

PCR:MAL 16019

# **ASIAN DEVELOPMENT BANK**

## **PROJECT COMPLETION REPORT**

**ON THE**

**KALAKA-SARIBAS INTEGRATED AGRICULTURAL  
DEVELOPMENT PROJECT  
(Loan No. 755-MAL)**

**IN**

**MALAYSIA**

**September 1995**

## CURRENCY EQUIVALENTS

Currency Unit — Malaysian Ringgit (RM)

Currency Unit		At Appraisal (September 1985)	At PCR (November 1994)
RM1.00	=	\$0.4095	\$0.3899
\$1.00	=	RM2.4422	RM2.5535

- (i) Since June 1983, the ringgit has been linked to a weighted basket of currencies of the country's major trading partners.
- (ii) In this Report, the rate of \$1.00 = RM2.5555 has been used.

## ABBREVIATIONS

BME	-	Benefit Monitoring and Evaluation
BOD	-	Biological Oxygen Demand
COD	-	Chemical Oxygen Demand
CP	-	Contract Package
CPO	-	Crude Palm Oil
DID	-	Drainage and Irrigation Department
DOA	-	Department of Agriculture
DOE	-	Department of Environment
EA	-	Executing Agency
EIA	-	Environmental Impact Assessment
EIRR	-	Economic Internal Rate of Return
FFB	-	Fresh Fruit Bunch
FIRR	-	Financial Internal Rate of Return
FO	-	Farmers Organization
IDC	-	Interest During Construction
JVC	-	Joint Venture Company
LA	-	Loan Agreement
LDA	-	Land Development Agreement
MOA	-	Ministry of Agriculture
OPE	-	Oil Palm Estate
PMU	-	Project Management Unit
PORIM	-	Palm Oil Research Institute of Malaysia
PORLA	-	Palm Oil Registration and Licensing Authority
PPB	-	Perlis Plantation Berhad
PWD	-	Public Works Department
SALCRA	-	Sarawak Land Consolidation and Rehabilitation Authority
SPOM	-	Saratok Palm Oil Mill Sdn. Bhd.

## NOTES

- (i) The fiscal year of the Government ends on 31 December.
- (ii) In this Report, "\$" refers to US dollars.

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## BASIC DATA

### A. Loan Identification

1.	Country	Malaysia
2.	Loan Number	755-MAL
3.	Project Title	Kalaka-Saribas Integrated Agricultural Development Project
4.	Borrower	Malaysia
5.	Executing Agency	Ministry of Agriculture
6.	Amount of Loan	\$42.6 million
	Actual	\$24.91 million
7.	PCR Number	339

### B. Loan Data

1.	Appraisal	
	- Date Started	3 September 1985
	- Date Completed	27 September 1985
2.	Loan Negotiations	
	- Date Started	21 October 1985
	- Date Completed	24 October 1985
3.	Date of Board Approval	26 November 1985
4.	Date of Loan Agreement	24 April 1986
5.	Date of Loan Effectiveness	
	- In Loan Agreement	23 July 1986
	- Actual	5 November 1986
	- Number of Extensions	1
6.	Closing Date	
	- In Loan Agreement	30 June 1993
	- Actual	27 September 1994
	- Number of Extensions	2
7.	Terms of Loan	
	- Interest Rate	Variable
	- Maturity	20 years
	- Grace Period	7 years

## 8. Disbursements

## a. Dates

<u>Initial Disbursement</u> 30 July 1987	<u>Final Disbursement</u> 27 September 1994	<u>Time Interval</u> 86 months
<u>Effective Date</u> 5 November 1986	<u>Original Closing Date</u> 30 June 1993	<u>Time Interval</u> 80 months

## b. Amount (\$)

Category	Original Allocation	Last Revised Allocation	Net Amount Disbursed	Amount Cancelled (Increased)
01A	4,223,000	3,520,306	3,288,378	934,622
01B	1,925,000	2,418,526	2,404,729	(479,729)
01C	667,000	2,258,575	1,684,894	(1,017,894)
01D	1,266,000	1,074,649	1,046,370	219,630
02A	3,359,000	0	0	3,359,000
02B	991,000	0	0	991,000
03A	4,123,000	7,889,714	7,510,750	(3,387,750)
03B	189,000	180,077	180,077	8,923
03C	143,000	0	0	143,000
04A	506,000	386,989	359,402	146,598
04B	169,000	432,038	432,038	(263,038)
04C	666,000	0	0	666,000
05A	115,000	112,956	112,956	2,044
05B	370,000	0	0	370,000
06	1,248,000	1,372,945	1,334,031	(86,031)
07A	7,180,000	3,105,751	3,105,737	4,074,263
07B	524,000	339,119	339,118	184,882
07C	4,415,000	1,548,399	1,548,395	2,866,605
07D	655,000	270,731	270,731	384,269
08	9,866,000	0	0	9,866,000
Total	42,600,000	24,910,775	23,617,606	18,982,394

## 9. Local Costs

	Bank Loan	Government
- Amount (\$000)	5,265	38,162
- Percentage of Local Costs	12%	88%
- Percentage of Total Cost	8%	57%

**C. Project Data****1. Project Cost (\$'000)**

	Appraisal Estimate	Actual
a. Foreign Exchange Cost	42,600	23,733
b. Local Cost	<u>44,800</u>	<u>43,427</u>
c. Total Cost	87,400	67,160

**2. Financing Plan (\$'000)**

	Appraisal Estimate			Actual		
	Foreign	Local	Total	Foreign	Local	Total
Borrower	12,800 <sup>a</sup>	28,900	41,700	5,381	32,110	37,491
Equity	0	3,100	3,100	0	6,052	6,052
Bank	29,800	12,800	42,600	18,352	5,265	23,617
Total	42,600	44,800	87,400	23,733	43,427	67,160

<sup>a</sup> Interest and other charges during construction.

**3. Cost Breakdown by Project Component (\$'000)**

	Appraisal Estimate			Actual		
	Foreign	Local	Total	Foreign	Local	Total
Oil Palm Plantation	8,627	14,892	23,519	5,835	7,997	13,832
Processing Facilities	6,500	3,367	9,867	0	6,052	6,052
Institutional Support to SALCRA	4,347	8,026	12,373	3,210	6,339	9,549
Roads	6,420	9,782	16,202	7,898	13,240	21,138
Drainage	1,203	1,745	2,948	504	2,583	3,087
Agricultural Support Services	2,004	4,969	6,973	792	5,077	5,869
Project Management Unit	725	2,019	2,744	113	2,139	2,252
Interest during Construction	12,774	0	12,774	5,381	0	5,381
Total	42,600	44,800	87,400	23,733	43,427	67,160

**4. Project Schedule**

	Appraisal Estimate	Actual
a. Date of Fielding Consultants		
i. Institutional Support to SALCRA	October 1986	August 1988
ii. Roads	October 1986	February 1988

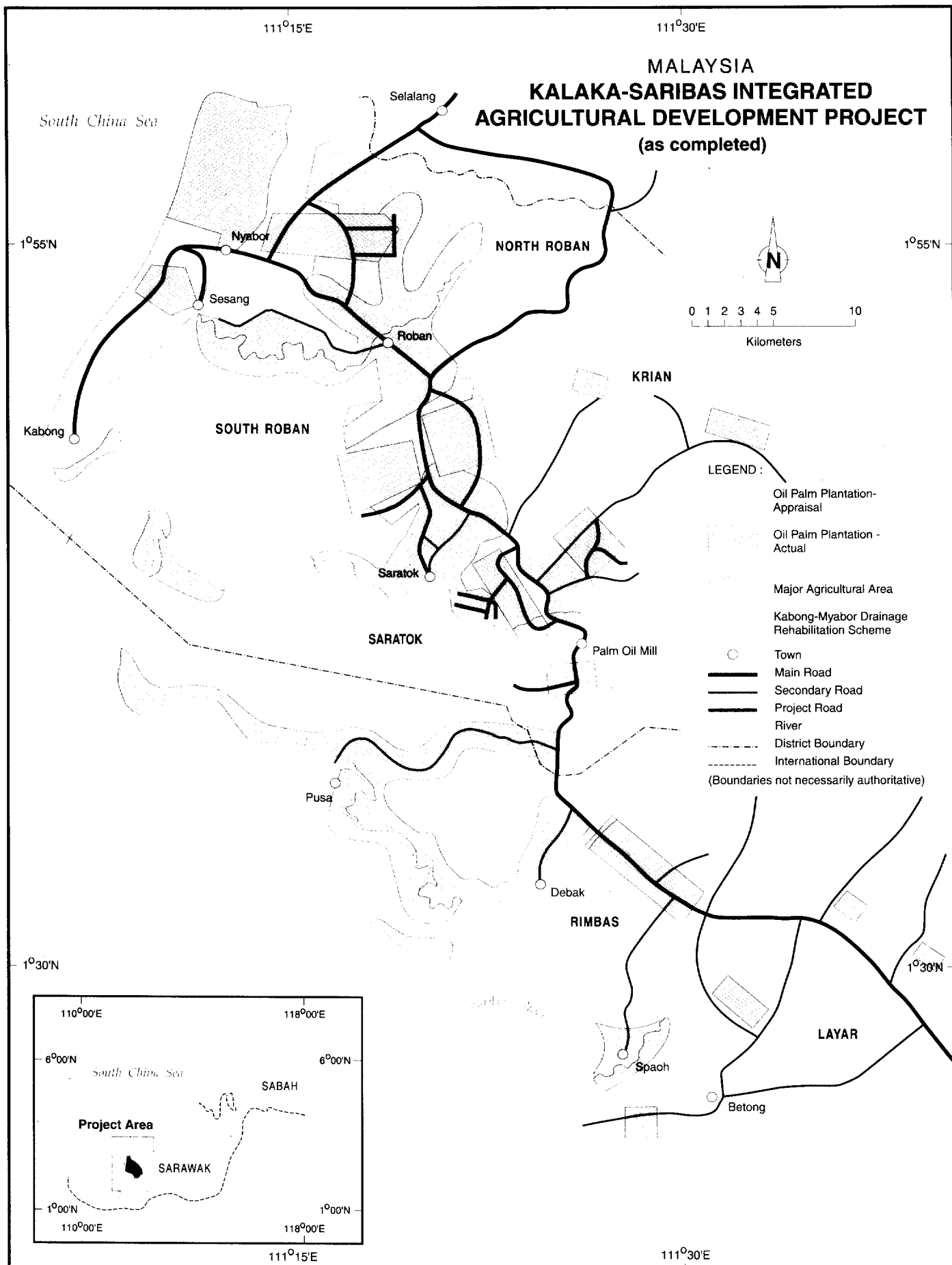
- b. Civil Works Contract
- i. Date of First Award
- Institutional Support to SALCRA October 1986 June 1987
  - Oil Palm Processing Facilities April 1990 October 1993
  - Roads October 1986 June 1990
- ii. Completion of Work September 1992 October 1994
- c. Equipment and Supplies Dates
- i. Date of First Award July 1986 July 1986
- ii. Completion of Installation September 1988 January 1989

#### D. Data on Bank Missions

Name of Mission	Date	No. of Persons	No. of Person-days	Specialization of Members
Inception	2-9 Nov 1986	2	16	Sr. Project Economist, Project Engineer
Loan Review	13-25 Sept 1987	2	24	Project Engineer, Project Adm. Clerk
Loan Review	20-29 Sept 1988	1	10	Project Engineer
Loan Re-Appraisal	31 Jul-20 Aug 1989	4	55	Sr. Project Economist, Project Engineer, Agronomist (Staff Consultant) Financial cum Institutional Expert (Staff Consultant)
Special Loan Review	15-20 Mar 1990	1	6	Project Engineer
Loan Review	24 Oct-2 Nov 1990	1	9	Sr. Project Engineer
Loan Review	3-13 Sept 1991	1	11	Sr. Project Engineer
Special Loan Review	18-31 July 1992	1	12	Project Engineer
Loan Review	14-27 Nov 1993	2	27	Project Engineer, Project Adm. Clerk
PCR <sup>1</sup>	14-26 Nov 1994	3	40	Project Engineer, Project Adm. Clerk, Agricultural Economist Consultant

<sup>1</sup>

This Report was prepared by a Bank Mission comprising B. H. Webb (Project Engineer/Mission Leader), W. F. Rola (Agricultural Economist/Staff Consultant), and N. Rodrigo (Senior Clerk/Project Administration). The Mission carried out a review of the Project from 14 to 26 November 1994.





## **I. PROJECT DESCRIPTION**

1. In line with the development objectives of the Fourth Malaysian Plan (1981-1985), the Bank responded to the Government's request in 1982 for assistance in implementing its policy to consolidate the development of smallholders in commercial tree crop production. The Project was subsequently prepared in 1985 and was geared towards the development of the smallholder sector in the State of Sarawak, which is well endowed with natural resources but relatively underdeveloped in terms of infrastructure and communications. The objectives of the Project were to increase agricultural production, raise farmers' incomes, create more jobs, and eradicate poverty in the Kalaka and Saribas districts of Sarawak State in Eastern Malaysia. A concurrent objective of the Project was also to arrest soil erosion and decreasing natural fertility in the uplands resulting from a shorter shifting cultivation cycle. The Project thus focused on (i) small farmers and shifting cultivators in the upland areas, where agricultural activities have low productivity, mainly because of traditional shifting cultivation and the inadequate road infrastructure; and (ii) small farmers in the lowland and coastal belt areas, where the productivity of smallholdings was constrained by poor drainage and inadequate agricultural support services. To reduce their dependence for income and employment on environmentally damaging shifting cultivation, upland farmers were given an opportunity for remunerative and regular income through the establishment of oil palm schemes. Small farmers in lowland areas were assisted in raising the productivity of their holdings through the rehabilitation and construction of drainage works, and through more effective agricultural support services by the State of Sarawak.

2. The main component of the Project was the land clearing of about 10,000 hectares (ha) of land under shifting cultivation for planting with oil palm. Oil palm schemes varying between 1,600 and 2,700 ha were established and are being managed on an estate basis. The Project also provided for palm oil processing facilities and institutional support to the Executing Agency (EA), the Sarawak Land Consolidation and Rehabilitation Authority (SALCRA), for the oil palm component. The Project also provided for (i) construction of access roads to the oil palm plantations; (ii) rehabilitation of existing drainage systems in coastal areas for 2,300 ha; and (iii) strengthening of agricultural support services, which included a fish hatchery, offices, stores, staff quarters, and extension services to support the production of 600 tons (t) of copra, 3,470 ha of cocoa, 230 ha of pepper, and 2,190 ha of fruit trees. Consulting services were provided for land development, engineering, plantation management, and supervision of the design and construction of access roads. Also, advisory and operational technical assistance (TA) for 20 person-months was provided by the Project.<sup>1</sup>

## **II. EVALUATION OF IMPLEMENTATION**

### **A. Project Components**

3. The Project was implemented over a period of 8.2 years from 23 July 1986 to 27 September 1994 as against an appraisal estimate of 7.0 years. Because of the slow progress in land development for the oil palm component during the first three years of implementation, the Bank reformulated the scope of the Project in September 1989, reducing the area of oil palm plantation from the original 10,000 ha to 7,000 ha, followed by the cancellation of \$14.00 million from the loan. Because of the Government's decision to finance the palm oil mill component from its own resources and other loan savings identified, a further \$3.7 million was cancelled from

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<sup>1</sup> TA No. 722-MAL: Institutional Strengthening of SALCRA, for \$250,000, approved on 26 November 1985.

the loan in September 1992. Also, the Government decided to retain the original appraisal target of 10,000 ha, but by the end of 1995 will have developed 11,540 ha. By December 1994, 8,374 ha had been planted, and the remaining 3,166 ha will be planted by December 1995. This translates to an overall physical achievement of about 115.4 percent based on the appraisal target of 10,000 ha. A comparison of the appraisal targets and actual results is given in Appendix 1.

