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INTERNATIONAL DEVELOPMENT ASSOCIATION

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Report No. 265a-MA

APPRAISAL OF THE
JOHORE LAND SETTLEMENT PROJECT
MALAYSIA

January 11, 1974

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Asia Projects Department

CURRENCY EQUIVALENTS

| | | |
|---------------|---|------------------------|
| Currency Unit | = | Malaysian Dollar (M\$) |
| US\$1 | = | M\$ 2.33 |
| M\$1 | = | US\$0.4291 |
| M\$1 million | = | US\$429,100 |

WEIGHTS AND MEASURES

| | | |
|-------------------|---|-----------------------|
| 1 acre (ac) | = | 0.405 hectares (ha) |
| 1 mile (mi) | = | 1.601 kilometers (km) |
| 1 sq mile (sq mi) | = | 640 acres |
| 1 ton | = | 2,240 pounds (lb) |

ABBREVIATIONS

| | | |
|--------|---|--|
| FELCRA | - | Federal Land Consolidation and Rehabilitation Authority |
| FELDA | - | Federal Land Development Authority |
| FMC | - | Felda Marketing Corporation |
| FSC | - | Felda Stores Corporation |
| MARDI | - | Malaysian Agricultural Development Institute |
| LKJT | - | Lembaga Kemajuan Johore Tenggara (Johore Tenggara Development authority) |
| MPOPA | - | Malaysian Palm Oil Producers' Association |
| MRDC | - | Malaysian Rubber Development Corporation |
| NEP | - | New Economic Policy |
| PWD | - | Public Works Department |
| RISDA | - | Rubber Industry Smallholders' Development Authority |
| SEDC | - | State Economic Development Corporation |
| SMP | - | Second Malaysian Plan (1971-75) |

Fiscal Year

January 1 through December 31

MALAYSIA

JOHORE LAND SETTLEMENT PROJECT

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JOHORE LAND SETTLEMENT PROJECTSUMMARY AND CONCLUSION

i. The project comprises part of a land settlement program in the Johore Tenggara Region in the southeastern part of Peninsular Malaysia. New land development is an important instrument of the Government's New Economic Policy which aims to increase income and employment opportunities for the unemployed and underemployed. Land development assists the country's low income groups directly by providing higher income jobs and indirectly by siphoning away labor from the traditional low income smallholder sector. Recent development plans have paid particular attention to the need of providing settlers with a satisfactory range of public services and with additional non-agricultural employment opportunities. The proposed project, which is an integral part of the Master Plan for the Johore Tenggara Region, will help achieve these important objectives. The Plan, including the feasibility study for the proposed project, was prepared by a group of consulting firms led by Hunting Technical Services Ltd. (UK).

ii. The project consists of: (a) clearing 81,000 acres of land; (b) planting about 65,000 acres of oil palms; (c) construction of housing for about 4,400 settler families, offices and public buildings, such as schools and medical facilities; (d) construction of five palm oil mills; and (e) construction of roads and provision of water. The Federal Land Development Authority (FELDA) — a Government agency which has the main responsibility for land development and settlement in Malaysia — would be responsible for project implementation. FELDA is also the executing agency for three Bank financed Jengka projects (loans 533-IDA, 672 IDA and BBS MA). About 10,200 persons would find permanent employment through the project; 4,900 would be directly employed on the oil palm schemes, while 5,300 persons would fill the additional jobs induced in villages and nearby urban centers. A total population of about 30,000 persons would be supported by these jobs. Annual settler family income would increase from about M\$ 870 (US\$375) before entering the project to about M\$ 3,800 (US\$1,600) after some 20 years.

iii. Total costs of the proposed project are estimated at M\$ 209.2 million (US\$89.8 million). FELDA expenditure for agricultural development, housing, processing facilities, and management are estimated to be US\$61.9 million. Direct Government expenditures for roads, water supply, and public buildings, such as schools and health centers, would equal US\$10.0 million. Contingencies are estimated to be US\$17.9 million. The foreign exchange component is US\$21.8 million, or 24% of project costs. The proposed project would be financed through: (a) a Bank loan of US\$40.0 million; (b) Government loans to FELDA of US\$29.5 million; (c) Government grants to FELDA of US\$8.4 million; and (d) direct Government expenditures of US\$11.9 million. Contracts with an estimated value of US\$31.5 million, net of contingencies, would be let under international competitive bidding in accordance with Bank guidelines. These contracts would be for land clearing and planting; upgrading of roads;

the construction of buildings and palm oil mills; and for mill machinery and vehicles and equipment. As in the Jengka projects, fertilizers and pesticide for US\$10.7 million, net of contingencies, would be procured within the supply system FELDA has established for its entire land settlement program. The road and water supply components and public buildings of the project, US\$10.0 million, net of contingencies, would be executed by the Public Works Department on force account. The remaining costs of US\$19.7 million, net of contingencies, are FELDA expenditures for salaries and settlers' wages.

iv. This would be the seventh agricultural and forestry project financed by the Bank in Malaysia. Previous land settlement projects include 3 loans for the Jengka Triangle Program (Loans 533-MA, US\$14.0 million; 672-MA US\$13.0 million; and 885-MA US\$25.0 million) approved in 1968, 1970 and 1973. The other projects are: a forestry project (Loan 673-MA, US\$8.5 million, 1970) and two irrigation projects - Muda (Loan 434-MA, US\$45.0 million, 1966) and Kemubu (Loan 500-MA, US\$10.0 million, 1967). All projects are progressing satisfactorily.

v. The economic rate of return of the proposed project is 14.8%. The project would be suitable for a Bank loan of US\$40.0 million to the Government for a term of 23 years, including 8 years of grace for the repayment of the principal. The loan which would be disbursed from 1974 through 1982 would be onlent by the Government to FELDA on the same terms as the Bank loan.

MALAYSIA

JOHORE LAND SETTLEMENT PROJECT

I. INTRODUCTION

1.01 The Government of Malaysia has asked the Bank to help finance the Johore Tenggara FELDA land settlement program. The proposed project is part of this program and aims to establish about 4,400 smallholdings on 65,000 acres of oil palm. About 350 smallholdings on 5,200 acres of rubber would also be established. Rubber development, which would be financed by Government, is already well advanced and is not included in the project. Total project costs are estimated at M\$ 209.2 million (US\$89.8 million) and the proposed Bank loan would amount to US\$40.0 million, 45% of total project costs.

1.02 The continued expansion of agriculture, which accounted for 30% of GDP, 50% of employment and 55% of exports in 1972 is essential for reducing under- and unemployment in Malaysia. Satisfactory growth of the economy demands the achievement of high rates of growth in smallholder agriculture. An effective way of doing this is through new land development and smallholder settlement programs. Considering the economic prospects for growing various crops under Malaysian conditions, oil palms are particularly suited as primary crops in settlement projects. Oil palm growing expanded from 124,000 acres in 1960 to 1.1 million acres in 1973. The share of the smallholder oil palm of the total oil palm area has been increasing steadily and reached 50% in 1973. It is projected to rise to 60% by 1980 as a result of Government policy to foster smallholder development. The project would help achieve this important policy objective.

1.03 The feasibility study for the proposed project was a component of a Master Plan for the development of the 250,000 acres rain forest in the Johore Tenggara region, prepared in 1971 by Hunting Technical Services Ltd. (UK).

1.04 This report is based upon the findings of a Bank mission which visited Malaysia in June/July 1973, comprising Messrs Elz, Dax, Panton and Sandstrom.

II. BACKGROUND

A. General

2.01 The total land area of Malaysia is about 128,000 square miles. Less than one-fourth of the area of Peninsular Malaysia (formerly West Malaysia) and only about 3% of Sarawak and Sabah (formerly East Malaysia) are under cultivation. Tropical rain forest covers most of the remaining area. The climate is characterized by uniformly warm to hot temperatures,

...rying from 76°F to 83°F, abundant rainfall averaging 90" and is suitable for oil palm cultivation.

2.02 Population in 1972 was estimated at 11.6 million, growing at about 2.8% yearly. About 85% of the population is concentrated in Peninsular Malaysia with the highest densities on the west coast and in the south. On the Peninsula, Malays account for about 53% of the population, Chinese 35% and Indian 11%.

2.03 The Malaysian economy is export-oriented. In 1972 exports accounted for almost 40% of GNP. Main exports were rubber US\$557 million, tin US\$397 million, timber US\$372 million and palm oil US\$155 million. Real GNP grew at an average yearly rate of 6% during the last decade and amounted to about US\$5.5 billion in 1972. Average real GNP per capita, which grew at about 3.0% yearly during the 1960s, was about US\$380 in Peninsular Malaysia in 1970. It was only US\$280 in the rural areas, and even less (US\$180) for small-scale rice and rubber growers. During the 1960s, consumer prices rose by about 1% yearly on the average. During 1972-73, however, price increases accelerated to about 4% yearly, mainly as a result of sharp increases in import prices.

2.04 Wide disparities in income and ownership of assets reflect ethnic imbalances. Malays have lower incomes than non-Malays. Much of this income imbalance arises because nearly 80% of the Malay employment is in the rural sector compared with slightly more than 50% for the non-Malay. But even within the rural sector, Malay incomes are generally much lower. More than half of the total Malay labor force is engaged in traditional low income smallholder agriculture compared to 14% of the non-Malay labor force. The dissatisfaction with the distribution of benefits of economic growth and with growing racial income inequality provides the basis for the New Economic Policy (NEP). Two of the major aims of this policy, expressed in the Second Malaysian Plan (SMP) 1971-75, are: (a) to reduce poverty by raising income levels and increasing employment opportunities for all Malaysians, irrespective of race; and (b) to accelerate the process of restructuring Malaysian society to correct economic imbalances so as to reduce and eventually eliminate the identification of race with economic function. Rapid growth of land development will help reduce poverty by creating jobs. It will assist the country's largest low income group directly by providing higher income employment and indirectly by siphoning labor away from the traditional smallholder sector. At the same time land development will help correct economic imbalances because most of the new land will be settled by Malays.

2.05 Considering the economic prospects for growing various crops under Malaysian conditions, oil palms are particularly well suited as primary crops after forest clearing and they can be grown on a large scale without depletion and damage to the soil.

B. Oil Palm

2.06 Until 1960, oil palm growing in Malaysia was comparatively unimportant, but it expanded rapidly from about 124,000 acres in 1960 to 1.1 million acres in 1973. Originally, most of the oil palm was grown on estates, but by 1973, the smallholder area accounted for about 50% of the total area and is estimated to increase to about 60% by 1980. Most of the production is for export, which amounted to 730,000 tons in 1973. Expansion is continuing and it is estimated that by 1985, Malaysia would produce about 3.2 million tons or 70% of estimated world palm oil and 50% of palm kernel oil exports. Although the rapid expansion of palm oil production and exports in Malaysia and other countries has led to increases in the share of this commodity on total world fats and oils exports, palm oil accounted for only 8.7% of total world exports in 1972 and there were no difficulties in selling palm oil on world markets. ^{1/} This is due mainly to: (a) improvements in quality and processing technology which increased the uses of palm oil; and (b) the steadily rising import demand for fats and oils particularly from developing countries.

2.07 Despite its success in introducing large-scale production of palm oil, Government recognizes the need for diversification to reduce the risk from heavy reliance on rubber and oil palm and thus made diversification a major goal of the SMP. Government has recently created the Malaysian Agricultural Research and Development Institute (MARDI) which, besides other activities, carries out research and experimentation into new crops (Annex 1). FELDA is cooperating in this effort through commercial scale experiments in sugar and cocoa. High priority is placed on building an efficient livestock industry. In 1972, four beef and dairy farms, comprising a total of 17,000 ac were set up and further expansion is under way.

C. Land Development and Settlement

2.08 Since the early 1960s, Government has given high priority to land development and settlement, to provide economically viable farm units to families farming at close to subsistence level and to relieve urban and rural unemployment. The major public sector programs have been carried out by FELDA and by State Governments which retain considerable responsibility for land affairs (Annex 2). The target for new land development under the SMP is 1 million ac of which 750,000 ac will be developed in Peninsular Malaysia.

2.09 Federal and State Governments have prepared comprehensive land development plans for several of the larger regions suited to agricultural and other development. The first of these was the Jengka Triangle in the

^{1/} See, Palm Oil - Review and Outlook for Bank Lending, Sec M73-556, September 14, 1973.

State of Pahang, where FELDA is currently developing 96,400 ac of oil palm and rubber. The second is the 750,000 ac Johore Tenggara region, where the proposed project is situated. A third is the further development of 2.5 million ac in Pahang Tenggara where FELDA also has a major development role. The Bank has been asked to help finance the Keratong project in Pahang Tenggara and an appraisal report is being prepared. Similar planning studies are currently being carried out in Kelantan and in Sarawak. Special attention is given to ecological considerations in designing these development plans (Annex 3).

2.10 Settlement standards have varied widely, depending largely on the effectiveness of the project identification and planning process and efficiency of the management. State organized schemes have been generally poor in comparison with the much better organized and managed FELDA schemes. The average size of smallholdings outside organized development schemes is currently around 4 ac, although there is a wide diversity between regions, due to differences in local land availability, population pressure and other factors. Without income from other sources, these holdings are too small to be viable at estimated future palm oil and rubber prices. The consolidation of fragmented and overly small holdings into viable units remains of high priority and is the focus of programs under the Federal Land Consolidation and Rehabilitation Authority (FELCRA) and the Rubber Industry Smallholders' Development Authority (RISDA). Their target acreages under the SMP are 100,000 acres and 150,000 acres respectively. The Bank will be considering financial assistance to RISDA. FELDA smallholder oil palm holdings have increased from 10 ac allotted to settlers in the 1960s to 14 ac for the proposed project since experience has shown that family labor is under-utilized on smaller holdings. The average size of 14 ac for oil palm under the proposed project is a plot which can be managed by one person, and which provides the smallholder with an income after loan repayment comparable with other sectors of the smallholder economy (Annex 4).

D. Federal Land Development Authority

2.11 FELDA was created in 1956 to carry out land development and settlement projects. Since then, it has become the largest and most efficient public land settlement agency in Malaysia. By June 1973, it had developed about 430,000 ac and settled some 27,500 families. Its original oil palm and rubber planting program under the SMP was 275,000 ac but this has been raised to about 400,000 ac since FELDA has already exceeded its annual target in 1972 and is expected to exceed its target for the remaining Plan years. For further details, see Chapter V.

2.12 FELDA settlers live in villages located within or just outside of the agricultural areas. These villages have so far been of relatively modest size; in the Jengka program, an average of about 420 families were settled in each village. In order to provide settlers with higher public service standards and a variety of employment opportunities, the village sizes in new land development areas are now being increased in accordance

with the Government's NEP. In Johore Tenggara, the FELDA villages will vary in size from about 300 families to more than 1,200 families and in Pahang Tenggara some 2,500 settler families will be concentrated in one town. These larger villages or towns should become important growth centers, attracting both service and manufacturing industries. By the time the labor requirements on the agricultural schemes decrease, which coincides with the time when many of the settler children enter the labor force, the town economies should be able to absorb this additional labor (Annexes 5 and 6).

E. The Johore Tenggara Regional Master Plan

2.13 A comprehensive analysis of the natural resources and land use situation in Peninsular Malaysia undertaken during the First Malaysia Plan (1966-70) led to the identification of several large areas of forested land with considerable potential for agricultural development, especially in the south-eastern part of the Peninsula. A Master Plan for development of the Johore Tenggara region (almost 750,000 ac) was designed. This region was given priority for large-scale agricultural development because of the overall quality of its resources and its relatively easy access and close proximity to existing developed lands in south Johore. Details are in Annex 7.

F. The Project Area

2.14 The proposed project lies in the Johore Tenggara region of Johore State, within 40-60 mi north-east of Johore Baharu, the State capital (Map). It is organized in 16 schemes situated at eight separate sites throughout the region. The terrain is undulating with friable, deep, sandy clay loams of proven suitability for oil palm. Rainfall is fairly evenly distributed, varying between 100" and 140". Temperatures range between 76° and 81°F. The 1970 population of the region was about 135,000, including close to 70,000 in the Kluang and Kota Tinggi urban areas. By 1990 the total population will exceed 400,000.

2.15 General access to the project area will be via a network of federal roads (Map) which are now being constructed according to a time schedule well coordinated with the land development program (para 3.11). Temporary roads used for timber extraction already allow access to most of the project schemes. Both present and future water supply for the area comes from surface sources which are adequate. The project area will be linked to the national telecommunication network. A new port is being constructed at Pasir Gudang, about 14 mi east of Johore Baharu. It will contain a FELDA-owned and operated palm oil bulking facility of 50,000 tons and a loading wharf. The first phase of 30,000 tons is expected to be operational in 1974. The facility will handle palm oil from all FELDA schemes in Johore and the east coast of Peninsular Malaysia.

III. THE PROJECT

A. Project Description

3.01 The proposed project would be part of an ongoing FELDA settlement program which started in 1972. The project would be carried out over 8 years, 1974 through 1981. Principal project components would be:

- (a) clearing of about 81,000 ac of forest and the planting and maintenance of about 64,800 ac oil palm;
- (b) construction of 8 villages including offices and public buildings to settle 4,360 families, and management and support staff, together with appropriate roads, water systems and electricity;
- (c) construction of 5 palm oil mills with an ultimate capacity of 153 tons ffb 1/ per hour.

3.02 Each settler would be provided with 14 ac of planted oil palm, a 0.25 ac house lot and a house with piped water. The eight villages serving the 16 schemes vary in size from 265 settler families to 1,255 settler families (see Annex 5 and Annex 8, Table 1). Each village would also contain FELDA offices, stores and workshops. About 2,300 ac of oil palm would not be distributed but would be managed by FELDA. These areas, spread over the entire project area, would be kept as reserve to be distributed to settlers in case of failure of their allotted plots through fire, wind damage or similar disasters. In addition, a block of about 1,500 acres of oil palm would be set aside to be operated by FELDA as an estate with excess settler labor.

B. Agricultural Development

Land Tenure

3.03 Land for the project, which is all State Land, has been allocated to FELDA by the State Government through the Johore Tenggara Development Authority. The land is developed by FELDA and 5 years after planting, each settler enters into an agreement with FELDA making him an occupier in expectation of title to 14 ac of oil palm in a block of oil palms in common with a group of other settlers (para 3.16) and a 0.25 ac house plot. On completion of his loan repayment the settler receives title to the land (para 5.08). The title is transferable but the land cannot be subdivided.

1/ Fresh fruit bunches: the fruit of the oil palm (a cluster of oily nuts around a stem) prior to processing.

Clearing and Planting Program

3.04 Before FELDA begins the development of the land and in accordance with a time schedule which meets FELDA's requirements, marketable timber is extracted from the forest by licensees under the supervision of the State Forest Department. Assurances were obtained from the State Government during negotiations that timber extraction operations will not delay FELDA's clearing and planting program.

3.05 Typically, felling, land clearing and burning, mostly done manually, take place during October through March. A leguminous cover crop is planted afterwards followed by lining operations. Planting usually begins in September and may extend into the second quarter of the following year depending on size of the scheme. These operations are carried out by contractors under FELDA supervision. The crop is then maintained by contract labor for a further 18 months, during which regular monthly weeding rounds are undertaken, dead or weak plants are replaced, and regular fertilizer applications are made. Finally, the settlers, after occupying the village, take over the responsibility for upkeep. The settlers are paid wages by FELDA up to two years of harvesting, a period of about 3.0 years. These wages are added to the settlers' loans.

3.06 The clearing and planting schedule is given in Annex 8, Chart 1, and is summarized below:

Land Cleared and Planted (acres)

| | <u>1972</u> | <u>1973</u> | <u>1974</u> | <u>1975</u> | <u>1976</u> | <u>Total</u> |
|---------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Forest Clearing | 21,223 | 18,880 | 22,030 | 19,150 | - | 81,283 |
| Planting | - | 17,033 | 14,459 | 17,471 | 15,848 | 64,811 |
| Cumulative Planting | - | 17,033 | 31,492 | 48,963 | 64,811 | 64,811 |

More land would be cleared than planted, to allow for roads, villages and processing facilities.

3.07 Planting material would be produced in FELDA nurseries each of about 40 ac. They would be established on the scheme site a few months ahead of the main felling. Adequate supplies of proven planting material are available in Malaysia.

Labor and Settlers

3.08 The labor force needed for land clearing, preparation and early maintenance of the main crop areas is provided by contractors (para 3.05) and is recruited locally from villages and small towns on the periphery of the development region. Oil palm nursery establishment and maintenance is carried out directly by FELDA staff, using locally recruited labor which is obtained largely from neighboring established FELDA schemes.

3.09 No problems are envisaged in recruiting settlers either from Johore or other regions of the country. In March 1973, FELDA had about 11,000 settler applications for an estimated settler intake of 3,800 in 1973. Settler selection procedures are described in para 5.07 and Annex 10.

C. Housing and Infrastructure

Housing

3.10 Settlers' houses are constructed by private contractors, employed by FELDA. The cost, M\$ 1,890 (US\$810), including M\$ 90 for water connection, (para 3.12), is charged to the settler's loan account. The houses will be built of wood and will be elevated and airy in the Malay tradition. Their design is relatively simple and inexpensive but they will provide the settler family with a satisfactory shelter. After the development period, when the income of the settler increases and the agricultural labor requirements are modest, the settler is expected to upgrade his house to a standard compatible with his income. This modified sites and services approach is working well in other FELDA settlements.

Roads

3.11 In addition to the general access highway system now being constructed in Johore Tenggara (para 2.15), about 16 mi of roads will have to be built specifically to gain access to project villages and schemes. These roads are included in the project. Assurances were obtained from the Federal Government during negotiations that the con-

growth center and Sungai Sebol/Penggeli Timor will later become integrated with the new town of Bandar Tenggara and these two settlements should therefore be planned for eventual installation of a central sewerage system. Assurances to this effect were obtained from FELDA during negotiations.

Communal Facilities

3.14 A primary school system will be provided in each village with approximately one school with 6 classrooms per 400 settler families. Secondary schools will be built in the six largest of the eight villages. A health sub-center, staffed with one hospital assistant (paramedic) and one nurse and visited by a physician on a regular basis, is to be provided in the five largest villages. Each of the three smallest villages will have a community clinic staffed with one nurse. In addition, each village will have a community center, a police post and a mosque (Annex 5 and Annex 8, Chart 2). FELDA, through federal grants, provides the funds for the construction of the community centers and the mosques while the responsible federal ministries provide the funds for the construction and operation of the schools, health sub-centers, community clinics and police posts. Electricity supply from the national grid system will not be available until the 1980's and meanwhile diesel generators will be installed and operated by FELDA for FELDA's use.

Commercial Facilities

3.15 A cooperative shop, operated by the FELDA Stores Corporation (FSC) (para 5.03), is to be located in each village. Eventually the purchasing power of the settlers and the availability of labor will induce the establishment of more commercial and service facilities, which is an important aspect of the maturing process of the villages (Annex 5). The village plans are drawn to accommodate this growth. Assurances will be obtained from FELDA during negotiations that they will not prevent the establishment of independent enterprises in the villages and that they will make land available to entrepreneurs in accordance with village plans after settlers have been established and the economic and social structure of the village has been determined.

D. Harvesting and Processing

3.16 Correct timing of harvest, careful handling and speedy transportation of the fresh fruit bunches to the mill, followed by rapid processing, are essential for production of high quality palm oil. FELDA experience has shown that a group harvesting system is the most practical method for obtaining the required standards. Under this system, settlers are grouped into teams of 20 and are made responsible for cutting and collection of the fruit from a designated 280 ac block, equivalent to their aggregate entitlement of holdings under their agreements with the authority. The group works under the supervision of an elected group leader who allocates individual tasks and checks the quality of the work done under the supervision of the FELDA scheme manager (para 5.18). Transportation of the fresh fruit bunches from harvesters' collection points to processing mills would be undertaken by private haulage contractors.

