysia Five-Year Plan and also includes some proposals of the Study Team. In the second one an attempt has been made to include only those investments which should be allocated to the First Division. The assumptions used will be explained in 8.3.

A third calculation of the investments for the physical infrastructure is given to show a more limited investment programme, which according to the Study Team will not seriously affect the growth rate of the economy nor the future manpower requirements.

The first calculation could only be made for the period 1971-1975 as the Study Team was not in a position to estimate investments in public building and construction needed for the development of Sarawak and located in the First Division for the period after the Second Malaysia Five-Year Plan.

Table 15. Identified gross investments in the First Division, 1971-1990 (x M\$ million)

Sectors	1971 - 1975		1976 - 1990		1971 - 1990	
	Total	Public	Total	Public	Total	Public
Agriculture	70	55	230	175	300	230
Forestry	1	1	17	17	18	18
Manufacturing	70	-	300	-	370	-
Physical infrastructure						
- programme I	220	220				
- programme II	155	155	559	559	714	714
- programme III	127	127	614	614	741	741
Education (1)	6	6	25	25	31	31
Health (1)	9	9	43	43	52	52
Total gross investments incl.						
- programme I	376	291				
- programme II	311	226	1,174	819	1,485	1,045
- programme III	283	198	1,229	874	1,512	1,072

(1) Including an addition of 7 per cent for depreciation.

8.3. Investments for the physical infrastructure

Table 16 shows the gross investments for the physical infrastructure of the First Division for the periods 1971-1975, 1976-1990 and the total plan period, divided in the various categories.

Table 16. Gross investments in the physical infrastructure in the First Division, 1971 - 1990 (x M\$ million)

Categories	1971 - 1975			1976 - 1990			1971 - 1990		
	I	II	III	II	III	II	III	II	III
Divisional road system	27.7	27.7	17.6	71.3	107.0	99.0	124.0	99.0	124.0
Roads service centres	3.6	3.6	3.6	55.4	55.4	59.0	59.0	59.0	59.0
Road extension Kuching Town	4.4	4.4	4.4	9.6	9.6	14.0	14.0	14.0	14.0
Road survey	0.3	0.3	0.3	0.7	0.7	1.0	1.0	1.0	1.0
Total roads	36.0	36.0	25.9	137.0	172.7	173.0	199.0	173.0	199.0
Bridges and ferries	4.0	4.0	4.0	5.0	5.0	9.0	9.0	9.0	9.0
Public utilities in service centres	2.0	2.0	2.0	33.0	33.0	35.0	35.0	35.0	35.0
Public utilities in Kuching Town	39.6	26.1	26.1	117.9	117.3	144.0	144.0	144.0	144.0
Total public utilities	41.6	28.1	28.1	150.9	150.9	179.0	179.0	179.0	179.0
Public construction in service centres	12.0	12.0	6.0	35.0	41.0	47.0	47.0	47.0	47.0
Public construction in Kuching Town	31.6	31.6	22.0	142.4	152.0	174.0	174.0	174.0	174.0
Total public construction	43.6	43.6	28.0	177.4	193.0	221.0	221.0	221.0	221.0
Government buildings and quarters	35.0	12.0	12.0	52.0	52.0	64.0	64.0	64.0	64.0
Port, airport and PWD-plant	45.0	21.0	21.0	-	-	21.0	21.0	21.0	21.0
Addition for depreciation (7 per cent)	14.0	10.0	8.0	37.0	40.0	47.0	48.0	47.0	48.0
Total gross investments physical infrastructure (in rounded figures)	220.0	155.0	127.0	559.0	614.0	714.0	741.0	714.0	741.0

Programme I includes the investments in the categories

- road extension Kuching Town,
- road survey,
- bridges and ferries,
- public utilities in service centres,
- public utilities in Kuching Town,
- public construction in Kuching Town,
- government building and quarters,
- port, airport and PWD-plant,

As the investments for the port and airport is allocated to the First Division in the period 1971-1975; investments for the PWD-plant is allocated to the First Division in the period 1971-1975. As the investment programme for the period 1971-1975, the old plan period has not been diminished, the investment programme in the period 1976-1990 will be greater. The following assumptions were used for programme III as proposed by the State Government to form part of the Second Malaysia Five-Year Plan. All the other figures in this programme are estimates of the Study Team.