## **1. Oil Palm Development**

4. As of 31 October 1994, a total of 8,374 ha of oil palm trees had been planted. This accounts for 83.7 percent of the appraised target (see Appendix 1, Tables 1 and 2). The total oil palm area is spread over eight schemes ranging from a low of 287 ha in Layar to a high of 2,816 ha in Saratok. SALCRA has attracted a total of 2,563 participants ranging from a low 95 participants from the Kabong-Nyabor scheme to a high of 759 participants in Saratok (see Appendix 1, Table 3). The Mission noted that survey work on individual lots has been completed for 5,278 ha. A total of 1,456 titles (57 percent) covering a total of 2,547.32 ha has been awarded to participating landowners. Another 626 titles (24 percent) covering a total of 1,259.73 ha are ready for issuance by the State Land Office.

5. All the participants for a total of 8,374 ha have signed the Land Development Agreement (LDA), representing 84 percent of the total participants for the 10,000 ha target. Because of initial problems related to land titling (including conflicts on boundaries among farmer-participants and identification of participants), there were relocations of oil palm areas developed under the Project, resulting in delays of Project implementation (the Appraisal Report did not provide any selection criteria for participants). The slow rate of participation of farmers was also due to their reluctance to change to oil palm, as prices of other crops such as pepper, cocoa, and coconut were relatively high during the initial years of Project implementation. In 1990, however, acceptance of the Project among farmers accelerated, and the total area committed to oil palm development increased to 11,540 ha. Of this area, a total of 10,170 ha was cleared, and 8,374 ha was actually planted (see Appendix 1, Table 3). SALCRA had targeted that at least 10,000 ha (as appraised) would be planted by 1995, representing a three-year delay compared with the appraisal schedule (see Appendix 1, Table 5).

6. The Kabong/Nyabor oil palm estate is on peat soils of the Anderson I series with a compacted depth of 50-90 centimeters (cm) overlying submarine clay. Of a total of 1,207 ha to be developed to oil palm, 558 ha have been planted, with the remainder to be planted in 1995. The palms grow faster on these peat soils and come into production after 26 months as compared with 36 months on upland mineral soils. However, these soils (0.75 meter depth peat over subterranean clay) were drained in the 1960s and have been compacted (mineralized) as compared with the deeper undrained Anderson I series of 150 cm depth, which are not suitable for oil palm development. In this respect, it should be noted that where water management is poor or the peat is too deep, the palms tend to topple over when fully grown.

## **2. Palm Oil Processing Facilities**

7. A joint venture company (JVC) between SALCRA and Perlis Plantation Berhad (PPB) registered under the name of Saratok Palm Oil Mill Sdn. Bhd. (SPOM) was established in December 1992. PPB has 30 percent of the equity in the JVC, while SALCRA has 70 percent with a capitalization of about RM16.0 million (\$6.4 million). With the cancellation of \$3.359 million allocated for the mill under the loan, SALCRA had undertaken to finance the mill from its own resources. For this purpose, the JVC raised RM16.95 million for the first-phase 30-ton/hour (t/hr) fresh fruit bunch (FFB) mill (including the construction of the mill staff quarters and rental of land),

and will raise a further RM6.0 million for the expansion to 60-t/hr FFB mill capacity through a combination of paid-up capital and internally generated revenue, a shareholder's loan, a loan from Bank Pembangunan Berhad, and a term loan. The Joint Venture Agreement finalized between SALCRA and PPB stipulates that PPB will manage the mill for the first five years. A Management Agreement has also been finalized between SPOM and PPB. PPB is a large oil palm plantation company in Malaysia owning and managing more than 50,000 ha of oil palm and operating five crude palm oil (CPO) mills and one palm oil refinery, and is therefore well qualified to manage the CPO mill.

8. SALCRA acquired a 106 ha area of land at the confluence of Sungei Melupa and Sungei Krian in February 1993, of which 30 ha was identified as an adequate and suitable site for the construction of the mill with an initial capacity of 30 t/hr, expandable to 60 t/hr. The JVC received approval for the site assessment from the Government's Department of Environment (DOE) on 9 February 1993, and construction commenced in June 1993. Mill construction was completed on schedule in October 1994, and DOE approved its license to operate on 10 November 1994. The CPO mill was officially commissioned on 28 November 1994.

9. The Mission noted that the mill is well designed, is functional, and appears to be efficiently operated. However, the bulk storage capacity for CPO is limited at 2,500 t, and the Mission is of the view that it should be increased to about 4,500 t within the next two years. The effluent control system has been designed in accordance with the standards set by DOE and specifications established by the Palm Oil Research Institute of Malaysia (PORIM); it is capable of reducing the biological oxygen demand (BOD)<sup>1</sup> from 30,000 milligrams per liter (mg/l) to 50 mg/l and chemical oxygen demand (COD)<sup>2</sup> from 40,000 mg/l to 80 mg/l. This system utilizes a combination of three mixing ponds, six anaerobic ponds, four facultative ponds, and two aeration ponds, which involves the use of specifically bred bacteria that break down the pollutant solids, oil, and chemicals under controlled conditions in the treatment plant. The discharge water is suitable for recycling into the mill make-up water.

### **3. Roads Component**

10. A total of 64 kilometer (km) of access roads has been completed by the Public Works Department (PWD), accounting for 73 percent of the appraised target (Appendix 1, Table 1). The road projects have been carried out in three contract packages (CPs): (i) CP No. 1 provides access to the Saratok and Roban South Schemes and has a total length of 24 km; (ii) CP No. 2 serves the Saratok, Roban North, and Roban South schemes and has a total length of 29 km; and (iii) CP No. 3 provides access to the Saratok schemes and has a total length of 11 km (see Map). The total road length is shorter than the appraised distance of 88 km because of the relocation of road alignment in order to provide access to more beneficiaries. The standard of road construction has been satisfactory. These roads are now providing effective all-weather access to the Project oil palm estates, and have spawned ancillary benefits such as rubber development, and also socioeconomic activities including the building of permanent longhouses,<sup>3</sup> improved transport services, and better communications. The roads also provide excellent access to the large rural community not participating in the oil palm component and

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<sup>1</sup> BOD refers to the quantity of suspended and dissolved organic matter in the discharge water that uses the oxygen in the water during its decomposition, reducing the quality of the water for life support of fish and aquatic fauna.

<sup>2</sup> COD refers to the quantity of dissolved chemicals in the discharge water that take up oxygen in the water, also reducing its quality.

<sup>3</sup> The longhouse is the local village unit, with all families living in terrace house-like units in one line.

are having a substantial impact on the improvement of living standards of people outside the Project area.

#### **4. Drainage Component**

11. The overall physical performance of the drainage component as executed by the Drainage and Irrigation Department (DID) has been satisfactory. Construction and rehabilitation works on main drains, collector drains, farm drains, access roads, and river tidal gate improvement have exceeded the appraised physical targets by 17 percent. Land acquisition was increased from 20 ha to 60 ha because more drains were constructed. Construction of offices and quarters was identical to the appraised targets. Other facilities provided through the Project included four tidal gates, six drain culverts, one tidal culvert, construction of 230 meters (m) of cut-off drains, 30 km of internal drain, and 22 road culverts. Operation and maintenance works are ongoing at various areas in the Kabong Nyabor DID scheme. DID opted not to avail of the provision for consultancy services, mainly because of the ability of its staff to carry out the job requirements. While this component has focused mainly on the midland area at Kalaka District, the District of Saribas is also a potential site for drainage projects in terms of areas and beneficiaries to be served for future projects.

#### **5. Institutional Support Services**

12. The Project funded the construction of 63 buildings as well as the provision of 69 vehicles, equipment, training of 404 persons, and 96 person-months of consultancy services as institutional support to SALCRA (see Appendix 1, Table 1). While achievement with regard to the provision of buildings, vehicles, equipment, and staff training far exceeded appraisal targets, the provision for consultancy services was only 46 percent of the appraised figure; this was due to the improved capability of SALCRA staff, who carried out part of the job requirements intended for the consultants. The standard of work carried out by SALCRA was fully satisfactory indicating that in future projects SALCRA does not need the provision of international consultants for oilpalm plantation establishment. Totals of 32 person-months (52 percent) for plantation establishment, and 14 person-months (70 percent) for advisory assistance of international consultancy services were availed of by SALCRA. Local consultancy work involving 64 person-months in the field of design and supervision was likewise utilized. The buildings included a training center, 38 staff quarters, 6 offices, 9 workshops/power house, and 9 stores, among others. In addition, a total of 1,132.9 km of estate roads were constructed. The accounting and systems management performance of SALCRA has similarly been upgraded due to the international consultancy services provided. SALCRA has also strengthened its institutional capability through the training of its estate managers and supervisory staff, mostly by sending them to established private plantations. Also, the training center has served as the venue for the training of field assistants and scheme participants.

#### **6. Agricultural Support Services**

13. Based on appraisal and reformulated targets, construction of offices and quarters, the improvement of the Debak fish hatchery, and the acquisition of vehicles and equipment have been generally achieved. The Project was able to provide 6 office/stores, 21 quarters, and 22 barracks. For hatchery improvement, the Project constructed 1 office complex, 6 water storage tanks, a 0.84-ha fishpond, 0.75 km of access road, and 2,663 m of fence, and renovated 1.5 ha of fishpond. In the crop development program component, the Department of Agriculture (DOA) achieved 107 percent of the appraisal targets, representing (i) 694 ha (95 percent) of cocoa intercrop; (ii) 312 ha (67 percent) of rehabilitated cocoa; and (iii) 3,396 ha (113 percent) of cocoa monocrop, 494 ha (214 percent) of pepper, and 2,191 ha (100 percent) of fruit trees. Cocoa

intercrop and coconut/cocoa rehabilitation have focused primarily in the Kabong/Nyabor drainage schemes. Cocoa monocrop, pepper, and fruit tree development have been implemented in the other Project areas. The Project has also included a provision for 43 posts for various grades of field staff to strengthen the previous manpower of DOA, but only 25 (58 percent) have actually been hired, since most of the technical positions are not able to attract qualified applicants. The farmers organizations (FOs) in Kalaka and Saribas districts have registered 4,101 and 4,991 members, respectively, which is an achievement, considering that this membership represents 73 percent and 62 percent of the farmers in the two districts, respectively. The FO in the more progressive district of Kalaka had higher volumes of business for the 1994 (January-May) period amounting to \$293,485 compared with the Saribas FO, which registered a total of \$204,790 for the same period, which is comparatively low but should improve as the Project progresses.

14. The hatchery improvement work at Debak was substantially completed in December 1991, but there is still 1,537 m of security fence for 7 ponds yet to be constructed. To date, there has been no action taken to provide an adequate permanent water supply of suitable quality for the hatchery's operation. As a short-term measure, one of the outgrower ponds has been converted into a reservoir, but this would not be sufficient in drought periods. However, PWD is developing a water supply system for the Debak area, and provision has been made to supply a sufficient quantity of water of suitable quality to the hatchery to enable it to sustain its designed output of fresh fingerlings as envisaged at appraisal. This work will be completed by the end of 1995. Since 1989 the target for fish fry production from the hatchery has been 500,000 fingerlings per annum. Actual production was 183,000 in 1989, 345,000 in 1990, 111,500 in 1991, 170,800 in 1992, and 700,000 in 1993; and with a better water supply, production for January-October 1994 reached 655,000. It is estimated that, with adequately trained staff and an adequate water supply, the design target of 1.0 million fingerlings per annum can be achieved and sustained.

## **B. Implementation Arrangements**

15. The designated EA for the Project's oil palm component was SALCRA, while the EA for the other components (i.e., road and drainage infrastructure and strengthening of agricultural support services) was the Federal Ministry of Agriculture (MOA). The implementing agencies involved in the Project were the Project Management Unit (PMU) of the State of Sarawak, PWD, DID, and DOA. Other agencies that provided support to Project implementation were the Land and Survey Department, Kalaka and Saribas Resident and District Offices, PORIM, Malaysian Agricultural Research and Development Institute, Federal Land Consolidation and Rehabilitation Authority, and Federal Agricultural Marketing Authority.

16. A PMU headed by a Project Director was established at Saratok to carry out the day-to-day activities of Project implementation. To oversee the functions of the PMU, a Project Steering Committee cochaired by the Sarawak State Chief Minister and the Minister of Agriculture was set up, with members from the EAs concerned, to supervise the functions of the PMU and coordinate Project execution, but this was not fully effective because of changes in MOA staff and overcontrol from the center at the MOA level in the Federal Government.

17. Because of difficulties in the initial phase of the implementation of the oil palm component, a special project unit was set up in 1989 in SALCRA's Head Office in Kuching, which assigned a Head of Project Implementation, a palm oil mill specialist, an oil palm agronomist, and a project specialist concerned with selection of participants and land titling. Also, SALCRA assigned a Group Manager to the Project to be responsible for the implementation of the oil palm development component, which was quite effective in achieving its targets.

18. While the Project has generally been implemented successfully, there were initial delays and problems relating to coordination and lengthy procedures (engagement of consultants) that appear to be due to the fact that the above implementing arrangements were too centrally controlled. Also, the Project Manager was changed four times as staff found better opportunities outside. It is suggested that in the future, it would be more appropriate to involve the Sarawak State Planning Unit and the State Ministry of Land Development in Project design and implementation because (i) the State Planning Unit, which was set up in 1991, is now actively involved with State development projects; (ii) both the State Planning Unit and the Ministry of Land Development are directly involved with the development of Sarawak's natural resources; and (iii) there would be more direct control and faster decision-making than with this Project.

### C. Project Costs and Financing

19. The actual total Project costs at current prices amounted to \$67.16 million compared with the appraised amount of \$87.4 million (see Appendix 2). Much of the reduction in the Project cost has been attributed to a \$9.7 million decrease in the cost of the oil palm development component together with a \$7.4 million decrease in interest charges during construction (IDC). The oil palm development component utilized only \$13.8 million of the Project funds, accounting for only 59 percent of the original appraised amount of \$23.5 million. While the road and drainage components have exceeded appraisal cost estimates, all the other components, notably the processing facilities and institutional support costs, including those related to agricultural support services and the PMUs, have incurred lower expenditures compared with the appraisal estimates. The oil palm development component was significantly lower than the appraised amount, mainly because of the lower cost of land development. The average cost of oil palm development per hectare was only about RM5,000 compared with the RM6,000 estimate during appraisal. Moreover, the RM2.8 million allocation for the bulk oil installation was likewise not utilized, as the road transport facilities to the refinery in Bintulu are more efficient. Table 1 shows a summarized comparison of the actual Project cost versus the appraisal estimates.

**Table 1: Project Costs  
(\$'000)**

Item	Appraisal Estimate			Actual		
	Foreign	Local	Total	Foreign	Local	Total
Oil Palm Plantation	8,627	14,892	23,519	5,835	7,997	13,832
Processing Facilities	6,500	3,367	9,867	0	6,052	6,052
Institutional Support to SALCRA	4,347	8,026	12,373	3,210	6,339	9,549
Roads	6,420	9,782	16,202	7,898	13,240	21,138
Drainage	1,203	1,745	2,948	504	2,583	3,087
Agricultural Support Services	2,004	4,969	6,973	792	5,077	5,869
PMUs	725	2,019	2,744	113	2,139	2,252
IDC	12,774	0	12,774	5,381	0	5,381
Total	42,600	44,800	87,400	23,733	43,427	67,160

20. Arrangements for Project financing changed significantly between appraisal and completion. From appraisal estimates, Government counterpart expenditures declined slightly from \$41.7 million to \$37.5 million (see Appendix 2, Table 3). However, this represents an 8 percent increase in the Malaysian Government's share (from 48 percent to 56 percent) at Project completion because of the reduced total Project cost. In the same view, the Bank's loan of \$42.6 million estimated at appraisal decreased to \$23.7 million, representing a reduced share from the original 49 percent of the total cost to 35 percent. Total Project expenditures in the foreign cost category declined from \$42.6 million during appraisal to only \$23.7 million at completion. Both the Government and the Bank's absolute shares on items requiring foreign exchange decreased. In the local cost category, the Bank's contribution decreased from \$12.8 million at appraisal to only \$5.3 million at Project completion, while the Government's contribution increased slightly from \$28.9 million to \$32.1 million.

