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8 October 1999

PROJECT PERFORMANCE AUDIT REPORT

The following Project Performance Audit Report prepared by the Operations
Evaluation Office is attached for information:

West New Britain Smallholder Development Project
(Papua New Guinea) (Loan Nos. 784-PNG[SF] and 785-PNG)

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ASIAN DEVELOPMENT BANK

PPA: PNG 19122

PROJECT PERFORMANCE AUDIT REPORT

ON THE

**WEST NEW BRITAIN SMALLHOLDER DEVELOPMENT PROJECT
(Loan Nos. 784[SF]/785PNG)**

IN

PAPUA NEW GUINEA

September 1999

CURRENCY EQUIVALENTS (as of May 1999)

Currency Unit — Kina (K)

		At Appraisal	At Project Completion	At Postevaluation
K1.00	=	\$1.03	\$0.75	\$0.42
\$1.00	=	K0.97	K1.33	K2.42

The exchange rate of the kina is determined on the basis of a weighted basket of currencies, and the value is adjusted daily.

ABBREVIATIONS

ABPNG	-	Agricultural Bank of Papua New Guinea
BME	-	benefit monitoring and evaluation
DAL	-	Department of Agriculture and Livestock
DOFP	-	Department of Finance and Planning
DPI	-	Department of Primary Industry
EA	-	Executing Agency
EIRR	-	economic internal rate of return
FFB	-	fresh fruit bunch
FIRR	-	financial internal rate of return
NCC	-	National Coordination Committee
OEM	-	Operations Evaluation Mission
O&M	-	operation and maintenance
OPIC	-	Oil Palm Industry Corporation
PCC	-	Provincial Coordination Committee
PCR	-	project completion report
PNG	-	Papua New Guinea
PPAR	-	project performance audit report
RDB	-	Rural Development Bank (formerly Agricultural Bank of PNG)
SDR	-	special drawing rights
SF	-	special fund
t	-	metric ton
TA	-	technical assistance

NOTES

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

CONTENTS

	Page
BASIC DATA	ii
EXECUTIVE SUMMARY	iii
MAP	v
I. BACKGROUND	1
A. Rationale	1
B. Formulation	1
C. Objectives and Scope at Appraisal	1
D. Financing Arrangements	1
E. Completion	2
F. Postevaluation	2
II. IMPLEMENTATION PERFORMANCE	2
A. Design	2
B. Contracting, Construction, and Commissioning	3
C. Organization and Management	4
D. Actual Cost and Financing	5
E. Implementation Schedule	5
F. The Technical Assistance	5
G. Compliance with Loan Covenants	6
III. PROJECT RESULTS	6
A. Operational Performance	6
B. Institutional Development	7
C. Financial Performance	8
D. Economic Reevaluation	8
E. Socioeconomic and Sociocultural Results	8
F. Gender and Development	9
G. Environmental Impacts and Control	10
H. Gestation and Sustainability	11
IV. KEY ISSUES FOR THE FUTURE	11
A. O&M Funding and Support Services	11
B. Credit Disbursement and Recovery	12
C. Potential Disease Outbreak	12
D. Benefit Monitoring and Evaluation Capability	13
E. Pricing Policy for Smallholder Production	13
V. CONCLUSIONS	14
A. Overall Assessment	14
B. Lessons Learned	14
C. Follow-Up Actions	15
APPENDIXES	16

BASIC DATA
West New Britain Smallholder Project (Loan Nos. 784[SF]/785-PNG)

PROJECT PREPARATION/INSTITUTION BUILDING

TA No.	TA Project Name	Type	Amount (\$)	Approval
627	Rural Development Technical Assistance	PP	350,000	26 Sep 1984

KEY PROJECT DATA (\$ million)

	Loan No. 784[SF] ¹		Loan No. 785		Total	
	Appraisal Estimate	Actual	Appraisal Estimate	Actual	Appraisal Estimate	Actual
Total Project Cost ²	33.0	27.0	16.9	15.3	49.9	42.3
Foreign Currency Cost	9.5	9.7	13.0	14.0	22.5	23.7
Local Currency Cost	23.5	17.3	3.9	1.3	27.4	18.6
Bank Loan Amount/Utilization	15.9	15.8	14.0	14.0	29.9	29.8
Bank Loan Amount/Cancellation	-	3.6	-	-	-	3.6

KEY DATES

	Expected	Actual
Fact-Finding		19 Nov–9 Dec 1985
Appraisal		8–25 Mar 1986
Loan Negotiations		10–13 Jun 1986
Board Approval		14 Aug 1986
Loan Agreement		20 Mar 1987
Loan Effectiveness		
Loan No. 784(SF)	18 Jun 1987	7 Apr 1988
Loan No. 785	2 Jul 1987	7 Apr 1988
Project Completion	31 Dec 1992	31 Dec 1995
Closing Date		
Loan No. 784(SF)	30 Jun 1993	18 Apr 1996
Loan No. 785	30 Jun 1993	15 Oct 1994
Months (Effectiveness to Completion)	66	102

KEY PERFORMANCE INDICATORS (%)

	Appraisal	PCR	PPAR
Economic Internal Rate of Return	17.9	9.3	13.8
Financial Internal Rate of Return	nc	nc	12.6

BORROWER

Papua New Guinea

EXECUTING AGENCY

Oil Palm Industry Corporation

MISSION DATA

Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	60
Appraisal	1	50
Inception Mission	1	8
Loan Review Missions	7	144
Special Project Administration	2	44
Project Completion Review	1	33
Postevaluation	1	28

nc = not calculated, PCR = project completion report, PP = project preparatory (technical assistance), PPAR = project performance audit report, SF = special fund.

¹ At the time of approval, the loan amount was SDR13.9 million. At loan closing, the actual amount disbursed amounted to SDR11.4, resulting in the cancellation of SDR2.5 or \$3.6 million equivalent in April 1999.

² Figures include actual expenditures of Department of Agriculture and Livestock and Agricultural Bank of Papua New Guinea.

EXECUTIVE SUMMARY

Commercial oil palm has been the fastest growing tree crop subsector in Papua New Guinea (PNG), with production and export volume increasing at an annual rate of over 8 percent from 1991 to 1997. The Bank's lending strategy emphasized the development of PNG smallholder agriculture to accelerate economic development and to improve the quality of life for farmers. The Project was formulated in 1985 and approved in August 1986. The rationale for the Project was to support the national objective of increasing export earnings as well as to accelerate the rate of growth of the agriculture sector through smallholder oil palm development. The main objectives were to (i) increase the production of palm oil for export, (ii) generate new employment opportunities to enable subsistence farmers to participate in the cash economy, and (iii) increase the household income and living standards of the rural population in the project areas. The Project included (i) development of 8,000 hectares (ha) for oil palm planting, (ii) provision of agriculture support/extension services, and (iii) provision of transport and social infrastructure.

The project design was based on the nucleus estate/smallholder development strategy that was successfully implemented in West New Britain Province in the 1970s. The total area of smallholder oil palm developed at project completion was 6,177 ha or about 77 percent of the appraisal target. Agriculture support, extension services, and most of the transport and social infrastructure were provided as envisaged at appraisal. The two existing private estates provided the facilities to collect and process the oil palm fruits from the project smallholders.

The Project was completed in December 1995, with a delay of about 3 years, about 55 percent overrun compared with the estimated implementation period of 66 months at appraisal. The time overrun was primarily attributed to the Government's late fulfillment of major conditions for loan effectiveness and the slowness in the initial start-up of project implementation activities due to the project staff's unfamiliarity with the Bank's procurement guidelines and tendering procedures. The project completion report, which was circulated to the Board on 10 December 1997, rated the Project as partly successful.