In programme II only a part of the total investments in the aforementioned categories has been allocated to the First Division; the following assumptions were used:

1. Public utilities in Kuching Town

- two thirds of the proposed SESCO investments in Kuching are allocated to the First Division for the period 1971-1975;
- one half of the proposed investments in telecommunications in Kuching is allocated to the First Division for the period 1971-1975;
- all investments of the Kuching Water Board are allocated to the First Division for the period 1971-1975; M\$ 3.0 million
- all the investments will be increased in the period 1976-1990 at the same rate as the population growth of Kuching, which has been estimated at 4 per cent per annum. M\$ 9.5 million

2. Public construction in service centres

- one quarter of the total programme for 1971-1990 will be carried out in the period 1971-1975; schools and medical facilities are not included in the investment programme, but are to be found in the programmes of the respective departments.

3. Public construction in Kuching Town

- in the period 1976-1990 the investments will increase with an average annual rate of 4 per cent.

4. Government buildings and quarters

- one third of the total investments according to the proposals for the Second Malaysia Five-Year Plan is allocated to the First Division;
- the investments will grow at the same rate as the personal emoluments of the public administration sector, i.e. 4 per cent per annum.

capital formation in the First Division, a comparison between the expected capital formation in the First Division and the total public investment programme should take place in those sectors for which no investment programme has been drafted.

5. Port, airport and PWD-plant investment outside the already included sectors
- one half of the proposed investments for the port and airport is allocated to the First Division in the period 1971-1975;
 - one third of the investments for the PWD-plant is allocated to the First Division in the period 1971-1975.

Programme III shows a minimum investment programme for the period 1971-1975.

As the total investment programme for the whole plan period has not been diminished, the consequence is that the investment programme in the period 1976-1990 will be greater than in programme II. The following assumptions were used for programme III:

1. Divisional road system
 - the investments for the period 1976-1990 will be 50 per cent higher than the for programme II.
2. Public construction in service centres
 - one eighth of the total programme 1971-1990 will be carried out in the period 1971-1975.
3. Public construction in Kuching Town
 - the following parts of the proposals for the Second Malaysia Five-Year Plan will be postponed till after 1975:

Petanak industrial area, phase I	M\$ 1.7 million
Drainage and sewage	M\$ 1.7 million
Urban roads	M\$ 3.0 million
Batu Lintang redevelopment scheme	M\$ 3.2 million
Total postponement	M\$ 9.6 million

The investment programme III will be M\$ 28 million lower than programme II, in the period 1971-1975, but in total this programme will be the most expensive of the two, as it will be M\$ 27 million higher than II when taken over the whole plan period.

8.4. The feasibility of the total investment programme

In order to evaluate the feasibility of investment programme II, as proposed by the Study Team for the Regional Plan for the First Division, a comparison between the identified investments and the expected capital formation in the First Division may be of assistance. The total gross capital formation in the plan period is estimated at approximately M\$ 2,688 million. The total public investment programme will amount to M\$ 1,485 million, which is 55 per cent of the total capital formation. This implies that 45 per cent of the capital formation should take place in those sectors for which no investment programme has been drafted.

The two most important fields of investment outside the already included sectors are private building and construction and the transport sector. It seems very likely that 45 per cent of the gross capital formation will provide these sectors and also others with enough investment possibilities to fulfil their capital requirements, and that therefore the regional plan of the First Division will generate enough capital to satisfy the requirements of all the sectors in the plan period.

In the period 1971-1975 the share of the identified investment programmes in the total gross capital formation is 77 per cent. For this period it will become more difficult to reach a conclusion on whether the other investment requirements can be covered by the remaining M\$ 92 million, which is the difference between the gross capital formation and the identified investments. If investment programme III will be adopted the not yet allocated part of the gross capital formation of the First Division will increase to M\$ 120 million.