#### **D. Project Implementation Schedule**

21. The Project was completed after eight years (1986/87-1993/94), a delay of one year from the appraisal schedule largely because of the slow participation of the smallholders in the initial period, as oil palm, the main component, was a new crop to the Project area. There were delays in staff recruitment, which also contributed to the need to extend the loan closing date by about one year. There has also been a delay in implementation of the benefit monitoring and evaluation (BME) program because of the lack of qualified staff. Appendix 3 provides a comparison between appraisal targets and actual achievements.

#### **E. Engagement of Consultants and Procurement of Goods and Services**

##### **1. Consultant Services**

22. SALCRA was provided with 209 person-months of consulting services (62 for planting and 147 for design and supervision of schemes), of which 96 person-months were utilized (32 and 64, respectively). For PWD, 330 person-months were provided and utilized for the field survey and supervision of road construction. Of 20 person-months of international consulting services provided under the TA accompanying the Project,<sup>1</sup> only 14 person-months were used by SALCRA, and the remaining 6 person-months were cancelled. The reduction in use of consultancy services by SALCRA was due to (i) availability of SALCRA's in-house expert resources to carry out planning, design, and supervision of the development of the oil palm schemes (SALCRA staff provided adequate input and were effective in the implementation program); and (ii) in the case of TA No. 722-MAL, only 14 person-months were utilized because of differences between the consultant and SALCRA. However, SALCRA implemented the recommendations, which have improved the efficiency of their operations.

##### **2. Procurement**

23. There were 524 procurement contracts awarded for the supply of goods and services, summarized in Appendix 4. Because the individual contracts for oil palm development were small, they were awarded based on local competitive bidding in accordance with Government procedures acceptable to the Bank. There were five large contracts under international competitive bidding, three of which were for access road construction. All the vehicles and equipment were procured using international shopping procedures. There was no

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<sup>1</sup>

TA No. 722-MAL: Institutional Strengthening of SALCRA, for \$250,000, approved on 26 November 1985.

turnkey contract for the palm oil mill, as it was constructed using Government and private sector resources.

#### **F. Performance of Consultants, Contractors, and Suppliers**

24. The performance of the international and local consultants engaged under the Project was generally satisfactory. All the international consultants engaged for the road component completed their tasks according to their terms of reference. In the future, it is envisaged that international consultants will not be required for road components. The consultants under Part A: Oil Palm Development completed their tasks for plantation management, and the planning and soil surveys for the oil palm plantations, and contributed significantly to the success of the oil palm development component.

25. The performance of the contractors for the construction of roads was good, while the other civil works contractors were generally satisfactory. The vehicles and equipment supplied conformed to the cost and other specifications of the Government.

#### **G. Conditions and Covenants**

26. The status of compliance with the major loan covenants is given in Appendix 5. The covenants that have only been partly complied with are:

- (i) Sufficient staff for the PMU posts (Loan Agreement [LA], Schedule 6, para. 1). Five of these posts were filled for short periods during the first four years, but since 1991 only nonprofessional staff have managed the PMU, resulting in delays in disbursements, report submission, and completion of BME. Despite repeated efforts by the Bank and the EA to overcome this problem, staff remain mobile because of better salaries in the private sector. To overcome this problem, three staff have now been seconded from DOA to the PMU.
- (ii) Midterm and final BME report (LA, Schedule 6, para. 14). This has been only partly completed because of the lack of sufficient qualified staff in the PMU. The Bank raised this issue with the EAs and proposed measures to overcome the problem twice since 1992, details of which are given in para. 33.

#### **H. Disbursements**

27. Of the revised loan amount of \$24.9 million, \$23.6 million (94.8 percent) was disbursed against the contracted amount of \$24.5 million (98.4 percent), leaving a small undisbursed contract balance of \$1.3 million, which was cancelled on 27 September 1994 (see Appendix 6).

#### **I. Environmental Impact**

28. At the time of appraisal, no environmental impact assessment (EIA) was carried out with regard to oil palm plantation development, but an EIA was carried out for the palm oil mill. In establishing 8,374 ha (projected to increase to 11,540 ha by end of 1995) of oil palm plantation, the Project has achieved one of its main objectives of reducing soil erosion by transferring environmentally damaging shifting cultivation to local tree crop husbandry. The use of terracing and planting platforms, along with inter-row mulching of pruned palm fronds and empty fruit bunches, controls surface erosion. These soil-stabilizing activities are expected to result in the gradual increase of soil fertility at the Project site. It has also been noted that in



some shifting cultivation areas the destructive grass weed *Imperata cylindrica* (lallang) has been controlled by the establishment of oil palm plantations. It may, however, be necessary that the agricultural chemical utilization levels of the oil palm estates be closely monitored to see that the rivers near the sites are not adversely affected.

29. The oil palm area generally covered regenerated vegetation under shifting cultivation with a maximum of about 8-10 years of regrowth. There was no sign of logging activities as a result of Project development. It should be noted that oil palm development in Malaysia has involved 800,000 ha cleared from forest, and therefore new developments in respect of the Phase II project should consider the implication of developing the vegetative cover of the areas to be developed, particularly in the riverine areas, where there should be at least a 100-m buffer zone left on either side of streams or rivers, and swamp forest reserves should be avoided.

30. As envisaged at appraisal, the discharge of palm oil mill effluent does not present any damaging impact on the river system into which it discharges, as DOE has strictly enforced the use of technology to ensure that the effluent discharge has a BOD level of less than 50 mg/l. In fact, the mill has been designed so that the discharged water from the effluent treatment system can be recycled into the raw water supply for mill operations. The palm oil mill has been cleared by DOE to operate with (i) certification of site assessment; (ii) approval of the mill design and permission to construct; and (iii) approval of the license to operate the mill, which was issued on 10 November 1994. DOE has, however, expressed some concern over the level of the emission from the smokestack, which needs monitoring. The necessary mitigating mechanisms to monitor the management of the required environmental standards are in place.

31. The design and methods of road construction have prevented any negative impact on the environment. The State Government has imposed strict standards, even for feeder roads, to ensure their sustainability, and this is the main reason why the cost of road construction under the Project has exceeded the appraisal estimate.

## **J. Benefit Monitoring and Evaluation**

32. The Universiti Pertanian Malaysia conducted the baseline survey of the Project area in 1986. As required by LA, Schedule 6, para. 14, a midterm evaluation survey was carried out by MOA in 1991 and 1993. However, although the midterm evaluation survey was carried out and analyzed, the draft report has not been finalized yet due to the shortage of staff at the PMU. Similarly, the Project completion report, which MOA agreed to undertake before the end of 1994, has not yet been done.

33. The PMU and SALCRA agreed to develop the terms of reference for the implementation of the completion review. It was further agreed that the Government would utilize the services of the University of Malaysia Sarawak to carry out the required surveys and analysis for the completion survey, and to submit the reports for both 1991 and the completion surveys to the Bank by third quarter 1995.

## **K. Initial Operation and Benefits**

### **1. Oil Palm Production**

34. As of 31 October 1994, a total of 4,800 ha was in varying stages of production with a total yield of 35,000 t of crude palm oil for the January-October (1994) period. The 10-month average yield was 7.3 t/ha, with the maximum of 21.6 t/ha already realized for 1988 plantings and a low of 1.1 t/ha for younger trees that were planted in 1991. The average yield for 1988

plantings has already matched the appraisal target two years ahead of schedule (see Appendix 7, Table 1). Since 1990, the aggregate FFB production is estimated at 83,500 t. An additional 1,094 ha is expected to be ready for harvest by 1995.

35. Yield projections of FFB harvests are estimated based on the Palm Oil Registration and Licensing Authority's (PORLA) yield records for inland oil palm estates, and on PORIM's projections for oil palm grown under peat soils. One distinct advantage of peat soils over inland soils is higher yield, as indicated in Appendix 7, Table 2. Comparing the peak harvest for both soil types (normally occurring in the 12th year after planting), FFB yields under peat soils will exceed FFB yields under inland soils by about 35 percent. However, replanting of oil palm trees will be required earlier for peat soils (about 21 years) compared with inland soils (25 years). Considering the early streams of benefits coming from FFB yields from peat soils, it is still economically feasible to utilize peat soils if the water management requirements can be properly addressed. It has been projected that the Project will produce an annual average of more than 200,000 of FFB at full development (see Appendix 7, Table 3). By 2013, the Project will have accumulated a total production of 3.85 million tons of FFB.

36. One concern is that the harvesting operations have not been coordinated with the view to ensuring a sustained supply of FFB to the CPO mill. Work programs for harvesting of FFB must be geared towards keeping the mill operating on a continuous basis for maximum efficiency. The SALCRA Group Manager, the Scheme Managers, and the Palm Oil Mill Manager need to coordinate the harvesting operations to ensure maximum efficiency of crop processing.

## **2. Fresh Fruit Bunch Sales and Operation Costs**

37. FFB production goes directly to the Palm Oil Mill in Saratok for CPO processing. The price paid for FFB output was based on the standard formula imposed by PORLA, which is subsequently based on world market prices of CPO and palm kernel. The net price for each estate (as well as each individual participant) is determined further by deducting the amount of loan repayment, costs of agricultural inputs, harvesting, transport, and maintenance costs. The net income of each participant is therefore affected by the size of his/her holdings. The annual maintenance and operating cost of oil palm was estimated at RM1,007/ha (see Appendix 7, Table 4). The cost items include fertilizer, weedicide, pesticide, farm implements, farm upkeep (e.g., manuring, weeding, pruning, pest control, and maintenance of scheme roads), and harvesting.

38. Aside from entering into the LDA with participating farmers, SALCRA has opened sales and loan account ledgers for the purpose of recording pro-rata land development costs to be recovered from a given individual farmer-participant as well as the farmer's share in the proceeds of FFB sales to the palm oil mill.

## **3. Crude Palm Oil, Cocoa, and Pepper Production**

39. As appraised, the total additional CPO production due to the Project will reach 47,000 t annually at full development (see Appendix 7, Table 5). In addition, cocoa production will provide an incremental output of 4,125 t compared with the appraisal figure of 200 t. The production differences, however, are based principally on the differences in the area of coverage between appraisal (500 ha) and Project completion (4,122 ha). Since coconut/copra production was left out during the implementation phase because of poor coconut market prices, the appraised incremental production target of 600 t annually has not been addressed. On the other hand, the Project has also provided for an annual incremental production of 1,951 t of pepper at full development.

#### **4. Impact on Beneficiaries**

40. A total of 5,837 farm families have been benefited by the Project through increased incomes (2,331 for cocoa and pepper, 2,563 for oil palm, and 1,043 for fruit tree crops). The oil palm schemes have replaced the traditional shifting cultivation system, thereby ensuring sustainability of production and income for the individual scheme participant. On the other hand, intensified extension and training activities provided through the Project have resulted in improved farm practices and higher crop production.

41. At full development (expected by year 9), the average annual net farm income from oil palm schemes is projected to reach RM16,316, which is about 36 percent higher than the appraisal figure of RM12,000. Incremental income from food crops under the drainage rehabilitation component is estimated at RM3,702 annually, which is about 12 percent higher than the projected income of RM3,300 during appraisal. Overall farmers annual incremental net farm income in the Project area is expected to increase from RM2,000 to RM8,109, which is 65 percent higher than the appraisal figure. Much of the increase has been influenced largely by the high incremental net income performance in the oil palm schemes. Also, additional income is being generated by nonfarm employment created by increased processing and commercial activities. However, as the BME surveys and reports have not yet been completed, it was not possible to evaluate the ethnic composition of the beneficiaries and assess the spreading of developmental benefits to the Malayas as was envisaged at appraisal.

42. The Project, through the support provided in the construction and rehabilitation of the Debak Fish Hatchery, has provided stocking materials and adequate fish fry supply to about 155 pond owners/farmers in Kalaka and Saribas districts. Of the total, 117 pond owners/farmers (75 percent) come from the Kalaka District. Since 1986, the Debak Fish Hatchery Section has produced a total of 2.39 million fish fry. About 87 percent of this fry production has been distributed in the Kalaka-Saribas District, while the rest has benefited pond owners/farmers in Sarikei, Lubu Antu, and Kanowit. Currently, the average wage for labor is about \$5.7 per day or \$114 per month.

#### **5. Employment Generation**

43. Oil palm development covering 8,374 ha and the construction of palm oil mill facilities have provided for a total of 7,241 person-years of employment (see Appendix 8). This labor generation impact exceeded the appraisal estimate by 61 percent. Maintenance works for both oil palm estates and the palm oil mill have provided additional employment of 1,949 person-years, which is 12 percent lower than the appraisal estimate of 2,220 person-years. Construction of access roads and drainage infrastructures have employed a total of 966 person-years, exceeding the appraisal target by 55 percent. Maintenance of the food crop areas because of intensified farming activities is expected to generate about 1,472 person-years of employment while access roads and drainage maintenance works will require about 97 person-years of labor annually.

#### **6. Commercial Activities**

44. The number and volume of commercial activities have improved in Kalaka-Saribas area as a consequence of the Project. The increase in both employment and income has increased the cash inflow in the surrounding areas of the Project site. As a consequence, the demand for services and consumer goods has increased. In Saratok, the number of hotels has more than doubled since 1990. Restaurants and stores have increased in number and volume of business. A minimart has recently been established. This has contributed to the participants

sourcing their food supplies such as rice from the stores instead of resorting to shifting cultivation.

## **7. Foreign Exchange Impact**

45. Incremental palm oil and cocoa outputs are being traded internationally, which will provide the Malaysian Government with significant income of foreign exchange. The Project is expected to generate total foreign exchange earnings of \$25.65 million per annum at full development. Estimates of fertilizer and other chemical input importations are projected to reach \$4.54 million. This will give a net foreign exchange earnings of \$21.11 million, a 98 percent achievement compared with the appraisal estimate (see Appendix 9).

## **8. Financial and Economic Analysis**

46. The overall economic internal rate of return (EIRR) of the Project is estimated at 15.8 percent, exceeding the appraisal estimate of 14.2 percent. The EIRR for the oil palm development is calculated at 16.7 percent versus the appraisal estimate of 18.2 percent, while the EIRR for the drainage rehabilitation component works out at 14.2 percent versus the appraisal figure 13.5 percent. The palm oil mill operation recorded a financial internal rate of return (FIRR) of 15.1 percent, which is lower than the appraisal figure of 27.7 percent. The FIRRs for the drainage rehabilitation component and for the oil palm development component are estimated at 11.5 and 16.5 percent, respectively, and the FIRR for the whole Project is estimated at 14.8 percent (no FIRR was estimated at appraisal). Tables 6, 8, and 9 of Appendix 10 indicate the details of the EIRRs and FIRRs for the various Project components.

47. Despite the initial delays in Project implementation, the relatively high rates of return (compared with the appraisal estimates) have been attributed largely to the current high price of CPO, the principal output of the Project. Actual CPO financial prices have increased by 30 percent from RM920.50/t during appraisal to RM1,200/t at completion. The estimated economic CPO price at appraisal was estimated at RM1,085/t versus RM1,038/t at completion, a difference of 4 percent.

48. The sensitivity analysis involving reduced benefits, increased production costs, and their combination is summarized in Appendix 10, Table 7. A 10 percent increase in production cost will result in a mild reduction of the EIRR to 14.6 percent. Similarly, a 10 percent decrease in benefit translates into a slightly lower EIRR of 13.2 percent. The combination of both variations will still yield a favorable EIRR figure of 11.8 percent. The Project is not vulnerable to (i) a 10 percent increase in production costs, (ii) a 10 percent decrease in benefits, or (iii) their combination as reflected in the low sensitivity indicators of 0.74, 1.61, and 2.49 percent, respectively.

## **9. Incremental Staffing**

49. The Project has employed a total of 182 incremental staff to implement it. This is about 78 percent of the total incremental staffing requirement estimated during appraisal. DID fully utilized its incremental staffing provisions, while SALCRA utilized a total of 155 staff (93 percent); PWD, 5 staff (71 percent); PMU, 8 staff (67 percent); and DOA, 25 staff (58 percent). The Mission noted that SALCRA's incremental staffing provisions were not filled because of the integration of the management and maintenance of some oil palm estates. However, all the key positions required to implement the Project have been hired. The staffing provisions for the PMU and DOA were not fully utilized because of lack of qualified staff willing to work at the Project sites owing to low salary rates and their location.