At appraisal, the project cost was estimated at \$49.9 million. The actual cost was \$42.3 million. The Bank provided two loans, one from the Asian Development Fund for SDR15.9 million equivalent and another from the ordinary capital resources amounting to \$14.0 million. The Bank's total disbursements amounted to \$29.8 million equivalent and the Government's contribution was about \$12.5 million equivalent. The amount of \$3.6 million from the concessional loan was cancelled.

The output from the Project was about 70,000 tons fresh fruit bunches in 1998. The peak harvest of about 107,000 fresh fruit bunches is expected by the year 2004. The total number of project beneficiaries was 1,731 or 79 percent of the appraisal target of 2,200 farmers. The farmer's monthly income (in real terms) from a farm of 2 ha is currently about K450, which is about 2.4 times higher the appraisal estimate. The farmers are very enthusiastic about this enterprise and virtually all are planning to plant an additional 2 ha of oil palm. The project area farmers (both project beneficiaries and nonproject farmers) benefited from the improvements in roads and social amenities provided by the Project.

Although women in the traditional PNG society tend to be socioculturally disadvantaged in many ways, the Project did not specifically provide for women in the development program. The project management initiated a "mama loose fruit" program for household women, and their activities in loose fruit collection provided them with regular incomes, which led to improvement in their financial status and increased their self-esteem. Other secondary benefits included an

increase in the savings rate and greater expenditure on household needs. Relationship in the household is also more harmonious since women no longer have to ask their husbands for the daily household expenses.

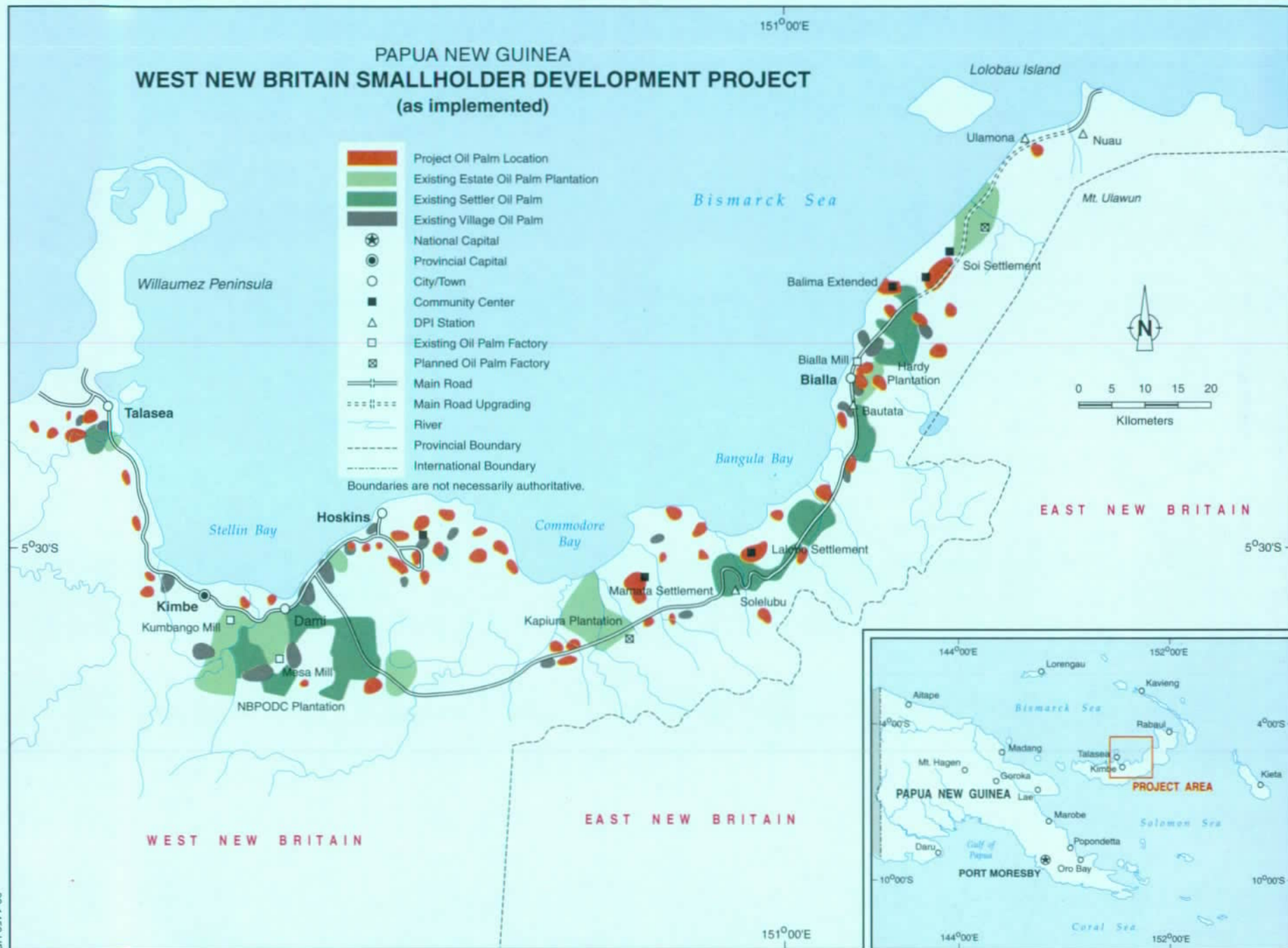
The Project stimulated significant development in the oil palm sector of the province and brought increased activities in the local economy. The Project increased the cash incomes of formerly subsistence farmers, improved the agronomic practice of small farmers in both oil palm planting and garden food crops cultivation, improved extension services, generated employment opportunities, increased local market and economy activities, and improved the living conditions of rural farmers. Indirect socioeconomic benefits were generated for both the project and nonproject farmers in terms of better access roads for farm produce marketing, children's schooling, and community activities; and health care and other social services. Due to budgetary problems, the provincial government is constrained in providing adequate funding for the operation and maintenance of project facilities. Inadequate funds from the provincial government for the upkeep of social infrastructure and to maintain farm roads could affect the quality of project benefits in the future. The extension services will also need additional funding from the Oil Palm Industry Corporation to expand activities so as to maintain services to all oil palm smallholders. The Oil Palm Industry Corporation extension services are currently supplemented by the services provided by the existing nucleus estates. Each nucleus estate has formed its own smallholder development unit, which provides extension support to oil palm smallholders.

The project Executing Agency was able to adjust the project design to accommodate the preference of village farmers and thereby reduced their opposition to giving land to settlement farmers. At project completion, the total number of settlement farmers was reduced from 1,001 to 763. The slower rate of project implementation turned out to have benefited the Project as it enabled the private nucleus estates to have additional milling capacity to meet the increase in output from the Project. Despite the difficulties incurred due to the change in the Executing Agency midway through the Project, the overall project management has been satisfactory.

In view of the substantial benefits of oil palm cultivation to the province, the Government should give priority to the need for additional operation and maintenance funding as well as to strengthen the extension services to promote the growth of this sector. The Project has demonstrated that smallholders in PNG can cultivate oil palm successfully. A carefully designed package of Government assistance (including extension and credit) is key to ensure successful development of smallholding farmers. From the national viewpoint, the cultivation of this crop, which is designed for the international market, will generate substantial foreign exchange earnings. Project benefits are likely to be sustainable and smallholders are continuing to expand their holding size by either using their own resources or obtaining credit from the nucleus estates. Overall, the project impacts are significant and the Project is rated as generally successful.