3.17 Five palm oil mills, with a total capacity of 153 tons ffb/hr in 1982, would be constructed by FELDA to handle the requirements of the project. Construction of the first mill will commence in 1975 and the last will be completed in 1981 (Annex 8, Table 2). With the development of the proposed project, FELDA will have a total of 105,000 ac of oil palm in Johore Tenggara handled through eight mills. As in its other schemes, FELDA would prepare plans and specifications, would supervise mill construction and would manage their operation. Transportation of the oil to the port for export would be handled by private contractors.

E. Management

3.18 There will be a manager with a staff of 17 to 26 persons for each of the 16 schemes. Management housing and offices will be located in the 8 villages and will be constructed through FELDA by private contractors (Annex 8, Chart 2). A retail store will be built in conjunction with each scheme office and operated through the FELDA Stores Corporation (para 5.03). Each scheme office will be provided with 2 Land Rovers, 2 tractors, and 1 diesel generator for electricity supply. Staff salaries and other management operating costs during the development period are included in the project cost, in addition to the capital costs for housing, offices, vehicles, and equipment.

F. Ecology

3.19 Land development within the project area would be carried out in conformity with the Malaysian Conservation Act which provides an adequate safeguard against erosion, siltation and excessive flooding (Annex 3). The FELDA project area is confined entirely to the undulating or low hilly lands containing soils of proven suitability for tree crop and village site development, and excludes the steeper land areas where a multiple land use policy based on permanent forestry would be introduced. Those areas of forest which have marketable timber potential will be worked on a sustained yield basis using an assisted regeneration system of forest improvement. The remainder will be conserved as protective forest and utilized as recreational-cum-tourist areas or as strict nature reserves as required (Map). The entire permanent forest reserve area will serve an essential water conservation role by safeguarding the regularity of run-off required to meet the increasing internal demand for water supplies within the settled portions of the region. It will also afford a sanctuary for the wild life which may be driven out of the area cleared for agriculture.

3.20 Processing mills would be sited at appropriate distances away from residential areas, in proximity to adequate water supplies, to reduce the consequences of pollution from effluents (a subject which is being given close attention by MARDI). Natural forest would be retained as river bank reserves within the areas of agricultural development to avoid felling large

trees into river beds causing adverse effects on river flow and danger to bridges or other downstream structures.

IV. COST ESTIMATES AND FINANCING

A. Project Costs

4.01 Project costs from 1972 through 1981, are estimated at M\$ 209.2 million (US\$89.8 million) with a foreign exchange component of M\$ 50.8 million (US\$21.8 million) or 24% of project costs.

4.02 Detailed project cost estimates are at Annex 9, Table 1 and are summarized below:

Summary of Project Costs (1972 through 1981)

| | <u>Local</u> | | | <u>Foreign</u> | | | <u>%</u> |
|--------------------------------------|--------------------|-------------|--------------|---------------------|-------------|-------------|-------------------------|
| | <u>M\$ Million</u> | | | <u>US\$ Million</u> | | | <u>Foreign Exchange</u> |
| <u>FELDA Expenditure</u> | | | | | | | |
| Agricultural Development | 62.2 | 20.7 | 82.9 | 26.7 | 8.9 | 35.6 | 24 |
| Settlers' Housing and Housing Lots | 8.8 | .5 | 9.3 | 3.8 | .2 | 4.0 | 5 |
| Processing Facilities | 21.5 | 12.1 | 33.6 | 9.2 | 5.2 | 14.4 | 36 |
| Management | 16.6 | 1.9 | 18.5 | 7.1 | .8 | 7.9 | 10 |
| Sub-total | 109.1 | 35.2 | 144.3 | 46.8 | 15.1 | 61.9 | 24 |
| <u>Direct Government Expenditure</u> | | | | | | | |
| Roads | 7.4 | 3.0 | 10.4 | 3.2 | 1.3 | 4.5 | 30 |
| Water Supply | 4.1 | 1.9 | 6.0 | 1.8 | .8 | 2.6 | 30 |
| Public Buildings | 6.1 | .7 | 6.8 | 2.6 | .3 | 2.9 | 10 |
| Sub-total | 17.6 | 5.6 | 23.2 | 7.6 | 2.4 | 10.0 | 24 |
| <u>Contingencies</u> | | | | | | | |
| Physical Price | 6.0 | 1.9 | 7.9 | 2.6 | .8 | 3.4 | 24 |
| | 25.6 | 8.2 | 33.8 | 11.0 | 3.5 | 14.5 | 24 |
| Sub-total | 31.6 | 10.1 | 41.7 | 13.6 | 4.3 | 17.9 | 24 |
| <u>Total Project Cost</u> | <u>158.4</u> | <u>50.8</u> | <u>209.2</u> | <u>68.0</u> | <u>21.8</u> | <u>89.8</u> | <u>24</u> |

4.03 The estimates are based on experience in similar FELDA schemes. The relatively low physical contingency (5%) is justified by the competitiveness of experienced field development contractors as well as the standardization of factory design. A price contingency for both local and foreign costs of 5% compounded annually has been added. The cost of settlement per family, excluding social costs (roads, water supply, and public buildings) would be US\$14,100, net of contingencies.

B. Proposed Financing

4.04 It is proposed that a Bank loan of US\$40.0 million (M\$ 93.2 million) to be disbursed from 1974 through 1982 be made to Government for 23 years, including a grace period of 8 years for repayments of principal. The proposed loan would finance about 45% of project costs. US\$14.3 million would be for foreign exchange expenditures and US\$25.7 million equivalent for local currency costs. The loan would be onlent by Government to FELDA on the same terms as the Bank loan.

4.05 Remaining project costs, US\$49.8 million, would be met by: (a) Government loans to FELDA of US\$29.5 million covering 27% of agricultural development costs, housing and processing, and 30% of the costs of fertilizer, pesticides, vehicles and equipment; (b) direct Government expenditure of US\$11.9 million for roads, water supply and public buildings; (c) Government grants to FELDA of US\$8.4 million for management operating costs (Annex 9, Table 2). The Government loan, which would be at the same terms as other Government loans to FELDA, would be at 5-1/2%, repayable over 25 years, including ten years of grace on principal. No interest would be charged for the first five years. FELDA loan terms to oil palm settlers are in Chapter V. Since the timing of felling and clearing operations is dictated by climatic conditions, some contracts have been let (in conformity to Bank guidelines) since August 1, 1973, in order not to hold up the project. The value of such advance contracts does not exceed US\$2.5 million. Disbursement against such contracts will be for expenditures incurred after the date of loan signing. Government would make available to FELDA, monthly and in advance, the investment funds and working capital required by the project. This would be on the basis of the appraisal estimates as revised by FELDA and as approved by the Bank from time to time. Assurances to this effect were obtained during negotiations.

4.06 In summary, the project would be financed as follows:

PROJECT FINANCING
(M\$ Million)

| | <u>IBRD</u> | <u>Government</u> | | | <u>Total</u> |
|--------------------------------|-------------|-------------------|---------------|--------------|--------------|
| | | <u>Loans</u> | <u>Grants</u> | <u>Total</u> | |
| FELDA Expenditures | 93.2 | 68.7 | 19.6 | 88.3 | 181.5 |
| Direct Government Expenditures | — | — | 27.7 | 27.7 | 27.7 |
| Total | 93.2 | 68.7 | 47.3 | 116.0 | 209.2 |
| Total (US\$ Million) | <u>40.0</u> | <u>29.5</u> | <u>20.3</u> | <u>49.8</u> | <u>89.8</u> |
| Percent of Total | 45 | 32 | 23 | 55 | 100 |

C. Procurement and Disbursement

4.07 Contracts with an estimated value of US\$31.5 million net of contingencies (44% of project costs) would be let under international competitive bidding, in accordance with Bank guidelines. This would include land clearing and planting (US\$11.2 million), housing and office buildings (US\$5.4 million); upgrading of roads and culverts (US\$2.7 million); palm oil mill machinery and construction (US\$11.5 million); and vehicles and equipment (US\$0.7 million). Sufficient experienced contractor capacity for land clearing and house construction is available in Malaysia and all of it is likely to be carried out by local contractors, as in the Jengka projects. A range of mill machinery and vehicle components is manufactured in Malaysia and the Bank would agree that local manufacturers would be allowed a margin of protection of 15% or the customs duty, whichever is less, again as in the Jengka projects.

4.08 As in the Jengka project, fertilizer and pesticides estimated to cost US\$10.7 million (15% of project cost) would be procured through the effective system which FELDA has established to supply its entire land settlement program. It would be neither practical nor economical to establish a separate supply system for the project, and therefore project requirements would be purchased after local competition between the major international fertilizer companies which are well represented in Malaysia.

4.09 Roads, water supply systems and public buildings estimated at US\$10.0 million (14% of project costs) and financed by Government, would be constructed on PWD force account.

4.10 The remaining costs of US\$19.7 million (27% of project cost) are direct FELDA expenditures such as salaries, settlers' wages during the development period and planting material and as such are not suitable for local or international competitive bidding.

4.11 IBRD financed expenditures and disbursements are at Annex 9, Table 4 and 5 respectively. Disbursements would generally follow the procedures adopted for Jengka Loans 533-MA, 672-MA and 885-MA and would be made against appropriate documents as follows:

- (a) 90% of total costs for land clearing and planting, upgrading of agricultural roads, housing, house lot development on oil palm schemes, and palm oil mill construction and machinery; and
- (b) 100% of the foreign cost of directly imported fertilizer, pesticides, vehicles and equipment, or 100% of the ex-factory price (excluding taxes) if manufactured locally, or 70% of total expenditure if imported but procured locally.

D. Account

As with the three Jengka projects, FELDA would maintain a separate account for this project, and it would be audited independently. Assurances were obtained during negotiations that independent auditors satisfactory to the Bank would be appointed to audit the project and FELDA's overall accounts. The Government's and FELDA's financial year is January 1 through December 31. Assurances were obtained during negotiations that FELDA would furnish to the Bank within six months following the close of the fiscal year signed copies of the auditor's report.

V. ORGANIZATION AND MANAGEMENT

A. FELDA

5.01 A description of FELDA's organization, objectives and performance is in Annex 6. The Authority is a Government-owned agency under the Ministry of National and Rural Development with a wide range of autonomy on day to day operations.

5.02 FELDA is provided with most of its funds from Government budgetary allocations. The balance has been covered by IBRD and a loan from the Asian Development Bank. A Board of 12 members under an Executive Chairman includes representatives of public agencies and the private sector. The Board determines operating policies and carries overall responsibility. The chief executive of FELDA is the Director General who is also a member of the Board. As in previous Bank loans, assurances were obtained during negotiations that the Bank will be afforded an adequate opportunity to comment on the qualifications and experience of any proposed new appointee to the position of Chairman of the Board or Director General of FELDA.

5.03 The FELDA Stores Corporation (FSC) with the Director General as chairman but with a separate constitution operates a string of retail shops serving FELDA settlers. Fifty-one percent of the equity of the FSC is retained by FELDA and the balance is for issue to settler cooperatives. Similarly, the marketing department, which is presently under the direct supervision of the Director General, will become a separate entity early next year as FELDA Marketing Corporation with the Director General as chairman. This change allows a more flexible and independent operation than is possible for an organization solely controlled by Government.

5.04 FELDA is the main Government agency responsible for implementing Government's settlement policies. Because of its proven ability to carry out these policies, it has been given increasing targets. Yearly plantings of oil palm and rubber have increased from 10,500 acres in 1960 to nearly 100,000 ac in 1973. In addition, the Authority has been given a greater role in the Government's crop diversification policy. In 1973, about 3,100 ac were planted with sugar cane and 5,000 ac of cocoa are expected to be planted in 1974-75.

5.05 The rapid expansion of FELDA operations has not been without problems. Delays have occurred in implementing the planting program and settler intake leading to higher costs, mainly because of delays in infrastructure development (roads, water supply) which is carried out by Government agencies. These shortcomings were partly the result of unrealistic time schedules in the early years. More realistic schedules are now worked out and cost projections made accordingly.

5.06 Another shortcoming in FELDA operations has been its financial accounting system. The system was not able to meet the needs of an expanding, diversified organization. As a result, Public Administration Services (PAS), a Chicago-based consulting firm, was engaged in 1972 to improve the situation. They introduced a computerized accounting system which is now being implemented. Apart from streamlining and speeding up financial accounting, departmental recording and reporting systems will be coordinated to a degree which has not been possible before.

B. Settlement Procedures

Settler Selection

5.07 Most of the settlers are Malays (para 2.04). Selected candidates are mainly landless peasants, poor smallholders or ex-servicemen. They must own less than two acres of land to be eligible. At least 50% of the project settlers will be from Johore. Interviews are carried out in two stages, first at district level and then at national level; the final selection is based on a points system which takes account of age and family circumstances, experience and capabilities, landownership and educational level. Details are in Annex 10.

Settler Status

5.08 Settlers sign the first part of the agreement with FELDA on arrival at the scheme. This entitles them to a FELDA loan which covers all agricultural development costs, housing and house lot expenses during the development period. It also binds them to the rules laid down by FELDA and to carry out work on the scheme as instructed by FELDA management staff. Failure to abide by the rules may result in the settler being expelled from the scheme. During the early years of settlement, the settlers carry out maintenance work on the scheme, for which they receive a minimum of M\$ 2.90 per day. If monthly earnings are less than M\$ 70, the wage is supplemented by a subsistence loan to bring the monthly income up to this level. For the proposed project, incomes of oil palm settlers will be sufficiently large not to warrant subsistence payments. Detailed cost and income data for an oil palm holding are at Annex 11.

5.09 At the end of the fifth year after oil palm planting, loan repayment begins and the settler signs the second part of his agreement. This registers him as an occupier in expectation of title to 14 ac of oil palm, together with a house lot of 0.25 ac. Once the settler has paid off his loan, he acquires title to the land (para 3.03). Oil palms are maintained and harvested in blocks of 280 acres, and the settler receives a right to a share of proceeds equivalent to his share of the joint holding which would be managed by FELDA until loan repayment is completed.

5.10 Loans to settlers covering agricultural development costs (including wages paid to the settler during the development period) and housing are repayable at 6-1/4% over 15 years after the 6 year development period during which interest is capitalized (see Annex 11, Table 5). Investment in factory construction and equipment is recovered by a processing fee to settlers which is sufficient to cover factory operation costs and generate a reasonable return on investment. Management costs, which are similar to extension services costs, which are not normally recovered from beneficiaries, would also be recovered in this project by a price-proportional levy (see Annex 10, Table 1) raised when settlers' income exceeds the target of M\$ 3,600 per year. At present prices management costs are fully recovered. The elements of subsidy in these terms are consistent with Government income policy in the smallholder sector and offer satisfactory incentives for settlers to contribute their labor and enterprise to the task of opening up new land (see also para 7.03).

C. Area Office

5.11 The project will be controlled from the FELDA South Area Office, one of seven set up in 1971 in an effort to create more flexible and dynamic operational direction and control of development. The area controller in charge of this office would advise on the selection of contractors for agricultural development and civil works, and would coordinate infrastructure and public building construction with the respective federal or state agencies. The office would manage the project, keep accounts, and coordinate harvesting and transportation of oil palm fruits to mills. The staff have gained much experience in recent years and are performing satisfactorily.

5.12 The area controller reports directly to the Deputy Director General for Field Administration in headquarters, and maintains close contact with the Agricultural Services Director on all agricultural matters. A manager would be in charge of each 3,000 to 6,000 acre scheme and would be supported by an assistant manager, between two and four field supervisors, and double these numbers of field assistants at full development on each scheme. FELDA experience has shown this staffing plan appropriate and feasible in relation to the present recruitment and training programs.

D. Communal Services

5.13 The respective departments of the Federal Government would provide staff for, and meet the recurrent costs of schools, health centers, and police posts constructed under the project. Assurances to this effect were obtained during negotiations. Such arrangements have worked well in the Jengka Triangle projects.

VI. PRODUCTION, MARKETING AND FINANCIAL RESULTS

A. Yields and Production

6.01 For the proposed project, it is assumed that palms have a life of 30 years. Harvesting begins in the fourth year after planting. Yield estimates (Annex 12) are based on data available from other FELDA schemes already in production in other parts of Johore and South Pahang, where climatic and soil conditions are similar and where the same type of planting material has been used. Peak oil palm yields of 9.2 tons ffb per ac and an oil extraction rate of 21% are projected in the sixth year in harvest. Kernel output is 4.2% of ffb production.

6.02 Total palm oil and kernel production from the project is estimated at 2.2 million tons and 440,000 tons respectively. Peak production would be reached in 1985. In that year 123,500 tons palm oil and 24,800 tons palm kernels would be produced.

B. Marketing and Prices

6.03 Settlers would sell their ffb to FELDA under a pricing formula which would enable FELDA to cover fully its processing and transportation costs (see Annex 11). After processing, palm oil would be exported and kernels would be sold locally for further processing as kernel oil and expeller cake.

6.04 Palm oil produced in Peninsular Malaysia is sold through a pool operated by the Malaysian Palm Oil Producers' Association (MPOPA). Members

of the MPOPA are mill owners. The larger companies own bulking installations which handle sales for their own companies and for those mill owners who do not own bulking installations. Proceeds from all sales are pooled and every member of the pool receives the same price allowing for quality differences. Until June 1973, these installations handled sales of palm oil from FELDA settlements since FELDA production was relatively small. With the construction of its own bulking installations and in anticipation of its rapidly increasing sales, FELDA has established its own network of selling agents and brokers which are directed through FELDA's marketing department. All Malaysian Government-to-Government palm oil sales (such as those to India and China) are executed by FELDA. To allow for greater marketing flexibility and independence a separate FELDA Marketing Corporation (FMC) will be formed early 1974 (see para 5.03).

6.05 A recent study by the Bank's Commodities and Export Projection Division ^{1/} indicates that the export demand prospects for fats and oils, including palm oil, up to 1980 and also in the following decade remain favorable. Project output of palm oil would account for about 2.5% of estimated world exports of palm oil in 1985. The Secretariat of the Inter-governmental Group on Oil Seeds, Oils and Fats, has been informed of the project and raised no objection. Only a moderate fall in the price of palm oil is expected. A price range of US\$197/ton to US\$220/ton (cif Europe) in constant 1972/73 terms is projected for 1980 and thereafter. The economic rate of return analysis of the project is based on a price of US\$197/ton. Sensitivity analysis takes account of the higher price in the range (Annex 13).

C. Financial Results

6.06 Settlers. Participating settlers would benefit substantially under the project. Most would be landless rubber tappers and casual workers (together about 60% of all settlers), poor smallholders or largely unemployed urban dwellers. Before joining the scheme they earn an average yearly income of about M\$ 850-900 which puts them in the lowest quintile of income groups in Malaysia (Annex 13). The average net settler income through the life of the project after they go on the block system (i.e. five years after planting) is estimated at about M\$ 3,200/year (Annex 11, Table 6). Settlers will earn about an average yearly M\$ 3,800 (US\$1,600) after loan repayment, i.e. 20 years after planting. These income levels are reasonable and in line with government income targets for smallholders (Annex 4).

6.07 FELDA. A projected cash flow is in Annex 9, Table 2. It indicates that annual deficits would occur until 1978. This would be met out of FELDA reserves or by Government. Surpluses would arise first in 1979 and these would remain positive on a cumulative basis until 2002 when repayment of the replanting cess to smallholders (or its use for replanting) would cause a deficit. However, sufficient funds to cover this deficit would be available from interest received on the accumulated surpluses.

^{1/} See, Palm Oil - Review and Outlook for Bank Lending, SecM73-556, September 14, 1973.

6.08 Government. A projected cash flow is in Annex 9, Table 3. Revenues accruing to Government from the project would be sufficient to repay its development and operating costs under the project and to establish a cumulative surplus of M\$ 163 million by the end of the project period. Cumulative deficit during project development would peak at M\$ 93 million in 1981. This deficit would be met by Government.

VII. BENEFITS AND JUSTIFICATION

7.01 The proposed project forms a vital part of the development strategy for the Johore Tenggara region. It would support Government plans to achieve high rates of growth in smallholder agriculture through land development, thereby reducing unemployment and underemployment and increasing incomes of the rural population. At peak production (1985) yearly sales ex mill are estimated at M\$ 57 million (US\$24 million). Industrial development will be induced through the construction of oil palm mills and storage facilities which will generate increased local manufacture of mill and storage equipment. Settlers' average yearly incomes would rise from about M\$ 870 (US\$375) before they join the scheme to M\$ 3,800 (US\$1,600) after they finish loan repayments.

7.02 The project will contribute to the establishment of a number of urban growth centers. These centers will help redirect urban migration from a few large cities to medium-sized towns. They will bring additional long-term employment opportunities to settlers and their dependents. About 10,200 persons would find permanent employment through the project; 4,900 would be directly employed on the schemes, while some 5,300 persons would fill the additional jobs induced in the villages and in other nearby urban centers. A total population of about 30,000 persons would be supported by these jobs. In addition roughly 6,000 workers would be directly employed during the development period.

7.03 Settlement costs of US\$14,100 per settler are well justified. The growth of the Malaysian economy and the reduction of un- or underemployment depends to a large extent on land development. Lower cost schemes during the early 1960's have failed due to a lack of sufficient incentives to settlers. Furthermore, under Malaysian geographic conditions, oil palm is an ideal crop to open up land because it allows planting and cultivation on roughly prepared land with little if any detriment to the soil and ultimate felling of the palms for replanting or new crops is not expensive. Clean clearing forest for pasture or annual crops would be much more costly.

7.04 The economic rate of return is estimated at 14.8%. Details of the analysis are in Annex 13. Major assumptions underlying the analysis include: (a) exclusion from costs of water supply, school and health center construction on the grounds that their benefits are excluded and would at least equal costs; (b) a shadow wage for labor of M\$ 2.90/day, equivalent to an average yearly income of M\$ 870/year, in line with the average income settlers earn before joining FELDA, comparing with M\$ 3.50/day earned by casual non-skilled labor working on FELDA schemes; (c) yields given in Annex 12; and (d) an export price (cif Europe) of US\$197/ton. This

is the low price of the range given in Bank commodity price projections. With the high price of this range (US\$220/ton) and the above assumptions, the economic rate of return would be 16.8%. The rate of return calculated without shadow pricing and assuming that real wage rates would rise by 3% yearly, starting with an actual rate of M\$ 3.50/day in 1973, would be 13.5%

7.05 Except for the part obtained by the Government, most of the benefit of the project accrues to settlers whose present and expected future incomes are well below average Malaysian incomes. The distributional impact of the project is therefore clearly favorable.

VIII. RECOMMENDATIONS

8.01 The proposed project is financially and economically sound and is suitable for a Bank loan of US\$40.0 million repayable over 25 years including 8 years of grace on repayment of principal.

8.02 The following principal assurances were obtained during negotiations:

- (a) timber clearance operations will not delay the clearing and planting programs (para 3.04);
- (b) the construction schedule for the access highway system will accommodate the requirements of FELDA's land development program (para 3.11);
- (c) FELDA will not prevent the establishment of independent enterprises in project villages and will make land available to independent entrepreneurs in accordance with the village plans (para 3.15);
- (d) the respective departments of the Federal Government would provide staff for, and meet the recurrent costs of schools, health centers, and police posts constructed under the project (para 5.13).
- (e) The villages of Bukit Sening and Sungai Sebol/Penggeli Timor will be planned for eventual installation of a central sewerage system (para 3.13).

MALAYSIA

JOHORE LAND SETTLEMENT PROJECT

The Malaysian Agricultural Research and Development Institute

1. The Malaysian Agricultural Reserach and Development Institute (MARDI) is a statutory Malaysian Government Body constituted by Act of Parliament in 1969. It became operational in March 1971 when a nucleus staff was seconded from the Research and Agronomy branches of the Department of Agriculture. Since that date the professional staff has grown to over 100 research officers. Facilities, including experimental stations, laboratory and office buildings and equipment, have been taken over from other agencies of Government or acquired in accordance with a phased program of expansion which aims at an eventual total of some 350 research officers by 1975.