## **L. Performance of the Borrower and Executing Agencies**

50. Generally, the activities under the direct control and supervision of SALCRA were carried out expeditiously on schedule once the initial problems of participant selection had been resolved. The PMU has successfully managed Project implementation despite four changes in Project Manager (caused by better opportunities outside) and shortages of professional and technical staff. PWD has done an excellent job in the construction of the access/feeder roads even though this component was delayed by one year because of the relocation of the oil palm areas. DID performance in construction and rehabilitation of the drainage component was satisfactory.

51. The Government and the EAs have complied with most major loan requirements (see para. 26), but the implementation of the BME program has only been partly complied with. The EAs have played an important role in the implementation of the Project by sincerely devoting their time and efforts to completing it on schedule.

## **M. Performance of the Bank**

52. In general, the Project was satisfactorily appraised, and the Bank has performed reasonably well in assisting the EAs in implementing it. The Bank has adequately monitored the progress of the Project by fielding 11 missions (see Basic Data). One problem that arose during implementation was the Bank's decision to reformulate the scope of the oil palm component by reducing the area from 10,000 to 7,000 ha, which was apparently caused by the very slow rate of farmers' acceptance to take part in the Project. The decision was based solely on the estimated target for oil palm plantation development and did not take into account the requirements of the palm oil mill. This resulted in a mismatch with the palm oil mill's capacity requirement, but fortunately the EA chose to continue with the appraisal target. However, the Bank's extensive involvement eventually contributed to the success of the Project.

# **III. CONCLUSIONS AND RECOMMENDATIONS**

## **A. Conclusions**

53. The Project has made very good progress, and as of 27 September 1994 (the loan closing date), the overall physical progress of implementation was estimated at about 105 percent based on the reformulated target of 7,000 ha of oil palm development. In fact, 8,374 ha has been planted, an achievement of 120 percent for this component. The palm oil mill was completed, was issued a license to operate by DOE, and was commissioned on 28 November 1994. The production of oil palm FFB is satisfactory, particularly on the Anderson I series peat soils at Kabong/Nyabor, where yields are about 20 percent higher than on the mineral soils. While there has also been an overachievement of the agricultural support services component for pepper, cocoa, and fruit tree crops, there was a shortfall of about 50 percent for the establishment of the fishpond component. The fish hatchery is now operating satisfactorily, but requires an improved permanent water supply. Generally, the operation and maintenance of the Project as a whole are satisfactory, though there is still a need to improve the staffing of all components.

54. The socioeconomic impact of the Project on the beneficiaries has been very positive resulting in a substantial improvement in the incomes and standard of living of the people in the area. The Government has also improved the electrification and communications facilities of the area. However, because the BME was not completed, it was not possible to assess whether there had been a spread of benefits to the Malaya communities.

55. The Mission rates the Project as generally successful and considers that as a whole it is sustainable. However, this can be achieved only on condition that there is good and efficient management of oil palm production, an effective and efficient transport system, continuous efficient operation of the palm oil mill, and efficient marketing of the Project's output.

## **B. Recommendations**

### **1. General Recommendations**

56. When designing similar projects in the future, it is essential that there be provision for the development of the appropriate system for motivation and selection of the targeted smallholder participants, and allowance for sufficient time in the Project implementation schedule to establish the required participants in the Project.

57. Based on the experience of implementing the Phase I project, it is recommended that the following be taken into consideration in the preparation and design of the proposed Phase II Project:

- (i) While there was a shortage of participants during the first three years of implementing Phase I, about 3,000 ha (600 participants) could ultimately not be accommodated under this Project. It is suggested that the Phase II project be divided into two subprojects: (a) a Saribas River Basin Subproject to cater for the new areas of Anderson I series peat soils along the Saribas River and upland mineral soils in Saribas District; and (b) a Kalaka District Extension Subproject to develop the additional identified oil palm areas in the Kabong, Nyabor, Roban North, Roban South, and Saratok scheme areas. However, oil palm development on peat soils should be confined to well-drained, compacted (mineralized) Anderson I series peat of between 0.5 and 1.0 m overlying subterranean clay. It is estimated that there would be a total of about 10,000-12,000 ha available for oil palm development in the two subprojects.
- (ii) To expedite land development, it is proposed to issue master titles to blocks of land, which could be leased to the Project schemes for 50 years or more, thus ensuring that the participants retain title to the land. This approach would also enable the schemes to be operated on a commercial estate basis more effectively.
- (iii) The requirement for oil palm processing facilities should be based on each 60 t/hr FFB mill servicing 9,000-12,000 ha depending on yields (average 10,000 ha per mill). The mill at Saratok will just service the Phase I project, and an additional mill should be considered for the Betong area for Phase II. The projected development of about 40,000 ha of oil palm in the Sri Aman Division will require four 60-t/ha CPO mills — the existing mills at Lubok Antu and Saratok and in the future possibly at Betong and Roban.
- (iv) The planning, design, and implementation should involve all the concerned Sarawak State Government Agencies, participating State Planning Unit, and the Land Development Ministry. The PMU should also have staff seconded from all the concerned EAs to ensure an integrated and coordinated implementation program.

## **2. Project-Specific Recommendations**

58. In view of these findings, the Mission recommends that the following actions be taken:

### **a. Project Monitoring and Evaluation**

59. The midterm review survey carried out in 1991, as required by LA, Schedule 6, para. III(15), has been analyzed, and the draft socioeconomic survey report has been sent to MOA and will be submitted to the Bank by mid-1995 as partial compliance with the LA. The second midterm evaluation was due in the second half of 1994 prior to the preparation of the Project completion report, and the Mission requested that steps be taken to ensure this was also done by third quarter 1995.

### **b. Fish Hatchery Water Supply**

60. While there has been an improvement in the supply of suitable water for the hatchery by using an outgrowing pond and a reservoir, there is an urgent need to develop a more reliable permanent supply. There is a need to pursue the installation of a pipeline by PWD as was proposed, or to develop additional rainfed reservoir ponds. The Mission requested DOA to take action on this matter as soon as possible.

### **c. Expansion of the Palm Oil Mill**

61. The projected expansion of the palm oil mill from its present capacity of 30 to 60 t/hr FFB should be done as soon as possible, as it is expected that in 1995 a total of 5,894 ha of oil palm trees will be at their production stage, and the present capacity will not be able to accommodate the Project's FFB outputs in succeeding years, when the oil palms increase their yields. It is recommended that financing and construction plans for the mill's expansion should be acted upon by the JVC to ensure that the expansion will be realized in 1997.

### **d. Incremental Staffing**

62. Incremental staffing of DOA may need to be filled up to ensure that the extension requirements, particularly of the cocoa and pepper grower participants, will be effectively provided.

### **e. Marketing Assistance**

63. Marketing assistance for non-oil palm commercial products should be provided to the crop growers to ensure that the incremental yield increases will not be offset by low farmgate prices.

## APPENDIXES

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# PHYSICAL ACCOMPLISHMENTS

**Table 1: Comparison of Physical Accomplishments**

Item	Units	Appraisal	Reformulation	Actual	Achievement (%)	
					Appraisal	Reformulation
<b>I. Oil Palm Development</b>						
<b>A. Oil Palm Plantations</b>						
1. Land development	ha	10,000	7,000	11,540	115%	165%
2. Fertilizers and chemicals	ha	10,000	7,000	11,540	115%	165%
3. Field maintenance	ha	10,000	7,000	11,540	115%	165%
<b>B. Processing Facilities</b>						
1. Palm oil mill	unit	1	1	1	100%	100%
2. Bulk oil installation	unit	1	0	0	0%	
Subtotal	unit	2	1	1	50%	100%
<b>C. Institutional Support to SALCRA</b>						
1. Buildings	unit	140	165	163	116%	99%
2. Vehicles and equipment	unit	36	61	69	192%	113%
3. Training	person	125	125	404	323%	323%
4. Consultants	pm	209	209	96	46%	46%
<b>II. Roads and Drainage</b>						
<b>A. Roads</b>						
1. Civil works	km	88	88	64	73%	73%
2. Operations and maintenance	km	88	88	64	73%	73%
3. Consultants	pm	256	330	330	129%	100%
4. Land acquisition	ha	na	na	na		
<b>B. Drainage</b>						
1. Construction	km	87	102	102	117%	100%
2. Offices and quarters	unit	11	11	11	100%	100%
3. Equipment	unit	8	10	10	125%	100%
4. Operations and maintenance	km	87	102	102	117%	100%
5. Land acquisition	ha	20	60	60	300%	100%
<b>III. Agricultural Support Services</b>						
<b>Department of Agriculture</b>						
1. Offices and quarters	unit	na	56	49		88%
2. Hatchery improvement	unit	1	1	1	100%	100%
3. Vehicles and equipment	unit	50	56	56	112%	100%
<b>IV. Project Management Unit</b>						
1. Vehicles and equipment	unit	4	4	4	100%	100%

pm = person-month

**Table 2: Details of Physical Accomplishment  
(as of October 1994)**

Item	Appraisal	Reformulation	Completion	Achievement (%)	Remarks
<b>I. Oil Palm Development</b>					
A. Oil Palm Plantation Establishment (ha)	10,000	7,000	8,374	83.74	The remaining oil palm areas will be fully established in 1995.
B. Processing Facilities					
1. Palm oil mill (unit)	1	1	1	100.00	The mill will be commissioned on Nov 28 1994 with a capacity of 30 t/hr FFB. The design provides for an additional 30 t/hr FFB.
2. Bulk oil installation (unit)	1	0	0	0.00	Notes needed. Refer to text.
C. Institutional Support to SALCRA (Consultancy Services)					
1. Local consultant for design and supervision (pm)	147	147	64	43.54	Services were reduced. SALCRA staff are already capable of doing part of the job
2. International consultant for plantation establishment and management (pm)	62	62	32	51.61	SALCRA staff are already capable of part of the job.
3. International consultant for advisory assistance (pm)	20	20	14	70.00	Part of the job was carried out by SALCRA staff.
<b>II. Roads</b>					
A. Road Network	88	88	63.880	72.59	Reduction was due to relocation of the road alignment based on the location of project beneficiaries.
1. Package 1 (km)	51	51	28.933	56.73	
2. Package 2 (km)	28	28	24.247	86.60	
3. Package 3 (km)	9	9	10.700	118.89	
B. Bridges					
1. Number	7	7	5	71.43	Same reason as above.
2. Length (m)	260	260	205.5	79.04	
<b>III. Drainage</b>					
A. Drains					
1. Main drains (km)	13	13	13	100.00	
2. Collector drains (km)	24	24	24	100.00	
3. Farm drains (km)	35	35	35	100.00	
B. Access Roads (km)	10	10	10	100.00	
C. Tidal Gates (km)	4	4	4	100.00	
D. Offices/Quarters (no)	11	11	11	100.00	
E. Land Acquired (ha)	20	20	60	300.00	Exceeded target due to more drains constructed.
F. Consultancy Services (pm)	20	20	20	100.00	DID staff were capable of doing the job.
<b>IV. Agricultural Support Services</b>					
A. Buildings	56	56	49		
1. Office/stores (no)	7	7	6	85.71	One was not built due to land acquisition problem.
2. Class 2 quarters (no)	0	0	2	NA	

**Table 2: Details of Physical Accomplishment  
(as of October 1994)  
(continued)**

Item	Appraisal	Reformulation	Completion	Achievement (%)	Remarks
3. Class 3 quarters (no)	2	2	3	150.00	Other quarters were built to accommodate the DOA component head.
4. Class 4 quarters (no)	4	4	16	400.00	Exceeded targets due to increased number of subdistricts.
5. Barracks (no)	43	43	22	51.16	The remaining units were not constructed, since most of the administrative and field staff were local residents of the project area.
B. Land Acquisition (ha)	3.7	3.7	3.7	100.00	
C. Hatchery Improvement					
1. Office complex (no)	1	1	1	100.00	
2. Pond renovation (ha)	2.25	2.25	1.50	66.67	Lack of available area.
3. Pond construction (ha)	1.60	1.60	0.84	52.50	
4. Access road (km)	0.75	0.75	0.75	100.00	
5. Water storage tanks (no)	9	9	6	66.67	Remaining tanks were not built due to limited supply of clean water.
D. Crop Development					
1. Cocoa intercrop (ha)	728	728	694	95.33	
2. Cocoa rehabilitation (ha)	467	467	312	66.81	
3. Cocoa monocrop (ha)	3000	3000	3396	113.20	
4. Pepper (ha)	231	231	493.75	213.74	
5. Fruit trees (ha)	2187	2187	2190	100.14	
E. Aquaculture Development					
1. Pond construction (ha)	120	120	100	83.33	
2. Pond renovation (ha)	35	35	30	85.71	
V. Incremental Staffing					
A. SALCRA	167	167	155	92.81	All key posts in the estates have been filled up.
B. PWD	7	7	5	71.43	Did not hire administrative staff. PWD administrative staff took over the job.
C. DID	6	6	6	100.00	
D. DOA	43	43	25	58.14	Most technical positions did not attract qualified applicants due both to its nonpermanent status and the remoteness of the Project area.
E. PMU	12	12	8	66.67	
All Agencies	235	235	199	84.68	
VI. Project Management Unit					
Vehicles and equipment (no)	4	4	4	100.00	

**Table 3: Summary of Oil Palm Scheme Development**

<b>Scheme</b>	<b>Land Participation (ha)</b>	<b>Participants (no.)</b>	<b>Area Cleared (ha)</b>	<b>Area Planted (ha)</b>
Roban South	1,601	547	1,544	1,376
Saratok	3,154	759	3,046	2,816
Roban North	2,014	377	1,931	1,610
Rimbass	1,040	220	1,098	867
Krian	759	232	696	361
Layar	801	151	480	287
Paku	965	182	670	499
Kabong/Nyabor	1,207	95	705	558
<b>Total</b>	<b>11,541 <sup>a</sup></b>	<b>2,563</b>	<b>10,170</b>	<b>8,374</b>

<sup>a</sup> To be completed by December 1995.