The success of the Project can be attributed to four main factors: (i) the choice of crop, which is suited to the soil and climatic conditions of the province (typically high rainfall area); (ii) flexibility in project design; (iii) good project management; (iv) appropriate extension support; and (v) private nucleus estates' support. Oil palm has been grown in the project area since the mid-sixties and farmers are familiar with the crop. At the same time, large plantations have been established in West New Britain Province and they have constructed palm oil mills to process not only their own produce but also those of the surrounding smallholders. The economic outlook for this commodity is favorable, and there is a ready international market for the produce.

PAPUA NEW GUINEA WEST NEW BRITAIN SMALLHOLDER DEVELOPMENT PROJECT (as implemented)



I. BACKGROUND

A. Rationale

1. Within the agriculture sector of Papua New Guinea (PNG), smallholder tree crop production has been a major source of employment and cash income for the bulk of the rural population, and accounts for virtually all of the country's agricultural exports. Due to suitable soil and climatic conditions, commercial oil palm has been the fastest-growing tree crop subsector, with production and export volume increasing at an annual rate of over 8 percent from 1991 to 1997. The favorable soil and climatic conditions have allowed the successful development of nucleus estates and smallholder oil palm projects in West New Britain since the early sixties. Because of traditional customary land constraints, commercial estates can only be established on large tracts of Government-owned land. Government and small farmers' customary land¹ suitable for oil palm development are available. Basic marketing/transport infrastructure and private nucleus estate processing and export facilities are also in place. This Project was intended to support the national objective of increasing foreign exchange earnings, generate employment as well as accelerate the rate of growth of the agriculture sector through smallholder oil palm development. The Project was conceived in support of the Government's development objectives to generate employment, and bring about better living standards for small subsistence farmers.

B. Formulation

2. The Project was formulated under project preparatory technical assistance (TA) approved in September 1984.² The feasibility study undertaken for the TA found the Project to be viable and suitable for Bank financing. Appraisal was completed in March 1986.

C. Objectives and Scope at Appraisal

3. The Project was formulated to develop a viable smallholder oil palm industry to accelerate economic development and improve the living conditions of small subsistence farmers. Specifically, the objectives of the Project were to (i) increase foreign exchange earnings through increased production of palm oil for export, (ii) generate new employment opportunities to enable subsistence farmers to participate in the cash economy, and (iii) increase household income and raise the living standards of the rural population in the project areas. The Project included the (i) development of 8,000 hectares (ha) for oil palm planting by about 1,200 indigenous village smallholders and about 1,000 settlement smallholders,³ (ii) provision of agriculture support services, and (iii) provision of transport and social infrastructure. The Project also included a TA to study the agronomic factors affecting oil palm productivity and design methodologies for increasing smallholders palm oil yields.

D. Financing Arrangements

4. At appraisal, the total cost of the Project was estimated at \$49.9 million equivalent, comprising \$22.5 million in foreign currency and \$27.4 million equivalent in local currency. The Bank provided two loans (one from the Asian Development Fund and another from ordinary capital resources) totaling \$29.9 million to finance the foreign exchange cost and part of the

¹ Traditional land lots owned by tribal groups under their customary rights.

² TA 627-PNG: *Rural Development*, for \$350,000, approved on 26 September 1984.

³ Settlement farmers are migrants from other provinces who had illegally settled on Government-owned land prior to the Project. Existing village farmers are indigenous tribal farmers who owned their commune land by customary rights.

local currency cost. The balance, equivalent to about 40 percent of the total project cost, was to be financed by the Government. The Borrower was PNG and the Executing Agency (EA) was the Department of Agriculture and Livestock (DAL). During implementation, the role of EA was transferred to the Oil Palm Industry Corporation (OPIC) in 1992.

E. Completion

5. The Project was expected to be completed by December 1992. Two loan extensions were approved to allow further field development and physical infrastructure completion. Subsequently, the Project was completed in December 1995. Bank Loan 785-PNG was closed in 15 October 1994 but concessional Loan 784(SF)-PNG was closed on 18 April 1996 to allow completion of further field plantings started in 1995. The project completion report (PCR) was circulated to the Board on 10 December 1997. The PCR discussed the design, scope, implementation, and operational aspects of the Project and provided a reassessment of the farm financial budget and economic reevaluation. However, the report lacked detailed assessment of the project's socioeconomic impact. Although some components had been delayed, the PCR considered the Project to have been adequately implemented. The PCR stressed that both the baseline and the annual benefit monitoring and evaluation (BME) were not conducted. They could have provided the necessary data to allow for a quantitative assessment of the project's impact on smallholders and the national economy. The PCR also rated the performance of the Rural Development Bank (RDB) as less than satisfactory. Nevertheless, the PCR found that the main objectives of generating foreign exchange earnings and improving the living conditions of small subsistence farmers were achieved. The PCR rated the Project as partly successful.

F. Postevaluation

6. This project performance audit report (PPAR) focuses on pertinent aspects of the Project and assesses the project's effectiveness in terms of appropriateness of design, implementation performance, sustainability, and achievement of the objectives. The PPAR is based on a review of the PCR, the appraisal report, material in Bank files; discussions with staff members of the Bank, the EA, Implementing Agencies (IA), concerned Government agencies; and findings of the Operations Evaluation Mission (OEM) that visited the project area from 14 March to 7 April 1999.⁴ It is also based on inspections of the project sites and facilities and the results of a field survey conducted during the OEM. Copies of the draft PPAR were distributed to the Borrower, EA, IAs, and Bank staff for review and comments. Comments received were taken into consideration and incorporated in the final report.

II. IMPLEMENTATION PERFORMANCE

A. Design

7. The prevailing smallholder oil palm development model in PNG as well as the availability of suitable customary-owned land for oil palm development provided the basis for the formulation and adoption of the project design. It was a simple design aimed to produce palm oil and fitted well with the existing sociocultural conditions of local subsistence farmers. The design was based on the nucleus estate/smallholder development strategy first implemented within the project area in the 1970s. The early development of the smallholding oil palm was assisted by

⁴ The OEM was conducted in conjunction with the preparation of the PPAR for Loan 852/853(SF)-PNG: *East New Britain Smallholder Development Project*, for \$5 million, approved on 3 November 1987.

two loans from the World Bank.⁵ At appraisal, there were already 12,000 ha of smallholdings and 8,000 ha of nucleus estate oil palm planted in the province. The two existing private nucleus estates had constructed three palm oil mills with adequate capacity to process all the produce from both the nucleus estates and smallholdings. At appraisal, the plantation mills were expected to provide the facilities for processing the project smallholders' produce. Thus, the project design of nucleus estates and smallholding oil palm development is an appropriate one.

8. The Project had large fund allocations for road improvement and construction (about 33 percent of the estimated project base cost) to meet the needs of both existing and new settlement farmers. This important component of the Project was not highlighted in the appraisal report. The appraisal's economic analysis also did not evaluate the benefits to existing farmers deriving from these road improvements and construction. The project design should have given greater emphasis on road planning, construction, and maintenance. The current dispute between the provincial government, nucleus estates, and smallholders on who should shoulder the operation and maintenance (O&M) costs of various types of roads has become an important issue in the efficient operation of the oil palm industry in West New Britain Province.