2. The decision by the Malaysian Government to establish MARDI reflects recognition of the need for a central organization to make better use of the scarce personnel and financial resources than was previously possible when agricultural research was the responsibility of a number of individual institutes and departments. A single autonomous research organization is better able to provide the administrative flexibility required for productive research and high staff morale. It is also better able to provide continuity of research and the long-range planning and budgeting essential for effective work, particularly when it is assured of a minimum budget for periods of five or more years, which was never possible in the case of departmental research groups.

3. MARDI personnel and their support staff are based at the headquarters research station near Serdang, about 15 mi south of Kuala Lumpur, and at an expanding network of regional experimental stations in the main agro-ecologic regions of the country. These research stations are specializing on particular crops which are either representative of the regions at the present time, or which may have a development potential in those regions.

Organization and Staff

4. The Institute is headed by a Director who is responsible to a Governing Board, on which are representatives of Government agencies and other statutory bodies and private sector organizations engaged in, or interested in the results of agricultural research. There is also a Science Council which initiates or examines and approves proposals for research, and which is advised by a number of special advisory committees dealing with specific crops or other research topics.

5. The Director is assisted by two deputies, for Programs and for Administration, and by an Assistant Director who is responsible for Development, Publications and Library. The Program Director supervises the work of five subject matter divisions which are further divided into 28 branches. Some flexibility is introduced into this scientific discipline-based organization by the formation of research units or teams, headed by the more experienced research team leaders, which concentrate on particular crop, commodity or problem areas.

6. The Institute is presently very short of senior research personnel who have the experience necessary to provide research team leadership and to guide and advise the disproportionately large number of enthusiastic and well qualified but relatively inexperienced younger professionals. This deficiency, which is likely to persist for several years, is partly being met from technical assistance sources, the scale of which is expected to increase in the near future.

Finance

7. In January 1972 MARDI received its first annual budget allocation and M\$ 15.5 million were expended during this first year. The 1973 allocation totals M\$ 12.4 million, of which M\$ 7.4 million is for operating and M\$ 5.0 million is for development expenditure.

8. In addition to the above allocations, two special funds for oil palm production and consumption research totalling M\$ 6.5 and M\$ 9 million respectively are in operation for the period to 1975, and the aim is to obtain a similar block budget to cover the entire operating and development expenditure of the Institute for the period 1975-80. The details of this budget request, which is expected to total around M\$ 160 million, are currently being prepared.

Oil Palm Research

9. The oil palm research program is particularly strong, supported by an active advisory committee which is not only appreciative of the problems faced by the industry, but is also able to judge which of these problems are most likely to be solved by research and to establish working priorities. FELDA is represented on this advisory committee.

10. The current list of research topics includes a long-term breeding program aimed at improving the quality of oil palm planting material. This calls for a widening of the range of genetic material available to the plant breeders, and an expedition is currently in West Africa collecting material sufficient for the establishment of a 500 ac genetic materials garden in Peninsula Malaysia.

11. An oil palm physiology research project, which is a cooperative project involving MARDI staff and staff from a private company, is based on the company's research station in south Johore. This research will be very

relevant to FELDA's oil palm yield research, which are suspected to be due in part to moisture stress inherent to the sedentary soils found on all FELDA schemes, in contrast to the moisture and more fertile alluvial soils found on many private estates, which yield considerably higher.

12. A team which will investigate the nutritional problems of the oil palm will also be established shortly, and will be equally relevant to the FELDA yield situation, which may be improved through a better understanding of the nutritional balance and fertilizer requirement of the palm under variable agro-climatic conditions. Both the above programs would benefit from team leadership provided through foreign aid.

13. Milling standards and optimum times for harvesting of fruit in relation to palm oil yield and quality are also receiving special attention. A private company with its own research facility has been contracted to undertake a special study of palm oil mill effluent treatment, as a response to the pollution problem which is arising in the larger processing mills which are now becoming commonplace in the industry.

14. A new experimental station is being set up on a 4,300 ac site near Kluang, within the Johore Tenggara master plan region, which will specialize in oil palm, pastures, fodder and beef cattle experimentation. One thousand ac have been cleared to date. This main oil palm research station is in a similar agro-climatic zone to the Johore Tenggara FELDA Project area, with similar topography, soils and rainfall, so that research experience derived from this station is likely to have direct application to the project area and to other FELDA schemes already existing in the State of Johore.

15. The inception of this new station provides an ideal opportunity for FELDA and MARDI to integrate their respective research on oil palm to the extent that MARDI concentrates on long-term breeding, nutritional and physiological research and other problems common to the industry as a whole, while the small cadre of FELDA research personnel concentrate on the numerous production problems inherent to FELDA's own operations which can be solved by applied research effort.

Other Research

16. Other major research projects involve the improvement of the rice, pineapple, cocoa, fruit and livestock industries. Priority is being given to livestock improvement, with accent on beef, pastures and feed-grains development designed to increase the availability of locally produced animal protein.

17. Rice research is aimed at increasing overall production efficiency within existing rice growing areas to the extent that Malaysia becomes 90% self-sufficient. To this end, investigations are continuing into rotational and multiple cropping patterns suitable for the rice growing areas, where

double crop irrigation facilities are now widespread. Breeding and select work is being concentrated on improving the quality of local rice varieties to meet consumer taste preferences.

18. Cocoa has been identified as a most promising diversification crop. A horticultural crop research program has been formulated to develop this potential, together with the wide range of local fruits, which present considerable opportunities for upgrading.

19. The Malaysian pineapple industry is facing very stiff competition accentuated by UK entry into the EEC, and priority is accordingly being given to developing better varieties capable of giving higher recovery rates on processing, thus reducing costs and thereby increasing the competitive position of the industry.

20. A request for Bank financing to strengthen MARDI research in several of the above fields has been received and a team of research consultants is likely to visit Malaysia in December this year in order to prepare a suitable project for appraisal early in 1974.

MALAYSIAJOHORE LAND SETTLEMENT PROJECTAgricultural Development Background for FELDADevelopment Strategy

1. FELDA agricultural development methods have much in common with those of the private estate sector of the Malaysian agricultural industry modified as necessary in the light of FELDA's own considerable experience. These methods include extensive use of contractors to undertake the establishment of the main crops, and of village site and processing facility construction, together with the employment of a management staff on all schemes to ensure the effective organization of the settlers labor and maintain the highest possible standards of crop production and processing.
2. The scale and complexity of FELDA's operations call for a high level of planning efficiency on the part of the Authority. It must supervise the work of a large number of contractors and coordinate the supporting activities of a wide range of public sector agencies. At the same time it has to attend to its own steadily increasing commitments in respect to recruitment, training, and establishment and operation of its schemes.
3. As the scale of FELDA's operations has increased, so also has the size of its average scheme, and the extent to which schemes are grouped together for reasons of operational efficiency. The earliest schemes, established in the late fifties, were around 2,000 ac in size, but with experience this has increased to between 5,000 and 7,000 ac at the present time; equivalent to that of the larger estate units in the private sector.
4. In the early days it was usually possible to select sites suitable for schemes in most states of West Malaysia, but within a few years almost all the available and suitable land having convenient access within the west coast states had been taken up, either by FELDA or by other public and private sector agricultural organizations. By the mid-sixties FELDA was, therefore, obliged by circumstances to concentrate its site selection activities within the large region of relatively undeveloped but agriculturally suitable land, with limited access, which occupies the southeastern segment of Peninsular Malaysia. Several choice sites of contiguous potential agricultural land suitable for tree crop establishment, each 100,000 ac or more in extent, had been identified through surveys within this large region of around 5 million ac, and FELDA obtained agreement in principle from the State Governments concerned for development of several of these tracts.

5. The first such tract to be developed systematically as an area concentrated settlement was the Taib Andak Complex in the State of Johore. This complex which contains 5 schemes with an aggregate area of more than 21,000 planted ac of oil palm. In 1966 a more ambitious program of development commenced in the Jengka Triangle portion of the State of Pahang in conformity with a master plan prepared by a consortium of consultants. This study which recommended the cultivating of 93,000 ac of oil palm and rubber, was partly financed by a Bank technical assistance grant and the development is being partly financed by a succession of three Bank loans over the period 1967-1981.

6. In 1969 and 1970 two further development planning studies were commenced. They covered the Johore and Pahang Tenggara Regions, respectively, which include the greater part of the southeast agricultural development region referred to above. These studies were more comprehensive in scope and covered larger areas of potential agricultural land than did the Jengka Triangle Study, and they took account of the needs and capacities of other agricultural interests besides FELDA. In recognition of the major contribution which FELDA would make to the agricultural sector development in each of these regions, special feasibility studies for large blocks of land previously committed in principal to FELDA by the State Governments, were carried out in both the Johore and Pahang Tenggara Regions. 1/

7. FELDA schemes in these two projects differ from the earlier Jengka Projects in the size of individual settler holdings. The increase in the size of the holding from 10 to 14 acres is justified both by employment and income considerations. A 14-acre holding just about provides employment for one full-time laborer (see Annex 11, Table 2) whereas a 10-acre holding leaves the settler underemployed. This would present an acute problem in newly opened up areas with limited outside employment opportunities. Also, a 14-acre holding is required to provide an income that is consistent with a targeted 3.5% rate of growth of real incomes in the smallholder sector (see Annex 4).

1/ The importance of FELDA's role in the Second Malaysia Plan (SMP) period is apparent from the fact that the Authority's target of 275,000 ac at the start of the plan period was raised to about 400,000 shortly after the commencement of the period, at which level it is equivalent to 40% of the national target of 1 million ac of new land development during the SMP. 47,000 ac and 73,000 ac were developed by FELDA in the first and second years of the plan, and 100,000 ac is being targeted for the current year, to be followed by 90,000 ac in each of the final two years.

MALAYSIAJOHORE LAND SETTLEMENT PROJECTEcology

1. During the preparation of the master plan for Johore Tenggara (see Annex 7), special attention was given to assessment of the impact which development will have on the ecological conditions of the region, and of the conservation needs associated with these developments. The plan took into account the need for protection of water catchments and reservoirs, the removal or avoidance of pollution, the conservation of biological communities, jungle reserves and wild life, and the preservation of scenic assets in the interests of recreation and tourism. To this end, the legally established slope cultivation limit of 20° would be vigorously enforced in accordance with the Malaysian Conservation Enactment, and steeper land would be utilized either for controlled forestry on a sustained yield basis or reserved to serve a strictly protective function, depending on the relative productivity of the forest and the extent to which the productive forest can be satisfactorily worked without impairing conservation standards. A multiple land use policy which includes wild life and water resource conservation is being applied in these areas.
2. In addition to the above, several areas containing distinct vegetation and biological communities have been identified for permanent reservation as strict nature reserves, protective forests or recreational areas below the steep-land boundary. These sites, which are of special scientific or aesthetic interest, include examples of beach forest, alluvial swamp forest, mangrove forest and coastal hill forest.
3. The depth and range of analysis and survey of the more important ecologic factors -- climate, topography, soil, forestry, geology, vegetation, wild life, and water, -- coupled with the close attention given to conservation and pollution aspects of development in the master plan, are indicative of the Malaysian Government's concern for the problem of maintaining an ecological balance. Rigorous enforcement of the conservation and pollution regulations and a continuous monitoring of the situation by the LKJT during the 20 year development period should ensure that the Johore Tenggara Region becomes a model of multiple land use and coordinated conservation of natural resources.
4. Careful site selection, with special attention given to suitability of topography, soil and drainage, both for the main commercial tree crop areas and for villages, where dusun (orchard) fruit and vegetable growing is carried out on the settler house lots, has always been a characteristic of FELDA planning procedures. Level to only gently sloping, well drained land is essential for the village sites, and such areas are not easily found on many FELDA schemes, which are exclusively on the sedentary soils developed over the dissected penneplain topography of the interior. Such

terrain is normally rolling to hilly, with slopes in the 6-20° class and the soils are more free drained and possess lower reserves of inherent fertility than do the considerably richer types developed over the coastal and riverine flats bordering the west coast of West Malaysia, where much of the earlier smallholder and estate development took place in the first half of the twentieth century.

5. This rolling to hilly land, which seldom exceeds 300 feet in elevation, and over which the amplitude of relief is almost always in the range of 150 to 250 feet, is covered in its natural state by tropical rain forest. Malaysian experience has shown that such land can be readily adapted to tree crop cultivation on a sustained yield basis, provided that a high standard of conservation farming is practiced. Such measures include contour terracing or platform planting and the early establishment of a thick ground cover, preferably leguminous, to reduce the incidence of erosion in the early years of tree crop establishment, pending the development of a full canopy which simulates the natural forest condition. The quality of the soils are such that rubber can be grown almost everywhere within this terrain group, but oil palm, which is more demanding in terms of moisture requirements and which imposes a heavier plant nutrient drain upon the soil, must necessarily be limited to a narrower range of soils. Terrain constraints are also more serious in the case of oil palm, owing to the much greater yield of crop per acre (about 10 times that of rubber) which must be transported from the land, calling for an intricate road and path system which is both difficult and expensive to construct and maintain in the areas of steeper and more incised topography.

6. The parts of the Johore Tenggara Region allocated to FELDA in the master plan fall into the higher quality class which makes them suitable for oil palm, except for about 5,000 acres in the northern part of Tanjong Penggerang area where the conditions are only suitable for rubber.

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JOHORE LAND SETTLEMENT PROJECT

Settler Incomes and Size of Holdings in a National Context

1. The 14-acre size chosen for the oil palm holdings in the project constitutes a reasonable compromise between the conflicting size requirements arising from income and employment considerations. With 14 acres close to full employment is provided for one worker per family while the income is slightly higher than the average for smallholders. A much larger size (about 30 acres) would be required for full employment of the settler and his family during the mature period, but would lead to a wide gap between the incomes of FELDA oil palm settlers and targeted incomes in the smallholder sector of about M\$ 300 per month per family.

Income

2. The incomes of FELDA oil palm settlers are expected to increase from less than the average for smallholders, before joining FELDA, to slightly above the average after the development period. The average FELDA settler family income is about M\$ 870 per year before joining the scheme, versus about M\$ 1,200 for the average smallholder family, and increases to about M\$ 3,800 not including off-farm income at the end of the century, compared to about M\$ 3,400 for the average smallholder assuming a 3.5% annual growth rate family incomes ^{1/}, and including off-farm income.

3. A substantial portion of the income of smallholders outside the project is derived from off-farm sources -- available data indicate that the average proportion may be as high as 40% (see Table 1). A 14-acre oil palm holding will require close to one full-time worker during the mature period (including management tasks) leaving 0.5 to 1 worker per average family free to earn additional income, if the opportunity exists. If an off-farm income equal to 40% of the average smallholder income could be earned by this extra family labor, a settler family income of about M\$ 5,000 would be attained at the end of the century, which is well above the average smallholder income target, about 35% of the projected average national family income of that time. However, it is unlikely that a 40% off-farm income can be earned in the smaller FELDA villages with their limited employment opportunities. The possibility however, might arise in Bukit Sening and Penggeli Timor/Sungai Sebol (with about 40% of the

^{1/} IBRD report No. 217-MA August 1973, Vol. 1, Annexes A & B.

settlers) at the end of the century (Annex 5) on balance. The income targets at FELDA settlers appear reasonable given the risk element and the personal transfer costs incurred in settlement.

JOHORE LAND SETTLEMENT PROJECT

Average Annual Family Income from Smallholdings
and Other Sources

| Product and Area | Year of Survey | Average Smallholding Size (acres) | Average no. of Parcels per Farm | Total Average Income | | Farm Income | | Income From Outside Farm | | | |
|-----------------------------|----------------|-----------------------------------|---------------------------------|----------------------|-----|-------------|-----|--------------------------|----|-----|----|
| | | | | M\$ | % | M\$ | % | M\$ | % | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | | | |
| Padi^{1/} | | | | | | | | | | | |
| Kemubu | 1968 | 2.2 | 2.6 | 650 | 100 | 360 | 56 | 286 | 44 | | |
| Besut | 1970 | | | 1,080 | 100 | 540 | 50 | 540 | 50 | | |
| Krian | 1971 | | | 1,110 | 100 | 750 | 68 | 360 | 32 | | |
| Sungai Manek | 1970 | | | 1,150 | 100 | 700 | 61 | 450 | 39 | | |
| Province | | | | | | | | | | | |
| Wellesley | 1968 | 3.3 | | 1,310 | 100 | 1,010 | 77 | 300 | 23 | | |
| Changkat Jong | 1970 | | | 1,500 | 100 | 1,170 | 78 | 330 | 22 | | |
| Panjong Karang | 1966 | | | 1,640 | 100 | 1,170 | 72 | 470 | 28 | | |
| Average (unweighted) | | | | 1,200 | 100 | 810 | 67 | 390 | 33 | | |
| Rubber^{2/} | | | | | | | | | | | |
| Matu Pa at | 1970 | 11.0 | 2.6 | 1,585 | 100 | 935 | 59 | 650 | 41 | | |
| Antian | 1970 | 9.8 | 2.2 | 1,925 | 100 | 1,070 | 56 | 855 | 44 | | |
| uar | 1970 | 14.5 | 4.1 | 2,090 | 100 | 1,320 | 63 | 770 | 37 | | |
| Average | | | | 11.3 | 2.8 | 1,770 | 100 | 1,045 | 59 | 725 | 41 |
| Coconut^{3/} | | | | | | | | | | | |
| Kelantan | 1964/65 | 5 | 4.5 | 815 | 100 | 360 | 44 | 455 | 56 | | |
| Antian | 1964/65 | 16 | 2.8 | 950 | 100 | 505 | 53 | 445 | 47 | | |
| Matu Pahat | 1964/65 | 12 | 3.4 | 1,605 | 100 | 600 | 37 | 1,005 | 63 | | |
| Abak Bernam | 1964/65 | 8 | 2.7 | 1,675 | 100 | 1,140 | 68 | 535 | 32 | | |
| Kuala Selangor | 1964/65 | 9 | 2.5 | 1,905 | 100 | 780 | 41 | 1,125 | 59 | | |
| Lower Perak | 1964/65 | 21 | 4.5 | 2,300 | 100 | 1,655 | 72 | 645 | 28 | | |
| Average | | | | 1,270 | 100 | 655 | 51 | 615 | 49 | | |

^{1/} Padi Farming in West Malaysia, op. cit, and S. Selvadurai, Ani bin Arope, and Nik Hassani bin Mohammad, Socio-Economic Study of Padi Farms in the Kemubu Area of Kelantan, 1968, Ministry of Agriculture and Co-operatives, Malaysia, October 1969.

^{2/} Socio-Economic Survey of Rubber Smallholdings in West Johore, Kementerian Pertanian dan Perikanan, Kuala Lumpur, February 1972.

^{3/} S. Selvadurai, A Preliminary Report on the Survey of Coconut Smallholdings in West Malaysia, Ministry of Agriculture and Co-operatives, Kuala Lumpur, Malaysia, March 1968.

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JOHORE LAND SETTLEMENT PROJECT

Labor Requirements on Smallholdings

| Crop | Average Size of Smallholdings ^{1/} | Number of Full-Time Jobs on an Average Smallholding During the Mature Period ^{2/} |
|------------------|---|--|
| (1) | (2) | (3) |
| Padi | 3.4 | 0.9 |
| Rubber | 5.6 | 0.8 |
| Oil Palm | | |
| Average | 9.1 | 0.5 |
| Proposed Project | 14.0 | 0.7 |

^{1/} Sources: Table 3 for padi and rubber. The average for oil palm refers to FELDA smallholdings in 1970, when they accounted for more than 75% of total oil palm smallholding acreage (Statistical Digest 1970, op. cit., Table B4).

^{2/} Seasonal variation has not been considered and the presented figures are averages. Administrative requirements are also disregarded. Rubber and oil palm estimates are based on FELDA experience. The padi estimate is an average for single-and-double-cropped padi, based on surveys.

Size Distribution of Land Parcels and Rubber and Padi Smallholdings

-- Peninsula Malaysia

| 1/ Individual parcels | | | | 2/ Rubber smallholdings | | | | 3/ Padi smallholdings | | | | |
|-----------------------|-----------|-----|------------------|-------------------------|-----------|-----|------------------|-----------------------|-----------|--------|------------------|-----|
| Size (acres) | No. (000) | % | Area (000 acres) | Size (acres) | No. (000) | % | Area (000 acres) | Size (acres) | No. (000) | % | Area (000 acres) | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | |
| < 1 | 511 | 29 | 247 | 5 | < 5 | 241 | 62 | 709 | 33 | < 1 | 30 | 10 |
| 1-3 | 650 | 37 | 1,237 | 25 | 5-15 | 130 | 34 | 1,005 | 47 | 1-2 | 68 | 23 |
| 3-5 | 333 | 19 | 1,261 | 25 | 15-30 | 12 | 3 | 236 | 11 | 2-3 | 62 | 21 |
| 5-10 | 234 | 13 | 1,521 | 30 | > 30 | 4 | 1 | 204 | 9 | 3-4 | 41 | 14 |
| 10-15 | 23 | 1 | 269 | 5 | Total | 387 | 100 | 2,154 | 100 | 4-5 | 30 | 10 |
| 15-25 | 9 | 1 | 171 | 4 | | | | | | 5-7.5 | 44 | 15 |
| 25-50 | 5 | 0 | 160 | 3 | | | | | | 7.5-10 | 12 | 4 |
| > 50 | 2 | 0 | 133 | 3 | | | | | | > 10 | 9 | 3 |
| Total | 1,767 | 100 | 4,999 | 100 | | | | | | Total | 296 | 100 |

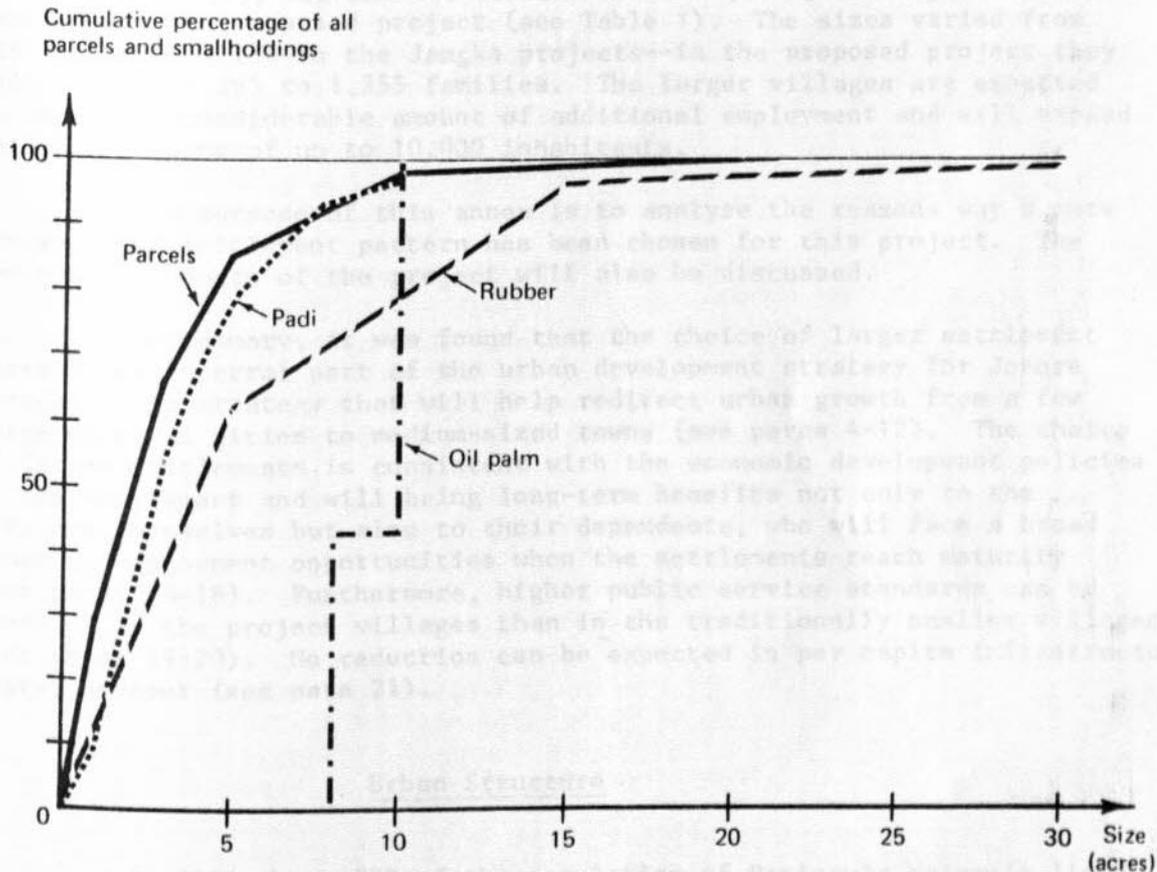
1/ Department of Statistics, West Malaysia, Number and Area of Smallholding Lots and Titles, November 1971, Tables 0.3 and 0.8. 1964-1966 data.