**Table 4: Number of Land Development Agreements Signed by Participants as of October 1994**

<b>Number</b>	<b>Oil Palm Estate</b>	<b>Participants (no.)</b>	<b>Land Development Agreements Signed</b>	
			<b>Total (no.)</b>	<b>%</b>
1	Roban South	547	520	95.06
2	Saratok	759	520	68.51
3	Roban North	377	377	100.00
4	Rimbass	220	218	99.09
5	Kabong	95	42	44.21
6	Layar	151	149	98.68
7	Paku	182	170	93.41
8	Krian	232	157	67.67
	<b>Total</b>	<b>2,563</b>	<b>2,153</b>	<b>84.00</b>

**Table 5: Comparison of Tree Planting Schedule by Year  
(ha)**

<b>Year</b>	<b>Appraisal</b>	<b>Completion</b>	<b>Difference</b>
1987	1,300	0	(1,300)
1988	1,400	500	(900)
1989	1,400	1,233	(167)
1990	1,600	1,322	(278)
1991	2,100	1,745	(355)
1992	2,200	1,094	(1,106)
1993	0	1,627	1,627
1994	0	1,779	1,779
1995	0	700	700
<b>Total</b>	<b>10,000</b>	<b>10,000</b>	<b>0</b>

**Table 6: Comparison of Incremental Staffing by Project Implementing Agency**

Item	PMU			DID			DOA			PWD			SALCRA			TOTAL		
	App.	Comp.	% Achv't	App.	Comp.	% Achv't	App.	Comp.	% Achv't	App.	Comp.	% Achv't	App.	Comp.	% Achv't	App.	Comp.	% Achv't
Officer Level	3	3	100.00	0	0	NA	2	0	0.00	1	1	100.00	9	6	66.67	15	10	66.67
Assistant Officers	3	1	33.33	0	0	NA	1	0	0.00	2	2	100.00	15	11	73.33	21	14	66.67
Administrative Staff	1	0	0.00	0	0	NA	14	5	35.71	2	0	0.00	65	58	89.23	82	63	76.83
Drivers/Utilities	5	4	80.00	6	6	100.00	26	20	76.92	2	2	100.00	78	80	102.56	117	112	95.73
Total	12	8	66.67	6	6	100.00	43	25	58.14	7	5	71.43	167	155	92.81	235	199	84.68

DID = Drainage and Irrigation Department

DOA = Department of Agriculture

PMU = Project Management Unit

PWD = Public Works Department

SALCRA = Sarawak Land Consolidation and Rehabilitation Authority

## COMPARISON OF COST ESTIMATES AND ACTUAL EXPENDITURES

**Table 1: Comparison of Project Costs**

Item	Appraisal Estimate			Actual			Percentage Difference		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
Oil Palm Plantation	8,627	14,892	23,519	5,835	7,997	13,832	67.64	53.70	58.81
Processing Facilities	6,500	3,367	9,867	0	6,052	6,052	0.00	179.74	61.34
Institutional Support to SALCRA	4,347	8,026	12,373	3,210	6,339	9,549	73.84	78.98	77.18
Roads	6,420	9,782	16,202	7,898	13,240	21,138	123.02	135.35	130.47
Drainage	1,203	1,745	2,948	504	2,583	3,087	41.90	148.02	104.72
Agricultural Support Services	2,004	4,969	6,973	792	5,077	5,869	39.52	102.17	84.17
Project Management Units	725	2,019	2,744	113	2,139	2,252	15.59	105.94	82.07
Interest During Construction	12,774	0	12,774	5,381	0	5,381	42.12	0.00	42.12
<b>Total</b>	<b>42,600</b>	<b>44,800</b>	<b>87,400</b>	<b>23,733</b>	<b>43,427</b>	<b>67,160</b>	<b>55.71</b>	<b>96.94</b>	<b>76.84</b>

**Table 2: Cost Comparison by Project Component**  
(\$'000)

Category	Appraisal			Actual			Difference					
							Foreign		Local		Total	
	Foreign	Local	Total	Foreign	Local	Total	Amount	Percent	Amount	Percent	Amount	Percent
<b>I. Oil Palm Development</b>												
<b>A. Oil Palm Plantation</b>												
1. Land Development	5,077	8,824	13,901	2,383	4,397	6,780	2,694	47%	4,427	50%	7,121	49%
2. Fertilizer and Chemicals	2,877	643	3,520	2,405	1,736	4,141	472	84%	(1,093)	270%	(621)	118%
3. Field Maintenance	674	5,425	6,099	1,047	1,864	2,911	(373)	155%	3,561	34%	3,188	48%
<b>B. Processing Facilities</b>												
1. Palm Oil Mill	5,019	2,007	7,026	0	6,052	6,052	5,019	0%	(4,045)	302%	974	86%
2. Bulk Oil Installation	1,481	1,360	2,841	0	0	0	1,481	0%	1,360	0%	2,841	0%
<b>C. Institutional Support to SALCRA</b>												
1. Building	1,228	2,566	3,794	904	1,691	2,595	324	74%	875	66%	1,199	68%
2. Vehicles and Equipment	997	224	1,221	1,684	432	2,116	(687)	169%	(208)	193%	(895)	173%
3. Training	4	70	74	0	113	113	4	0%	(43)	161%	(39)	153%
4. Consultants	900	805	1,705	622	271	893	278	69%	534	34%	812	52%
5. Incremental Operation Cost	1,218	4,361	5,579	0	3,832	3,832	1,218	0%	529	88%	1,747	60%
Subtotal	19,475	26,285	45,760	9,045	20,388	29,433	10,430	46%	5,897	78%	16,327	64%
<b>II. Roads and Drainage</b>												
<b>A. Roads</b>												
1. Civil Works	5,332	7,162	12,494	7,187	11,819	19,006	(1,855)	135%	(4,657)	165%	(6,512)	152%
2. Operation and Maintenance	158	565	723	0	0	0	158	0%	565	0%	723	0%
3. Consultants	930	737	1,667	711	1,058	1,769	219	76%	(321)	144%	(102)	106%
4. Land Acquisition	0	1,318	1,318	0	363	363	0	0%	955	28%	955	28%
<b>B. Drainage</b>												
1. Construction	678	911	1,589	324	650	974	354	48%	261	71%	615	61%
2. Offices and Quarters	150	310	460	0	1,008	1,008	150	0%	(608)	325%	(548)	219%
3. Equipment	282	63	345	180	399	579	102	64%	(336)	633%	(234)	168%
4. Operation and Maintenance	57	205	262	0	357	357	57	0%	(152)	174%	(95)	136%
5. Survey and Design	36	128	164	0	49	49	36	0%	79	38%	115	30%
6. Land Acquisition	0	128	128	0	120	120	0	0%	8	94%	8	94%
Subtotal	7,623	11,527	19,150	8,402	15,823	24,225	(779)	110%	(4,296)	137%	(5,075)	127%
<b>III. Agricultural Support Services</b>												
1. Offices and Quarters	621	1,299	1,920	346	2,209	2,555	275	56%	(910)	170%	(635)	133%
2. Hatchery Improvement	134	52	186	11	0	11	123	8%	52	0%	175	6%
3. Vehicles and Equipment	253	56	309	435	0	435	(182)	172%	56	0%	(126)	141%
4. Incremental Operation Cost	995	3,562	4,557	0	2,868	2,868	995	0%	694	81%	1,689	63%
Subtotal	2,003	4,969	6,972	792	5,077	5,869	1,211	236%	(108)	102%	1,103	84%
<b>IV. Project Management Unit</b>												
1. Vehicles and Equipment	172	38	210	113	0	113	59	66%	38	0%	97	54%
2. Incremental Operating Cost	553	1,981	2,534	0	2,139	2,139	553	0%	(158)	106%	395	84%
Subtotal	725	2,019	2,744	113	2,139	2,252	612	66%	(120)	106%	492	82%
<b>V. Interest During Construction</b>	12,774	0	12,774	5,381	0	5,381	7,393	42%	0	0%	7,393	42%
<b>GRAND TOTAL</b>	<b>42,600</b>	<b>44,800</b>	<b>87,400</b>	<b>23,733</b>	<b>43,427</b>	<b>67,160</b>	<b>18,867</b>	<b>56%</b>	<b>1,373</b>	<b>97%</b>	<b>20,240</b>	<b>77%</b>



**Table 3: Financing Arrangements at Appraisal and Project Completion Periods  
(\$ million)**

Source	Foreign Cost		Local Cost		Total Cost		Financing (%)	
	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual
ADB	29.8	18.4	12.8	5.3	42.6	23.7	49%	35%
Government	12.8	5.4	28.9	32.1	41.7	37.5	48%	56%
Equity <sup>a</sup>	—	0.0	3.1	6.0	3.1	6.0	4%	9%
Total Cost	42.6	23.8	44.8	43.4	87.4	67.2	100%	100%

<sup>a</sup> SALCRA (70%) and Perlis Plantation Berhad (30%).

**Table 4: Project Cost in Current Prices by Component by Year**



Category	FY 1986		FY 1987		FY 1988		FY 1989		FY 1990		FY 1991		FY 1992		FY 1993		FY 1994		Total																
	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.	Bank	Govt.			
Foreign Costs																																			
I. Oil Palm Development																																			
A. Oil Palm Plantation																																			
Land Development	0	0	58	0	76	0	203	0	485	0	310	0	706	0	255	0	280	0	2,383	0	2,383	0	2,383	0	2,383	0	2,383	0	2,383	0	2,383	0	2,383	0	2,383
Fertilizer and Chemicals	0	0	28	0	76	0	62	0	302	0	364	0	474	0	1,002	0	97	0	2,405	0	2,405	0	2,405	0	2,405	0	2,405	0	2,405	0	2,405	0	2,405	0	2,405
Field Maintenance	0	0	0	0	14	0	51	0	183	0	157	0	529	0	113	0	0	0	1,047	0	1,047	0	1,047	0	1,047	0	1,047	0	1,047	0	1,047	0	1,047	0	1,047
B. Processing Facilities																																			
Palm Oil Mill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
C. Institutional Support to SALCRA																																			
Building	0	0	9	0	1	0	0	0	154	0	340	0	373	0	0	0	27	0	904	0	904	0	904	0	904	0	904	0	904	0	904	0	904	0	904
Vehicles and Equipment	0	0	71	0	13	0	133	0	511	0	253	0	347	0	77	0	279	0	1,684	0	1,684	0	1,684	0	1,684	0	1,684	0	1,684	0	1,684	0	1,684	0	1,684
Training	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Consultants	0	0	0	0	14	0	110	0	205	0	145	0	41	0	107	0	0	0	622	0	622	0	622	0	622	0	622	0	622	0	622	0	622	0	622
II. Roads and Drainage																																			
A. Roads																																			
Civil Works	0	0	0	0	0	0	0	0	252	0	905	0	3,529	0	2,016	0	485	0	7,187	0	7,187	0	7,187	0	7,187	0	7,187	0	7,187	0	7,187	0	7,187	0	7,187
Operation and Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Consultants	0	0	0	0	52	0	48	0	71	0	186	0	125	0	57	0	172	0	711	0	711	0	711	0	711	0	711	0	711	0	711	0	711	0	711
Land Acquisition	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B. Drainage																																			
Construction	0	0	0	0	54	0	129	0	101	0	40	0	0	0	0	0	0	324	0	324	0	324	0	324	0	324	0	324	0	324	0	324	0	324	
Offices and Quarters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Equipment	0	0	12	0	26	0	17	0	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Operation and Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Survey and Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	180	0	180	0	180	0	180	0	180	0	180	0	180	0	180	0	180	
Land Acquisition	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
III. Agricultural Support Services																																			
Offices and Quarters	0	0	0	0	31	0	74	0	28	0	0	0	213	0	0	0	0	346	0	346	0	346	0	346	0	346	0	346	0	346	0	346	0	346	
Hatchery Improvement	0	0	0	0	2	0	9	0	0	0	0	0	0	0	0	0	0	11	0	11	0	11	0	11	0	11	0	11	0	11	0	11	0	11	
Vehicles and Equipment	0	0	0	0	0	0	15	0	2	0	1	0	0	0	0	0	0	435	0	435	0	435	0	435	0	435	0	435	0	435	0	435	0	435	
Incremental Operation Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
IV. Project Management Unit																																			
Incremental Operation Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
V. Interest During Construction																																			
Subtotal	0	0	211	391	809	348	898	412	2,429	430	2,701	640	6,337	951	3,627	1,407	1,340	18,352	5,381	5,381	5,381	5,381	5,381	5,381	5,381	5,381	5,381	5,381	5,381	5,381	5,381	5,381	5,381	5,381	
Local Costs																																			
Oil Palm Development																																			
A. Oil Palm Plantation																																			
Land Development	0	0	98	0	117	0	326	0	900	0	543	0	1,122	208	0	426	0	3,106	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291	1,291	
Fertilizer and Chemicals	0	0	7	0	19	0	29	0	75	0	91	0	119	116	0	196	0	1,736	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340	
Field Maintenance	0	0	0	0	24	0	91	0	325	0	279	0	829	111	0	205	0	1,548	316	316	316	316	316	316	316	316	316	316	316	316	316	316	316	316	
B. Processing Facilities																																			
Palm Oil Mill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
C. Institutional Support to SALCRA																																			
Building	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Vehicles and Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Training	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Consultants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Incremental Operation Cost	0	0	70	0	129	0	72	0	85	0	114	0	0	0	0	0	0	271	0	271	0	271	0	271	0	271	0	271	0	271	0	271	0	271	
Land Acquisition	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
VI. Roads and Drainage																																			
A. Roads																																			
Civil Works	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Operation and Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Consultants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Land Acquisition	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B. Drainage																																			
Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offices and Quarters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																

**Federal and State of Sarawak Expenditures**  
**Equity : SALCRA (70%) and Perlis Plantation Berhad (30%).**

## PROJECT IMPLEMENTATION SCHEDULE

Item	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>I. Oilpalm Development</b>									
<b>A. Oil Palm Plantations</b>									
1. Land development	■	■	■	■	■	■	■		
2. Planting		■	■	■	■	■	■		
3. Consultant services	■	■	■	■	■	■	■		
<b>B. Processing Facilities</b>									
1. Palm oil mill					■	■	■		
2. Bulk oil installation					■	■	■		
<b>C. Institutional Support to SALCRA</b>		■	■	■	■	■			
<b>II. Roads and Drainage</b>									
<b>A. Roads</b>									
1. Land acquisition		■	■						
2. Consultants									
a. Survey and design	■	■	■						
b. Construction supervision		■	■	■	■	■			
3. Civil works		■	■	■	■	■			
<b>B. Drainage</b>									
1. Land acquisition	■	■	■						
2. Survey and design	■	■							
3. Procurement of equipment	■	■	■						
4. Civil works		■	■	■	■	■			
<b>III. Agricultural Support Services</b>									
1. Staff recruitment	■	■	■						
2. Procurement of vehicles and equipment	■	■	■						
3. Hatchery construction			■	■					
<b>IV. Project Management Unit</b>									
1. Staff recruitment	■	■	■						
2. Procurement of vehicles and equipment	■	■	■						
<b>V. SAPP and Feasibility Study</b>									
1. SAPP	■								
2. Feasibility study		■	■						

SAPP = Sarawak Agricultural Perspective Plan

 Appraisal  
 Actual

## SUMMARY OF CONTRACTS AWARDED

Table 1: Major Contracts <sup>a</sup>

Contract Description	Contractor/Supplier	Contract Amount	US Dollar Equivalent
<b>A. Oil Palm Development</b>			
1. Civil Works	Samado Sdn. Bhd. Yew Development Company	M\$ 1,529,091 M\$ 439,414	577,725 163,019
2. Fertilizer and Chemicals	Baco Enterprise Sdn. Bhd. Bacom Enterprises Sdn. Bhd. Bacom Enterprises Sdn. Bhd.	M\$ 649,217 M\$ 413,933	245,676 154,405 458,840
3. Vehicles and Equipment	Syarikat Waty Enterprises Ismaco Sdn. Bhd. Ismaco Sdn. Bhd. Kaliman Sdn. Bhd.	M\$ 307,800 M\$ 340,930 M\$ 278,668 M\$ 396,000	110,397 132,916 103,389 145,848
4. Consultancy	Kumarasivam Tan and Arifin Sime Darby Services Ltd.	M\$ 490,671 US\$ 421,447 M\$ 739,704	186,253 421,447 270,731
<b>B. Roads and Drainage</b>			
1. Civil Works	Liu Yu Tshiung Const. Sdn. Bhd. Malaysian Thai Dev/Lau Jurutama Sdn. Bhd.	M\$ 4,532,290 M\$ 5,892,255 M\$ 9,129,297	1,775,764 2,204,110 3,524,096
2. Equipment	Sin Kim Hua Eng. Sdn. Bhd.	M\$ 348,062	124,629
3. Consultancy	Kumarasivam Tan and Arifin	M\$ 2,013,127	749,186
<b>C. Agricultural Support Services</b>			
1. Civil Works	Mida Construction Co.	M\$ 318,909	127,564
2. Vehicles and Equipment	Jentra Pengedar Sdn. Bhd.	M\$ 596,524	226,539

<sup>a</sup> These contracts are classified as the major contracts, with a total contract amount of about \$100,000 or above.