A further study into the capital requirements of the sectors which are not included in the investment programmes of the Study Team will be necessary to ascertain whether programme II or III should be adopted.

A comparison between the public investment programmes and the expected public gross capital formation shows that in the period 1971-1975 the programmes II and III will both exceed the public gross capital formation. Also the following years this discrepancy will continue, although on a smaller scale.

It is difficult to draw a definite conclusion from this finding. Given the political structure of the country, in the national situation a certain maximum share of the public sector in the total investments can be assumed; in a region, however, the share of the public investments may be much higher than the national average.

In the case of the First Division where a concentration of public activities exists as a result of the government's seat being located in this region, logically a higher share of public investments in the total gross capital formation may be expected. In fact, according to this study, this share may be approximately 56 per cent of the gross capital formation of the Division. Whether this is too high or not is not known. Unfortunately no relevant standards based on extensive research and experience, have yet been devised to assist the regional planner in drawing conclusions from a situation as discussed above. Moreover as the Study Team does not know the level of the expected public investments in the State for the period 1971-1975 it cannot learn whether any kind of overconcentration of these investments is taking place in the First Division.

- in direct contact with the population.
- Special attention should be paid to the training of local leaders who are capable of guiding rural communities in modern ways.
 - In order to facilitate local participation it is of importance to stimulate the development of viable rural communities by means of primary centres. These centres can become areas of interest by comprising no more than 4000 inhabitants, as well as areas of competence by having a population of at least 2000 persons. It is recommended to make the primary centres the focus of administrative activities and their co-ordination at the local level. This new administration unit has to grow into an area of interest for the villagers concerned, who now belong to various kampongs with limited relations with other kampongs.
 - Together with the establishment of local administrative units the institutions of local government at the level of primary centres have to be developed, the district area is too large and differentiated for an effective local participation.
 - Earlier estimates of the Study Team have indicated that only a part of the natural increase of the farm population could be absorbed in the First Division (Interim report). Due, however, to the fact that in the Draft Regional Plan also soils marginal from a physical point of view have been proposed for agricultural use, it seems possible to absorb the total natural increase of the population without the necessity of a large scale emigration to other Divisions. The development programmes indicated in chapter 7 require, however, several types of migration within the First Division.
 - a) An increase of urbanization can be expected and will mainly concern persons living in overpopulated parts of the midland areas, already in close contact with the urban areas, and persons living in depressed parts of the upland and coastal areas.
 - b) If the land development schemes are implemented according to the proposed schedule within the agricultural sector in the First Division migrations will become necessary from the midland and coastal areas to the riverain areas. This will mainly involve Malay and Chinese and to a lesser extent Dayak.
 - c) In the upland areas movement of persons, mainly Dayak, will be necessary from the areas with little or no carrying capacity to areas elsewhere in the upland areas with a greater development potential.
- There are several reasons to take also emigration from the First Division into account. In paragraph 6.2.4 it was indicated that a less favourable economic development of Sarawak and the First Division could result in considerable unemployment. The choice to use even soils only marginally suitable from a physical point of view, was the result of the fact that the Study Team was not in the

position to compare the cost and benefits of absorbing population in other parts of Sarawak. It is therefore recommended that the proposed State Planning Unit, in co-operation with all the relevant departments, will investigate migration and possibilities in Sarawak. The matter of equitable income distribution. In the Problems concerning migration within the First Division should be the responsibility of the Resident of the First Division and the Divisional Development was only Committee of the GVA per worker in the other sectors combined. On the other As soon as the development programme indicated in chapter 7 and Annex 7 are accepted and worked out in more detail, it becomes possible to quantify the consequences in so far as migration is concerned and to indicate the areas and the population that will be involved. This gives a sound basis for further elaboration of a migration policy.