2/ Development Problems and Prospects of Malaysia, op. cit., Volume II, Table 7.3b. 1972 data (registered smallholdings only -- covers about 80% of total rubber smallholding acreage).

3/ Padi Farming in West Malaysia, op. cit. 1970 data.

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 JOHORE LAND SETTLEMENT PROJECT

Cumulative Size Distributions of Land Parcels and Smallholdings
 Peninsula Malaysia



MALAYSIAJOHORE LAND SETTLEMENT PROJECTSettlement Pattern and Economic Development in Johore Tenggara

1. Village sizes in the proposed project differ from those in earlier land settlement projects in Malaysia--the average size is larger and there is a wider range of sizes. Average village sizes in the three Jengka Triangle projects were 395, 435 and 440 settler families, respectively, versus 590 families in the proposed project (see Table 1). The sizes varied from 325 to 535 families in the Jengka projects--in the proposed project they will vary from 265 to 1,255 families. The larger villages are expected to attract a considerable amount of additional employment and will expand into small towns of up to 10,000 inhabitants.

2. The purpose of this annex is to analyze the reasons why a more concentrated settlement pattern has been chosen for this project. The employment effects of the project will also be discussed.

3. In summary, it was found that the choice of larger settlement sizes is an integral part of the urban development strategy for Johore Tenggara -- a strategy that will help redirect urban growth from a few large national cities to medium-sized towns (see paras 4-12). The choice of larger settlements is consistent with the economic development policies of the Government and will bring long-term benefits not only to the settlers themselves but also to their dependents, who will face a broad range of employment opportunities when the settlements reach maturity (see paras 13-18). Furthermore, higher public service standards can be provided in the project villages than in the traditionally smaller villages (see paras 19-20). No reduction can be expected in per capita infrastructure costs, however (see para 21).

Urban Structure

4. In 1970 about 37% of the population of Peninsula Malaysia lived in villages and towns with a population of 5,000 or more, compared with 31% in 1957. 1/ The corresponding figures for the state of Johore are

1/ The 1970 figure is adjusted for the population living in urbanized areas contiguous with the largest cities but outside of their administrative boundaries (see Urban conurbations - Population and households in ten gazetted towns and their adjoining built-up areas, 1970 population and Housing Census of Malaysia). Without this adjustment the percentage is 34. No adjustment of the 1957 figure has been made but the number of people living in such adjoining urbanized areas in that year was probably relatively small.

22% and 28%, respectively. That is, Johore is less urbanized than Peninsula Malaysia as a whole.

5. A more clear picture of urbanization trends is obtained by looking at the whole spectrum of settlement sizes -- see Table 2. The population living in large settlements with 50,000 persons or more increased much more rapidly than the population as a whole, and so did small settlements with a population of 5 - 20,000. The 1957-70 growth rate of large settlements was more than 100% and that of small ones about 50%, versus an overall growth rate of some 40%. The number of people living in medium sized settlements, 20-50,000 persons, actually declined between 1957 and 1970, by about 25%. 1/ As a result of this trend a larger and larger share of the total population is living in the few big urban centers in Malaysia.

6. Figure 1 further exemplifies this trend towards a concentration of the urban population in large urban centers. 2/ From 1957 to 1970 the distribution curve for Peninsula Malaysia flattened out for intermediate settlement sizes, reflecting their decreasing share of the total population. One also sees that the curve for Johore is relatively flat in the 10-50,000 size range because of the lack of settlements of this size.

7. From the preceding it should not be concluded that rural-urban migrants are moving directly to the largest urban centers. It is more likely that step migration is taking place with the migrants first moving to smaller settlements and then on to larger ones after some time, but the details of this process are still unknown. What is important here is, however, the net effects which have been observed above.

8. There are many public services and economic activities for which a minimum population size is required if they are to be economically viable. The thresholds for many of these activities are in the 15-20,000 population range. Migrants desiring a wide range of public services and economic opportunities therefore tend to gravitate towards centers with a population above this threshold level. As there are very few centers of 15-50,000 persons in Malaysia, the growth pattern discussed above is understandable. Of the 11 states in Peninsula Malaysia 6 had no town of 15-20,000 persons in 1970, 7 had no town of 20-30,000, and 7 had no town of 30-50,000. Looking at the whole 15-50,000 range there were 4 states without a single town.

1/ A similar picture is arrived at by analyzing the growth of individual settlements. Those which had a population of 50,000 or more in 1957 expanded much faster than the population as a whole and those with a population of 5 - 50,000 in 1957 grew much slower.

2/ Distribution curves of the kind shown in Figure 1 have the property of being flatter the larger the total population of the country or region is. They also tend to approach straight lines for large total populations. Sources: Peninsula Malaysia 1957: Pahang Tenggara Regional Master-planning Study, Supporting Volume on Sociology and Migration, p. 10; Peninsula Malaysia and Johore 1970: 1970 Population and Housing Census of Malaysia.

Settlement Sizes in Johore Tenggara

9. The larger settlement sizes in the proposed FELDA project are part of an overall development strategy for Johore Tenggara which aims at creating medium-sized growth centers with such a variety of employment opportunities and with such levels of services that the present migration flows to the larger cities could be reduced. The settlement structure originally proposed in the Johore Tenggara Regional Master Plan consisted of about 40 new centers, compared to the 24 now planned (see Table 3). The merger of many small villages into a few large ones makes it feasible to provide higher service levels than originally contemplated. Furthermore, the unemployment problems which usually arise in settlements after the development period should be alleviated. However, the physical configuration of the agricultural area is such that some settlements will have to be relatively small and scattered, if travel distances to work are to be kept at a reasonable level, and some unemployment and outmigration therefore has to be expected from these villages. It is hoped that such outmigrants will move within the region to the larger settlements rather than out of the region. The provision of a comprehensive set of public services and economic opportunities in the urban hierarchy proposed for the area should make it possible to achieve this goal.

10. The FELDA project settlements will play important roles in the proposed urban hierarchy. The fourth largest of all new settlements is FELDA's Bukit Sening which will have a population of close to 10,000 by 1990. Some 25% of the population and employment in the second largest of the new towns-- Bandar Tenggara (see Map) with a planned total 1990 population of about 17,000 -- will be generated by FELDA's Pengeli Timor/Sungai Sebol settlement. The new town of Bandar Lebam is closely tied to the proposed tourist development along the coast of the South China Sea and is projected to have a population of 44,000 by 1990. Its growth is also dependent on its role as a service center for the many surrounding FELDA settlements.

11. Mission estimates of the 1990 population of all the planned new settlements in Johore Tenggara are shown in Table 3 together with estimates of the population living in the eight FELDA project villages. The total population will be about 166,000 which is about 40,000 less than the estimate presented in the Johore Tenggara Regional Master Plan. The major reason for this reduction in the projected population is the increased size of smallholdings which, with a given land area to be developed, reduces the number of settlers. Also, the projections in the Master Plan appear overly optimistic with respect to the ability of the small settlements proposed there to attract and keep migrants and jobs.

12. The population of existing settlements in the region will also increase substantially between 1970 and 1990, partly due to the land development and its spillover effects. The populations of Kluang and Kota Tinggi -- on the fringes of the development area (see Map) -- are expected to increase from, respectively about 60,000 (including population in immediately adjacent areas) and 8,000 in 1970 to some 180,000 and 20,000

by 1990. Kluang is an important regional trade and service center and a garrison town, which also has a strong base of manufacturing industries. Kota Tinggi is a small market town and administrative center and lies at the junction of the two project sub-regions.

Economic Development and Settlement Size

13. There is a close correlation between urbanization and economic development -- the higher a country's GNP per capita is, the more urbanized it is.^{1/} There is little argument about the correlation but considerable controversy surrounds the question "what causes what?" Does urbanization cause economic development, or vice versa? This is not the place to explore this question in detail, however. Suffice it to say that urbanization should be monitored and controlled, and that urbanization policies should be closely integrated with economic development policies.^{2/} This is what is being done in Malaysia, and its extensive land development cum urbanization program-- of which Johore Tenggara is part-- reflects this. It should be pointed out that Malaysia, considering its per capita income, appears to be under-urbanized.^{3/} Furthermore, the urban population in Peninsula Malaysia is ethnically unbalanced -- only 20-25% of the urban population is Malay whereas they constitute more than 50% of total population. One of the purposes of the proposed project is to bring low-income rural Malays into the high-income urban sector, in accordance with the Government's New Economic Policy.

14. Most high-income economic activities require a minimum local population size-- as a local market and/or as a potential labor force with varied skills-- and a well-developed economy which can provide the many external services required by a specialized firm. The population thresholds at which various economic activities become feasible have been investigated in the Malaysian context,^{4/} and the related employment structure was also determined -- see Figure 2.^{5/} The proportion of the population

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- 1/ See Urbanization: Development Policies and Planning, International Social Development Review - No. 1, Department of Economic and Social Affairs, United Nations, New York, 1968; particularly pp. 21-38.
- 2/ See, e.g., T. Dotson, "Urbanization and National Development in South-east Asia", report reviewing the work done in the 1971-1972 Urban development Panel Seminars of SEADAC (Southeast Asia Development Advisory Group of the Asia Society).
- 3/ Pahang Tenggara Regional Masterplanning Study, Supporting Volume on Economics of Development, pp. 9-11.
- 4/ Pahang Tenggara Regional Masterplanning Study, Working Papers No. 39 and 52.
- 5/ Source: Pahang Tenggara Regional Masterplanning Study, Supporting Volume on Settlements and Infrastructure, p. 23.

employed in the primary sector (principally agriculture and related processing activities) declines rapidly with increasing settlement size. It appears that the structure shown in Figure 2 is fairly stable over time (at least over 15-25 years) and that economic development and nation-wide structural change take place through the growth of settlements and not through a changing structure for each size. Figure 2 has been used to estimate the employment situation in FELDA settlements by 1990.

Employment Situation in FELDA Settlements by 1990

15. The number of FELDA settlers, mill workers and administrators is known for each village and there are also reliable estimates of the number of additional households which will move into each village-- teachers, policemen, shop-keepers, etc. In Table 4 these estimates are presented for three villages with "base" population of 400, 1,250 and 2,500 settler families. Assuming an average family size of 6 persons, a labor force participation ratio of 0.35 and an unemployment rate of about 5%, by 1990, one can then estimate the total number of required jobs -- 1,000, 3,100 and 12,000, respectively. These jobs can then be allocated to the various sectors using (1) the normal employment structure, by settlement size, in Figure 2, and (2) the fact that the number of primary (FELDA) jobs are known.
16. This analysis shows that in smaller settlements the number of primary jobs by 1990 will be much lower than what is normal for settlements of these sizes. For instance, the normal number of primary jobs in a settlement of 3,000 persons (the 400-settler village) is 710 but in 1990 there will be only 445 primary jobs in this settlement. This imbalance decreases with the size of the settlement and disappears at a settlement size of some 1,600 settler families. By attracting additional primary jobs (including manufacturing jobs which are independent of a local market) a balance could be achieved by 1990. In the 400-settler village 265 such jobs would be required, for instance.
17. The reason behind the preceding is mainly that work requirements on the FELDA oil palm schemes decline after the development period, to slightly less than one full-time job per 14-acre holding (including some management work), at the same time as the children of the settlers enter the labor force. Small settlements have an initial population which is too large to be fully employed later on without special measures. The likely result is out-migration from the smaller settlements. These migrants can, however, be absorbed by the economies of other and larger settlements in the project region, because of the well-structured urban hierarchy discussed earlier, and do not have to move to a major city.

Employment Effects of the Project

18. One measure of the local long-term employment effect of the proposed project can be obtained by assuming that each village adjusts to the employment size and structure which is normal for the number of primary jobs it has (i.e., a certain out-migration is assumed after the development period). The resulting local employment multipliers are presented

in Table 5, Column (3). They vary from 1.19 for the smallest village (Lubok Ajal) to 1.75 for the largest (Bukit Sening), averaging 1.43. Estimates of the total employment multiplier for primary jobs in Malaysia range from 2.0 to 2.6. Assuming a value of 2.1 gives a total number of jobs generated of about 10,200. That is, the direct long-term employment effect is about 4,850 jobs, the indirect local employment effect is about 2,100 jobs, and the indirect employment effect outside of the villages is about 3,250 jobs. During the development period the project is estimated to require an average of 6,000 workers.

Service Thresholds

19. The fact that larger villages can support a wider range of services than small villages can, was an important factor contributing to the decision to increase settlement sizes in general in Johore Tenggara, and FELDA settlement sizes in particular. There are many facilities which require a minimum population size if they are to be efficiently utilized, such as secondary schools and certain health equipment and personnel, and which therefore cannot be provided in smaller villages. A settlement size of about 500 settler families is the threshold for some of these facilities and many settlers in the traditionally smaller FELDA settlements have to travel from their home village to centrally located service facilities.

20. Table 6 presents the social services which will be provided in the proposed project. There are basically two service levels with the three smallest settlements having a lower level than the five largest ones. The smaller villages do not have a secondary school and the children will have to travel to nearby larger villages. Furthermore, a community clinic is provided in the smaller villages whereas the larger ones have a health sub-center. The clinic is staffed with one nurse. It has no regular visits by doctors but a mobile dispensary comes every two weeks. The health sub-center is staffed with one nurse and one para-medic and is regularly visited by a doctor.

Infrastructure Costs

21. It has been suggested that a concentration of the settlers in larger villages would substantially reduce per capita infrastructure costs that is, per capita capital and operating costs for water supply, roads, etc. would decline with increasing village sizes. Most of the cost reduction has been assumed to occur in the water supply sector because of economies of scale in treatment plants and transmission lines. An analysis of the cost data for the proposed project reveals that this is not likely to be the case. For instance, water supply costs are relatively low

even with small villages because several of them are usually integrated into one large system with a common treatment facility. Some reduction of costs is likely but no reliable estimates can be made, and the amounts involved will be small.

of Village Sites in the Jember Triangle
and Jember Tenggara FIDIA Projects

| | Group I (1) | Group II (2) | Group III (3) | Jember Tenggara FIDIA (4) |
|--------------------|----------------|-----------------|------------------|------------------------------------|
| 1. Total | 7 | 2 | 2 | 2 |
| 2. Settlers | 2,776 | 3,040 | 3,260 | 11,076 |
| 3. No. of settlers | 395 | 1,520 | 1,630 | 350 |
| 4. Settled with | | | | |
| 5. Settled | | | | |
| 6. Settled | | | | |
| 7. Settled | | | | |
| 8. Settled | | | | |
| 9. Settled | | | | |
| 10. Settled | | | | |
| 11. Settled | | | | |
| 12. Settled | | | | |
| 13. Settled | | | | |
| 14. Settled | | | | |
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| 17. Settled | | | | |
| 18. Settled | | | | |
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| 20. Settled | | | | |
| 21. Settled | | | | |
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| 26. Settled | | | | |
| 27. Settled | | | | |
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| 29. Settled | | | | |
| 30. Settled | | | | |
| 31. Settled | | | | |
| 32. Settled | | | | |
| 33. Settled | | | | |
| 34. Settled | | | | |
| 35. Settled | | | | |
| 36. Settled | | | | |
| 37. Settled | | | | |
| 38. Settled | | | | |
| 39. Settled | | | | |
| 40. Settled | | | | |
| 41. Settled | | | | |
| 42. Settled | | | | |
| 43. Settled | | | | |
| 44. Settled | | | | |
| 45. Settled | | | | |
| 46. Settled | | | | |
| 47. Settled | | | | |
| 48. Settled | | | | |
| 49. Settled | | | | |
| 50. Settled | | | | |

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JOHORE LAND SETTLEMENT PROJECT

Comparison of Village Sizes in the Jengka Triangle
and Johore Tenggara FELDA Projects.

| | Jengka I (1) | Jengka II (2) | Jengka III (3) | Johore Tenggara FELDA (4) |
|---|-----------------|------------------|-------------------|------------------------------------|
| Number of villages | 7 | 7 | 9 | 8 |
| Total number of settlers | 2,770 | 3,040 | 3,960 | 4,400 |
| Average Number of settlers per village | 395 | 435 | 440 | 550 |
| Size distribution - number of villages with: | | | | |
| -199 settlers | - | - | - | - |
| 200-300 settlers | - | - | - | 1 |
| 300-400 settlers | 4 | 2 | - | 2 |
| 400-500 settlers | 3 | 4 | 9 | 1 |
| 500-600 settlers | - | 1 | - | 1 |
| 600-1,000 settlers | - | - | - | 2 |
| 1,000+ settlers | - | - | - | 1 |

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JOHORE LAND SETTLEMENT PROJECT

The 1957 and 1970 Population of Peninsula Malaysia, by
Size of Settlement

| Settlement Size (000) (1) | 1957 Population | | 1970 Population (Adjusted) 1/ | | 1957-70 Growth | |
|------------------------------------|-----------------|------------|----------------------------------|------------|-----------------|-------------------|
| | (000) (2) | % (3) | (000) (4) | % (5) | Adjusted (6) | Unadjusted (7) |
| - 5 | 4,324 | 69 | 5,597 | 63 | 29 | 35 |
| 5- 20 | 478 | 8 | 720 | 8 | 51 | 64 |
| 20- 50 | 422 | 7 | 321 | 4 | -24 | -19 |
| 50-100 | 325 | 5 | 635 | 7 | 95 | 104 |
| 100+ | 734 | 12 | 1,555 | 18 | 112 | 66 |
| TOTAL | 6,279 | 100 | 8,827 | 100 | 41 | 41 |

1/ Adjusted for contiguous urbanized areas (see para. 4). Columns (6) and (7) show that the growth pattern is not substantially changed through this adjustment. The true pattern is probably close to the one indicated in column (6).

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Projected 1990 Size Distribution of New Settlements
in the Johore Tenggara Region.

| Settlement Size (000) (1) | All Settlements | | | FELDA Project Settlements | | |
|------------------------------------|---------------------------------|----------------------------------|------------|---------------------------------|----------------------------------|------------|
| | Number of Settlements (2) | Total Population (000) (3) | % (4) | Number of Settlements (5) | Total Population (000) (6) | % (7) |
| -2.5 | 4 | 8,600 | 5 | 2 | 4,400 | 12 |
| 2.5-5 | 9 | 32,800 | 20 | 3 | 10,200 | 29 |
| 5-10 | 8 | 52,200 | 31 | 3 | 20,800 | 59 |
| 10-15 | 1 | 12,100 | 7 | - | - | - |
| 15-20 | 1 | 16,700 | 10 | - | - | - |
| 20+ | 1 | 43,800 | 26 | - | - | - |
| TOTAL | 24 | 166,200 | 100 | 8 | 35,400 | 100 |

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JOHORE LAND SETTLEMENT PROJECT

Estimates of Population and Employment in FELDA Settlements, 1990

| | 400-Settler Village | | 1250-Settler Village | | 2500-Settler Village | |
|---|---------------------|----------|----------------------|----------|----------------------|----------|
| | Number (1) | % (2) | Number (3) | % (4) | Number (5) | % (6) |
| 1. FELDA settler households | 400 | 80 | 1,250 | 80 | 2,500 | 42 |
| 2. FELDA administrator households | 30 | 6 | 95 | 6 | 190 | 3 |
| 3. FELDA mill worker households | 15 | 3 | 45 | 3 | 90 | 1 |
| 4. Other households | 55 | 11 | 170 | 11 | 3,220 | 54 |
| 5. Total households | 500 | 100 | 1,560 | 100 | 6,000 | 100 |
| 6. Average household size (persons) | 6 | | 6 | | 6 | |
| 7. Total population | 3,000 | | 9,360 | | 36,000 | |
| 8. Labor force participation ratio | 0.35 | | 0.35 | | 0.35 | |
| 9. Labor force | 1,050 | | 3,275 | | 12,600 | |
| 10. Total number of jobs | 1,000 | 100 | 3,110 | 100 | 11,970 | 100 |
| 11. FELDA (primary) jobs | 445 | 45 | 1,390 | 45 | 2,780 | 23 |
| 12. Additional primary/manufacturing jobs | 265 | 26 | 155 | 5 | 0 | 0 |
| 13. Manufacturing | 20 | 2 | 125 | 4 | 960 | 8 |
| 14. Commerce | 60 | 6 | 405 | 13 | 2,505 | 21 |
| 15. Services | 110 | 11 | 690 | 22 | 4,180 | 35 |
| 16. Others | 100 | 10 | 345 | 11 | 1,545 | 13 |

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JOHORE LAND SETTLEMENT PROJECT

Estimates of Long-term Employment Multiplier Effects

| Village | Number of Project Jobs by 1990 | Local Employment Multiplier | Total Number of jobs generated locally (2) * (3) (4) | Number of jobs generated outside of the village (6) - (4) (5) | Total Number of jobs generated 2.1 * (2) (6) |
|----------------|--------------------------------|-----------------------------|--|---|--|
| (1) | (2) | (3) | (4) | (5) | (6) |
| Semenchu | 400 | 1.21 | 485 | 355 | 840 |
| Papan Timor | 430 | 1.23 | 530 | 375 | 905 |
| Punggeli Timor | 565 | 1.30 | 735 | 450 | 1,185 |
| Bukit Wah Ha | 860 | 1.47 | 1,265 | 540 | 1,805 |
| Kahang Timor | 550 | 1.29 | 710 | 445 | 1,155 |
| Kahang Barat | 295 | 1.15 | 340 | 280 | 620 |
| Bukit Sening | 1,400 | 1.75 | 2,450 | 490 | 2,940 |
| Bukit Ajal | <u>355</u> | <u>1.19</u> | <u>420</u> | <u>325</u> | <u>745</u> |
| TOTAL | 4,855 | 1.43 | 6,935 | 3,260 | 10,195 |