**Table 2: Minor Contracts**

<b>Contract Description</b>	<b>Number of Contracts</b>	<b>US Dollar Equivalent</b>
<b>A. Oil Palm Development</b>		
1. Civil Works	216	5,777,395
2. Fertilizer and Chemicals	77	1,897,145
3. Vehicles and Equipment	73	1,868,870
4. Field Maintenance	88	2,621,299
<b>B. Roads and Drainage</b>		
1. Civil Works	8	324,264
2. Equipment	4	55,448
3. Consultancy	1	13,842
<b>C. Agricultural Support Services</b>		
1. Civil Works	19	259,184
2. Vehicles and Equipment	18	204,499
<b>D. Project Management Unit</b>		
Vehicles and Equipment	11	112,956

## COMPLIANCE WITH LOAN COVENANTS

Covenant	Reference to Loan Document	Status of Compliance
<b>I. PROJECT IMPLEMENTATION</b>		
<b>A. Executing Agencies</b>		
1. (a) SALCRA shall be the Executing Agency for Parts A of the Project and shall be responsible for carrying out all aspects for its part of the Project. The Borrower shall be as soon as possible, but not later than February 1990.	LA, Schedule 6, para. 1.	
(i) establish within SALCRA a Project Unit which shall be exclusively responsible for the implementation of Part A of the Project and which shall be headed by a Senior Officer with the necessary qualification and experience in field activities and Oil Palm Office Management, who shall have decision making authority;		Complied with. This unit is called Kalaka-Saribas Coordinating Unit. The unit is progressively in full operation with the appointment of the Head of Oil Palm Component on 10 June 1991.
(ii) appoint four additional Scheme Managers with the necessary qualifications and experience in Oil Palm Plantation Management.		Of four Estate Managers, three have been appointed (Saratok OPE, Roban North OPE, and Roban South OPE). The Estate Manager at Roban North OPE is also managing the Kabong OPE as it is too small to warrant a separate Estate Manager.
<b>B. Project Management and Coordination</b>		
2. SALCRA shall assign a Group Manager to the Project Management Unit (PMU) who shall be responsible for implementation of Part A of the Project and shall be directly accountable to the General Manager of SALCRA and the Project Director.	LA, Schedule 6, para. 3	Complied with.

Covenant	Reference to Loan Document	Status of Compliance
<b>C. Project Steering Committee</b>		
3. The Borrower shall, prior to the effective date of this Loan Agreement establish a Project Steering Committee (PSC) to supervise the functions of PMU and coordinate Project execution. PSC shall be jointly chaired by the Sarawak State Chief Minister of Agriculture of their respective authorized representatives. Member of PSC shall be the heads of departments of the Federal and State Agencies involved in Project implementation. The Project Director shall be Secretary of PSC.	LA, Schedule 6, para. 4	Complied with. (PSC set up in 1986.) One meeting held in January 1992.
<b>D. Interdepartmental Task Force</b>		
4. At district level an Interdepartmental Force shall carry out public information campaigns and such other measures as are conducive to promoting farmer's participation in the establishment of the Oil Palm Plantations under Part A (i) of the Project. The Task Force shall be chaired by the resident of the Second Division and shall further comprise representatives of SALCRA as Deputy Chairman and of other relevant Government agencies, including the Department of Agriculture (DOA) and PMU, as members.	LA, Schedule 6, para. 2	Complied with. (Task Force set up in October 1989.) Two meetings held in 1990, one in January 1991, and one in May 1992. No problem with farmer participation, as the land available is 11,540 ha.
<b>E. Joint Venture for Processing Facilities</b>		
5. Except as the Bank may otherwise agree the Palm Oil processing facilities under Part A (2) of the Project shall be established as a joint venture between SALCRA and a private sector company. The terms and condition of the joint venture agreement and the charter of new company [the Joint Venture (JV)] to be established thereunder shall be finalized on terms and conditions satisfactory to the Bank. The Joint Venture shall be established before 30 June 1991.	LA, Schedule 6, para. 5	A joint venture company (JVC) under the name of Saratok Palm Oil Mill Sdn. Bhd. was established.  The Joint Venture Agreement and the Management Agreement between SALCRA and Perlis Plantation Berhad was forwarded to the Bank.

Covenant	Reference to Loan Document	Status of Compliance
6. In the proposed Joint Venture, the private sector company shall hold majority share holding of at least 51 to 49 percent, respectively. The balance of the Joint Venture by SALCRA, out of the proceeds of the Loan relented to SALCRA by Sarawak pursuant to the provisions of Section 3.01 of the LA.	LA, Schedule 6, para. 6	SALCRA holds 70 percent of the JVC's equity, with Perlis Plantation Berhad holding 30 percent. SALCRA has secured the loan of RM12 million from the State Government to finance the establishment of the JVC for the processing facilities. There is a plan to diversify part of SALCRA's equity in the JVC to landowners.
7. SALCRA shall enter into an agreement with the Joint Venture to provide for the processing of all fresh fruit produced on the estates to be established under the Project and shall sell the fruit to the new company at prevailing market prices. The Agreement shall be finalized before 30 September, 1988 in consultation with the Bank.	LA, Schedule 6, para. 7	SALCRA has entered an agreement with the JVC under the Management Agreement to process all fresh fruit bunches (FFB) from the plantation. Load testing of the mill has been carried out since 17 November 1994 and the mill was commissioned and in operation on 28 November 1994.
<b>II. Operation and Management</b>		
8. Overall responsibilities for operation and maintenance of the Project facilities shall rest with SALCRA and the Ministry of Agriculture (MOA) for Parts A and B of the Project, respectively. SALCRA shall operate and maintain the Oil Palm Plantation itself and shall cause the Palm Oil processing facilities to be operated and maintained by the Joint Venture. Maintenance of drainage works and road shall be undertaken by the Drainage and Irrigation Department and Public Works Department, respectively, under their current regulations and arrangements.	LA, Schedule 6, para. 8	Complied with. The palm oil processing facilities will be operated and managed by Perlis Plantation Berhad initially for the first five years of operation. Tenders for upgrading and surfacing of estate roads (Roban South OPE, Saratok OPE, Roban North OPE, Rimbas OPE, Kabong OPE, Layar OPE, and Paku OPE) have been called and awarded in 1995 except for Roban South OPE and Saratok OPE, which were retendered and have yet to be awarded. All works are in progress except Kabong OPE, which was completed in September 1994.



Covenant	Reference to Loan Document	Status of Compliance
9. The Borrower and SALCRA shall provide or cause to be provided all funds necessary for the operation and maintenance of the Project facilities to the agencies responsibilities for their respective parts of the Project.	LA, Schedule 6, para. 9	Complied with. Incremental operation costs and training were provided through a State grant.
<b>III. OTHER MATTERS</b>		
<b>Land Development Cost Ceiling</b>		
10. In carrying out any land development in the Project area, SALCRA shall limit its operations to within the basic norm cost in constant 1985 terms, estimated at US\$2,200 per hectare. SALCRA shall refrain from land development if the cost of such development exceeds this basic norm cost by more than 20 per cent.	LA, Schedule 6, para. 10.	Complied with. The present development cost is below RM5,000 per hectare.
<b>Sub-loans and Recovery of Land Development Costs</b>		
11.(a) SALCRA shall enter into Land Development Agreement with participating farmers for the purposes of establishing oil palm plantations. These Agreements shall enter inter-alia, contain confirmation of participating farmers consent for the use of their individual parcels of land for this purpose and the procedures for determining the pro-rata cost of land development attributable to each parcel of land which shall be treated as subloans to participating farmers on terms and conditions specified in Section 3.01 (c) of this Loan Agreement.	LA, Schedule 6, para. 11 (a).	Complied with. Of 2,563 participating farmers, 2,164 (85 percent) signed the Land Development Agreement. 1,456 titles covering 2,547 ha issued to the participating farmers. Another 676 titles covering 1,259 ha are in the Office ready for delivery.
Except as the Bank may otherwise agree, the recovery of these subloans shall be made from the proceeds of the sale of fresh fruit bunches to the Palm Oil Mill to be established under Part A (2) of the Project.		

Covenant	Reference to Loan Document	Status of Compliance
(b) Each participating farmer's share in the proceeds of sales of fresh fruit bunches shall be determined on the basis of a picket survey of individual land holding.	LA, Schedule 6, para. 11 (b)	All costs and revenue would be determined on a pro-rata basis on the actual planted areas in the estate.
(c) SALCRA shall (i) upon completion of the land development activities for each block of land selected for this purpose, open separate sales and loan account ledgers for (ii) record therein pro-rata land development cost to be recovered from such farmer, and (iii) record such farmer's share in the proceeds of the fresh fruit bunch sales to the palm oil mill.	LA, Schedule 6, para. 11 (c)	The system for operating individual participants' accounts has been completed for all estates.
(d) Recovery of the Land Development costs, together with interest thereon, from each participating farmer shall be such that where possible a minimal cash pay-out of Malaysian RM 350 per month (including farm wages) to each farmer shall be ensured.	LA, Schedule 6, para. 11 (d).	Provision to this effect has been made in LDA. A participant engaged in maintenance of estate receives RM300-350 a month. A participant who also harvests FFB will get an additional RM150 per month. At least two members of a family work in the estate on average. Therefore, a participating family should get a minimum of RM700-900 per month. In some cases, there are 4-5 family members working in the estate.

### Training

12.(a) SALCRA shall establish a permanent training center for training of its field assistants, clerks, drivers and operators, and participating farmers shall be given in the field and through demonstration on the job.	LA, Schedule 6, para. 12 (a).	Being complied with. Training of farmers and estate staff is ongoing, both at the training center and in the field and through study tours.
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Covenant	Reference to Loan Document	Status of Compliance
(b) In addition, a total number of about 125 selected staff (estate management and supervisory staff) of SALCRA shall undergo training in the training institute of the Federal Land Development Authority of the Borrower.	LA, Schedule 6, para. 12 (b)	SALCRA is continuing to train management and supervisory staff with private plantations.
<b>Land Acquisition</b>		
13.(a) The Borrower shall ensure that all lands, properties, rights-of-way, and other rights or privileges required for the Project are promptly acquired or otherwise made available so as to avoid delay in Project implementation. Without limiting the generality of the foregoing, the Borrower shall ensure that all land required for the Palm Oil Mill is acquired and made available to SALCRA on a timely basis.	LA, Schedule 6, para. 13 (a)	Complied with.
(b) SALCRA shall ensure that timely consent of farmers is obtained to make land available for establishment of Oil Palm Plantations.	LA, Schedule 6, para. 13 (b)	Complied with.
<b>Project Monitoring and Evaluation</b>		
14. The monitoring and evaluation of division of MOA shall undertake the midterm evaluation of Project by mid-1991 and the Project completion evaluation by the end of 1993, prior to the preparation of the Project completion report referred to in Section 4.07 (c) of this Loan Agreement.	LA, Schedule 6, para. 14.	Partially complied with. The midterm survey was carried out in 1991 and draft proof sent to MOA. The completion survey will be carried out in 1995.

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Covenant	Reference to Loan Document	Status of Compliance
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**Reports**

15. In addition to the progress report referred to in Section 4.07 (b) of this Loan Agreement, the Borrower shall cause MOA to submit to the Bank an annual plan of implementation and achievements along with the quarterly report for the quarterly progress report for the last quarter of each year. Furthermore, the quarterly progress reports shall also provide information on the progress of procurement of facilities and the status of consultant services to be provided under Part B of the Project. The quarterly progress report for each quarter shall be submitted within one month of the quarter to which it relates.	LA, Schedule 6, para. 15	Complied with.
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**CONTRACT AWARDS AND DISBURSEMENTS  
(\$'000)**

Category	At Appraisal	Final Allocation	Contracts	Disbursement	Amount Cancelled
01A Oil Palm Development (Part A) – Civil Works	4,223	3,520	3,412	3,288	232
01B Oil Palm Development (Part A) – Fertilizers & Chemicals	1,925	2,419	2,417	2,405	14
01C Oil Palm Development (Part A) – Vehicles & Equipment	667	2,258	2,029	1,684	574
01D Oil Palm Development (Part A) – Field Maintenance	1,266	1,075	1,073	1,047	28
02A Processing Facilities (Part A) – Palm Oil Mill	3,359	0	0	0	0
02B Processing Facilities (Part A) – Bulk Storage	991	0	0	0	0
03A Roads & Drainage (Part B) – Civil Works	4,123	7,890	7,828	7,510	380
03B Roads & Drainage (Part B) – Equipment	189	180	180	180	0
03C Roads & Drainage (Part B) – Operation and Maintenance	143	0	0	0	0
04A Agricultural Support Services (Part B) – Civil Works	506	387	387	360	27
04B Agricultural Support Services (Part B) – Vehicles & Equipment	169	432	432	432	0
04B Agricultural Support Services (Part B) – Incremental Operating Cost	666	0	0	0	0
05A Project Management Unit (Part B) – Vehicles & Equipment	115	113	113	113	0
05B Project Management Unit (Part B) – Incremental Operating Cost	370	0	0	0	0
06 Consulting Services (Part A & B)	1,248	1,373	1,373	1,335	38
07A Local Exp – Land Development	7,180	3,106	3,106	3,106	0
07B Local Exp – Fertilizers & Chemicals (Part A)	524	339	339	339	0
07C Local Exp – Field Maintenance (Part A)	4,415	1,548	1,548	1,548	0
07D Local Exp – Consultants	655	271	271	271	0
08 Unallocated	9,866	0	0	0	0
<b>Total</b>	<b>42,600</b>	<b>24,911</b>	<b>24,508</b>	<b>23,618</b>	<b>1,293</b>

# **OIL PALM, PALM OIL, COCOA AND PEPPER PRODUCTION**

**Table 1: Actual FFB Yield (t/ha) by Year and Time of Planting**

Year of Planting	ha	Year of Harvest					
		1990	1991	1992	1993	1994	Total
1988	500	557	5,873	8,382	11,920	10,791	37,523
1989	1,233	0	201	5,366	13,603	15,497	34,667
1990	1,322	0	0	111	2,409	6,861	9,381
1991	1,745	0	0	0	52	1,877	1,929
1992	1,094	0	0	0	0	6	6
Total		557	6,074	13,859	27,984	35,032	83,506

**Table 2: Comparison of Projected FFB Yield per Hectare  
on Inland and Peat Soils**

Year After Planting	FFB Yield/ha (t)		Difference (%)
	Inland	Peat	
1	0	0	NA
2	0	0	NA
3	1.2	7.5	625.00
4	8.00	13.30	166.25
5	13.44	23.00	171.13
6	16.65	26.20	157.36
7	18.80	29.90	159.04
8	20.21	30.00	148.44
9	21.08	30.00	142.31
10	21.57	30.00	139.08
11	21.57	30.00	139.08
12	21.79	30.00	137.68
13	21.70	28.00	129.03
14	21.47	28.00	130.41
15	21.20	28.00	132.08
16	20.88	26.00	124.52
17	20.51	26.00	126.77
18	20.11	26.00	129.29
19	19.30	25.00	129.53
20	19.27	25.00	129.74
21	18.88	0.00	0.00
22	18.43	0.00	0.00
23	18.01	0.00	0.00
24	17.57	0.00	0.00
25	17.12	0.00	0.00
26	0.00	0.00	NA

Table 3: FFB Yield Projections (t) of the Kalaka-Saribas Oil Palm Estates

Year	Year Planted Area Planted (ha) :		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Total	Cumulative Total (t)
	Inland Soils		0	500	1,233	1,322	1,745	914	1,193	1,374	364	0	8,645	
	Peat Soils		0	0	0	0	0	180	434	405	336	0	1,355	
Total			0	500	1,233	1,322	1,745	1,094	1,627	1,779	700	0	10,000	
Year	Year After Planting	FFB Yield/ha (t)		(t)	(t)	(t)	(t)	(t)	(t)	(t)	(t)	(t)	Annual Total (t)	
		Inland	Peat											
1988	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	2	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	3	1.2	7.5	0	600	0	0	0	0	0	0	0	600	600
1991	4	8.00	13.30	0	4,000	1,480	0	0	0	0	0	0	5,480	6,080
1992	5	13.44	23.00	0	6,720	9,864	1,586	0	0	0	0	0	18,170	24,250
1993	6	16.85	26.20	0	8,325	16,572	10,576	2,094	0	0	0	0	37,567	61,817
1994	7	18.80	29.90	0	9,400	20,529	17,768	13,960	2,447	0	0	0	64,104	125,920
1995	8	20.21	30.00	0	10,105	23,180	22,011	23,453	9,706	4,687	0	0	93,142	219,063
1996	9	21.08	30.00	0	10,540	24,919	24,854	29,054	16,424	15,316	4,686	0	125,793	344,856
1997	10	21.57	30.00	0	10,785	25,992	26,718	32,806	19,934	26,016	16,379	2,957	161,586	506,442
1998	11	21.57	30.00	0	10,785	26,596	27,868	35,266	22,565	31,234	27,782	7,381	189,477	695,918
1999	12	21.79	30.00	0	10,895	26,596	28,516	36,785	23,872	35,405	33,488	12,620	208,176	904,095
2000	13	21.70	28.00	0	10,850	26,867	28,516	37,640	24,667	37,131	37,941	14,864	218,474	1,122,569
2001	14	21.47	28.00	0	10,735	26,756	28,806	37,640	25,115	38,168	39,919	16,890	224,029	1,346,598
2002	15	21.20	28.00	0	10,600	26,473	28,687	38,024	25,115	38,753	41,114	17,436	226,202	1,572,799
2003	16	20.88	26.00	0	10,440	26,140	28,383	37,867	25,316	38,753	41,787	17,753	226,439	1,799,238
2004	17	20.51	26.00	0	10,255	25,745	28,026	37,465	24,874	39,015	41,787	17,931	225,100	2,024,338
2005	18	20.11	26.00	0	10,055	25,289	27,603	36,994	24,664	38,040	42,089	17,931	222,666	2,247,004
2006	19	19.30	25.00	0	9,650	24,796	27,114	36,436	24,417	37,766	41,156	18,012	219,345	2,466,349
2007	20	19.27	25.00	0	9,635	23,797	26,585	35,790	23,764	37,444	40,840	17,307	215,162	2,681,511
2008	21	18.88	0.00	0	9,440	23,760	25,515	35,092	23,426	36,194	40,469	17,223	211,118	2,892,629
2009	22	18.43	0.00	0	9,215	23,279	25,475	33,679	23,061	35,752	39,219	17,125	206,804	3,099,433
2010	23	18.01	0.00	0	9,005	22,724	24,959	33,626	22,140	35,275	38,711	16,336	202,777	3,302,211
2011	24	17.57	0.00	0	8,785	22,206	24,364	32,946	22,113	33,875	38,161	16,202	198,652	3,500,862
2012	25	17.12	0.00	0	8,560	21,664	23,809	32,160	17,256	33,839	36,643	16,056	189,988	3,690,850
2013	26	0.00	0.00	0	0	21,109	23,228	31,427	16,845	22,524	36,602	15,425	167,160	3,858,010
		-	-	0	209,380	516,331	530,968	670,202	417,721	615,187	638,772	259,449	3,858,010	38,493,441

FFB Yield Sources: PORLA (Inland Soil) and PORIM (Peat Soil).