9. Based on other countries' experience in oil palm development, the expenditure on the project roads was considered excessive. On a per-hectare basis, road construction/upgrading amounted to about \$1,910, or 110 percent of the oil palm field development cost. Under normal standard in Malaysia or Indonesia, the 438 kilometers (km) of roads provided by the Project was adequate to service about 20,000 ha of oil palm, or 2.5 times the area under this Project. It was apparent that the road construction/upgrading work provided under the Project would cater to the needs of both the existing nonproject oil palm smallholdings (numbering about 12,000 ha at the time of appraisal) as well as those of the project development. The economic benefits from the nonproject oil palm area and other users were not considered in the Project, thus underestimating the economic benefits.

10. One project design weakness was the development of village and settlement land without adequate analysis of the issues involved in settlement land development. During the initial stages of implementation, the villagers resented the granting of Government land to settlers from outside the province. The development of settlement land was also constrained by land titling and ownership problems. Consequently, the Project gave preference to developing village land.

B. Contracting, Construction, and Commissioning

11. International and domestic consultants were recruited in accordance with the Bank's *Guidelines on the Use of Consultants*. All civil works contracts were awarded to local contractors. The performance of the local contractors involved in road and bridge construction, school, aid posts, and other social services infrastructure was generally satisfactory. The awards of civil works and supply contracts were in line with the Bank's *Guidelines for Procurement* and the Government's procurement procedures acceptable to the Bank. Small contracts were undertaken by force account. The general quality of the buildings and roads constructed under the Project was satisfactory.

12. A project logistics officer, whose duties were to include collection of data for project BME to be carried out on an annual basis, was recruited. A BME specialist was recruited in 1995 to

⁵ IDA Loan Nos. 137 and 175-PNG, for the amount of \$1.5 million and \$5.0 million, respectively, *New Britain Smallholder Development Project*.

enhance the capacity of the Farm Management Information System Unit in DAL. The BME report provided valuable socioeconomic and sociocultural data on farm households in the project area. However, the information collected cannot be used as a benchmark survey since the data were collected near the end of the Project. Unfortunately, the report does not include any recommendation that can be used as an operational strategy for BME.

C. Organization and Management

13. Until December 1992, DAL was the EA and played the major role in project management at the national level. At the provincial level, the Department of Primary Industry had a major role in providing day-to-day implementation guidance to the project staff for all field activities. Two project offices were established at Kimbe and Bialla districts. A project manager was appointed in each district. The project manager was responsible for overall project implementation in the district. Two interagency coordination committees were formed—one at the national level and another in the province. The National Coordination Committee (NCC) chaired by the secretary of DAL was composed of representatives from concerned agencies such as the Department of Finance and Planning, Department of Works, Department of Land, the national departments of health and education, and the managing director of the Agriculture Bank of PNG.⁶ The Provincial Coordination Committee (PCC), chaired by the project manager, comprised local representatives of all the agencies represented in the NCC. The NCC and PCC did not meet regularly and attached no urgency to resolving project issues. This and the cumbersome Government procedures and the slow and erratic release of funds by Department of Finance and Planning were the major reasons for the implementation delays and lower level of achievement of project's planting targets. The overall management structure was appropriate for this Project. In December 1992, the EA's responsibility was transferred to OPIC. The greater focus of OPIC on smallholders and oil palm development was beneficial for the Project. All the project field staff were subsequently transferred to OPIC. This change in project implementation arrangements improved the overall field extension support for the project smallholders. RDB was responsible for providing the credit package for field development and house construction (settlers) for the project beneficiaries. However, its performance was less than satisfactory as resources for the credit component were inadequate and records were not kept up-to-date.

14. During project implementation, the Bank fielded 11 Review and Special Project Administration Missions with an appropriate mix of skills. Seven Review Missions were fielded with a staff input of 144 person-days. The missions were able to identify initial weaknesses in the administrative/bureaucratic procedures of DAL that were causing delays in project implementation and provided recommendations that helped accelerate the later phase of project implementation. The missions also raised the issue of the Borrower's noncompliance with certain loan covenants such as (i) annual review of cost coefficients for use in the pricing of fresh fruit bunch (FFB) for smallholders, (ii) a socioeconomic survey of project beneficiaries, and (iii) agreement between the national and the provincial government for O&M of roads, health, educational, and other social infrastructures built by the Project. Despite constant reminders during subsequent missions, these matters have not been resolved satisfactorily. Inadequate funding for O&M remains a key issue.

⁶ The Agriculture Bank of PNG has been renamed as the Rural Development Bank.

D. Actual Cost and Financing

15. The actual project expenditure was \$42.3 million equivalent compared with the estimated \$49.9 million equivalent at appraisal (Appendix 1). Bank disbursement was \$29.8 million, leaving a balance of \$3.6 million, which was subsequently cancelled. The main reason for the cancellation was the lack of counterpart funds to provide additional loans to farmers for further oil palm development. Government expenditure for the Project was \$12.5 million equivalent compared with the planned expenditure of \$19.9 million equivalent. The Government's share comprised \$5.7 million equivalent from annual budget appropriations and \$6.8 million equivalent from RDB.

16. Field development accounted for the bulk of cost underrun in project expenditures. Of the total allocation of \$14.1 million equivalent at appraisal, only \$6.8 million equivalent (or 48 percent) was actually spent. The total area of smallholder oil palm developed was 6,147 ha, or 77 percent of the planned area of 8,000 ha. Thus, the actual development cost of 1 ha of oil palm was \$1,106 or 63 percent of the allocated amount of \$1,763 per ha. Savings in field development accounted for about 71 percent of the underrun in project expenditure. The savings were largely due to the devaluation of the kina since 1995.

E. Implementation Schedule

17. The Project was completed on 31 December 1995 compared with the scheduled date of 31 December 1992. There was a delay of about 36 months, or about 55 percent, over the envisaged implementation period of 66 months. Loan effectiveness was extended four times because of the delay in Government's fulfillment of two conditions for loan effectiveness.⁷ Both loans became effective on 7 April 1988 with about 10 months delay. Delay in project implementation was experienced for these reasons: (i) project staff were unfamiliar with Bank procurement procedures during the initial start-up activities; (ii) road consulting services commenced late; (iii) civil work contracts were not finalized until two years after loan effectiveness; (iv) poor coordination between DAL and RDB resulted in slow disbursement of credit to farmers; (v) processing and selection of settlers proceeded slowly; (vi) local farmers questioned the legality of granting titles to provincial land to nonprovincial residents; and (vii) flooding and destruction of bridges by river water frequently disrupted road services between Kimbe and Bialla.

F. The Technical Assistance

18. In conjunction with project implementation, the Bank provided advisory TA for two consultants to undertake a study on smallholder oil palm productivity.⁸ The study, initiated in 1990, identified several social, cultural, and agronomic constraints to higher productivity in the smallholder oil palm area. Recommendations for increasing productivity were made. The consultants also collected socioeconomic and sociocultural data, which were useful for planning future smallholder development schemes. Some major constraints identified in the report such as loose fruit collection, need for harvesting tools and nets, and use of fertilizer in smallholding areas, have been addressed by the Project. Overall, the performance of the consultants was satisfactory. The report was of good quality and relevant to the project operational activities.

⁷ Loan effectiveness was delayed due to the delay in finalization and signing of the Financing Agreement between the Government and RDB and the Amended Master Agreement between the Government and the private oil palm estates.

⁸ TA 790-PNG: *Smallholder Oil Palm Productivity*, for \$300,000, approved on 14 August 1986.

G. Compliance with Loan Covenants

19. The OEM concurred with the PCR that overall compliance with the loan conditions and covenants was satisfactory. Minor shortcomings in compliance with the loan covenants were the (i) unresolved issue of obtaining agreement between the national and the provincial governments on maintenance of the project physical and social infrastructure, particularly the farm access roads; (ii) delay in providing land titles to settlers; (iii) failure of both NCC and PCC to meet regularly which resulted in less than satisfactory coordination of project activities by the concerned IAs; (iv) failure to maintain up-to-date financial accounts; and (v) Borrower's delay in providing regular reports to the Bank. Details on loan covenant compliance are in Appendix 2.