Special attention must be given to a thorough and timely preparation of the level persons concerned as well as to the measures to be taken to absorb them smoothly in the new settlement areas. attention. In 1990, therefore the GVA per worker in Research will be necessary in order to discover in time the nature and scope of the social problems which are nearly always connected with migrations. iod

1967 - 1990 will be 2.7 per cent for the primary sector against 2.2 per cent

9.2. Economic policies tertiary sectors taken together. Taken into account the

- The regional plan of the First Division as presented in this Report cannot be implemented instantly. It only provides a consistent framework for a possible development, but as it is mainly based on the potentials and bottlenecks within this region, it does not sufficiently connect the development of the First Division to that of the other regions of Sarawak. Therefore it is necessary for the government to form an opinion, based on systematical analysis, on the present economic structure of the whole State, and to make decisions on the functional distribution of activities among the various regions in the State. Furthermore, it will be necessary to formulate plans for the creation of growth poles within Sarawak, especially for the stimulation of secondary and tertiary activities which should not be spread too thinly over the whole area. To attain an efficient utilization a certain measure of concentration of those activities in well chosen urban centres, which will act as the cores of the development of their hinterlands, should take place. The pattern and hierarchy of the growth poles should be designed in such a way that no area with a great development potential will be situated outside the market area of such a centre. increase the income of the

For the First Division also such a pattern of service centres is proposed in this regional plan. As the functional distance between Kuching and the centre of second importance, Serian, is too great to ensure a workable hierarchy of centres, the government should stimulate the growth of Serian in such a way products should government stimulate the growth of Serian in such a way tic market both from the point of view of population and of purchasing power.

Therefore attempts should be made to find markets for Sarawak products abroad.

that it really becomes a functional urban centre next to Kuching.

- A major problem for which the regional plan of the First Division has not found an efficacious solution is the matter of equitable income distribution. In the First Division the income differences between the main urban centre and the rural areas tend to be great. In 1967 the GVA per worker in the primary sector was only 18 per cent of the GVA per worker in the other sectors combined. On the other hand 61 per cent of the employed work force found a living in the primary sector. If the primary activities are assumed to be carried out in the rural areas, and the secondary and tertiary activities to be mainly concentrated in the urban centres, it can be concluded that the resulting income distribution must be greatly inequitable.

As this regional plan in the first instance aimed at attaining the highest level of employment at a given economic growth, the problem of the difference in income level was not given special attention. In 1990, therefore the GVA per worker in the primary sector will be 20 per cent of that in the other sectors combined. The annual increase in GVA per worker in the primary sector in the period 1967 - 1990 will be 2.7 per cent for the primary sector against 2.2 per cent for the secondary and tertiary sectors taken together. Taken into account the nature of the calculations the difference in growth rate of GVA per worker between the primary sector and the rest of the economy is too insignificant to warrant the conclusion that the gap between the two is really closing.

The situation would already be much brighter if the agricultural development outside the First Division might warrant migration from this Division. The government should be aware of this possibility and should not discard it too easily.

The only other alternative for diminishing the income inequality between town and countryside would be to devise a system of income transfer by way of increased taxation and subsidizing. However, this is not only a matter for the State Government to decide, but would involve changes in the national tax structure. Moreover, it is less preferable than a migration policy, as in principle it will not increase the total productive capacity of the country; its effect will also be limited because in a situation in which the majority of the people is involved in agriculture it cannot be expected that the extra revenues accruing from the increased taxation will be sufficient to increase the income of the farmers in a substantial way. However, there may be instances in which such schemes may alleviate the problem discussed.

- As regards the increase of production, exports of agricultural produce and wood products should receive great attention. Sarawak has a relatively limited domestic market both from the point of view of population and of purchasing power.

Therefore attempts should be made to find markets for Sarawak products abroad. In this respect the government should consider measures to prevent the export of logs as much as possible and instead stimulate the export of processed wood. Apart from providing foreign exchange, logging alone does not contribute significantly to the GRP or GDP. The manufacturing of wood products is much more important for the economy of Sarawak and of the First Division. The value added created by processing raw material will not accrue to the country which is importing the raw material, but will remain within Sarawak. Also in the case of other agricultural products the policy should be adopted to stimulate the processing of the raw materials in Sarawak itself.