**Table 4: Annual Cost of Maintaining One Hectare of Oil Palm**

<b>Item</b>	<b>Financial Cost (RM)</b>
Fertilizer	331
Weedicide	268
Pesticide	25
Farm Implements	51
Farm Upkeep <sup>a</sup>	59
Harvesting	273
<b>Total</b>	<b>1,007</b>

<sup>a</sup> Includes manuring, weeding (noxious and circle spraying),  
pruning, pest control, and maintenance of scheme roads.

Sources: SALCRA and DOA.

**Table 5: Comparison of Incremental Production Impacts**

Commodity	Incremental Yield		Achievement (%)
	Appraisal	Completion	
Crude Palm Oil (mt)	47,000	47,000	100.00
Cocoa (mt)	200	4,125	2,062.50
Copra (mt) <sup>a</sup>	600	NA	N/A
Pepper (mt) <sup>a</sup>	NA	1,951	N/A

NA = not available; N/A = not applicable.

<sup>a</sup> During Project implementation, cocoa production and pepper production were given priority and coconut (copra) production has not been included in the Project.

**No. of Beneficiaries:**

– Oil Palm	2,563
– Crop Development	3,139
– Fisheries	155

<b>Total</b>	<b><u>5,857</u></b>
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## EMPLOYMENT IMPACT

Component	Employment Impacts (person–years)					
	Construction/Establishment			Maintenance		
	Appraisal	Actual	Achievement (%)	Appraisal	Actual	Achievement (%)
I. Oil Palm Development						
A. Oil Palm Estates	NA	7,073 <sup>a</sup>	NA	2,130	1,914 <sup>a</sup>	90%
B. Palm Oil Mill	NA	168 <sup>b</sup>	NA	90	35 <sup>b</sup>	39%
Subtotal	4,500	7,241	161%	2,220	1,949	88%
II. Access Roads and Drainage Works	625	966 <sup>c</sup>	155%	NA	97 <sup>d</sup>	NA
III. Crop Development	NA	NA	NA	NA	1,472	NA

## Notes:

NA = data are not available.

<sup>a</sup> Based on labor utilization of 223 and 64 person–days per ha per year for oil palm establishment and maintenance, respectively. One person–year is equivalent to 22 eight–hour working days per month for 12 months.

<sup>b</sup> Employment figures include construction of mixing, anaerobic, facultative, and polishing ponds. Maintenance employment figures refer only to the current 30 t/hr FFB.

<sup>c</sup> Employment figures include 197,206 and 120 person–years for construction of road package 1, 2, and 3, correspondingly, plus a total 443 person–years for drainage construction.

<sup>d</sup> Based on 20% labor proportion of road maintenance cost of RM15,000/km/yr and drainage maintenance cost of RM651,787/yr.

Sources of data: SALCRA, PWD, DID, DOA, and field interviews.

## SUMMARY OF FOREIGN EXCHANGE SAVINGS

Item	Amount (\$ million)
Exports	
Crude Palm Oil	21.33
Cocoa	4.32
Subtotal (A)	25.65
Imports (Fertilizer Chemicals)	
FFB Production <sup>a</sup>	2.24
Cocoa Production	
Monocrop	1.61
Intercrop	0.65
Rehab	0.04
Subtotal (B)	4.54
Total Foreign Exchange Savings (A–B)	21.11

<sup>a</sup> Raw material for CPO production.

## **ECONOMIC AND FINANCIAL ANALYSIS**

1. The financial and economic analysis of the Project has been carried out based on an eight-year implementation period and a Project life of 25 years (see Appendix 10, page 8), which is the economic life of the major oil palm development component.

### **A. Commodity Prices**

2. The economic prices of agricultural inputs and outputs are based on current 1994 prices of internationally traded commodities such as palm oil, cocoa, and fertilizer. The economic prices are derived from world market prices by adjusting transport handling and distribution charges and government taxes. Financial prices are based on the current market prices. The economic price structures are shown in Tables 2 and 3.

### **B. Wages**

3. Unskilled labor in the Project site is at full employment level; hence, financial and economic costs are taken as identical.

### **C. Yield Projections of Oil Palm**

4. Projected yields of fresh fruit bunch (FFB) are based on the existing yield levels of oil palm estates in Sarawak. FFB yield projections have also considered the yield performance of inland and peat soils. Projected yield of FFB is shown in Appendix 7, Table 3.

### **D. Production Costs and Budgets**

5. Production costs of oil palm, cocoa monocrop/intercrop, and pepper are based on the current practices in the Project site. Crop budgets for oil palm and cocoa/pepper are shown in Tables 4 and 5.

6. At full development, the net receipt of the individual oil palm estate participants will be RM12,116 a year or RM1,009 a month. The month cash income of each oil palm participant will be RM16,316 a month at full development. In the case of drainage beneficiaries, the average monthly and annual incomes at full development will accordingly be RM308 and RM3,702.

### **E. Financial Return of Oil Palm Processing Facilities**

7. The financial analysis of palm oil processing facilities is given in Tables 6 and 8a. It indicates that the mill has a financial internal rate of return of 15.1 percent. The major assumptions of the financial analysis are indicated below.

#### **1. Prices Used in Calculations**

##### **a. Fresh Fruit Bunch**

8. Prices of FFB per ton from 1990 to 1994 prior to the oil mill operations are valued at RM120, RM149, RM165, RM151, and RM205, respectively. The prices of FFB during the first two years of operation are estimated at RM196 and RM218, respectively.

**b. Palm Oil**

9. The financial price of crude palm oil (ex-mill) is pegged at RM1,200 per ton. This is a weighted average of the 10-month period January to October 1994.

**2. Revenues**

10. The revenue of the mill included the processing fee of RM40/t being charged to the individual participants.

**3. Corporate Tax**

11. A corporate tax equivalent to 40 percent of net income has been included as a cost to the oil mill operation.

**F. Economic Returns**

12. In the calculations of economic internal rate of return (EIRR), financial prices are converted into economic prices by excluding taxes, subsidies, and other transfer payments. Economic prices of inputs and outputs such as fertilizer, crude palm oil prices, and cocoa prices were derived from border prices (CIF and FOB).

13. Economic cost of labor is identical with the market wage rate for unskilled labor since the Project area is at full employment level and will continue to be so as the oil palm schemes approach maturity periods.

14. The costs of access roads are charged only 70 percent against Project benefits, compared with 60 percent at appraisal (in accordance with the proportion of land being served directly under the Project). A similar proportion is used for the drainage component.

15. EIRR calculations are based on constant 1995 prices, using World Bank commodity actual prices up to 1994 and price projections from 1995 to 2000. Past costs and benefit streams that are based on current prices are converted into constant prices using the adjusted G-5 marginal utility value (MUV) indices (Table 13).

16. The economic and financial analyses assumed that the oil mill will be expanded to 60 t/hr FFB to accommodate increased FFB output at full development. An additional RM4.2 million has been included as Project cost in 1996.

**G. Sensitivity Analysis**

17. The sensitivity of the overall EIRR has been tested against increased costs and reduced benefit conditions and has been found to be capable of absorbing the shocks. Summary results of the sensitivity analysis are shown in Table 7. Details are provided in Tables 10-12.

**Table 1: Summary of Financial and Economic Prices**

Item	Financial Price	Economic Price
Crude Palm Oil (ex-mill)(RM/t)	783	938
Palm Kernel (ex-mill)(RM/t) <sup>a</sup>	556	590
Oil Palm (FFB)(farmgate)(RM/t)	205	248
Cocoa (farmgate)(RM/t)	2,800	2,875
Pepper (farmgate)(RM/t)	4,750	4,750
12-12-12-17 (RM/t)	1,100	891
Labor (unskilled)(RM/person-day) <sup>b</sup>	12	12

<sup>a</sup> The economic farmgate price of oil palm (FFB/t) is estimated at RM196/t and RM218/t during the first two years of oil mill operation, respectively, and will remain constant at RM248/t for the succeeding years.

<sup>b</sup> Market wage is equal to economic wage rate, since the Project site is at full employment level.

**Table 2: Economic Price of Crude Palm Oil  
(per ton at 1995 prices)**

Item		Cost		
<b>In \$</b>				
Malaysia 5% bulk CIF N.W. Europe <sup>a</sup>		438		
Ocean Freight and Insurance		50		
FOB Malaysia Port		388		
<b>In RM (at \$1 = RM2.6744)</b>				
FOB Malaysia Port		1,038		
Port Charges, Handling, Storage, and Transport to Port		100		
Ex-mill Equivalent		938		
Item	At extraction rate 17.5% oil; 4.5% kernel – 4th year after planting	At extraction rate 19.0% oil; 5% kernel – 5th year after planting	At extraction rate 21.0% oil; 5.7% kernel – 6th year after planting	
Price of Products (FFB) <sup>b</sup>	251	273	303	
Processing Fees	40	40	40	
Transport – Farm to Mill	15	15	15	
Farmgate Price FFB	196	218	248	

<sup>a</sup> Based on the World Bank's Commodity Prices and Price Projections for March 1995 in constant 1990 dollars.

<sup>b</sup> Derivation of FFB price is also based on the ex-mill price of palm kernel at RM656/t.



**Table 3: Economic Price for Cocoa, 1994**  
(per ton at 1985 prices)

Item	Cost
<b>In \$</b>	
Cocoa (ICCO) New York, London nearest three future trading months <sup>a</sup>	1,601
Recent Differential (less 10%)	160
Ocean Freight and Insurance	55
FOB Malaysia Port	1,386
<b>In RM (at \$1 = RM 2.6744)</b>	
FOB Malaysia Port	3,706
Port Charges, Handling, Storage and Transport to Port	90
Ex-Drying Plant	3,616.718
Processing Value/Fee	725
Transport – Farm to Drying Plant	17
Farmgate Price	2,874.71

<sup>a</sup> International Bank for Reconstruction and Development Commodity Price Projections, August 1994.

**Table 4: Crop Budget for Oil Palm  
10,000 Hectare Scheme, 2,563 Scheme Participants <sup>a</sup>**

OIL PALM SCHEME	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Revenue</b>																								
Total Yield (t FFB) <sup>b</sup>	600	6,074	13,859	27,984	64,104	93,142	125,793	161,586	189,477	208,176	218,474	224,029	226,202	226,439	225,100	222,666	219,345	215,162	211,118	206,604	202,777	198,652	189,968	167,160
Palm Oil Ext. Rate (%) <sup>b</sup>	—	—	—	—	—	17.5	19	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Palm Kernel Ext. Rate (%) <sup>c</sup>	—	—	—	—	—	4.5	5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
FFB Price (RM/t) <sup>d</sup>	120	149	165	151	205	179	192	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205
Gross Revenue (RM'000)	72	905	2,287	4,226	13,141	16,672	24,152	33,125	38,843	42,676	44,787	45,926	46,371	46,420	46,146	45,647	44,966	44,106	43,279	42,395	41,569	40,724	38,948	34,266
<b>Production Costs (RM'000)</b>																								
Maintenance	0	0	0	0	2,375	3,031	3,746	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030	4,030
Harvesting	0	0	0	0	1,951	2,489	3,078	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310	3,310
Fertilizer	0	0	0	0	1,609	2,053	2,539	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730	2,730
Total Cost	0	0	0	0	5,935	7,574	9,365	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070	10,070
Gross Scheme Income (RM'000)	72	905	2,287	4,226	7,206	9,099	14,787	23,055	28,773	32,606	34,717	35,856	36,301	36,350	36,076	35,577	34,896	34,038	33,209	32,325	31,499	30,654	28,878	24,198
Loan Repayment						7,314	7,062	6,810	6,558	6,305	6,053	5,801	5,549	5,296	5,044	4,792	4,540	4,288						
Net Scheme Income	72	905	2,287	4,226	7,206	1,785	7,725	16,245	22,215	26,301	28,664	30,055	30,753	31,054	31,031	30,785	30,356	29,751	33,209	32,325	31,499	30,654	28,878	24,198
<b>PER SCHEME PARTICIPANT</b>																								
Net Scheme Income (RM)	28	353	892	1,649	2,812	696	3,014	6,338	8,668	10,262	11,184	11,727	11,999	12,116	12,107	12,011	11,844	11,608	12,957	12,612	12,290	11,960	11,267	9,441
Wage Income (RM)	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200
Annual Cash Income (RM)	4,228	4,553	5,092	5,849	7,012	4,896	7,214	10,538	12,866	14,462	15,384	15,927	16,199	16,316	16,307	16,211	16,044	15,808	17,157	16,812	16,490	16,160	15,467	13,641
Monthly Cash Income (RM)	352	379	424	487	584	408	601	878	1,072	1,205	1,282	1,327	1,350	1,360	1,359	1,351	1,337	1,317	1,430	1,401	1,374	1,347	1,289	1,137

<sup>a</sup> Currently, the total area for the oil palm scheme is 8,374 ha but will increase to 10,000 ha in 1995.

<sup>b</sup> FFB yields for the 1990–1993 period are actual figures, while those for the period 1994–2013 are yield projections.

<sup>c</sup> Gross FFB Price (RM/t) = [(PCPOA\*Extraction RateCPO) + (PPK\*Extraction RatePK)] – [Gross Processing Cost + Transport, Handling, and Other Duties].

The extraction rates for the period 1990–1994 was based on 20% and 5.5% for CPO and PK, respectively.

<sup>d</sup> The oil mill was commissioned on 28 November 1994.