III. PROJECT RESULTS

A. Operational Performance

20. At project completion, about 6,177 ha of smallholder oil palm were planted, about 77 percent of the appraisal target of 8,000 ha. Total oil palm plantings covered 3,126 ha in existing villages and 3,051 ha in settlements, compared with the appraisal targets of 4,056 and 4,064 ha, respectively. The existing village farmers numbered 968 (appraisal target of 1,200), while the settlement farmers were 763 (appraisal target 1,001). The total number of project beneficiaries was 1,731 or about 79 percent of the appraisal target of 2,200 farmers. During project implementation, indigenous village farmers expressed some resentment over the allocation of state land to settlers who came from neighboring provinces. Consequently, the project management adopted a flexible approach that reduced the settlement farmers' participation by about 30 percent. This was one reason for the lower number of settlers given land under the Project.

21. The output from the Project is currently about 70,000 tons (t) of FFB and production is expected to reach its peak of 107,000 t by the year 2004. This is about 75 percent of the appraisal peak production target of 142,000 t of FFB (envisaged from a larger area of 8,000 ha). From recent yield data provided by OPIC and field surveys, it is estimated that the average oil palm yield is about 17 t/ha compared with the PCR estimate of 12 t/ha. Some of this recent yield increases can be attributed to the use of fertilizers (2 kilograms ammonium chloride per palm per year) introduced in 1997. It is estimated that about 80 percent of the smallholders apply fertilizer to their trees. The fertilizer is provided on credit by the nucleus estates. The "mama loose fruit" program (para. 37) instituted in 1997 has also contributed to the recent increase in FFB output.

22. Both the village and settler oil palm plantings are well established, but maintenance standards need further improvement to equal those of the nucleus estates. Overall, the smallholdings are well established with healthy palm trees. However, palm circles in some smallholdings need proper weeding and frond pruning. Currently, these activities are being done haphazardly. The palms were generally free of pests or diseases. Based on present palm tree conditions and with fertilizer applications, the smallholding palm trees should be able to yield about 18 t FFB per hectare.

23. The Project provided the required roads and bridges as envisaged at appraisal. It constructed about 342 km of new farm roads, upgraded about 60 km of logging trails to farm road standard, and upgraded about 40 km of main road and 56 km of existing farm roads in the project districts of Bialla and Kimbe to allow access to villages and settlement farms. A total of

nine new bridges were constructed, compared with the appraisal target of eight bridges. The Project also constructed 9 extension support units, 123 staff housing, 6 community buildings, 6 power stations, 6 police outposts, 33 classrooms, and 9 aid posts. In addition, the Government provided 80 additional staff to improve social services in the project area. However, adequate funding for these services and O&M of project facilities are now a problem in view of the uncertainty regarding the national annual budget allocation. Most of the smaller bridges provided by the Project in Bialla district were destroyed by the frequent floods during the rainy seasons. Bialla district is usually cut off from the rest of the province for about four to six weeks during the rainy season. The EA has not been able to repair the bridges as flood water frequently coming down from the logged-over hills is too strong, making it too costly to build/repair the bridges regularly. There were also constraints on the provincial government's budget for the repair of road/bridges.

24. Road maintenance to enable collection of FFB by palm oil mill trucks is a major concern, particularly during the rainy season. The provincial government has minimal budget for main road maintenance, but has not committed any funds to maintain the smallholder farm access roads. Currently, the nucleus estates are maintaining the farm roads with the use of two graders belonging to OPIC.

25. The Project provided most of the social infrastructure as envisaged at appraisal (Appendix 3). Buildings were generally well maintained although the two schemes had insufficient funds to undertake repairs such as replacing rusted water tanks, leaking roofs, and damaged buildings. As the population in the project area increased, the existing basic social infrastructure facilities are no longer sufficient to meet the needs of the project beneficiaries. To provide adequate social services to the local population, additional funding from the provincial government is needed, particularly for schools, teachers, and health workers.

B. Institutional Development

26. When the responsibility of the EA was transferred from DAL to OPIC, the project extension and management staff were integrated into the organizational structure of OPIC. Project managers and supervisory staff have developed good working relationships with the field staff of the nucleus estates and the Oil Palm Research Association. Project extension staff and technical advisory officers had gained significant technical knowledge from their association with the nucleus estates and the research station located at Hoskins. They worked closely as a team in disseminating information and providing extension services to the smallholders. The project management staff have gained valuable experience in planning and management of smallholder oil palm development under the Project. The Hoskins Oil Palm Research Station and OPIC organized regular training seminars to train the newly recruited extension officers as well as the farmers in all aspects of palm oil production. The project staff were able to extend smallholder oil palm development by developing further plantings in existing villagers' land and arranging credit packages for the provision of fertilizers, harvesting nets, and field development from the nucleus estates. The Project, therefore, has had a significant institutional impact on the field extension staff, OPIC, and local research staff in strengthening development planning, management, and extension activities.

27. Although RDB is responsible for the credit package in the project, the staff of RDB provided little assistance to the project management in facilitating credit disbursement and financial recording, and they performed poorly in executing the credit component. Repayment of loans to smallholders was deducted by the plantation mills and repayments were then made to

RDB through the assistance of project management (OPIC). RDB gave the smallholders no additional credit to further expand their holdings. Additional credit to the farmers (such as for fertilizer and net purchase, new plantings, etc.) is currently provided by the private estates.

C. Financial Performance

28. Both the appraisal report and the PCR did not conduct any financial analysis on the viability of the Project. The financial internal rate of return calculated by the OEM was about 12.6 percent. Details of the farm budget and financial analysis are given in Appendix 4, Table A4.3.

29. The financial farm budget analysis on a per-hectare basis is given in Appendix 4, Table A4.2. At appraisal, the existing village farmers were growing mainly garden food crops for subsistence. Total annual farm income was estimated at about K650 in 1986. Based on the OEM's estimate, the project farmers with 2 ha of oil palm earned about K5,400 per year. In addition, the farmers continue to cultivate garden crops to supplement food production from the farm. The settlement farmers who have 4 ha of oil palm earned a gross income of over K11,000 per year for the past two years. The Project has brought about a significant increase in the income level of the subsistence farmers. Because customary land is available in the village, most village farmers are currently expanding their oil palm areas by either using their own resources or obtaining credit from the private estates.

D. Economic Reevaluation

30. Economic reevaluation for the Project was carried out using the same general methodology and approach used at appraisal and the PCR. The project economic internal rate of return (EIRR) was reestimated at 13.8 percent compared with the appraisal estimate of about 17.9 percent. The PCR reestimated the EIRR at about 9.3 percent. The EIRR reestimated by the OEM was based on major direct benefits that accrued to the Project from the export of palm oil. Unlike in the appraisal analysis, the social infrastructure was included since it would be impossible to develop new settlements without these facilities. A favorable factor in this analysis is the higher farmgate prices for FFB resulting from the recent devaluation of the local currency. During the period 1988 to 1999, the kina suffered a 70 percent devaluation against the US dollar. Details of the EIRR analysis are given in Appendix 4.