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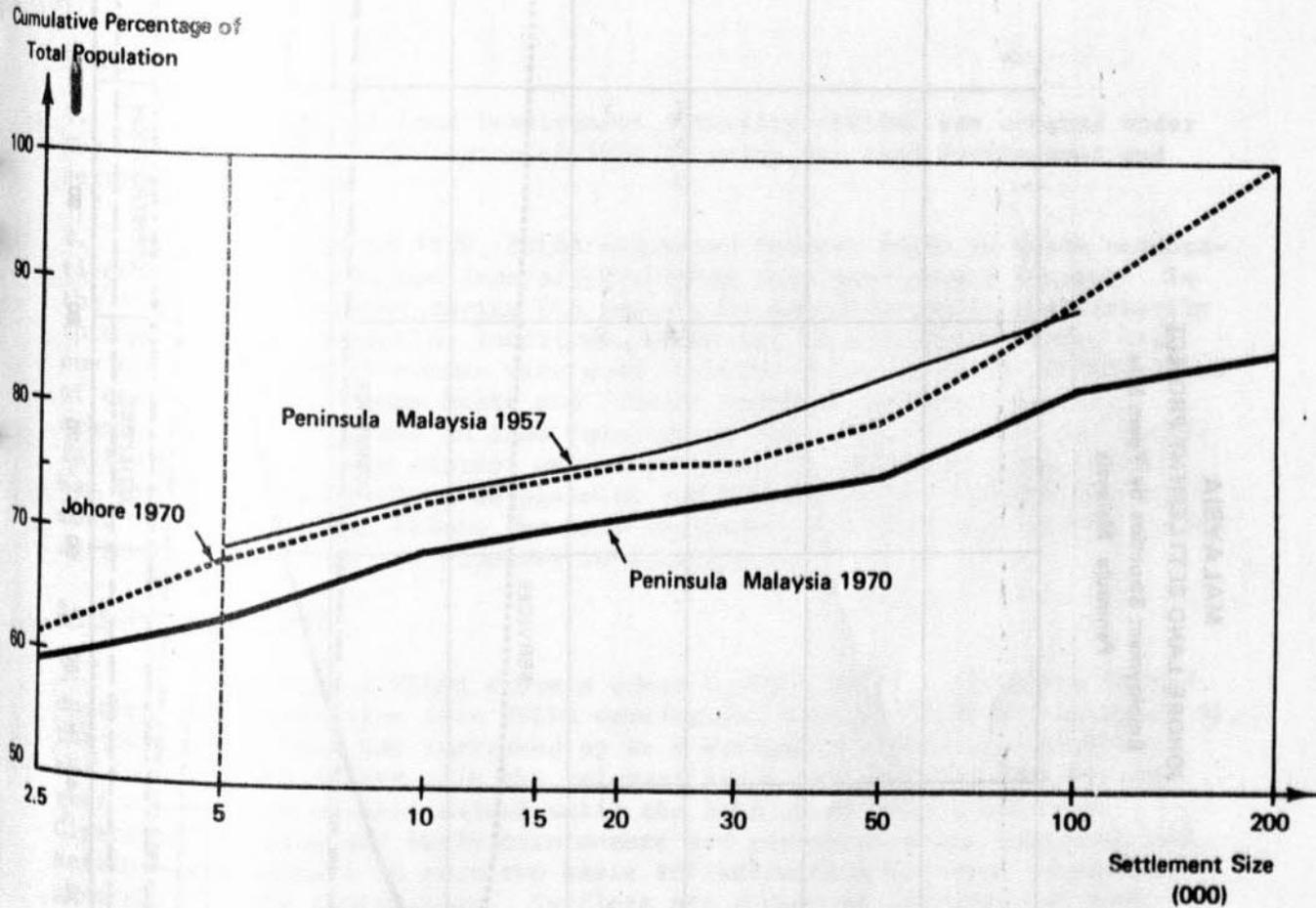
JOHORE LAND SETTLEMENT PROJECT

Social Service Facilities Provided in the
 Project Settlements

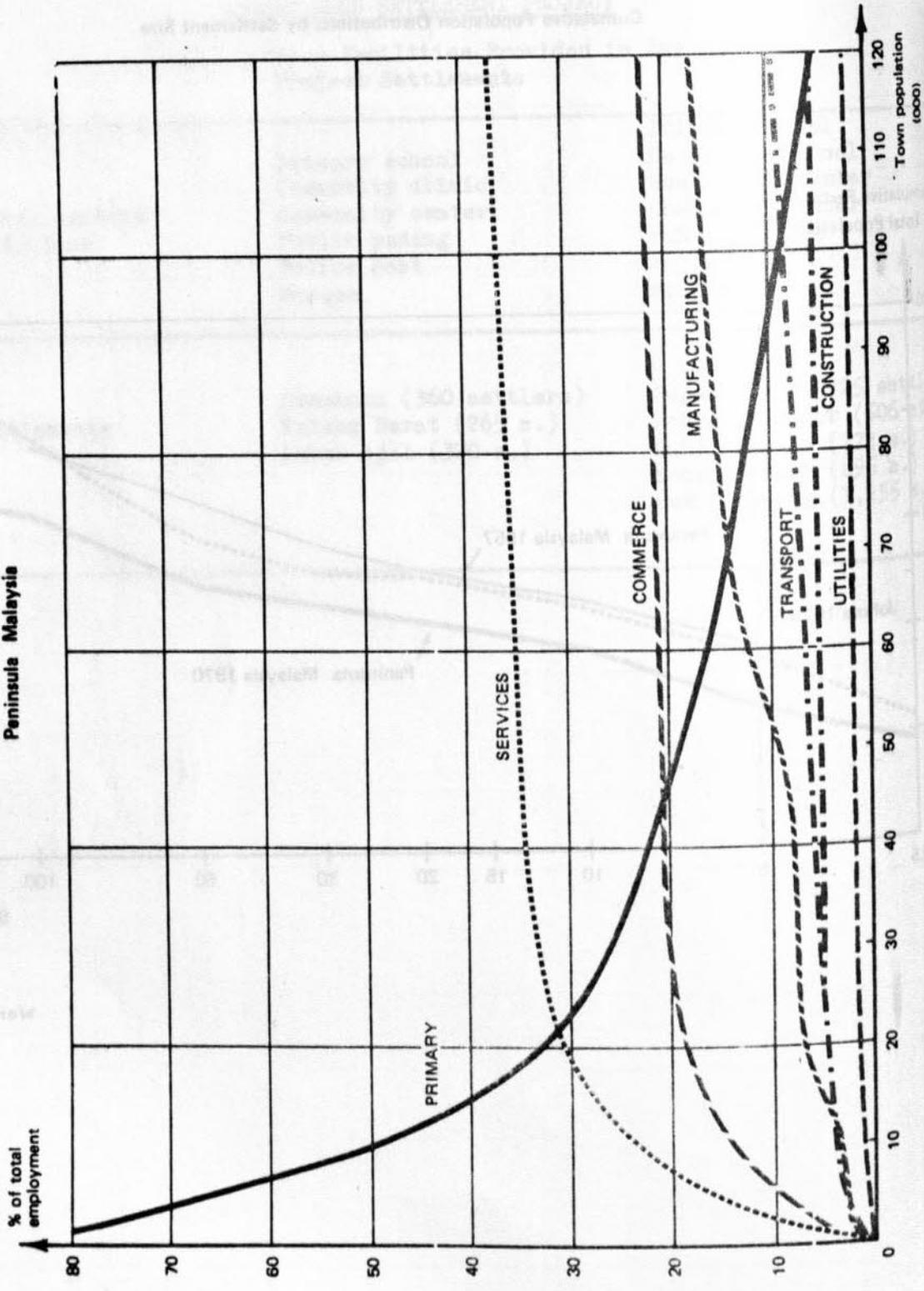
| | | |
|------------------------------|--|--|
| Social Service Facilities | Primary school Community clinic Community center Public padang Police post Mosque | Primary school Secondary school Health sub-center Community center Public padang Police post Mosque |
| Settlements | Semenchu (360 settlers) Kahang Barat (265 s.) Lubok Ajal (320 s.) | Papan Timor (725 settlers) Penggeli Timor (506 s.) Bukit wah Ha (772 s.) Kahang Timor (495 s.) Bukit Sening (1,255 s.) |

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JOHORE LAND SETTLEMENT PROJECT

Cumulative Population Distributions by Settlement Size



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JOHORE LAND SETTLEMENT PROJECT
 Employment Structure by Town Size
 Peninsular Malaysia



MALAYSIAJOHORE LAND SETTLEMENT PROJECTThe Federal Land Development AuthorityBackground

1. The Federal Land Development Authority (FELDA) was created under the Land Development Ordinance of 1956 to carry out land development and settlement projects.
2. From 1957 to 1960, FELDA allocated Federal funds to State corporations and Land boards for federally approved land development schemes. In the 15 schemes operated during the period, it exercised influence primarily through its loan approving functions. However, it also experimented with one direct management scheme with good results. Because of the difficulties of coordinating the many State and Federal agencies involved in other schemes overall progress on land development was slow. In 1960, new legislation gave FELDA more control over land ownership and since then, FELDA has been directly involved in planning and administration of land development schemes. It has become the most important institutional instrument for agriculture and rural development in Malaysia.

Settlement Schemes

3. Traditional FELDA schemes cover 4,000-5,000 ac. With the introduction of urbanization into FELDA development schemes in 1972 (see Annex 5), the size per scheme has increased up to a maximum of 7,000 ac. Rights to the land are negotiated with the relevant state government. Premium and rent charges are usually waived until the land comes into production. Clearing, planting and early maintenance are performed under contract, and settlers are brought in once the basic infrastructure has been completed, generally in the fourth year. Settlers are chosen on the basis of such criteria as age, experience, physical health, marital status and amount of land previously owned (see Annex 10). They are employed on their own holding or in other jobs and are guaranteed a minimum subsistence allowance. This and other development costs are charged to the settler's loan account. Repayment begins about two years after the crop comes into production when income, net of repayment of loan, is about M\$ 125/month. Repayment is deducted from the value of produce, which must be sold through the Authority. The total loan which the settler must repay, including interest at 6-1/4% for a 14 ac oil palm holding, is about M\$ 19,500. The cost of settlement per family, excluding social costs (roads, water supply and public buildings) would be US\$14,100, net of contingencies. Including social cost it would amount to US\$16,330.

4. The FELDA planting target for the Second Malaysia Plan (SMP) was initially set at 275,000 ac (55,000 ac/year). While there has been a delay in the first year, planting has accelerated and it is expected that about 125,000 ac more than originally targeted will be planted by the end of the Plan. In 1975, on termination of the SMP, FELDA clearing and planting operations for rubber and oil palm are projected to be reduced to about 50,000-60,000 ac yearly while other organizations like RISDA are expected to carry a heavier load of land development.

5. Output of FELDA palm oil, which was comparatively small during the 1960's when most of the planted area was still immature, is expected to increase by about 24% yearly from 1971 to 1985. Of the total Malaysian supply of palm oil in 1985, FELDA output is expected to account for about one-third. Past achievements and expected future developments of FELDA's oil palm and rubber development are indicated in the table in this Annex.

6. By the end of 1973, FELDA had 11 palm oil mills with a total capacity of 344 tons ffb/hour in operation. Sixteen additional oil palm mills with a total capacity of 693 tons ffb/hour are to be constructed during the remainder of the decade. Their capacity, together with an extension in capacity of the existing mills, will raise total FELDA oil mill capacity to about 1,100 tons ffb/hour by 1980/81. For the export of palm oil in bulk, FELDA is constructing or expanding facilities at Port Klang, Tanjong Gelang (Kuantan) and Pasir Gudang. Total capacity of these installations is expected to be 75,000 tons by 1976. At the end of 1973, three rubber factories with a total capacity of 90 tons/day were in operation. Capacity expansion is not envisaged since Government decided that rubber processing of non-private rubber development should be the responsibility of the Malaysian Rubber Development Corporation (MRDC).

7. The expansion of physical plant and land development was accompanied by an expansion of public amenities. The following table shows the achievements until the end of 1972:

| | |
|-----------------------------|-----|
| Access road (mi) | 337 |
| Village roads (mi) | 550 |
| Water supply to villages | 77 |
| Schools (primary/secondary) | 73 |
| Clinics | 68 |
| Community centers | 76 |
| Public playgrounds | 29 |
| Public telephones | 46 |
| Postal agencies | 60 |
| Police posts | 38 |

8. Despite these achievements, FELDA's progress has not been entirely satisfactory. This is particularly noticeable in delays in settler intake. These were partly caused by delays in preparatory work, such as the provision of roads and housing, which resulted from contract delays rising out of:
(a) the employment of less experienced contractors in an attempt to achieve a more balanced ethnic distribution of contracts (most of the contractors

are Chinese); (b) difficulties in obtaining timber supplies for house construction; and (c) contractors finding it difficult to recruit skilled workers in the more remote locations into which FELDA has moved to an increasing degree. Part of the delay was also due to unrealistic planning, assuming that settlers would move on to schemes about one year after planting. Experience has shown that this is not possible with such a large infrastructure program and the target time has now been extended to 18 months.

9. In the past, there have also been problems on social aspects of the schemes because there was little involvement of settlers in scheme administration and there was a lack of alternative employment opportunities. A Settler Development Division which was formed in 1972 is improving the social situation and FELDA management is setting aside land on schemes to be managed on an estate basis to supply additional employment opportunities. The increased size of villages (see Annex 5) should also provide alternative, non-agricultural employment opportunities.

Organization and Management of FELDA Headquarters

10. FELDA operates as a quasi-autonomous government agency under the Ministry of National and Rural Development. It is given wide autonomy for day to day administration. Operating policy is set and overall supervision handled by a Board consisting of 12 members, which includes representatives of the public and private sectors. The Director General, FELDA's chief executive, is a member of the Board. He has been in this post since 1965 and is a career civil servant.

11. FELDA's organization has been modified over the last two years to adjust to its expanding responsibilities. One of the major objectives is decentralization. The present structure, which was introduced in July 1973, is shown in the chart. This structure is a modification of the recommendations of a reorganization study conducted by a consulting firm, Public Administrative Service (PAS) of Chicago. That study proposed to install only one Deputy Director-General, namely for field administration. However, after one year of operation under the originally proposed structure, it turned out that the supervisory function left to the Director-General, which included everything except those areas of responsibilities left to field administration (as indicated in the chart), was too heavy. Consequently, and rightly in the mission's opinion, another Deputy Director General post for technical services was established to ease the workload on the Director General.

12. The main features of the organization and management structure are:

- (a) the Director General of FELDA is the main executive officer rather than as in the past the Chairman of the Board. He is accountable to the Chairman of the Board regarding matters of administrative management and to the Board for the overall conduct of FELDA affairs. His main functions include planning and supervising departmental operations, directing the preparation of long range plans and maintaining liaison with

external agencies and the general public. The directors for finance, marketing, management services, and research report directly to him;

- (b) the Deputy Director-General for Field Administration has the responsibility of supervising and coordinating all agricultural and social services at headquarters and the area controllers' offices in the field;
- (c) the Deputy Director-General for Technical Services has the responsibility of supervising and coordinating activities of the Budget and Planning, and Projects, and the Processing Departments;
- (d) the Budget and Planning Department analyzes and approves budget proposals submitted by the area controllers through the Field Administration Department and formulates future policies and plans. It schedules and conducts budget hearings and develops and administers internal operating and control procedures;
- (e) the Processing Department manages directly all industrial plant and equipment while the Project Department does the same for all agricultural plant and equipment;
- (f) the Finance Department has authority over the accounts, treasury, systems and pre-audit division. It plans, organizes and directs the activities of these divisions. One of its major functions is the collection and analysis of fiscal, budget and cost control reports;
- (g) the Management Services Department is responsible for staffing and training, and general services and coordinates procurement with engineering; and
- (h) the Marketing Department is responsible for the marketing of rubber, palm oil and kernels, and auxiliary products. It performs promotional services and hedging actions to cover market fluctuation risks, provides advice on quality control and carries out a wide range of market analyses.

13. In 1972, a new FELDA subsidiary, the FELDA Stores Corporation (FSC) was established and took over the retailing activities handled previously by the FELDA Shops Division. Fifty-one percent of the equity in FSC is retained by FELDA and the balance is for issue to settler cooperatives. The FSC is administered by a Board under a separate constitution and employees are directly employed by the FSC. The Director-General of FELDA is the Chairman of the FSC. For early 1974, it is planned to form a FELDA Marketing Corporation along the lines established for the FSC. The advantage of such an organization, which would have private company status, would be that it would not be accountable to Government agencies

and thereby guarantee a certain confidentiality in customer-seller relationships which is necessary in marketing. Further, salaries of the Corporation would not be subject to Government salary scales which would enable the Corporation to pay salaries competitive with private industry. Assurances will be sought during negotiations that the Bank will be afforded an adequate opportunity to comment on the by-laws of the FELDA Marketing Corporation before it is established.

Staffing and Training

14. At the end of 1972, FELDA had a staff of 3,223 allocated as follows:

| | |
|--|--------------|
| Executive, administrative and professional | 423 |
| Supervisory, clerical, fiscal and stores | 714 |
| Field operations and research | 1,523 |
| Mill operation and maintenance | 421 |
| Custodial, building, maintenance and labor | 142 |
| | <u>3,223</u> |

This staff (excluding labor) is quite young, the average age being 33 with 90% of staff members under 40. Required expansion of the staff is supported by a vigorous training program. FELDA will need about 120 area and scheme managers and assistant managers by 1975. It is now recruiting yearly about 30 graduates of the Serdang School of Agriculture, who receive one year of training as assistant scheme managers before becoming scheme managers.

15. A separate training division is responsible for training of FELDA staff and settlers. The formal staff training is carried out at five training schools and two centers where a one-year introductory course in field practices and general administration is given to trainee field assistants. In addition, in-service training courses are run at the two centers.

16. The 1972 intake amounted to 380 trainees, which is the largest annual intake to date. After allowing for a drop out rate of 5%, the out-turn in 1973 should be sufficient to meet the demand for field assistants on the 100,000 ac of new land development scheduled for this year, at the rate of one field assistant to each 500 ac, and also provide replacements to fill vacancies on existing schemes caused by resignations, promotions, and staff retirements. The out-turn is likely to remain at this level at least for the next year or two. The course includes four months' theoretical instruction in both rubber and oil palm, followed by a one-month settler development and scheme administration period of classroom instruction, and finishes with three months of practical instruction on a neighboring FELDA scheme.

17. Each school has a permanent staff of two and each center has three agricultural diploma holders, while instructional support is given by FELDA regional offices and scheme staff.

18. In-service staff training courses are usually between two or three days and two weeks in duration, and cover a variety of specialized subjects such as oil palm nursery operation or are designed as refresher courses intended to acquaint the staff with new techniques.

19. Settler training is given on the schemes and commences as on-the-job instruction imparted by the scheme management staff from the moment the settlers take over the maintenance of the crop from the planting contractors. Settlers on rubber schemes are also given an intensive six month course on tapping a few months before their lots are ready for opening. The course, which is attended by every settler, includes lectures and demonstrations presented with the aid of Rubber Research Institute extension service staff, and practical experience gained on the tree in an area of land designated as a training area.

20. In the case of oil palm schemes, where 20 settlers working as a group under an elected leader are jointly responsible for the harvesting of their fruits, the block leaders are given a one week course in the operation of the system one month before the system is introduced at the start of the fourth year in harvest. Prior to this, the settlers and their dependants carry out their maintenance and harvesting tasks under the direct supervision of the FELDA field staff, during which time particular attention is given to explaining the how and why of the several specialized tasks - weeding, polinating, pruning, manuring, and harvesting especially - all of which are so important to the optimum growth and yield of the palms.

Finances

21. The main sources of finance for FELDA are: Federal Government budget allocations; IBRD loans for the three Jengka projects (US\$52 million) and an Asian Development Bank loan of US\$8.4 million for the construction of two palm oil mills.

22. Government budget allocations are made annually to FELDA:

- (a) as loans for relending to settlers to cover the cost of agricultural development, housing, house lots and settler subsistence, bearing nominal interest of 5-1/2% with repayment periods of 25 years including a grace period of ten years on principal repayments. During this grace period, no interest is charged during the first five years and only simple interest of 5-1/2% during the remaining five years. These procedures reduce the nominal rate of 5-1/2% to a weighted average rate of interest of 3.8%. The total of Government loans received by the end of 1972 was M\$ 376.3 million, of which M\$ 75 million was received in 1972. Loan repayments by the end of 1972 amounted to M\$ 4.6 million, of which M\$ 2.3 million was interest; and
- (b) as grants for FELDA's administrative expenses, which are budgeted at M\$ 25 million in 1972. A total of M\$ 136.9 million has been received so far.

23. Up to the present, FELDA has never experienced budgetary constraints, and as far as can be seen, this situation should prevail in the future given Government's priority to land settlement schemes and its favorable budgetary position.

24. Recently, FELDA submitted to Government a plan to reduce loan repayments made by its rubber smallholders. This proposal has been made in view of rubber price declines on the world market during the 1960's, which have made it more difficult or impossible for many smallholders to repay their loans in full. The proposed basis for repayment is a fixed amount per acre per year which would increase with the size of the holding and a reduction in the interest for settlers' loans from 6-1/4% to 4%. This system would permit net annual family incomes of M\$ 125 a month, assuming a cif first quality rubber price of M\$ 0.44/lb. However, with the revaluation of the Malaysian dollar and no corresponding increase in rubber price projections, the long-term rubber price is more likely to be M\$ 0.40/lb. This would not make the M\$ 125/month income target feasible. The situation is presently being reviewed by Government and FELDA.

25. Agricultural development costs such as land clearing, planting and initial upkeep as well as housing and office construction costs are fairly well standardized. Cost for this item, have been increasing, but not as much as the costs of road construction, village site preparation, water supply and most importantly, general administration. No exact figures can be given until the new data collection and accounting systems are installed and have been in operation for at least six months, i.e., by early 1974.

Accounts and Audit

26. FELDA's accounts are of two main types: grant and loan, corresponding to the two types of financing it receives from Government (para 21). Up to now administrative accounts have been consolidated for the whole of FELDA, but in future accounts will be kept at both individual scheme and headquarter levels. The loan account is a consolidation of all costs charged to schemes. Separate accounts are kept for each scheme.

27. FELDA's accounting organization and procedures failed to keep pace with its rapid expansion and diversification, and for this reason FELDA appointed the firm of Public Administrative Services (PAS) of Chicago to carry out a study of its general and financial administration. Based on PAS's recommendations, and those of the UNDP-recruited temporary financial director, the Finance Department has been reorganized.

28. Within the Finance Department, and under the new arrangement, the Treasurer will be responsible for keeping a strict cash control, register cash movements, and forecast cash inflows and outflows based on operations and on recommended short-term cash investments. The Treasurer began making four-month cash flow projections in September 1972.

29. The Systems Division within the Finance Department has responsibility for field accounting; introducing accounting procedures adapted to computers; and training staff in accounting and bookkeeping.
30. The Operations Division within the Finance Department pre-audits and controls accounts. It has begun data processing programming and is revising its financial management system. It is responsible for financial planning and for originating financial policy recommendations to the Director General.
31. The main problems of the Finance Department are:
- (a) inadequate staff - a more vigorous recruitment and training effort has to be made, especially of accountants and systems analysts, and of area controllers and managers, to permit further decentralization of account processing;
 - (b) new accounting systems have to be devised for new operations, such as the recently started sugar cane complex; and
 - (c) inventory control requires additional training of staff at lower levels.
32. The computerized financial control system, as designed by PAS, is now being implemented. Operations of the payroll and settler accounts are successful, but the final results of the computer analysis of the 1972 financial statements, including those for the Jengka projects, which were scheduled to be finalized by June 1973, will be delayed by four to five months. The major reasons for this delay are difficulties in balancing 1972 accounts and the considerable "debugging" operations which were experienced. The experiences gained so far indicate that the new system will be of great value in streamlining FELDA financial operations. In particular, it will force all departments not only to provide more accurate data collection and compilation, but it demands a high degree of coordination among the various departments involved in the financial reporting system, a coordination which has been missing in the past. However, although there is every indication that the introduction of the new system is going to be successful, the final proof will not be obtained until the 1972 financial statements are out, i.e., in October/November of 1973. It will take about another month before the accounts are audited. If the system fails, FELDA's financial organization will be in severe trouble, since the previous manual system has been discontinued and cannot be reinstated at short notice. Because of this, it will be prudent to insist on audited 1972 accounts for the Jengka projects, and this would be made a condition of effectiveness.

Size of Settler Holding

33. In the 17 years since FELDA became operational, the house lot has remained at a quarter acre, but there has been a progressive increase in the size of the agricultural plot allocated to settlers. On the earliest schemes these plots, 6 ac in extent, were all planted to rubber, while an additional

2 ac plot, intended for dusun (orchard) development was set aside in a separate part of these early schemes. Eventually, the dusun lots were planted to rubber, thus raising the area of commercial crop per settler to 8 ac. In the mid-sixties, this figure was further raised to 10 ac, as in the case of the Jengka Triangle Projects.