Table 5: Crop Budget for Cocoa and Pepper  
4,402 and 494 Hectares, Respectively

Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cocoa Monocrop																											
Yield (t/ha) *	0	0	0	0.8	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
Production (t)	0	0	0	243.8	2867.6	3220.8	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	3735.6	
Price (RM/t)	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	
Cocoa Interocrop																											
Yield (t/ha) *	0	0	0	0.25	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	
Production (t)	0	0	0	10.5	70.2	108	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	
Price (RM/t)	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	
Cocoa Rehab																											
Yield (t/ha) *	0.1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
Production (t)	2.2	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	
Price (RM/t)	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	
Pepper																											
Yield (t/ha) *	0	0	0	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	
Production (t)	0	0	0	104.33	383.34	1,187.38	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	1,951.30	
Price (RM/t)	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	4,750	
Gross Revenue (RM/000)	6.16	43.40	43.40	1,250.46	5,567.78	13,802.13	18,875.76	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	20,821.20	
Production Costs (RM/000)																											
Cocoa Monocrop	0.00	0.00	0.00	704.82	2,574.46	4,194.18	5,083.01	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	5,895.46	
Cocoa Interocrop	0.00	0.00	0.00	36.46	135.41	258.32	255.19	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	602.39	
Cocoa Rehab	11.48	32.36	32.36	104.33	363.34	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	1,187.38	
Pepper	0.00	0.00	0.00	295.83	1,086.21	3,394.44	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	5,529.01	
Total Cost	11.48	32.36	32.36	1,099.28	3,958.87	7,929.80	11,030.08	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	12,189.72	
Net Income	(5.32)	11.04	11.04	181.20	1,598.80	5,872.33	7,945.86	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	8,931.47	
Net Income per 2.1 ha Farm (RM)																											
- per annum	(2.28)	4.73	4.73	77.72	665.76	2,432.98	3,365.18	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	3,702.22	
- per month	(0.19)	0.39	0.39	6.48	57.15	202.75	280.43	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	308.52	

\* Yield data refers to Project increments.

**Table 6: Comparison of Rates of Return**

Item	Appraisal	Completion	Difference (%)
<b>FIRR</b>			
– Oil Palm Development	NA	16.5	NA
– Drainage/Rehabilitation	NA	11.5	NA
– All components	NA	14.8	NA
<b>EIRR</b>			
– Oil Palm Development <sup>a</sup>	18.2	16.7	–8.3
– Drainage/Rehabilitation	13.5	14.2	5.6
– All components	14.2	15.8	10.8

<sup>a</sup> Oil palm development includes the oil mill.

**Table 7: Summary of Sensitivity Analysis of EIRR  
of Overall Project**

<b>Base Case</b>	<b>Changes in Variable</b>	<b>EIRR (%)</b>	<b>Sensitivity Indicator</b>
<b>EIRR</b>	<b>Base</b>	<b>15.73</b>	
	<b>1. 10% Increase in Production Cost</b>	<b>14.57</b>	<b>0.74</b>
	<b>2. 10% Decrease in Benefit</b>	<b>13.19</b>	<b>1.61</b>
	<b>3. Combination of 1 and 2</b>	<b>11.82</b>	<b>2.49</b>

**Table 8a: Financial Internal Rate of Return  
Processing Facilities – Palm Oil Mill \***  
(RM '000)

Item	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Cash Inflow Revenues</b>																												
Palm Oil (CPO)										17,879	26,216	37,220	43,644	47,951	50,323	51,602	52,103	52,158	51,849	51,289	50,524	49,500	48,629	47,636	46,708	45,757	43,762	38,503
Palm Kernel (PK)										2,750	4,126	5,830	6,836	7,511	7,883	8,083	8,161	8,170	8,122	8,034	7,914	7,763	7,617	7,461	7,316	7,167	6,855	6,031
Processing Fee <sup>†</sup>										3,726	5,032	6,463	7,579	8,327	8,739	8,961	9,048	9,058	9,004	8,907	8,774	8,606	8,445	8,272	8,111	7,946	7,600	6,686
Subtotal	0	0	0	0	0	0	0	0	0	24,355	35,374	49,513	58,059	63,789	66,945	68,646	69,312	69,366	68,975	68,230	67,212	65,929	64,691	63,368	62,135	60,870	58,217	51,220
<b>Cash Outflows</b>																												
Investment Cost	0	414	160	417	604	617	836	4,595	14,832		4,200																	
Operating Cost																												
a) Purchase of FFB										16,672	24,152	33,125	38,843	42,676	44,787	45,926	46,371	46,420	46,146	45,647	44,966	44,108	43,279	42,395	41,506	40,724	38,948	34,268
b) Processing Cost																												
i) Milling <sup>‡</sup>	0	0	0	0	0	0	0	0	0	2,235	3,019	3,878	4,547	4,996	5,243	5,377	5,428	5,435	5,402	5,344	5,265	5,164	5,067	4,964	4,867	4,767	4,560	4,012
ii) Land Transport <sup>§</sup>										1,397	1,887	2,424	2,842	3,123	3,277	3,360	3,393	3,397	3,377	3,340	3,290	3,227	3,167	3,102	3,042	2,980	2,850	2,507
iii) Sea Transport										279	377	485	568	625	655	672	679	679	675	668	658	645	633	620	608	595	570	501
Subtotal	0	414	160	417	604	617	836	4,595	14,832	20,583	33,635	39,912	46,800	51,420	53,962	55,335	55,871	55,931	55,600	54,999	54,179	53,144	52,146	51,081	50,086	49,066	46,928	41,288
Net Income before tax	0	(414)	(160)	(417)	(604)	(617)	(836)	(4,595)	(14,832)	3,771	1,739	9,601	11,259	12,368	12,983	13,311	13,441	13,455	13,375	13,230	13,033	12,786	12,545	12,288	12,049	11,804	11,289	9,932
c) Corporate Tax										2,255	1,782	5,370	6,297	6,918	7,260	7,445	7,517	7,525	7,481	7,400	7,289	7,150	7,016	6,873	6,739	6,602	6,314	5,555
NET BENEFITS	0	(414)	(160)	(417)	(604)	(617)	(836)	(4,595)	(14,832)	1,516	(43)	4,231	4,962	5,450	5,723	5,866	5,924	5,930	5,894	5,830	5,744	5,635	5,529	5,415	5,310	5,202	4,975	4,377
FIRR																												15.19%

Note: Previous years' figures are converted into constant 1994 values using the MUV Index.

<sup>†</sup> Palm Oil Mill was commissioned only on 28 November 1994.

<sup>‡</sup> SALCRA has been charging the participants RM40/t.

<sup>§</sup> Milling cost is pegged at RM24/t. Direct milling costs amounts to RM17/t while interest and depreciation costs amount to RM5/t.

<sup>¶</sup> Land transport of FFB to mill site is RM15/t.



Item	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>I. Oil Palm Development Component</b>																										
Gross Incremental Benefits	0	0	0	0	0	0	0	0	19,284	24,217	28,360	33,291	36,576	30,624	31,402	31,707	31,740	31,552	30,748	30,159	29,593	28,998	28,423	27,845	26,631	23,431
Gross Incremental Costs																										
Oil Palm																										
Investment Cost	122	772	1,279	3,254	9,031	9,778	15,229	8,283	7,069	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	5,638	7,195	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567
Oil Mill																										
Investment Cost	0	0	0	0	0	0	0	1,112	4,800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	1,691	1,691	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090
Subtotal	122	772	1,279	3,254	9,031	9,778	15,229	9,395	19,027	8,898	14,578	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657
Net Incremental Benefit	(122)	(772)	(1,279)	(3,254)	(9,031)	(9,778)	(15,229)	(9,395)	(19,027)	10,398	9,640	16,734	21,634	18,967	19,746	20,050	20,084	19,896	19,555	19,096	18,503	17,931	16,787	16,189	14,974	11,774
ERR																										16.86%
<b>II. Drainage, Roads, and Agricultural Support Services Component</b>																										
Gross Incremental Benefit	0	6	45	45	1,271	5,058	13,815	19,133	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131
Gross Incremental Cost																										
Drainage/Roads	16	165	1,191	1,072	2,631	8,273	16,830	7,763	1,544	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Investment Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost																										
Agric'l Support Services	0	168	2,810	2,202	2,106	3,398	2,270	442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Investment Cost	0	11	31	31	1,018	3,761	7,533	10,479	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580
Maintenance Cost	108	301	458																							



**Table 10: Sensitivity Analysis – 10% Increase in Production Cost  
All Project Components  
(RM '000)**

Item	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
I. Oil Palm Development Component																												
Gross Incremental Benefits	0	0	0	0	0	0	0	0	0	19,284	24,217	28,360	33,291	36,576	30,624	31,402	31,707	31,740	31,552	31,211	30,746	30,159	29,593	28,988	28,423	27,845	26,631	23,431
Gross Incremental Costs																												
Oil Palm																												
Investment Cost	122	772	1,279	3,254	9,031	9,778	15,229	8,283	7,099	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	5,638	7,915	9,786	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	
Oil Mill																												
Investment Cost	0	0	0	0	0	0	0	1,112	4,800	0	3,990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	1,691	1,860	1,860	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	
Subtotal	122	772	1,279	3,254	9,031	9,778	15,229	9,395	19,027	9,775	15,637	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	
Net Incremental Benefit	(122)	(772)	(1,279)	(3,254)	(9,031)	(9,778)	(15,229)	(9,395)	(19,027)	9,509	8,581	15,568	20,468	23,754	17,802	18,580	18,885	18,918	18,730	18,389	17,924	17,337	16,770	16,166	15,601	15,023	13,809	10,609
EIRR																												15.82%
II. Drainage, Roads, and Agricultural Support Services Component																												
Gross Incremental Benefit	0	6	45	45	1,271	5,668	13,815	19,133	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	21,131	
Gross Incremental Cost																												
Drainage/Roads																												
Investment Cost	16	165	1,191	1,072	2,831	8,273	16,830	7,783	1,544	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	0	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	
Agricult Support Services																												
Investment Cost	0	168	2,810	2,202	2,106	3,338	2,270	442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	11	31	31	1,016	3,761	7,533	10,479	11,580	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	
Project Management Unit	108	301	458	391	515	839	862	1,151	495	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	124	645	4,491	3,965	6,468	16,211	27,525	19,854	13,619	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	
Net Incremental Benefit	(124)	(638)	(4,446)	(3,651)	(5,197)	(10,553)	(13,710)	(721)	7,511	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	7,215	
EIRR																												12.54%
ALL COMPONENTS																												
NET INCREMENTAL BENEFIT	(246)	(1,410)	(5,726)	(6,904)	(14,227)	(20,331)	(28,939)	(10,116)	(11,516)	16,724	15,795	22,783	27,683	30,968	25,016	25,795	26,099	26,133	25,945	25,604	25,138	24,552	23,985	23,380	22,816	22,238	21,023	17,823
EIRR																												14.57%

**Table 11: Sensitivity Analysis – 10% Decrease in Benefit**  
**All Project Components**  
**(RM '000)**

Item	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013										
I. Oil Palm Development Component																												
Gross Incremental Benefits	0	0	0	0	0	0	0	0	0	17,356	21,796	25,551	29,961	32,918	27,561	28,262	28,536	28,566	28,397	28,090	27,671	27,144	26,633	26,089	25,581	25,061	23,968	21,088
Gross Incremental Costs																												
Oil Palm																												
Investment Cost	122	772	1,279	3,254	9,031	9,778	15,229	8,283	7,099	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	5,638	7,195	8,897	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	9,567	
Oil Mill																												
Investment Cost	0	0	0	0	0	0	0	1,112	4,600	0	3,990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	1,691	1,691	1,691	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	2,090	
Subtotal	122	772	1,279	3,254	9,031	9,778	15,229	9,395	19,027	8,886	14,578	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657	11,657
Net Incremental Benefit	(122)	(772)	(1,279)	(3,254)	(9,031)	(9,778)	(15,229)	(9,395)	(19,027)	8,469	7,218	13,895	18,305	21,262	15,905	16,606	16,880	16,910	16,741	16,434	16,015	15,487	14,977	14,433	13,925	13,404	12,311	9,431
EIRR																												14.36%
II. Drainage, Roads, and Agricultural Support Services Component																												
Gross Incremental Benefit	0	6	45	45	1,271	5,658	13,815	19,133	21,131	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018
Gross Incremental Cost																												
Drainage/Roads																												
Investment Cost	16	165	1,191	1,072	2,831	8,273	16,830	7,783	1,544	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	0	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	1,071	
Agricult Support Services																												
Investment Cost	0	168	2,810	2,202	2,106	3,338	2,270	442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	11	31	31	1,018	3,761	7,533	10,479	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	11,580	
Project Management Unit	106	301	456	391	515	839	892	1,151	495	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	124	645	4,491	3,605	6,406	16,211	27,525	19,854	13,619	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651	12,651
Net Incremental Benefit	(124)	(638)	(4,446)	(3,651)	(5,197)	(10,553)	(13,710)	(721)	7,511	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367	6,367
EIRR																												11.27%
ALL COMPONENTS																												
NET INCREMENTAL BENEFIT	(246)	(1,410)	(5,726)	(6,904)	(14,227)	(20,331)	(28,939)	(10,116)	(11,516)	14,836	13,584	20,261	24,672	27,628	22,272	22,972	23,246	23,276	23,107	22,800	22,381	21,854	21,344	20,799	20,291	19,771	18,678	15,798
EIRR																												13.19%

**Table 12: Sensitivity Analysis – 10% Increase in Production Cost and 10% Decrease in Benefit**  
**All Project Components**  
**(RM '000)**

Item	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
I. Oil Palm Development Component																												
Gross Incremental Benefits	0	0	0	0	0	0	0	0	0	17,356	21,796	25,551	29,961	32,918	27,561	28,262	28,536	28,566	28,397	28,090	27,671	27,144	26,633	26,089	25,581	25,061	23,968	21,068
Gross Incremental Costs																												
Oil Palm																												
Investment Cost	122	772	1,279	3,254	9,031	9,778	15,229	8,283	7,099	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	5,638	7,915	9,786	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	10,523	
Oil Mill																												
Investment Cost	0	0	0	0	0	0	0	1,112	4,600	0	3,960	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	1,691	1,860	1,860	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	2,299	
Subtotal	122	772	1,279	3,254	9,031	9,778	15,229	9,395	19,027	9,775	15,637	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	12,822	
Net Incremental Benefit	(122)	(772)	(1,279)	(3,254)	(9,031)	(9,778)	(15,229)	(9,395)	(19,027)	7,581	6,159	12,729	17,139	20,096	14,739	15,440	15,714	15,744	15,575	15,266	14,849	14,321	13,811	13,267	12,759	12,239	11,146	8,266
EIRR																												13.37%
II. Drainage, Roads and Agricultural Support Services Component																												
Gross Incremental Benefit	0	6	45	45	1,271	5,658	13,815	19,133	21,131	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	19,018	
Gross Incremental Cost																												
Drainage/Roads																												
Investment Cost	16	165	1,191	1,072	2,831	8,273	16,830	7,783	1,544	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	0	0	0	0	0	0	0	0	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	
Agricult Support Services																												
Investment Cost	0	168	2,810	2,202	2,106	3,338	2,270	442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance Cost	0	11	31	31	1,016	3,761	7,533	10,479	11,580	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	12,738	
Project Management Unit	108	301	458	391	515	639	892	1,151	495	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	124	645	4,491	3,695	6,468	16,211	27,525	19,854	13,619	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	13,916	
Net Incremental Benefit	(124)	(638)	(4,446)	(3,651)	(5,197)	(10,553)	(13,710)	(721)	7,511	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	5,102	
EIRR																												9.12%
ALL COMPONENTS																												
NET INCREMENTAL BENEFIT	(246)	(1,410)	(5,726)	(6,904)	(14,227)	(20,331)	(28,939)	(10,116)	(11,516)	12,682	11,261	17,831	22,241	25,198	19,841	20,542	20,816	20,846	20,677	20,370	19,951	19,423	18,913	18,369	17,861	17,340	16,247	13,367
EIRR																												11.82%

**Table 13: G-5 MUV Index by Base Year**

<b>Year</b>	<b>1990=100</b>	<b>1994=100</b>
1986	80.89	72.97
1987	88.84	80.14
1988	95.13	85.82
1989	94.65	85.39
1990	100.00	90.21
1991	102.23	92.22
1992	106.64	96.20
1993	107.17	96.68
1994	110.85	100.00

Source of raw data: Inflation Indices, 1948-2000  
in Commodity Price Outlook, August 1994.