The agricultural sector is of great importance, both from the point of view of the Gross Regional Product and of employment. Although the final realization of the development programme for the planning period (1971-1975) is the achievement of the directly productive agricultural sector, such as the Department of Agriculture, the State Development Finance Co-operation, etc. The greatest bottleneck is the field staff of the various departments and the personnel of the National Resources Development Corporation. It is therefore necessary that the policies mentioned hereafter are closely scrutinized when the total development programme for the State of Sarawak will be known.

9.3. Manpower policies

One of the most serious impediments especially endangering the implementation of the development programme for the planning period (1971-1975) is the lack of qualified and experienced manpower. Hereafter the most important categories of manpower which are of crucial importance for the development process, and only limited available, will be discussed. It should be realized, however, that it is impossible to obtain a clear picture of the quantitative aspects of the manpower problems only on the basis of the developments proposed for the First Division. It is therefore necessary that the policies mentioned hereafter are closely scrutinized when the total development programme for the State of Sarawak will be known.

- In order to strengthen the administrative machinery of the State Government several planning units, such as the State Planning Unit and the Agricultural Planning Unit have been proposed, as well as the introduction of new parastatal organizations such as the Industrial Development Agency and the improvement or extension of existing ones such as the Federal Agricultural Marketing Authority, the State Development Finance Co-operation, (Agricultural Credit Agency) and a Land Development Authority.

At present Sarawak has but a limited amount of personnel with the education and experience necessary to staff these administrative units effectively. Filling all these positions by withdrawing experienced officers from the existing establishment is impeding. It would weaken the administration of the departments on which the planning agencies have to rely and could therefore make their performance less efficient. At the same time it would result in an unbalanced relationship between planning and implementing agencies within the governments administrative machinery.

It is therefore recommended to withdraw only a small number of experienced officers from their present posts to fulfil the most important functions, such as head of the planning units and development agencies. The remainder of the proposed posts should be provided for by means of technical assistance. At the same time fellowships must be made available in order to obtain as soon as possible the qualified manpower necessary for staffing the proposed expanded administrative machinery. The technical assistance programme and the fellowship programme should be adapted to each other in such a way that there is a possibility for the young qualified officers to obtain, under guidance, the experience required to fulfil their new posts effectively.

- The agricultural sector is of great importance, both from the point of view of contribution to the Gross Regional Product and of employment. Although the final realization of the proposed developments are in the hands of the farmers, the achievement of the objectives depends, more than in most of the other directly productive sectors, on the performance of government organizations such as the Department of Agriculture, the Drainage and Irrigation Department, the State Development Finance Corporation, the Land Development Authority etc. The greatest bottlenecks as far as manpower is concerned, are expected in the field staff of Agricultural Assistants and Senior Agricultural Assistants and the personnel familiar with drainage and irrigation. It is questionable whether the National Resources Training Centre can timely provide the qualified manpower and even if this would be the case experience would still be lacking. It is therefore recommended to ease the manpower problems of these agencies by contracting the planning and implementation of the proposed transformation of the riverain areas to Land Development Consultants under the supervision of the Land Development Authority. This will make it possible to limit the demand for qualified personnel for the planning and field staff of the Land Development Authority. At the same time the bottleneck resulting from lack of experienced drainage and irrigation engineers could be solved. The terms of reference under which the Land Development Consultants have to work should contain an extensive training programme which will make it possible for the Land Development Authority to take over the development of the riverain areas gradually.
- The implementation of the proposed programmes for developing the physical infrastructure will put a heavy burden on the Public Works Department. A major bottleneck as far as manpower is concerned is expected because the branches of this department are already under-staffed, especially at the intermediate level. It is therefore recommended that the inservice training programmes of P.W.D.