31. The EIRR estimate by the OEM lower than that at appraisal was mainly due to the different assumptions regarding projected palm oil prices and farm yields in the two calculations. The appraisal used a higher projected price of palm oil for the period from 1995 based on World Bank projections at the time. The appraisal also used higher oil palm yields of 20 t/ha at peak production without fertilizer. Other factors contributed to the higher EIRR at appraisal: (i) infrastructure costs were spread out over a larger area than was actually developed, (ii) imputed cost of labor for oil palm maintenance and harvesting was assumed to be zero, (iii) residual value for roads and buildings in project year 25 was high, and (iv) the cost of socio-infrastructure was excluded from the total Project cost. The three-year delay in project implementation also substantially contributed to the lower EIRR estimated at the time of the OEM.

E. Socioeconomic and Sociocultural Results

32. The Project has generated significant socioeconomic benefits to the project beneficiaries although the number of beneficiaries fell short of the appraisal target by about 469 families. The benefits were mostly in the form of cash income, which significantly improved the living

conditions of the project beneficiaries. The most significant improvement for the project farmers is the increase in annual net farm income. Village farmers with 2 ha of oil palm are now earning an average monthly income of about K450 mostly in cash.⁹ This income level at peak production is about 2.4 times higher than the appraisal estimate. These farmers are now in a position to buy food, whereas formerly they obtained close to 100 percent of their food requirements from their home garden (subsistence living).

33. Twenty randomly selected project farmers were interviewed in the field. A group interview of 25 farmers was also conducted. The main findings are as follows: (i) the average size of oil palm holding is about 3.7 ha; (ii) the average crop yield is 16 t of FFB/ha/year; (iii) about 80 percent of the farmers harvest their crop twice a month, while the others harvest either once or three times per month; (iv) most of the farmers claim to have repaid their loan; (v) most farmers had less than 6 years of education, but about 80 percent of them have children who are either currently enrolled in or have completed high school; (v) the average family has seven members; and (vi) all the farmers in the settlement schemes live within 3 km from education, health, and other social facilities. The most significant finding is that all farmers are grateful for the assistance provided to them for their oil palm smallholdings development. They are very enthusiastic about this enterprise and virtually all of them plan to plant an additional 2 ha of oil palm. They will draw upon their savings from the sale of FFB to finance this activity. Currently, oil palm smallholders obtain seedlings and fertilizer for new plantings from the nucleus estates on credit.

34. While the Project has increased the beneficiaries' cash income, it was observed that there has been a sharp increase in gambling and alcohol consumption within the project area. This pattern of alcohol consumption, particularly after the sale of FFB, has been causing social problems. Alcohol consumption has increased with the establishment of several bottle shops in the village and town centers. The recent introduction of poker machines aggravated the gambling problem.

35. The project area residents (both project beneficiaries and an equal number of nonproject farmers) benefited from the improvements in roads and social amenities. Residents in the project area, particularly the women, are able to transport their excess garden produce for sale in the local market, and the marketing activities among local communities have greatly improved. The children of settlement farmers now have transport to school instead of walking to school. Health facilities have also improved for both the local residents and project farmers.

F. Gender and Development

36. This was not a major issue at the time of appraisal, and the Project did not provide a specific GAD component. As noted in para. 35, the provision of physical and social infrastructure by the Project helped the women in marketing their garden produce and in increasing their social activities. Traditionally, women raise farm produce and sell the surplus at the local market; this provides them with a small source of income. Roads constructed under the Project enable women to bring their produce early to nearby markets and also provide them with an opportunity to meet other women, thus breaking the isolation from other communities. With

⁹ Farmers' net incremental income from palm oil production fluctuates with international palm oil prices. Based on the current peak yield of about 18 t of FFB per ha, the average monthly income for the last two years was about K450 per family holding of 2 ha. Many village farmers with 2 ha farms assisted by the Project have expanded their holdings to 3-4 ha. The new plantings would further increase the farmers' income.

the establishment of the aid posts, the women have become more aware of their health and nutrition needs.

37. One major initiative of the project office was a program established in 1997 to register women in the collection of loose oil palm fruits. Under this program, women (wives and daughters of farmers) are organized to collect loose fruits, i.e., fruits that have fallen from the bunches after harvest and collection by the men.¹⁰ This program for women is called "mama loose fruit" program and it has helped increase overall fruit production by about 3-5 percent in the project area. One important impact of this program is that payment for these loose fruits is made directly to the women's account. The wives can earn up to about K100 per month. This work does not affect their other activities such as household chores, child-rearing, growing garden food crops, and selling garden produce in the local market.

38. Besides improving the financial status of women, the "mama loose fruit" program has improved the status of women in the community. For the first time, the women can have savings and this has increased their self-esteem. Other secondary benefits include an increase in savings rate since women are more likely to save part of their earnings. They can spend more on household needs rather than on unproductive activities such as drinking and gambling. There is also a more harmonious relationship in the household since women no longer have to ask their men for money for household expenses. Since the implementation of this program in 1997, OPIC informed the OEM that instances of wife abuse have fallen significantly. Currently, about 2,900 women are registered under this program. The registration exercise is ongoing and the number of women enrolled in the program is expected to reach 5,000 within the next year.

G. Environmental Impacts and Control

39. Land degradation as a result of oil palm cultivation is not expected to be significant as the Project has avoided steep land and gullies as planting areas. In addition, the rapid buildup of palm fronds on the floor of interrows minimizes soil erosion risks and conserves soil fertility.

40. A concern on the environmental impact from oil palm development is from the mill processing of FFB. This issue was not addressed at appraisal as the processing of the fruit bunches by the plantation palm oil mills was regarded as outside the scope of the Project. However, the processing of smallholder's FFB by the privately owned mills would result in generation of additional waste. Because the privately owned mills have failed to install proper treatment plants, the waste is being discharged directly into the sea. The Government has established guidelines for palm oil waste treatment. Unfortunately, no monitoring is being undertaken to ensure that palm oil mills comply with the guidelines. It was observed that the full complement of treatment ponds necessary to treat palm oil waste has not been established in the mills. Thus, the discharge from these mills could have some adverse effect on the coastal ecosystem. It is important that the PNG Bureau of Water Resources monitor the situation regularly as untreated mill effluent could cause damage to the reef and inshore marine life.

41. In addition, there are no control measures to minimize air pollution from the burning of fruit fiber and empty shells in the mills. While the mills' contribution to the greenhouse effect is negligible, the fallout of fine dust is both a nuisance and a health hazard to nearby residents.

¹⁰ During harvesting, a number of oil palm fruits fall off from the FFB, particularly the ripe FFB. The loose fruits are usually left uncollected in the field or collection stations.

H. Gestation and Sustainability

42. The Project has now reached the end of its gestation period. All the oil palm plants are producing and the annual production of FFB has reached about 80 percent of its peak levels. An ongoing program trains farmers to ensure that their trees are properly maintained to achieve the expected yield level. There is a strong possibility that total FFB production from the project beneficiaries will continue to increase to 150,000 t in the year 2010 since many project farmers are utilizing their savings or obtaining credit from the private estates to plant an additional 2-4 ha of oil palm.

43. The main factor that could affect project sustainability is inadequate funds from the provincial government for the upkeep of the physical and social infrastructure and the maintenance of the farm access roads. OPIC and the private nucleus estates are currently providing assistance to maintain the farm roads to ensure the transport of all FFB from smallholders, particularly during the rainy season. The extension services will also need additional funding from OPIC to expand their activities to cover additional oil palm areas. Currently, West New Britain has about 10,000 farmers planting about 32,000 ha of smallholder oil palm. It appears that the same extension workers who service the project area of 6,000 ha are currently being mobilized to provide extension support to all the oil palm smallholders. Thus, the number of farmers served by each extension worker has significantly increased. This shortage of extension workers is to some extent being addressed by the services provided by the private nucleus estates. Each nucleus estate has formed its own smallholder development unit, which provides extension support to the smallholders. These units were initially formed to arrange the transport of smallholder FFB to the mills. Subsequently, their function was expanded to include providing smallholders with extension services and credit for the purchase of farm tools, fertilizers, and chemicals. More recently, the unit also provides seedlings (on credit) to farmers who would like to plant additional areas of oil palm. The assistance provided to smallholders by the nucleus estates arises from the symbiotic relationship between the two parties. The nucleus estates' palm oil mills will be able to increase their profit by purchasing more FFB from the smallholders.