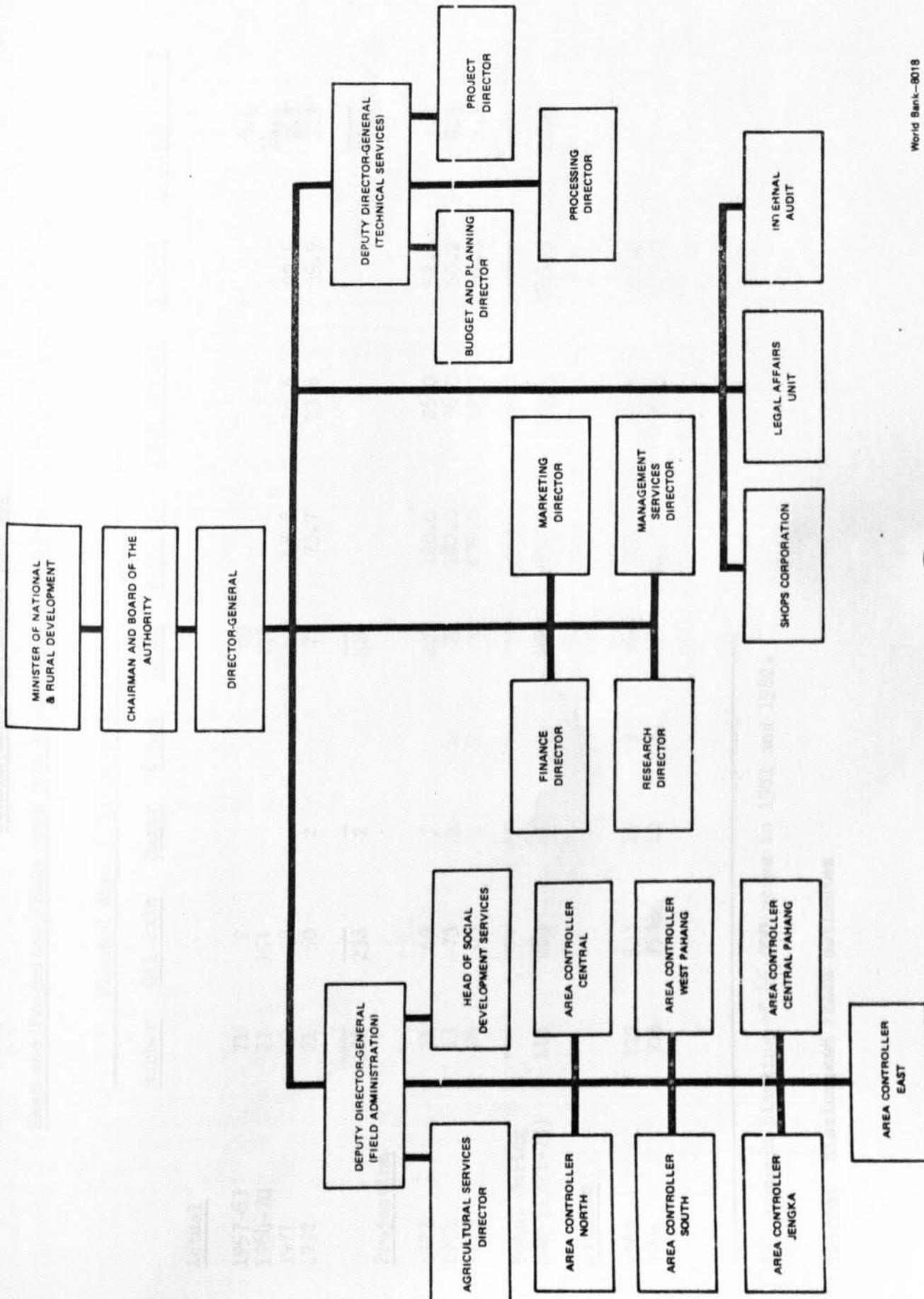
34. The first oil palm schemes, started in the early sixties, began with 8 ac and were later increased to 10 ac by the planting of the dusun reserves to oil palm, analogous to the early rubber schemes. Subsequently, 10 ac unit holdings were allocated to oil palm settlers, including those in the Jengka Triangle Projects.

35. More recently, after reviewing the income and employment status of FELDA settlers, the Government of Malaysia has increased the land allocations for settlers on all new schemes to 12 and 14 ac for rubber and oil palm holdings respectively. This further increase, which aims to provide a fuller measure of employment for the settler and his family and to increase his income after repayment to a level commensurate with that in the urban sector, is in compliance with the NEP, which aims at reducing the income disparity between rural and urban occupations.

36. At a projected rubber price in constant 1972/73 terms of a 12 ac FELDA rubber holding would ensure an average yearly net income during the loan repayment period of about M\$ 1,500 net of loan repayments and M\$ 3,800 for the remaining 10 years of project life after loan repayment. The holding will provide two full-time jobs for the settler and his family at maturity. Such an income level will constitute an improvement on the 10 ac holdings allocated to settlers on FELDA schemes established in the past, but even at this improved level, it will be below the income levels attained by other smallholders with two fully employed members.

37. Oil palm settlers with 14 ac holdings will earn net average yearly incomes of M\$ 3,200 net of loan repayments during the loan repayment period and M\$ 3,800 during the remaining seven years of project life after loan repayments. Employment needs of the family are, however, not so well satisfied in spite of the larger holding and the provision of alternate employment opportunities will continue to be a more pressing problem on FELDA oil palm schemes as the younger members of the settler families reach working age.

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JOHORE LAND SETTLEMENT PROJECT
FELDA ORGANIZATION CHART



JOHORE LAND SETTLEMENT PROJECT

Past and Projected FELDA Area and Production of Rubber, Oil Palm, Sugar and Cocoa

| Actual | Planted Area ('000 acres) | | | | Production ('000 m tons) | | | Families Settled ('000) |
|---------------------------------------|---------------------------|-------------------|-----------|----------|--------------------------|--------------|--------------|-------------------------|
| | Rubber | Oil Palm | Sugar | Cocoa | Total | Palm Oil | Palm Kernel | |
| 1957-63 | 71 | 9 | | | 80 | | | 6.4 |
| 1964-70 | 77 | 151 | | | 228 | | | 14.4 |
| 1971 | 19 | 28 | | | 47 | 48.8 | 10.6 | 2.3 |
| 1972 | 21 | 50 | 2 | | 73 | 73.7 | 13.8 | 2.9 |
| | <u>188</u> | <u>238</u> | <u>2</u> | | <u>428</u> | | | <u>26.0</u> |
| <u>Projection</u> | | | | | | | | |
| 1973 | 31 | 69 | 3 | | 103 | 120.0 | 26.0 | 3.8 |
| 1974 | 13 | 73 | 4 | 1 | 91 | 180.0 | 36.0 | 5.3 |
| 1975 | 26 | 63 | 1 | 2 | 94 | 235.0 | 47.0 | 5.7 |
| <u>Total during S&P (1971-75)</u> | <u>110</u> | <u>283</u> | <u>10</u> | <u>3</u> | <u>408</u> | <u>657.0</u> | <u>133.4</u> | <u>245.3</u> |
| <u>Matured</u> | | | | | | | | |
| 1980 | 219 | 533 | 10 | 3 | 766 | 691.0 | 136.0 | 107.0 |
| 1985 | 303 | 758 ^{1/} | 10 | 3 | 1,075 | 1,017.0 | 196.0 | 172.0 |

^{1/} Assumes planting of 45,000 acres in 1981 and 1982.

Source: Mission and FELDA estimates

MALAYSIAJOHORE LAND SETTLEMENT PROJECTThe Johore Tenggara Regional Master Plan

1. During the course of the First Malaysia Plan (1966-1970) the Government of Malaysia undertook a comprehensive analysis of the natural resources and land use situation in Peninsula Malaysia, as an aid to planning for the optimum usage of these resources over the medium- and long-term. Several large areas of undeveloped land with considerable potentials for development were identified in various parts of the country including the Johore Tenggara Region situated in the southeastern corner of the Peninsula Malaysia.
2. This region, with extensive areas of good soil was found to have an especially promising potential for agricultural development, together with considerable commercial forestry opportunities. Other areas were considered worthy of preservation in their natural state, either as wildlife and nature preservation - cum-recreation reserves, in which case they would also serve a vital watershed conservation role; or, as in the case of a stretch of scenically attractive coastline fringed with good beaches and clear water, for carefully controlled development as a major tourist resort. Some possibilities for mining, mainly of tin and aluminum ores, were also identified.
3. The overall quality of these resources combined with the close proximity of the region to the main developed areas of south and south-western Johore, with their well developed access and other infrastructures, caused the Government of Malaysia to declare the region a high priority area for development commencing in the Second Malaysia Plan.
4. A consortium of British planning consultants, led by Hunting Technical Services, was accordingly commissioned to survey and study the area in greater depth and to draw up a plan for progressive development of the region. The resultant master plan was completed in 1971, after two years study which included soil and terrain surveys and forest inventories, and intensive hydrological, ecological and geological studies of a number of carefully selected sites. The physical resource studies were complemented by a sociological study which included field surveys of Malay farmers, who were expected to comprise the greater portion of the new settlement population.
5. The above information, together with economic data mainly from official sources, provided the background against which the economic and social development master plan was prepared and is now being implemented. Provision is made for: (a) the clearing of 281,000 acres of forest and the development of 250,000 (net) acres of oil palm, rubber and other

agricultural crops, including 5,000 acres dairy and beef industry schemes, giving employment to about 14,000 families; (b) the establishment of an integrated logging and timber processing complex based on 92,000 acres of rain forest being cleared at an annual rate of 6,000 acres per year between 1974 and 1989; (c) the creation of a tourist complex in an area of scenically attractive coastline which may be handling 50,000 overnight visitors at full development and offering direct employment to 20,000 persons; (d) the conservation under forest of all land with an average slope greater than 20° and other land with soils unsuitable for agriculture, together with reservoir catchments needed to ensure regularity of water supplies, and the establishment of several strict nature reserves for preservation of distinct biological communities of special scientific or aesthetic interest.

6. Between 20 and 30 new villages, two new towns, one of which will be the new tourism center, and expansion schemes for the existing towns of Kluang and Kota Tinggi are included in the master plan. They are sufficient to accommodate over 400,000 people by 1990, and are served by a new regional road system.

7. A Johore Tenggara Development Authority (Lembaga Kemajuan Johore Tenggara, or LKJT) which is a joint State and Central Government statutory body, has been created to control and coordinate the development activities.

8. Feasibility studies of the integrated logging and timber processing project and the dairy farm project mentioned below, together with a package program for development of about 75,000 acres for FELDA development during the Second Malaysia Plan, were included in the master plan documents. The document covering this last project constituted the preparation report for the present appraisal.

9. Progress in implementing the master plan is satisfactory, including the phased development of the primary road access into the main area of FELDA development, any delay in construction of which could seriously interfere with, or even delay, the successful completion of the FELDA land development and settlement program.

10. The overall master plan is expected to give a rate of return to the economy of 17%. It will have favorable effects on employment, income distribution and economic growth. Total public sector development expenditure for agricultural development, roads and bridges, water supplies, posts and telecommunications, schools, health and other social services during the 20-year period from 1971-90 will be about M\$ 640 million.

11. In addition to the FELDA project, developments scheduled under the SMP in the master plan region include:

- (a) a 13,400 acre smallholder oil palm land development program, which is being undertaken by the SEDC at four sites;

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- (b) a 3,300 acre site which is being subdivided for allocation to private concerns operating on a joint venture basis and developing a variety of diversification crop projects including a franchise poultry operation and an orchid farm, and possibly also cocoa, tapioca, ginger, soya bean, and eel pond enterprises;
- (c) a 4,300 acre Malaysian Agricultural Research and Development Institute (MARDI) research station, of which 1,700 acres will be opened up during the SMP (see Annex 1);
- (d) a 5,400 acre dairy industry scheme which will be run by the National Livestock Authority (USAHAIWAN). Only 2,500 acres are scheduled for development in the SMP;
- (e) a 5,500 acres beef cattle industry project which is likely to be a joint venture project between the authority and a foreign group with expertise in this field;
- (f) the 92,000 acre joint venture integrated timber industry project, involving the SEDC and a foreign group, referred to above;
- (g) a first phase development of the tourism project, which will include the opening of day visitor facilities in 1974 and the construction of a hotel which is likely to be operated on a joint venture basis between the authority and a private sector, for which negotiations are currently underway; and
- (h) a wide range of infrastructural construction projects including completion of the Penggarang Highway in 1974, and a M\$ 0.5 million bridge over the Sungai Sayong which will provide access to the new town of Bandar Tenggara.

October 8, 1973

✓ To be reviewed estate with express seller's intent.

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JOHORE LAND SETTLEMENT PROJECT

Distribution of Oil Palm Settlers and Land by Villages and Schemes

| Village | Scheme | Number of Families and Settler Houses | Planted Land | | |
|----------------|----------------|--|-------------------|---------------------|---------------|
| | | | Allocated | Unallocated | Total |
| | | | ----- acres ----- | | |
| Semenchu | Semenchu | <u>360</u> | <u>5,040</u> | <u>568</u> | <u>5,608</u> |
| Papan Timor | Papan Timor | 0 | 0 | 1,482 ^{1/} | 1,482 |
| | Sungai Mas | <u>385</u> | <u>5,391</u> | <u>0</u> | <u>5,391</u> |
| | | <u>385</u> | <u>5,391</u> | <u>1,482</u> | <u>6,873</u> |
| Penggeli Timor | Penggeli Timor | 292 | 4,088 | 464 | 4,552 |
| | Sungai Sebol | <u>214</u> | <u>2,996</u> | <u>339</u> | <u>3,335</u> |
| | | <u>506</u> | <u>7,084</u> | <u>803</u> | <u>7,887</u> |
| Bukit Wah Ha | Bukit Wah Ha | 213 | 2,982 | 18 | 3,000 |
| | Simpang Wah Ha | 248 | 3,472 | 0 | 3,472 |
| | Bukit Easter | <u>311</u> | <u>4,354</u> | <u>8</u> | <u>4,362</u> |
| | | <u>772</u> | <u>10,808</u> | <u>26</u> | <u>10,834</u> |
| Kahang Timor | Kahang Timor | 245 | 3,430 | 136 | 3,566 |
| | Ulu Dengar | 250 | 3,500 | 0 | 3,500 |
| | | <u>495</u> | <u>6,930</u> | <u>136</u> | <u>7,066</u> |
| Kahang Barat | Kahang Barat | <u>265</u> | <u>3,710</u> | <u>404</u> | <u>4,114</u> |
| Bukit Sening | Bukit Adela | 229 | 3,206 | 351 | 3,557 |
| | Bukit Sening | 395 | 5,530 | 11 | 5,541 |
| | Bukit Tungal | 299 | 4,186 | 4 | 4,190 |
| | Bukit Kledang | <u>332</u> | <u>4,648</u> | <u>4</u> | <u>4,652</u> |
| | | <u>1,255</u> | <u>17,570</u> | <u>370</u> | <u>17,940</u> |
| Lubok Ajal | Lubok Ajal | <u>320</u> | <u>4,480</u> | <u>9</u> | <u>4,489</u> |
| TOTAL | | <u>4,358</u> | <u>61,013</u> | <u>3,798</u> | <u>64,811</u> |

^{1/} To be runas estate with excess settler labor.

JOHORE LAND SETTLEMENT PROJECT
Staging and Capital Costs of Mill Construction and Staff Quarters
 (M\$ 000)

| Calendar Year | 75 | 76 | 77 | 78 | 79 | 80 | 81 | Total | | |
|-----------------------------|----------|-----------------|------|------|-------|------|------|-------|-----|-------|
| A. Mill Construction | | | | | | | | | | |
| | Capacity | Completion Date | | | | | | | | |
| Semenchu Mill | 27 | July 76 | 251 | | | | | 5024 | | |
| Stage I | | | | | | | | | | |
| Sening Mill | 18 | July 78 | 3590 | 957 | 239 | | | 4786 | | |
| Stage I | | | | | | | | | | |
| Stage II | 45 | July 80 | 1403 | 374 | 94 | | | 1871 | | |
| Total | | | 3590 | 957 | 1642 | 374 | 94 | 6657 | | |
| Wah Ha Mill | 18 | July 78 | 3590 | 957 | 239 | | | 4786 | | |
| Stage I | | | | | | | | | | |
| Stage II | 27 | July 81 | | 178 | 60 | | | 238 | | |
| Total | | | 3590 | 957 | 239 | 178 | 60 | 5024 | | |
| Penggeli Mill | 18 | July 77 | 957 | 239 | 178 | 48 | 12 | 4786 | | |
| Stage I | | | | | | | | | | |
| Stage II | 27 | July 80 | 3590 | 239 | 178 | 48 | 12 | 238 | | |
| Total | | | 3590 | 957 | 178 | 48 | 12 | 5024 | | |
| Kahang Mill | 18 | July 78 | 3590 | 957 | 239 | | | 4786 | | |
| Stage I | | | | | | | | | | |
| Stage II | 27 | July 81 | | 178 | 60 | | | 238 | | |
| Total | | | 3590 | 957 | 239 | 178 | 60 | 5024 | | |
| TOTAL | 153 | | 3768 | 4595 | 11978 | 3110 | 2298 | 778 | 226 | 26753 |
| B. Staff Quarters | | | | | | | | | | |
| Semenchu | | | 313 | | | | | 313 | | |
| Sening | | | | 283 | | 193 | | 476 | | |
| Wah Ha | | | | 166 | | | 147 | 313 | | |
| Penggeli | | | 166 | | | | | 313 | | |
| Kahang | | | | 166 | | | 147 | 313 | | |
| TOTAL | | | 313 | 615 | | 340 | 294 | 1728 | | |

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JOHORE LAND SETTLEMENT PROJECT

Phasing of Factory Construction

FFB Throughput (tons/year) and Required Capacity (tons/hour) 1/

| Calendar Year | 1976 Oct-Dec | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 |
|-------------------------------|-----------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| INDRAH | | | | | | | | | | | |
| FFB Throughput | | | | | | | | | | | |
| 1972 Clearing, 12481 acres 2/ | 3744 | 29954 | 74886 | 97352 | 103592 | 109833 | 113577 | 114825 | - | - | - |
| Required Capacity | 1.2 | 9.59 | 23.96 | 27.26 | 29.01 | 26.37 | 27.25 | 27.56 | - | - | - |
| Phasing of Capacity | 27 | | | | | | | | | | |
| ISING | | | | | | | | | | | |
| FFB Throughput | | | | | | | | | | | |
| 1973 Clearing, 3557 acres 3/ | - | 1067 | 8537 | 2134 | 27745 | 29523 | 31302 | 32369 | 3 724 | 32369 | 31657 |
| 1974 Clearing, 9731 acres 4/ | - | - | 2919 | 2335 | 58386 | 75902 | 80767 | 85633 | 8 552 | 89525 | 88552 |
| 1975 Clearing, 4652 acres 5/ | - | - | - | 139 | 11165 | 27912 | 36286 | 38612 | 4 938 | 42333 | 42798 |
| Total | - | 1067 | 11456 | 4609 | 97296 | 133337 | 148355 | 156614 | 16 214 | 164227 | 163007 |
| Required Capacity | | | | | | | | | | | |
| 1973 Clearing | - | .34 | 2.73 | .82 | 7.77 | 8.27 | 7.51 | 7.79 | 7.85 | - | - |
| 1974 Clearing | - | - | .93 | .47 | 18.68 | 21.25 | 22.61 | 20.55 | 21.25 | - | - |
| 1975 Clearing | - | - | - | .45 | 3.57 | 8.93 | 10.16 | 10.81 | 9.83 | - | - |
| Total | - | .34 | 3.66 | 1.74 | 30.02 | 38.45 | 40.28 | 39.15 | 38.93 | 39.61 | 39.12 |
| Phasing of Capacity | - | - | 18 | - | 45 | | | | | | |
| MUJA | | | | | | | | | | | |
| FFB Throughput | | | | | | | | | | | |
| 1973 Clearing, 3000 acres 6/ | - | 900 | 7200 | 18000 | 23400 | 24900 | 26400 | 27300 | 27600 | 27300 | 26700 |
| 1974 Clearing, 5380 acres 7/ | - | - | 1616 | 12931 | 32328 | 42026 | 44720 | 47414 | 49031 | 49560 | 49031 |
| 1975 Clearing, 2446 acres 8/ | - | - | - | 734 | 5870 | 14676 | 19079 | 20302 | 21525 | 22259 | 22503 |
| Total | - | 900 | 8816 | 31665 | 61598 | 81602 | 90199 | 95016 | 98156 | 99119 | 98234 |
| Required Capacity | | | | | | | | | | | |
| 1973 Clearing | - | .29 | 2.30 | 5.76 | 6.55 | 6.97 | 6.34 | 6.55 | - | - | - |
| 1974 Clearing | - | - | .52 | 4.13 | 10.34 | 11.77 | 12.52 | 11.38 | - | - | - |
| 1975 Clearing | - | - | - | .23 | 1.88 | 4.70 | 5.34 | 5.68 | - | - | - |
| Total | - | .29 | 2.82 | 10.12 | 18.77 | 23.44 | 24.20 | 23.61 | 23.55 | 23.79 | 23.58 |
| Phasing of Capacity | - | - | 18 | - | 27 | | | | | | |
| POKELI | | | | | | | | | | | |
| FFB Throughput | | | | | | | | | | | |
| 1972 Clearing, 4552 acres 9/ | 1366 | 10925 | 27312 | 35506 | 37782 | 40058 | 41423 | 41878 | 41473 | 40513 | 39602 |
| 1973 Clearing, 3335 acres 10/ | - | 1001 | 8004 | 20010 | 26013 | 27681 | 29348 | 30349 | 30682 | 30349 | 29681 |
| 1975 Clearing, 4489 acres 11/ | - | - | - | 1347 | 10774 | 26934 | 35014 | 37259 | 39503 | 40850 | 41229 |
| Total | 1366 | 11926 | 35316 | 56863 | 74569 | 94673 | 105785 | 109486 | 111658 | 111712 | 110512 |
| Required Capacity | | | | | | | | | | | |
| 1972 Clearing | .43 | 3.50 | 8.73 | 9.94 | 10.58 | 9.61 | | | | | |
| 1973 Clearing | - | .32 | 2.56 | 6.40 | 7.28 | 7.75 | | | | | |
| 1975 Clearing | - | - | - | .43 | 3.44 | 8.61 | | | | | |
| Total | .43 | 3.82 | 11.29 | 16.77 | 21.30 | 25.97 | 25.39 | 26.28 | 26.78 | 26.81 | 26.54 |
| Phasing of Capacity | - | 18 | - | - | 27 | | | | | | |
| PENGELI TIMOR | | | | | | | | | | | |
| FFB Throughput | | | | | | | | | | | |
| 1973 Clearing, 4567 acres 12/ | - | 1370 | 10961 | 27202 | 35621 | 37906 | 40190 | 41560 | 42016 | 41560 | 40646 |
| 1974 Clearing, 2352 acres 13/ | - | - | 706 | 5645 | 14112 | 18346 | 19522 | 20698 | 21403 | 21438 | 21403 |
| 1975 Clearing, 4261 acres 14/ | - | - | - | 1778 | 10226 | 25566 | 33236 | 35366 | 37497 | 38775 | 39201 |
| Total | - | 1370 | 11667 | 34325 | 59959 | 81818 | 92948 | 97624 | 100916 | 101973 | 101250 |
| Required Capacity | | | | | | | | | | | |
| 1973 Clearing | - | .44 | 3.51 | 8.77 | 9.97 | 10.61 | 9.65 | 9.97 | | | |
| 1974 Clearing | - | - | .23 | 1.81 | 4.52 | 5.14 | 5.47 | 4.97 | | | |
| 1975 Clearing | - | - | - | .41 | 3.27 | 8.18 | 9.31 | 9.90 | | | |
| Total | - | .44 | 3.74 | 10.99 | 17.76 | 23.93 | 24.43 | 24.80 | 24.22 | 24.47 | 24.30 |
| Phasing of Capacity | - | - | 18 | - | - | 27 | | | | | |