- will be considerably extended. At the same time an investigation must be made of the possibility to increase the salaries of experienced technical staff in such a way that the P.W.D. can compete on the open labour market. If highly qualified manpower becomes a bottleneck a fellowship programme combined with temporary technical assistance should be taken up.
- The educational system that must provide the qualified manpower will itself have considerable manpower problems. One of the major manpower shortages is expected in the categories for the junior vocational schools and the three years' agricultural courses. The teachers for the junior vocational schools can be partly obtained among experienced artisans. It will, however, be necessary to obtain, at least in the first five years, assistance from outside Sarawak either by obtaining teachers for this type of education from West Malaysia or via technical assistance programmes such as peace corps, etc.
 - In the private sectors there are two categories of persons who play a very important role in the realization of the projected development. Firstly the entrepreneurs who have to realize the projected growth of the industrial sector. Secondly the middle men who have an important function in realizing the proposed rural development. It is recommended that the government, in close co-operation with the relevant agencies such as chambers of commerce, etc., will stimulate an improvement of the quality of the manpower in these categories by providing courses in management, accountancy etc.
 - It has been indicated several times that in order to realize the proposed development programme the State Government in the coming years will have to rely partly and temporarily on technical assistance. The extent of the required assistance depends on the State Development Plan.
- There is a tendency of technical assistance personnel to gravitate to the capital of the receiving country. Considering the location of Sarawak in the Federation, it seems necessary that this State will have a greater share of the technical assistance personnel available to the Federation, within its boundaries than is the case at the moment. It is recommended that the State Government of Sarawak will require the co-operation of the Federal Government to obtain the technical assistance necessary for the implementation of the proposed regional development plan.
- As manpower and not finance is expected to be the major bottleneck for development, it has to be realized that if the manpower requirements indicated can not be obtained, parts of the proposed development plans will have to be

9.4. Land tenure policies (Annex 10, Land Tenure)

The following proposals are to be seen in connection with the plan of the Study Team with respect to agricultural development.

With respect to the approach to native customary rights there are three possibilities:

1. To abolish all native customary rights in land.
2. To continue the situation as it is at present, which implies the protection of native customary rights in land without legally recognizing them.
3. To recognize native customary rights.

ad 1) It seems obvious that if a policy of abolishing native customary rights is adopted, the government under the present conditions has to face serious political complications.

ad 2) As has been mentioned earlier this policy causes many difficulties as to planned land development.

ad 3) A policy is suggested here to give legal recognition to native customary rights in land.

- To this effect the government should decide to give at least in principle legal recognition to these rights as well as to define the areas where these rights are exercised, such in so far as the government considers fair and commendable in connection with the nation's interest.

- Since the government cannot take a decision without having proper information regarding native customary rights it is suggested that an investigation into these rights is officially ordered by the government. It is recommended that one or more specialists in the field of adat land law and land tenure are charged with this investigation. The results of this investigation should be reflected in the now prevailing land law.

It is furthermore suggested that this investigation is extended to expectations of future development of native customary rights. The expert's advice will enable the government to consider measures, if and when required, to deal with land tenure problems within the sphere of the adat law.

- Provisions should be made to settle conflicts between persons submitted to various law systems.

In order to bridge the gap between the different land law systems, proper provisions should be made so as to bring land belonging within the sphere of the adat law into the western sphere of land law, as it is intended in the prevailing provisions of the Code.

In this respect it has to be observed that adat law itself does not necessarily exclude the existence of a tenure pattern of individual holdings and permanent agriculture of cashcrops. Agricultural development has to be promoted by extension, education and supporting facilities; land legislation is only one of the means to this effect but cannot by itself bring about agricultural development.

- In so far as the present illegal occupation or illegal use of native land by Chinese farmers is concerned, it seems for the moment advisable for the government to refrain from taking any action. It is suggested that the government postpones taking action to legalize these illegal agreements and other transactions by means of the provisions in de Code, until an investigation of existing native customary rights in the land concerned has been completed. This investigation should also be extended to the various forms of agreements and other transactions through which Chinese farmers have acquired the occupation or the use of the land.
- To prevent illegal occupation and illegal use of native land by Chinese farmers in the future it is suggested that the government should take the initiative to secure sufficient land to be alienated to Chinese farmers.