44. Despite the uncertainty in O&M funding for project facilities and roads, the prospect of sustaining the benefits from palm oil production is favorable. The trees are well grown, current yields obtained are about the level envisaged at appraisal, marketing and processing provided by the private estates are sustainable, and palm oil has a ready world market. The technology adopted for oil palm planting is appropriate and is supported by research based in the project area. All these imply the likely future sustainable development of the oil palm industry in the province.

IV. KEY ISSUES FOR THE FUTURE

A. O&M Funding and Support Services

45. The main role of the Government in sustaining and promoting smallholder oil palm development in West New Britain is to (i) provide adequate extension support, (ii) maintain and expand the network of farm roads, and (iii) provide additional loans for new farmers to plant oil palm in their farm holdings. However, due to the current financial crisis, both the national and provincial governments are not able to provide adequate funds for oil palm development in the province.

46. The primary funding sources for financing oil palm research and extension activities are the levies imposed on oil palm production. Currently, there is a levy of K0.56/t of FFB for research, K0.50/t of FFB for control of pests (Sexava), and K3.5/t of FFB for OPIC operation expenditure and extension services. The OPIC levy to finance extension activities is imposed only on oil palm fruits produced by the smallholdings. Plantations are charged only the levies for research and pest control. The estimated total collection from these levies in 1997 was as follows: K0.68 million for research, K0.61 million for pest control, and K1.2 million for OPIC extension activities. In 1998, the annual recurrent expenditure for OPIC was about K4.0 million. Thus, the OPIC levy provides the organization with only about 30 percent of its requirements. The balance came from the Government's annual budget allocation.

47. The Government should consider raising more revenue from the industry. Oil palm smallholders do not pay any income taxes to the Government. The levies charged represented about 1.7 percent of the ex-mill value of FFB or 3.2 percent of the actual farmgate price received for the FFB. Hence, the contribution by oil palm smallholders is low. The imposition of a fixed levy is also a disadvantage to the Government since the full benefits of higher prices are enjoyed only by the farmers and the mills. If the levy is based on a percentage share of the ex-mill value of FFB, then the Government will be in a better position to raise more revenue for the operational and extension activities in the oil palm sector. For example, a 10 percent tax on smallholder's production (in 1997) would raise about K5.4 million, which would be more than sufficient for OPIC's annual recurrent expenditure.

B. Credit Disbursement and Recovery

48. Apart from the delay in loan disbursement, the channeling of smallholders loans through RDB has proceeded with little difficulty in this Project. The loan package for project beneficiaries ranged from K1,700 for the village farmer with 2 ha of oil palm to K6,500 for the settler with 4 ha of land. The loan repayment period was 4-8 years after a grace period of 3 years, with interest capitalized during the grace period.

49. At appraisal, it was expected that RDB would provide adequate staff to process loan application, disburse loans, and monitor loan recovery. However, this assurance has not been fully met and, currently, RDB is faced with a shortfall in its operating budget and is forced to reduce its staff strength. It has not been able to update the individual accounts of all the project beneficiaries. Farmers loan repayment is done through deduction by the plantation mills. The deductions are then forwarded to RDB with assistance from project management so that farmers' records are correctly entered. At the time of the OEM visit, most farmers claimed that they had fully repaid their loan, and this fact is substantiated by the project office, which maintains a separate record of all loans disbursed and repaid by the project beneficiaries. However, because of poor record keeping, RDB has not been able to confirm the status of farmers loan repayment. Many farmers claim that they have overpaid their loan and would like to obtain a refund from RDB. There is need for RDB to update its records and settle the credit issue quickly.

C. Potential Disease Outbreak

50. Being relatively new to the project area, oil palm trees are presently free from any serious pest or diseases. However, with time and with larger areas under monocropping, the situation could change. One concern is root rot caused by the fungus *Ganoderma lucidum*, identified by the oil palm research station as a potential problem. It is a disease of oil palm in

Malaysia and Solomon Islands where, in some instances, up to 20 percent infection rates have been recorded. It presently occurs in West New Britain at very low levels (only eight cases reported so far), but it has the potential for developing into a serious problem as old palms are replanted and larger new areas are planted. This is of immediate concern in areas where smallholders have replaced coconut with oil palm as the fungus is known to live as a saprophyte on coconut. There are reports that the disease is already causing concern in Kavieng (New Ireland) where oil palm was planted in old coconut areas. There is no effective chemical control, and sanitation measures involving removal of the old palms is beyond the capability of the smallholder. There is a need for the oil palm research station at Dami to closely monitor the disease and develop measures in case of a major outbreak.

D. Benefit Monitoring and Evaluation Capability

51. The project budget provided for baseline and annual surveys of smallholders for BME of field development activities. In addition, an impact study at the time of project completion was planned. The only BME information available for this Project is from a baseline survey conducted in 1995, or in the eighth year of the Project. The annual socioeconomic survey and the impact survey were not carried out. This situation arises from the low priority placed by both the project office and the Bank's project administrative staff to conduct project BME. There is a need for the Bank to put more emphasis on project performance and monitoring activities.

E. Pricing Policy for Smallholder Production

52. The price paid for smallholders FFB is decided to a large extent by the private nucleus estates. The plantation mills in each district enjoy monopsonistic power since the smallholders cannot sell their FFB elsewhere. Although the Government has a major stake in one of the nucleus plantations, they do not appear to be always acting in the best interest of smallholders. To protect the smallholders' interest, the Project provided for an annual review of the cost coefficient used in the pricing formula to ensure that farmers receive a fair price for their produce.

53. The OEM observed that prior to 1996, the mills were free to determine their processing cost and margins in deciding the price they pay for smallholders' FFB. During the period from 1991 to 1996, the smallholders' share of the ex-mill value of their produce ranged from 46 to 55 percent (Table A4.1). From 1997 onward, the Government established a formula that fixed the farmers' share at 55 percent and the millers' share at 45 percent. The application of percentage sharing means that the millers enjoyed high economic rent during times of high palm oil prices. Thus, the millers' share for processing a ton of FFB increased from an average of K46/t of FFB during 1991-1996 to K115/t of FFB during 1997-1999 when the international prices of palm oil were at their peak.

54. The covenant that the Government undertake an annual review of the cost coefficient was not strictly implemented. The Government is currently conducting a price review, and it appears that the review places equal emphasis on the farmer's cost of production and the miller's processing cost. The approach taken is to fix a minimum price for farmers' FFB so that they can recover their production cost instead of fixing milling margins and allowing farmers to enjoy a fair price for their produce. If the milling cost and margin are fixed at K40/t of FFB, then the farmer would (based on 1999 average price) receive an additional K84/t of FFB for his produce (Appendix 4, Table A4.1). Although the current price review has not been finalized,

there is a need for the Government to consider fixing the miller's cost and margin at reasonable levels and to ensure that smallholders get a fair price for their produce.