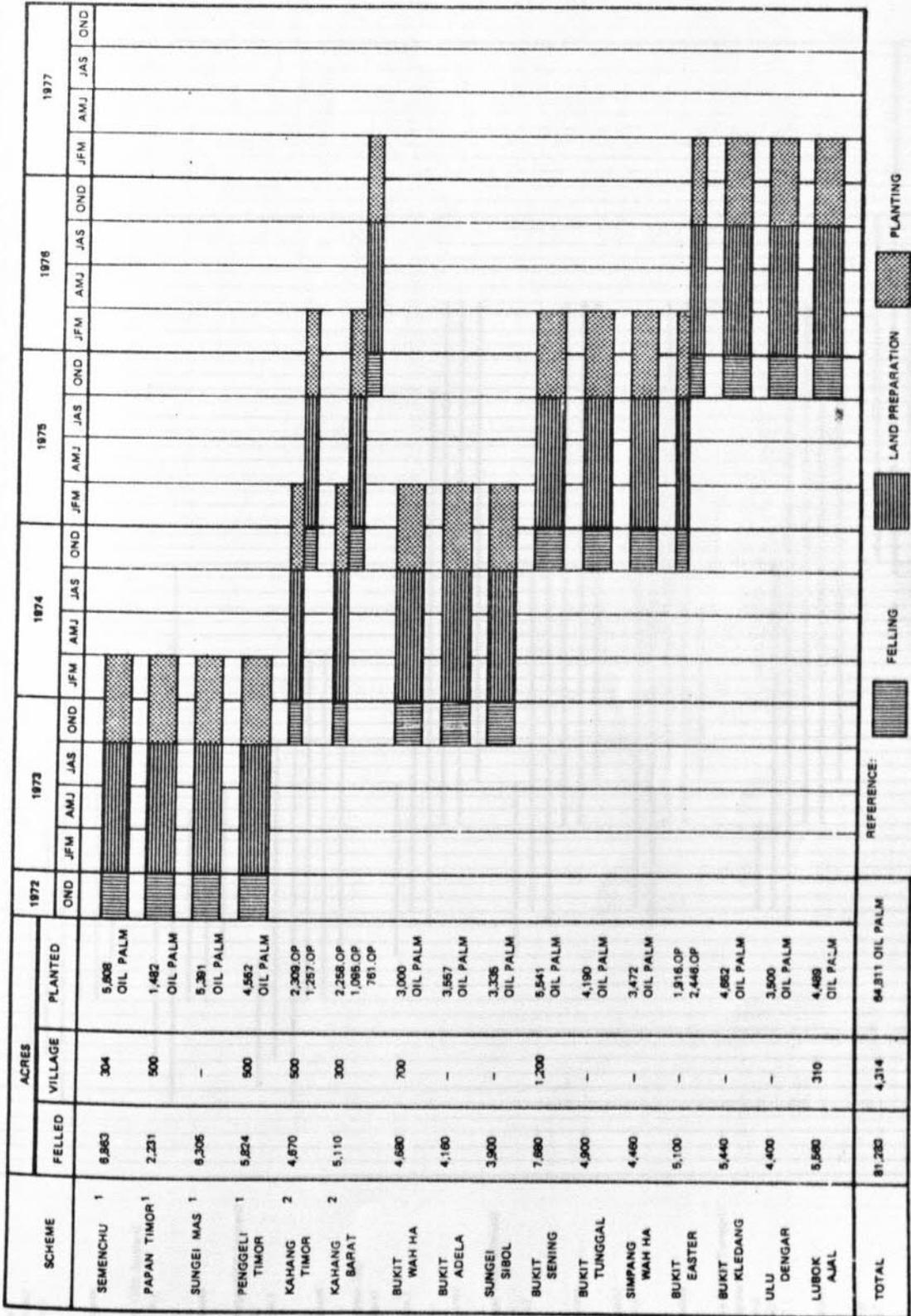
Required Capacity is based on throughput in the peak month of September, when factories operate at a peak capacity of 500 hours/month. It is assumed that the percentage of the September crop in annual crop is 16% in the first 21 years of harvesting, 14% in the next two years, and 12% thereafter. Thus the required capacity per hour is:
 $.00032 \times \text{annual FFB throughput in the first 21 years}$
 $.00028 \times \text{annual FFB throughput in next 2 years}$
 $.00024 \times \text{annual FFB throughput thereafter.}$

| | |
|----------------|------------|
| Penang | 5608 acres |
| Papan Timor | 1482 acres |
| Sungai Mas | 5391 acres |
| Bukit Adala | 3557 acres |
| Bukit Sening | 5541 acres |
| Bukit Tunggul | 4190 acres |
| Bukit Kledang | 4652 acres |
| Bukit Mah-ha | 3000 acres |
| Pengang Mah-ha | 3472 acres |
| Bukit Easter I | 1916 acres |

| | |
|----------------------|------------|
| 8/ Bukit Easter II | 2446 acres |
| 9/ Penggali Timor | 4552 acres |
| 10/ Sungai Sibol | 3335 acres |
| 11/ Lubok Ajal | 4489 acres |
| 12/ Kahang Timor I | 2309 acres |
| Kahang Barat I | 2258 acres |
| 13/ Kahang Timor II | 1257 acres |
| Kahang Barat II | 1095 acres |
| 14/ Kahang Barat III | 761 acres |
| Ulu Dengar | 3500 acres |

TOTAL 64811 acres

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 JOHORE LAND SETTLEMENT PROJECT
 AGRICULTURAL DEVELOPMENT PROGRAM



1. Acreage figures for these 4 schemes are derived from ground surveys carried out after felling; acreage figures for other schemes are estimates derived from planimeter measurements on 1:25,000 scale topographic maps.

2. The phased development on these 2 schemes is necessary because of a commercial timber clearance constraint.

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JUBILEE LAND SETTLEMENT PROJECT

| | Total Project Costs (RM'000) | | | | | | | | | | Total (US'000) | Foreign Exchange | % | | |
|---|------------------------------|------|-------|-------|-------|-------|-------|-------|-------|------|----------------|------------------|-------|-------|----|
| | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | | | | | |
| Agricultural Development - Oil Palm 1/ | | | | | | | | | | | | | | | |
| Land Clearing and Planting (Contractors) | 477 | 4132 | 5657 | 6347 | 5864 | 2252 | 352 | - | - | - | 25061 | 10756 | 10216 | 538 | 5 |
| Fertilisers and Pesticides | - | 106 | 655 | 1311 | 2957 | 4558 | 5599 | 4855 | 3413 | 1512 | 26966 | 10715 | 3214 | 7500 | 70 |
| Planting Materials | - | 1891 | 1700 | 2083 | 1910 | 153 | 59 | - | - | - | 7798 | 3346 | 3345 | - | 0 |
| Upgrading of Roads and Gutters | - | - | 176 | 341 | 1618 | 1477 | 1680 | 1236 | - | - | 6332 | 2126 | 1907 | 818 | 30 |
| Other PEZMA Expenditure | - | 25 | - | 630 | 622 | 662 | 479 | 36 | - | - | 2610 | 1179 | 2610 | - | 0 |
| Settler Wages | - | - | - | 906 | 7081 | 3206 | 4014 | 3125 | 1942 | 781 | 16053 | 6895 | 6895 | - | 0 |
| Sub-Total | 477 | 6154 | 8188 | 11618 | 15032 | 12706 | 12183 | 9252 | 5355 | 2293 | 82858 | 35562 | 26699 | 8856 | 24 |
| Resin, and Bomble's | | | | | | | | | | | | | | | |
| Land Clearing and Destumping | 37 | 338 | 577 | 78 | 62 | 7 | - | - | - | - | 1099 | 472 | 445 | 24 | 5 |
| House Construction | - | - | 1274 | 1763 | 2152 | 2181 | 759 | 107 | - | - | 8236 | 3534 | 3537 | 177 | 5 |
| Sub-Total | 37 | 338 | 1851 | 1841 | 2214 | 2188 | 759 | 107 | - | - | 9335 | 4006 | 3805 | 201 | 5 |
| Settlement Infrastructure: | | | | | | | | | | | | | | | |
| Government Expenditure: | | | | | | | | | | | | | | | |
| Settlement Roads | - | - | 1300 | 3350 | 1650 | 150 | - | - | - | - | 6450 | 2768 | 1938 | 830 | 30 |
| Settlement Road Maintenance | - | - | - | - | 98 | 300 | 322 | 322 | 322 | 322 | 1664 | 714 | 560 | 214 | 30 |
| Water Supply | - | 480 | 1560 | 1660 | 1220 | 880 | 100 | 100 | - | - | 6000 | 2575 | 1802 | 773 | 30 |
| Access Roads | - | - | 700 | 1575 | - | - | - | - | - | - | 2275 | 976 | 683 | 293 | 30 |
| Public Buildings | - | - | - | 1508 | 2089 | 1670 | 1535 | - | - | - | 6752 | 2859 | 2607 | 290 | 10 |
| Sub-Total | - | 480 | 3560 | 8093 | 5057 | 2950 | 1935 | 422 | 322 | 322 | 23141 | 9932 | 7530 | 2400 | 24 |
| Processing | | | | | | | | | | | | | | | |
| Mill Construction and Machinery | - | - | - | 3768 | 4595 | 11976 | 2119 | 2270 | 2270 | 2270 | 46543 | 11689 | 6544 | 4937 | 43 |
| Housing for Mill Staff - Capital Cost | - | - | - | - | 313 | 166 | 615 | 340 | 294 | - | 1728 | 742 | 704 | 37 | 5 |
| Mill Operating Cost and PPA Transport | - | - | - | - | - | 59 | 524 | 1274 | 1272 | 756 | 3112 | 2186 | 1975 | 219 | 10 |
| Sub-Total | - | - | - | 3768 | 4967 | 12668 | 4999 | 3527 | 2390 | 1274 | 33593 | 14618 | 9223 | 5193 | 36 |
| Management | | | | | | | | | | | | | | | |
| Vehicles and Equipment | 83 | 137 | 148 | 221 | 176 | 138 | 157 | 137 | 148 | 191 | 1536 | 659 | 198 | 461 | 70 |
| Housing and Offices | - | - | 350 | 665 | 700 | 608 | 224 | 26 | - | - | 2573 | 1104 | 1049 | 55 | 5 |
| Salaries and Other Operating Costs | 57 | 454 | 880 | 1351 | 1756 | 1913 | 1984 | 1996 | 1996 | 1996 | 14383 | 6173 | 5864 | 309 | 5 |
| Sub-Total | 140 | 591 | 1378 | 2237 | 2632 | 2659 | 2365 | 2159 | 2144 | 2187 | 18482 | 7936 | 7111 | 825 | 10 |
| Total | 654 | 7563 | 14877 | 27557 | 29902 | 32771 | 22241 | 15467 | 10211 | 6076 | 167419 | 71834 | 56368 | 17475 | 24 |
| Physical Contingency 2/ | - | - | 749 | 1378 | 1495 | 1639 | 1112 | 773 | 512 | 304 | 7962 | 3417 | 2587 | 820 | 24 |
| Price Contingency 3/ | - | - | 749 | 2825 | 4713 | 7062 | 6148 | 5260 | 4157 | 2901 | 33815 | 14513 | 11030 | 3483 | 24 |
| Sub-Total | - | - | 1498 | 4203 | 6208 | 8701 | 7280 | 6033 | 4669 | 3205 | 41777 | 17930 | 13627 | 4303 | 24 |
| TOTAL PROJECT COST | 654 | 7563 | 16475 | 31760 | 36110 | 41672 | 29501 | 21500 | 14880 | 9281 | 209196 | 89784 | 67995 | 21789 | 24 |

1/ Derived from Annex 11, Table 3
2/ SE from 1974 on
3/ SE compared from 1974 on

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JEROME LAND SETTLEMENT PROJECT

FIELD Sources and Application of Project Funds
(RM '000)

| | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | | | |
|----------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| 1072 Dec | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 514 | 6482 | 5338 | 6990 | 9126 | 10621 | 11168 | 8852 | 6440 | 3148 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| | - | - | 6205 | 13800 | 18683 | 13096 | 9230 | 5010 | 2520 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 140 | 591 | 1016 | 1633 | 2184 | 2473 | 2669 | 2832 | 2960 | 3120 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | 2126 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 554 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 7284 | 5929 | 4778 | 3387 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 22431 | 30039 | 38055 | 28823 | 27120 | 25020 | 14218 | 20805 | 21084 | 21240 | 21650 | 21182 | 21044 | 20889 | 20732 | 20577 | 24140 | 20283 | 19391 | 24717 | 20812 | 9873 | 7460 | 7362 | 7305 | 7284 | 7284 | 5929 | 4778 | 3387 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 654 | 7083 | 12559 | 224 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

MALAYSIA

LONGHOE LAND SETTLEMENT PROJECT

Consolidated Government Sources and Applications of Project Funds 1/
(RM '000)

| | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| Repayments from FELDA Development Costs | - | - | - | - | - | - | - | - | - | - | 65 | 890 | 1568 | 2457 | 3616 | 4965 | 6378 | 7602 | 8420 | 8820 | 8820 | 8820 | 8820 | 8820 | 8820 | 8820 | 8755 | 7930 | 7252 | 6363 | 5204 | 3855 | 2442 | 1618 |
| Net Tax on Palm Oil 2/ | - | - | - | 24 | 257 | 928 | 1546 | 3041 | 4146 | 4869 | 5369 | 5712 | 5828 | 6070 | 6159 | 6224 | 6293 | 6358 | 6463 | 6479 | 6535 | 6580 | 6628 | 6665 | 6628 | 6665 | 9020 | 8847 | 7012 | 7246 | 7498 | 5722 | 4159 | 2033 |
| Funds 3/ | 20 | 43 | 105 | 218 | 522 | 840 | 1063 | 1764 | 2348 | 2838 | 2824 | 3244 | 3378 | 3511 | 3666 | 3811 | 4311 | 3943 | 4084 | 4186 | 4313 | 4406 | 4435 | 4550 | 4708 | 4872 | 5043 | 5220 | 5403 | 5591 | 4822 | 4300 | 3486 | |
| TOTAL | 20 | 43 | 105 | 218 | 546 | 1097 | 1991 | 3310 | 5389 | 6984 | 7758 | 9503 | 10658 | 11896 | 13352 | 14935 | 16913 | 17838 | 16842 | 19469 | 19612 | 19761 | 19835 | 19998 | 20192 | 22647 | 19820 | 19484 | 19012 | 18293 | 14399 | 10871 | 7137 | |

NOTES

1. To FELDA Development Costs

2. Net Expenditure during Development Period

3. Net Cash Surplus (Deficit)

4. Net Cash Surplus (Deficit) (534) (7520) (10245) (17741) (16871) (11997) (14413) (8940) (4480) 224 4429 6049 7084 8197 9523 10972 12813 13594 12448 14923 14907 14889 14795 14778 14792 17058 14035 13496 12814 11879 7760 4000 26 (634) (8154) (18399) (36140) (53011) (65008) (79421) (88381) (92861) (92637) (88208) (82159) (75075) (66878) (57355) (46383) (33570) (19976) (7528) 7395 22302 37191 51986 66764 81356 98614 112649 126145 138959 150838 158598 162598 162624

5. Current prices, assuming a 3.5% rate of inflation after 1981

6. Same stream is expressed in 1973 prices in Annex 13, Table 1, "Economic Rate of Return"

7. Same stream is expressed in 1973 prices in Annex 13, Table 1, "Economic Rate of Return"

MALAYSIA

JOHORE LAND SETTLEMENT PROJECT

IBRD Financed Expenditures

(M\$ '000)

| | Percent of Total Cost | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | Total | Total US\$ '000 | Contingencies allocated US\$ '000 |
|--|--------------------------|-------|--------|--------|--------|--------|-------|-------|-------|--------|--------------------|---|
| Agricultural Development - Oil Palm | | | | | | | | | | | | |
| Land clearing and planting (contractor) | 90 | 3,288 | 5,372 | 5,260 | 2,027 | 317 | --- | --- | --- | 16,264 | 6,980 | |
| Fertilizer and pesticides | 70 | 459 | 918 | 2,070 | 3,191 | 3,919 | 3,399 | 2,389 | 1,056 | 17,403 | 7,469 | |
| Upgrading of roads and culverts | 90 | --- | 307 | 1,456 | 1,329 | 1,512 | 1,112 | --- | --- | 5,716 | 2,453 | |
| Subtotal | | 3,747 | 6,597 | 8,786 | 6,547 | 5,748 | 4,511 | 2,389 | 1,058 | 39,383 | 16,902 | 4,026 |
| Housing and Bungalows | | | | | | | | | | | | |
| Land clearing and destumping (contractor) | 90 | 514 | 70 | 56 | 6 | --- | --- | --- | --- | 646 | 277 | |
| House construction | 90 | 1,147 | 1,587 | 1,937 | 1,963 | 683 | 96 | --- | --- | 7,413 | 3,182 | |
| Subtotal | | 1,661 | 1,657 | 1,993 | 1,969 | 683 | 96 | --- | --- | 8,059 | 3,459 | 521 |
| Processing | | | | | | | | | | | | |
| Mill construction and material | 90 | --- | 3,391 | 4,136 | 10,780 | 2,799 | 2,068 | 700 | 203 | 24,077 | 10,354 | |
| House construction for mill staff | 90 | --- | --- | 282 | 149 | 554 | --- | 306 | 265 | 1,556 | 668 | |
| Subtotal | | --- | 3,391 | 4,418 | 10,929 | 3,353 | 2,068 | 1,006 | 468 | 25,633 | 11,002 | 2,430 |
| Management | | | | | | | | | | | | |
| Vehicles and equipment | 70 | 104 | 155 | 115 | 97 | 129 | 96 | 113 | 144 | 953 | 409 | |
| Housing and offices | 90 | 315 | 599 | 630 | 547 | 202 | 23 | --- | --- | 2,316 | 994 | |
| Subtotal | | 419 | 754 | 745 | 644 | 331 | 119 | 113 | 144 | 3,269 | 1,403 | 257 |
| TOTAL | | 5,827 | 12,399 | 15,942 | 20,089 | 10,115 | 6,794 | 3,508 | 1,670 | 76,344 | 32,766 | 7,234 |
| Contingencies | | | | | | | | | | | | |
| Physical | | 87 | 130 | 239 | 227 | 187 | 126 | 73 | 53 | 1,122 | 482 | 207 |
| Price | | 291 | 1,271 | 2,512 | 4,329 | 2,794 | 2,310 | 1,429 | 797 | 15,733 | 6,752 | 7,027 |
| Subtotal | | 378 | 1,401 | 2,751 | 4,556 | 2,981 | 2,436 | 1,502 | 850 | 16,855 | 7,234 | 7,234 |
| GRAND TOTAL | | 6,205 | 13,800 | 18,693 | 24,645 | 13,096 | 9,230 | 5,010 | 2,520 | 93,199 | 40,000 | 7,234 |
| US\$ '000 | | 2,663 | 5,923 | 8,023 | 10,577 | 5,621 | 3,961 | 2,150 | 1,082 | | | |

MALAYSIA

JOHORE LAND SETTLEMENT PROJECT

Estimated Schedule of Disbursements
(US\$ '000)

| <u>IDA Fiscal Year and Quarter</u> | <u>Quarterly Disbursement</u> | <u>Cumulative at end of Quarter</u> |
|------------------------------------|-------------------------------|-------------------------------------|
| <u>1973/74</u> | | |
| March 31, 1974 | 375 | 375 |
| June 30, 1974 | 420 | 795 |
| <u>1974/75</u> | | |
| September 31, 1974 | 596 | 1,391 |
| December 31, 1974 | 804 | 2,195 |
| March 31, 1975 | 831 | 3,026 |
| June 30, 1975 | 828 | 3,854 |
| <u>1975/76</u> | | |
| September 31, 1975 | 700 | 4,554 |
| December 31, 1975 | 1,854 | 6,408 |
| March 31, 1976 | 1,431 | 7,839 |
| June 30, 1976 | 1,380 | 9,219 |
| <u>1976/77</u> | | |
| September 31, 1976 | 1,281 | 10,500 |
| December 31, 1976 | 3,846 | 14,346 |
| March 31, 1977 | 1,473 | 15,819 |
| June 30, 1977 | 1,154 | 16,973 |
| <u>1977/78</u> | | |
| September 31, 1977 | 457 | 17,430 |
| December 31, 1977 | 5,425 | 22,855 |
| March 31, 1978 | 2,542 | 25,397 |
| June 30, 1978 | 1,928 | 27,325 |
| <u>1978/79</u> | | |
| September 31, 1978 | 552 | 27,877 |
| December 31, 1978 | 3,391 | 31,268 |
| March 31, 1979 | 1,240 | 32,508 |
| June 30, 1979 | 351 | 32,859 |
| <u>1979/80</u> | | |
| September 31, 1979 | 243 | 33,102 |
| December 31, 1979 | 2,494 | 35,596 |
| March 31, 1980 | 952 | 36,548 |
| June 30, 1980 | 246 | 36,794 |
| <u>1980/81</u> | | |
| September 31, 1980 | 141 | 36,935 |
| December 31, 1980 | 1,322 | 38,257 |
| March 31, 1981 | 588 | 38,845 |
| June 30, 1981 | 107 | 38,952 |
| <u>1981/82</u> | | |
| September 31, 1981 | 78 | 39,030 |
| December 31, 1981 | 700 | 39,730 |
| March 31, 1982 | 247 | 39,978 |
| June 30, 1982 | 23 | 40,000 |

MALAYSIAJOHORE LAND SETTLEMENT PROJECTSettler Selection Criteria and Legal StatusSettlement Procedures

1. FELDA schemes are intended mainly for rural people who either possess no land or have insufficient land to obtain an adequate standard of living. Settlement procedures would be similar to those practiced under the Jengka projects.
2. The Federal Government stipulates that 20% of places in all FELDA schemes will be available to ex-members of the security forces possessing the minimum qualifications. The States require that 50% of the settlers (other than ex-servicemen) should be from the State where the development takes place, provided prospective settlers possess the minimum qualifications.
3. Selection is in two stages. First, applicants are interviewed in their home districts throughout Malaysia by FELDA staff and local officials who know the district and its people. At this stage the candidates' general suitability is determined and the basic minimum criteria for selection applied. These are that the candidate:
 - (a) is a Malaysian citizen;
 - (b) is married;
 - (c) has no serious criminal record;
 - (d) is physically and mentally fit;
 - (e) is prepared to abide by the rules and regulations established by FELDA;
 - (f) has less than two acres of land; and
 - (g) is over 18 and under 35 (formerly over 21 and under 45); ex-servicemen and policemen up to 40 years of age.
4. Following the interview, points are awarded to each candidate, up to a maximum of 30, on the following scales:

| (A) | <u>Age</u> | <u>Points</u> | <u>Age</u> | <u>Points</u> | <u>Age</u> | <u>Points</u> |
|-----|------------|---------------|------------|---------------|------------|---------------|
| | 18 | 5 | 24 | 10 | 30 | 6 |
| | 19 | 6 | 25 | 10 | 31 | 5 |
| | 20 | 7 | 26 | 10 | 32 | 4 |
| | 21 | 8 | 27 | 9 | 33 | 3 |
| | 22 | 9 | 28 | 8 | 34 | 2 |
| | 23 | 10 | 29 | 7 | 35 | 1 |

| (B) | <u>Number of Children</u> | <u>Points</u> | <u>Ownership of Land</u> | <u>Points</u> |
|-----|---------------------------|---------------|--------------------------|---------------|
| | 5 and above | 5 | Under 1/2 acre | 5 |
| | 4 | 4 | 1/2 acre | 4 |
| | 3 | 3 | 1 acre | 3 |
| | 2 | 2 | 1-1/2 acres | 2 |
| | 1 | 1 | 2 acres | 1 |
| | 0 | 0 | | |

| (C) | <u>Bonus Points - Agricultural Background</u> | <u>Points</u> |
|-----|---|---------------|
| | Rubber | 6 |
| | Oil Palm | 6 |
| | Dusun or vegetable cultivation | 1 |
| | Animal husbandry | 1 |

5. The final selection is made by FELDA Headquarters on the above points system and on the required allotment of places to servicemen.