The development proposals for the riverain areas and the Nonok Peninsula, as brought forward in the plan, require significant investments, which will only give adequate returns, if the land is used as indicated in the plan. Government will be faced with problems of consolidation of holdings and redistribution of land. As provisions in this field are lacking it is suggested that legal provisions be made to deal with these matters.

It must be expected that not all individuals will co-operate on a voluntary basis. Therefore in this legislation compulsory measures cannot be avoided.

- Specific attention is requested for the fact that at present large areas with development potential are used unproductively (it is estimated that in the First Division approx. 100,000 acres are occupied with unproductive rubber trees). Since all the land with development potential has to be used in order to reach the objectives of the agricultural plans, the government should realize that it might be necessary to act, if and when required, by taking legal measures to have this land productively used.
- It has been noticed by the Study Team that the National Resources Ordinance has practically not been applied. With reference to the plan it will, however, be necessary that this Ordinance be applied.
- It should be emphasized that farming systems and land tenure are closely inter-related. Changes of farming systems will automatically bring about changes in the prevailing land tenure pattern. The system of adat land law correlates with the farming system at a given moment.

When the farming system changes, the adat land law will follow suit to cope with the new conditions. Changing farming systems by means of changing the adat law is seldom effective.

On the other hand it is also true that the government should not refrain from taking action if and when adat land law proves to be incapable of preventing undesirable practices.

The same applies if, for reasons of agricultural development, measures are required to guide the development of the adat land law in the desired direction.

9.5. Research and stocktaking

The effectiveness of planning and the resulting development programmes on which the allocation of considerable government funds is decided, depend largely on the quality and quantity of available data. The improvement of future development programmes and the expected increase in socio-economic growth has to be proceeded by investments in stocktaking and research.

- As soon as possible the government must know what are the natural resources available for development. Therefore aerophysical research for mineral resources is recommended, as well as an inventory of the fishing potential in Sarawak waters. The potentials of the soils have already been investigated, although more detailed soil surveys have to be carried out in order to define the potentials of some soils more precisely. The danger of practising shifting cultivation in the dissected upland areas - increased run-off and soil erosion - should be investigated by means of quantitative observations. As even marginal soils, from a physical point of view, are recommended for agriculture, special attention must be given to providing a sound scientific basis for soil management.

Within the framework of the expected developments the research stations of the Agricultural and Forestry Departments should institute a long term research programme.

- Little or no research has been done in the field of sociology. As a deeper insight in the complicated plural society is a prerequisite for a well directed social development towards an integrated society, high priority should be given to the sociological research programme. This research programme should be divided into an applied research programme which must provide within a short time data to be used in extension services, community development programmes etc., and a more basic research programme to provide a better insight in the structure and major social processes of the society in Sarawak and the First Division. This basic research programme must make it possible for the applied research programme in the future to provide data of a better quality within a shorter period of time.

- Statistical data of social and economic nature have to be improved considerably in order to obtain more effective development plans in the future. An extension in quality and quantity of the personnel of the Department of Statistics is therefore necessary. Special attention should be given to the following statistics, viz. vital statistics, labour statistics, household budget surveys, industrial surveys, transport statistics, etc.

Also a wide range of agricultural statistics concerning acreages, production, import, export and farm prices have to be collected in co-operation with the agricultural economics section of the Research Branch of the Department of Agriculture and FAMA.

- In order to promote productivity in farming the agricultural economics research should be focussed on the economics of farm management, marketing, processing and trade margins.
- Statistical data have to be comparable with each other in time per geographical entity before they become useful for comprehensive planning and development activities. It is recommended to design as soon as possible census units that will become the basis for the processing of data of, for instance, the population census, the agricultural census, etc. The proposed administrative areas of the primary centres could be used as the smallest census units in rural areas.