6. Development Period. On arrival at a scheme - some 2.5 years after clearing - the settler signs the first part of the settlers' agreement. This provides that in return for being permitted to settle on the scheme, the settler works under the direction of FELDA on the development of the scheme. The settler is paid a minimum of M\$ 2.90 per day, about M\$ 70 a month, for his work and if no work is available, he receives a subsistence loan at the same rate. The settler is required to abide by all rules and regulations of the Authority and if he breaks them, or if he is considered unsuitable in conduct, he may be required to leave the scheme.

7. Post Development Period. At the end of the 6th year after clearing the settler, assuming his performance is satisfactory, signs the second part of his agreement - the Supplement Agreement. This changes the status of the settler from, in effect, an employee of the Authority to that of a smallholder. He is registered as an occupier in expectation of title approximately 14 acres of oil palm and a 1/4 acre house lot. In the case of oil palm, because it is not practical to cultivate oil palms initially as smallholdings under the FELDA system, he is not allocated a specific area, but is assigned to a group of 20 to maintain and harvest a 280 acre block. Once the settler has paid off his loan (Annex 11) the Authority

will recommend to the State Government that the State alienate to the settler the house lot, on a 99-year lease. The 14 ac oil palm will be alienated to a cooperative society of which the settler is a member.

8. During the period when any loan repayments or charges are due by the settler to FELDA or the State, the area is managed and administered by FELDA. At all times the settler is required to sell all ffb to mills specified by FELDA for which he shall receive the average price received by FELDA over the preceding three months after deducting transport, processing, distribution, mill amortization and upkeep costs and a replanting reserve charge (Annex 11, Table 5).

9. Under the First Jengka Project Loan 533-MA, it was also provided that Jengka settlers would bear the project headquarters and scheme management costs during the development and operating periods. This arrangement has since been altered and FELDA and the Government have introduced new arrangements. Recovery of FELDA's administration costs from settlers is related to the f.o.b. price. For palm oil, no costs are charged if the f.o.b. price is below M\$ 439/ton since at that price the settler's income would be below M\$ 3,600/year which is the minimum income level set by Government. The table in this Annex indicates the relationship between f.o.b. prices and management fees charged to the settler.

10. Settlers Loans. A loan account would be opened for each settler which would be charged with the cost of his house, including clearing the house lot, and of developing 14 ac of oil palms. At the end of the fifth year, settlers would be issued with a statement showing the amount of the loan and the repayment due. The statements would also include any loans for tools, etc.

11. Interest would be charged at 6-1/4% on the loan and would be capitalized over the development period. This is lower than commercial rates and it reflects Government's desire to provide settlers with reasonable income opportunities.

12. Loans would be repaid by equal annual installments of principal and interest over a period of 15 years commencing on the first day of the sixth year. Loan repayments would be deducted at source from payments made by the FELDA-owned and operated mills to settlers for their production. The costs of fertilizers and other inputs would also be recovered in this way.

Oil Palm Settler's Legal Position

| <u>Year</u> ^{1/} | <u>Legal Status</u> | <u>Loan Repayment</u> |
|---------------------------|---|---|
| 1 | -) | Loan amount increasing with various development expenditures. |
| 2 | -) | |
| 3 |) | |
| 4) | Works under direction) | |
| 5) | of Felda) | |
| 6) | Signs settler agreement, becomes occupier in expectation of title to individual ownership or to a share in a large block of oil palms in common with a group of other settlers. | |
| <hr/> | | |
| 7 | Loan repayment commences.) | |
| 8/10 | Continues as in Year 7-8.) | |
| 11 | During year, becomes occupier in expectation of title to a specific 14 acre block of oil palms.) | Loan repayment continues. |
| 12/21 | Continues as in Year 11.) | |
| 22 | Lease granted to settler by State.) | Loan repayment terminates. |

1/ Clearing takes place at the end of year 1.

October 8, 1973

Management Levies for 14-Acre Holding

| <u>Price of Palm Oil (M\$ FOB)</u> | <u>Income Increase (M\$ per ton FFB)</u> | <u>Gross Annual Income (M\$)</u> | <u>Management Levy (M\$ per ton FFB)</u> | <u>Management Levy Amount (M\$)</u> | <u>Net Annual Income (M\$)</u> |
|--|--|--------------------------------------|--|---|------------------------------------|
| 368.10 | - | 3,600.00 | - | - | 3,600.00 |
| 383.01 | 3 | 3,973.20 | 1 | 124.40 | 3,848.80 |
| 397.92 | 6 | 4,346.40 | 2 | 248.80 | 4,097.60 |
| 412.83 | 9 | 4,719.60 | 3 | 373.20 | 4,346.40 |
| 427.74 | 12 | 5,092.80 | 4 | 497.60 | 4,595.20 |
| 442.65 | 15 | 5,466.00 | 5 | 622.00 | 4,844.00 |
| 457.56 | 18 | 5,839.20 | 6 | 746.40 | 5,092.80 |
| 472.47 | 21 | 6,212.40 | 7 | 870.80 | 5,341.60 |
| 487.38 | 24 | 6,585.60 | 8 | 995.20 | 5,590.40 |
| 502.29 | 27 | 6,958.80 | 9 | 1,119.60 | 5,839.20 |
| 509.45 | 28.44 | 7,137.94 | 9.48 | 1,179.31 | 5,958.62 |

Fertilizer Cost Per Acre of Oil Palm

Cost Per Acre
(M\$)

Price of Fertilizer

Rate of Application

3RD YEAR

NPK Yellow Compound at 9 oz per point; four rounds 135 lb /acre NPK Yellow @ 344/m.ton

21.0

4TH YEAR

One round of the following fertilizers

CCM No 44 (12 : 6 : 22 : 3) at 16 oz per point : 60 lb /acre
 Rock Phosphate at 12 oz per point : 45 lb /acre
 CCM No 44 (12 : 6 : 22 : 3) at 24 oz per point : 90 lb /acre
 CCM No 44 (12 : 6 : 22 : 3) at 24 oz per point : 90 lb /acre
 Muriate of Potash at 16 oz per point : 60 lb /acre

7.2
3.9
10.1
10.8
5.4

TOTAL

37.4

5TH YEAR

Nitro 26 @ 2-3/4 lbs per point : 165 lb /acre
 Rock Phosphate @ 2 lb per point : 120 lb /acre
 Muriate of Potash @ 4 lb per point : 240 lb /acre
 Kieserite @ 1 lb per point : 60 lb /acre

19.3
7.4
21.6
6.1

Based on the experience of Kulai Schemes the following additional fertilizers will be applied after foliar analysis:

Nitro 26 @ 21 lb per point : 120 lb /acre
 Rock Phosphate @ 2 lb per point : 120 lb /acre
 Muriate of Potash @ 2 lb per point : 120 lb /acre
 Kieserite @ 1 lb per point : 60 lb /acre

14.4
7.2
10.8
6.0

TOTAL

92.8

6TH YEAR

Nitro 26 @ 2-3/4 lb per point : 165 lb /acre
 Rock Phosphate @ 2-1/2 lb per point : 150 lb /acre
 Muriate of Potash @ 5 lb per point : 300 lb /acre
 Kieserite @ 1-1/2 lb per point : 90 lb /acre

19.3
9.3
27.0
9.2

Additional fertilizers after foliar analysis estimated as per 3rd year

TOTAL

103.2

7TH TO 10TH YEAR

Nitro 26 @ 3.7 lb per point : 222 lb /acre
 Rock Phosphate @ 3 lb per point : 180 lb /acre
 Muriate of Potash @ 6 lb per point : 360 lb /acre
 Kieserite @ 2 lb per point : 120 lb /acre

26.0
11.2
32.4
12.2

Additional fertilizers after foliar analysis estimated as per 3rd year

TOTAL

120.2

11TH YEAR and onwards

57 trees per acre; 5% less than in 10th year

114.2

MALAYSIA

JOHORE LAND SETTLEMENT PROJECT

Settlers' Wages and Labor Input per Acre of Oil Palm per Year

| Calendar Year | 4 | | 5 | | 6 | | 7 | | 7 | | 8-12 | | 13 | | 14 | | 15 | | 16-20 | |
|--------------------------------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
| | Man-days | RM |
| Weeding | 34.8 | 12.0 | 43.5 | 15.0 | 17.4 | 6.0 | 11.6 | 4.0 | 2.0 | 6.0 | 6.0 | 2.0 | 6.0 | 6.0 | 6.0 | 6.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Palm Manuring | 2.9 | 1.0 | 5.8 | 2.0 | 5.8 | 2.0 | 4.4 | 1.5 | 0.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Pests and Diseases | 0.9 | 0.3 | 1.5 | 0.5 | 1.5 | 0.5 | 0.9 | 0.3 | 0.3 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Harvesting | - | - | 8.7 | 3.0 | 26.1 | 9.0 | 20.3 | 7.0 | 2.0 | 10.0 | 10.0 | 9.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Maintenance Works | 2.9 | 1.0 | 5.8 | 2.0 | 5.8 | 2.0 | 4.4 | 1.5 | 0.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Pollination | - | - | 7.0 | 2.0 | 10.5 | 3.0 | 7.0 | 2.0 | 1.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | - | - |
| Foliar Analysis | - | - | 1.1 | 0.3 | 1.1 | 0.3 | 0.7 | 0.2 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Harvesting Platforms | - | - | 1.1 | 0.3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Castration | 5.3 | 1.5 | 1.8 | 0.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Supplying | 1.1 | 0.3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Late planting in drained areas | 1.1 | 0.3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Drains | 4.2 | 1.2 | 0.7 | 0.2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| TOTAL | 53.2 | 17.6 | 77.0 | 25.8 | 68.2 | 22.8 | 49.3 | 16.5 | 6.4 | 22.8 | 23.8 | 22.8 | 23.8 | 23.8 | 23.8 | 23.8 | 20.8 | 20.8 | 18.8 | 18.8 |
| TOTAL for 14 acre holding | 744.8 | 246.4 | 1078.0 | 361.2 | 954.8 | 319.2 | 690.2 | 231.0 | 89.6 | 319.2 | 333.2 | 319.2 | 333.2 | 333.2 | 333.2 | 333.2 | 291.2 | 291.2 | 263.2 | 263.2 |

Unit man-days over the plantings to settler cooperatives under the "block system" (fourth quarter of the seventh year) settlers receive wage incomes from FELDA. For the first three items in the table, settlers are obliged to work at a daily wage of RM 3.50/man-day, which is paid on a piece work basis. Other works are paid at RM 3.50/man-day, and occasional laborers as well as settlers and their dependents may be employed.

2/ Includes from pruning and sanitation.

Source: FELDA and Mission estimates

MALAYSIA

JOHORE LAND SETTLEMENT PROJECT
AGRICULTURAL DEVELOPMENT/(COSTS PER ACRE OF OIL PALM

| Calendar Year | (P. \$) | | | | | | | TOTAL |
|--|--------------|--------|--------|--------|--------|--------|---------------|----------|
| | 1 Oct-Dec | 2 | 3 | 4 | 5 | 6 | 7 Jan-Sept | |
| <u>Total Land Clearing and Planting</u> | | | | | | | | |
| <u>Payments to Contractors</u> | | | | | | | | |
| (a) <u>Land Clearing</u> | | | | | | | | |
| Felling | 28.00 | 35.00 | 7.00 | | | | | 70.00 |
| Burning | - | 4.35 | 0.55 | | | | | 4.90 |
| Pruning, Stacking, Reburning | - | 51.95 | 5.75 | | | | | 57.70 |
| Total | 28.00 | 91.30 | 13.30 | | | | | 132.60 |
| (b) <u>Others</u> | | | | | | | | |
| Lining | - | 5.20 | 0.60 | | | | | 5.80 |
| Jeep Tracks | - | 15.70 | 1.75 | | | | | 17.45 |
| Platforms | - | 8.85 | 1.00 | | | | | 9.85 |
| Cover Crop Plantings | - | 35.25 | 3.90 | | | | | 39.15 |
| Cover Crop Maintenance | - | 37.00 | 88.80 | 22.20 | | | | 148.00 |
| Palm Planting | - | 24.30 | 2.70 | | | | | 27.00 |
| Manuring Covers (labor) | - | 1.20 | 1.20 | | | | | 2.40 |
| Manuring Palms (labor) | - | - | 4.40 | | | | | 4.40 |
| Total | - | 127.50 | 104.35 | 22.20 | | | | 254.05 |
| <u>Fertilizers and Pesticides</u> | | | | | | | | |
| Manure for Cover Crops | - | 6.20 | 6.20 | | | | | 12.40 |
| Fertilizers for Oil Palms | - | - | 21.00 | 37.40 | 92.80 | 103.20 | 90.15 | 344.55 |
| Pests and Diseases | - | - | 6.00 | 5.00 | 5.00 | 7.00 | 5.25 | 28.25 |
| Total | - | 6.20 | 33.20 | 42.40 | 97.80 | 110.20 | 95.40 | 385.20 |
| <u>Planting Materials</u> | | | | | | | | |
| | - | 111.00 | 5.55 | 3.70 | - | - | - | 120.25 |
| <u>Upgrading of Roads and Culverts^{1/}</u> | | | | | | | | |
| | - | - | - | 20.00 | 78.00 | - | - | 98.00 |
| <u>Other Felda Expenditure</u> | | | | | | | | |
| Timber Removal ^{2/} | | | | 9.10 | 1.00 | | | 10.00 |
| Harvesters' Paths ^{2/} | | | | 11.40 | 1.25 | | | 12.65 |
| Drains ^{3/} | | | | 1.35 | | | | 1.35 |
| Supplying ^{3/} | | | 3.00 | | | | | 3.00 |
| Maintenance (Drains, Roads, Platforms) ^{2/} | | 0.50 | 3.10 | 1.15 | | | | 4.75 |
| Pests and Diseases ^{3/} | | 0.95 | 3.00 | 0.75 | | | | 4.70 |
| Settlers' Tools | | | | 3.00 | | | | 3.00 |
| Survey and Census | | | | 1.00 | | | | 1.00 |
| Total | | 1.45 | 9.10 | 27.75 | 2.25 | | | 40.55 |
| <u>Settler Wages^{4/}</u> | | | | | | | | |
| | | | | 53.20 | 77.00 | 68.20 | 49.30 | 247.70 |
| TOTAL | 28.00 | 337.45 | 165.50 | 169.25 | 255.05 | 178.40 | 144.70 | 1,278.35 |

^{1/} By separate contract.

^{2/} May be included in main contract.

^{3/} By casual labor until settlers move in on April 1 of fourth year.

^{4/} Detailed on Table 2 .

JOHORE LAND SETTLEMENT PROJECTFFB Sales on 14 Acre Oil Palm Holding During Development Period

| Calendar Year | 5 | 6 | 7 Jan-Sept |
|---|-----|-------|---------------|
| Tons FFB | 4.2 | 33.6 | 57.4 |
| Oil | .6 | 5.3 | 10.3 |
| Kernel | .1 | .9 | 1.8 |
| Ex-mill Value of Oil ¹ at 357.4/ton | 214 | 1,894 | 3,681 |
| Ex-mill Value of Kernel ¹ at 236.0/ton | 24 | 212 | 425 |
| Ex-mill Value | 238 | 2,106 | 4,106 |
| Less: Processing Cost @ 13.5/ton FFB | 57 | 454 | 775 |
| Scheme to Mill Transport @ 5.1/ton FFB | 21 | 171 | 293 |
| Net Sales | 160 | 1,481 | 3,038 |

1. see Table 6

JOHORE LAND SETTLEMENT PROJECTLoan Account of Typical Settler on 14 acre Oil Palm Holding

| Calendar Year | 1 Oct-Dec | 2 | 3 | 4 | 5 | 6 | 7 Jan-Sept | TOTAL |
|--|--------------|-------|-------|--------|--------|--------|---------------|--------|
| Agricultural Development Costs 1/ | 392 | 4,724 | 2,317 | 1,625 | 2,493 | 1,543 | 1,337 | 14,431 |
| Settler Labor 2/ | | | | 745 | 1,078 | 955 | 690 | 3,468 |
| House and Houselot Development | 7 | 50 | 1,235 | 567 | 95 | - | - | 1,954 |
| Total | 399 | 4,774 | 3,552 | 2,937 | 3,666 | 2,498 | 2,027 | 19,853 |
| Less: Net FFB Sales | | | | | 160 | 1,481 | 3,038 | 4,679 |
| Net Development Cost Interest at 6 1/2% | 399 | 4,774 | 3,552 | 2,937 | 3,506 | 1,017 | (1,011) | 15,174 |
| | 3 | 175 | 445 | 676 | 920 | 1,119 | 891 | 4,229 |
| Annual Loan Accumulated Loan | 402 | 4,949 | 3,997 | 3,613 | 4,426 | 2,136 | (120) | 19,403 |
| | 402 | 5,351 | 9,348 | 12,961 | 17,387 | 19,523 | 19,403 | |

Annual Loan Repayment for 15 years compounded at 6 1/2%: M\$ 2031

1/ See Annex 11, Table 3

2/ See Annex 11, Table 2

MALAYSIAJOHORE LAND SETTLEMENT PROJECTOil Palm Yield Estimates

| <u>Calendar Year</u> ^{1/} | FFB in Tons per Acre | % oil to FFB | Oil in Tons per Acre | % Kernel to FFB | Kernel in tons per Acre |
|------------------------------------|-------------------------------|-----------------|----------------------------|--------------------|-------------------------------|
| 5 | 0.3 | 12 | .04 | | |
| 6 | 2.4 | 16 | .38 | 2.4 | .007 |
| 7 | 6.0 | 18 | 1.08 | 2.8 | .067 |
| 8 | 7.8 | 19 | 1.48 | 3.2 | .192 |
| 9 | 8.3 | 20.5 | 1.70 | 3.6 | .280 |
| 10 | 8.8 | 21 | 1.85 | 4.0 | .332 |
| 11 | 9.1 | 21 | 1.91 | 4.2 | .370 |
| 12 | 9.2 | 21 | 1.93 | 4.2 | .382 |
| 13 | 9.1 | 21 | 1.91 | 4.2 | .386 |
| 14 | 8.9 | 21 | 1.87 | 4.2 | .382 |
| 15 | 8.7 | 21 | 1.83 | 4.2 | .374 |
| 16 | 8.5 | 21 | 1.78 | 4.2 | .365 |
| 17 | 8.3 | 21 | 1.74 | 4.2 | .357 |
| 18 | 8.1 | 21 | 1.70 | 4.2 | .349 |
| 19 | 7.9 | 21 | 1.66 | 4.2 | .340 |
| 20 | 7.7 | 21 | 1.62 | 4.2 | .332 |
| 21 | 7.5 | 21 | 1.57 | 4.2 | .323 |
| 22 | 7.3 | 21 | 1.53 | 4.2 | .315 |
| 23 | 7.1 | 21 | 1.49 | 4.2 | .307 |
| 24 | 6.9 | 21 | 1.45 | 4.2 | .298 |
| 25 | 6.7 | 21 | 1.40 | 4.2 | .290 |
| 26 | 6.6 | 21 | 1.39 | 4.2 | .281 |
| 27 | | | | 4.2 | .277 |

Calendar years; jungle is cleared in the last quarter of the first year; harvesting begins in the last quarter of the fifth year.

Except for the part obtained by the Government, most of the benefits of the project accrue to settlers whose present and expected income are well below average Malaysian income. The direct benefit of the project is therefore directly favorable.

MALAYSIAJOHORE LAND SETTLEMENT PROJECTEconomic Return

1. Benefits. Yield estimates are based on experience with schemes of similar soils and topography, and are about 10% lower than yield estimates for the Third Jengka Triangle Project.
2. The ex-mill price of palm oil is based on a price projection of US\$197/ton cif Europe in constant 1973 dollars, which represents the lower end of the range (US\$197/220) of Bank price projections for palm oil. The ex-mill price for palm kernels is based on the projected price of M\$ 236/ton in constant 1973 dollars.
3. Costs. Total development costs include a 5% physical contingency, based on experience gained in the Jengka projects.
4. Costs of water supply, school and health center constructions were excluded from costs on the grounds that their benefits are excluded and would at least equal costs.
5. All costs except settler labor were valued at market prices. For the economic rate of return, a shadow wage for labor at M\$ 2.90/day was applied. This is about equivalent to the laborer's foregone income before joining the scheme, and is also the contractual wage rate FELDA pays to settlers during the development period. The wage rate FELDA currently pays to casual laborers, and which is representative of wages for unskilled labor in the project area is M\$ 3.50/day. The use of a constant value for the calculation of the economic rate of return implies that through the life of the project there will remain segments of the rural population in economic circumstances similar to present FELDA entrants. The economic rate of return thus calculated is 14.8%. With the higher projected palm oil price (US\$220/ton) and the same cost assumptions, the rate of return would be 16.8%.
6. The rate of return was also calculated without shadow wage rates and assuming an increase in real wages by 3% yearly starting with a base of M\$ 3.50/day in 1973. The rate of return thus calculated is 13.5% at the lower projected price and 15.5% with the higher projected price for palm oil.
7. Except for the part obtained by the Government, most of the benefits of the project accrues to settlers whose present and expected future incomes are well below average Malaysian incomes. The distributional impact of the project is therefore clearly favorable.

MALAYSIA

JOHORE LAND SETTLEMENT PROJECT

Export Tax Schedule for Palm Oil

| <u>F.O.B. Price</u> <u>M\$</u> | <u>Marginal</u> <u>Tax Rate</u> | <u>Tax on</u> <u>Marginal</u> <u>M\$ 50</u> | <u>Total</u> <u>Export</u> <u>Tax</u> | <u>Effective</u> <u>Export</u> <u>Tax Rate</u> |
|-----------------------------------|------------------------------------|---|---|--|
| 350 | 7-1/2 | - | 26.25 | 7.50 |
| 400 | 10 | 5.00 | 31.25 | 7.81 |
| 450 | 12-1/2 | 6.25 | 37.50 | 8.33 |
| 500 | 15 | 7.50 | 45.00 | 9.00 |
| 550 | 17-1/2 | 8.75 | 53.75 | 9.77 |
| 600 | 20 | 10.00 | 63.75 | 10.63 |
| 650 | 22-1/2 | 11.25 | 75.00 | 11.53 |
| 700 | 25 | 12.50 | 87.50 | 12.50 |
| 750 | 27-1/2 | 13.75 | 101.25 | 13.50 |
| 800 | 30 | 15.00 | 116.25 | 14.53 |

Source: FELDA

MALAYSIA JOHORE LAND SETTLEMENT PROJECT

Project scheme boundary

Year of clearing:

- 1972
- 1973
- 1974
- 1975

Project village

- Palm oil mill
- Urban center
- Proposed urban center
- Proposed dam site
- Proposed reservoir
- Existing FELDA development
- Other existing alienation (including mining)
- Forest reserve (including coastal and swamp forest)
- Other proposed alienation
- Existing primary road
- Primary road under construction
- Primary road to be constructed
- Access road to be constructed
- Railway
- River
- International boundary

NOTE: RED AND GREEN SHADED AREAS COMPRISE THE JOHORE TENGGARA MASTER PLAN REGION.