V. CONCLUSIONS

A. Overall Assessment

55. The Project has demonstrated that smallholders in PNG can cultivate oil palm successfully. A carefully designed package of Government assistance (including extension and credit) is necessary to ensure that similar projects can be implemented in other provinces in this country. The soil and topography of the land in West New Britain Province are suitable for oil palm growing. The rich volcanic soil enables the crop to produce good yield with little fertilizer input. The agronomic management skills required for palm oil production are well within the grasp of the average farmer. Oil palm cultivation does not have a high demand for labor, and hence, farmers growing this crop can still maintain their practice of traditional food crop production. The crop cultivation practices for oil palm development fitted well into the sociocultural conditions of the local communities. From the national viewpoint, the production of palm oil for the international market generates substantial foreign exchange earnings. The Project is currently producing about 85,000 t of FFB per year and production is expected to peak at about 107,000 t/year by the year 2004, bringing an annual income of about K13.5 million. It is likely that the Project will sustain the expected benefits in the future.

56. The Project has also provided substantial physical and social infrastructure that brought about significant benefits to local communities and project beneficiaries, including women. The extension and other social services to women, especially advice on food crop garden, marketing, "mama loose fruit" program, account keeping, household budget management, etc., have improved the social lives of the project beneficiaries significantly. The construction of new roads and upgrading of existing farm roads in the project areas have brought about significant economic benefits and improved the quality of life for the project beneficiaries and the nonproject residents in the area. The provision of community schools, community halls, aid posts, and police posts has brought substantial social benefits that are difficult to quantify: improved health, education, and security. The institutional impact on project management and extension/technical staff is significant and has produced a core of competent staff who can tackle future oil palm development in the country. Thus, the outcome of the Project is considered satisfactory and project benefits are likely to be sustainable. The reestimated project financial internal rate of return and EIRR obtained are high, which demonstrates that the Project is financially and economically viable. Even with a 20 percent fall in expected commodity prices, the EIRR is still higher than 10 percent. The overall performance of the Bank and the EA is considered satisfactory. The Project is rated as generally successful.

B. Lessons Learned

57. The Project demonstrated the following lessons:

- (i) Private nucleus estate support. Project experience underscored the need for private sector support in the areas of processing and marketing for smallholder oil palm development. In cases where Government support services are weak and where smallholder credit is not readily available, participation of the private sector nucleus estates is key to ensure that the Project is successful and that project benefits are optimized and sustained.

- (ii) Need for flexibility in project approach. The decision to transfer project management to OPIC, following an assessment early on during implementation that DAL exhibited weaknesses in its administrative setup, proved to be an appropriate and beneficial move for the Project. The ability of project management to shift emphasis to oil palm planting by village farmers and to convince the nucleus estates to supplement and to provide credit for new oil palm planting contributed to the success of the Project. Flexibility in project management is a major factor for effective implementation.
- (iii) Need for social assessment. A more extensive examination of the social environment in the project area at appraisal will ensure that all affected people have been considered and problems arising from social conflicts, particularly settlement problems, could be averted if not eliminated. Although the Project did not carry out social assessment, on hindsight the design fitted well into the sociocultural conditions of the communities. This confirms the importance of requiring social assessment at the formulation stage.
- (iv) Need for assessment of EA capacity. Project experience underscored the need to conduct a detailed assessment of the EA's capacity to implement the Project. In cases where the EA is weak, institutional strengthening measures should be carried out to ensure that the Project commences as scheduled and that the EA staff are familiar with the Bank's tendering and procurement procedures to avoid undue delay during the project start-up phase.

C. Follow-Up Actions

58. OPIC should raise the matter of road and social infrastructure maintenance with the provincial government as soon as possible. The immediate resolution of this matter will ensure that the project beneficiaries continue to enjoy full benefits.
59. OPIC needs to reexamine the levy structure imposed on FFB exports to ensure that there are adequate funds for an effective extension program for smallholders.
60. The Department of Finance should carry out a detailed study of the weaknesses of RDB and take appropriate action to strengthen the financial resources of this bank. Urgent action should be taken to update the farmers loan account and give refunds to farmers who have overpaid their loans.
61. The pricing formula for smallholders FFB should be reviewed to ensure that farmers receive an equitable price for their produce.
62. The PNG Bureau of Water Resources should ensure that the palm oil mills comply fully with the PNG guidelines for palm oil waste treatment. The bureau should regularly monitor treated mill effluent before it is discharged into the sea.

APPENDIXES

Number	Title	Page	Cited on (page, para.)
1	Project Investment Costs	17	5,15
2	Compliance with Loan Covenants	18	6,19
3	Project Physical Achievements	22	7,25
4	Financial and Economic Reevaluation	24	8,28

PROJECT INVESTMENT COSTS
(\$ million)

Component	Appraisal			Actual^a		
	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost
Field Development	2.5	10.9	13.4	0.0	6.8	6.8
Agricultural Support Services	2.8	6.0	8.8	3.8	5.8	9.6
Road Infrastructure						
Roads	9.0	3.8	12.8	10.4	1.3	11.7
Department of Works	0.5	1.9	2.4	1.7	0.9	2.6
Social Infrastructure	3.2	4.7	8.0	3.8	3.8	7.6
Interest During Construction	4.5	0.0	4.5	4.0	0.0	4.0
Total	22.5	27.4	49.9	23.7	18.6	42.3

^a Figures have been prorated according to actual expenditures from the Bank and the Department of Agriculture and Livestock.

COMPLIANCE WITH LOAN COVENANTS

Covenant	Reference to Loan Agreement	Status of Compliance per PCR	OEM Remarks
1. The Borrower shall cause the Project to be carried out with due diligence and efficiency and in conformity with sound administrative, financial, engineering, and agricultural practices.	LA, Section 4.01(a)	Partly complied with	Concurred with PCR
2. In the carrying out of the Project and operation of the project facilities, the Borrower shall perform, or cause to be performed, all obligations set forth in Schedule 6 to this Loan Agreement.	LA, Section 4.01(b)	Partly complied with	Concurred with PCR
3. In the carrying out of the Project, the Borrower shall cause competent and qualified consultants and contractors, acceptable to the Borrower and the Bank, to be employed to an extent and upon terms and conditions satisfactory to the Borrower and the Bank.	LA, Section 4.03(a)	Complied with	Concurred with PCR
4. The Borrower shall ensure that the activities of its departments and agencies with respect to the carrying out of the Project and operation of the project facilities are conducted and coordinated in accordance with sound administrative policies and procedures.	LA, Section 4.04	Partly complied with	Concurred with PCR
5. The Borrower shall maintain, or cause to be maintained, records, an asset register and accounts adequate to identify the goods and services and other items of expenditure financed out of the proceeds of the Loan, to disclose the use thereof in the Project, to record the progress of the Project (including the cost thereof) and to reflect, in accordance with consistently maintained sound accounting principles, the operations and financial condition (to the extent relevant to the Project) of DPI and the other agencies of the Borrower responsible for the carrying out of the Project and operation of the project facilities, or any part thereof.	LA, Section 4.06(a)	Partly complied with	Concurred with PCR
6. The Borrower shall (i) maintain, or cause to be maintained, separate accounts for the Project; (ii) have such accounts and related financial statements audited annually, in accordance with sound auditing standards consistently applied, by auditors acceptable to the Bank; (iii) furnish to the Bank, as soon as available but in any event not later than six (6) months after the end of each related fiscal year, unaudited copies of such accounts and financial statements, and not later than twelve (12) months after the end of each related fiscal year, certified copies of such audited accounts and financial statements and the report of the auditors relating thereto, all in the English language; and (iv) furnish to the Bank such other information concerning such accounts and financial statements and the audit thereof as the Bank from shall time to time reasonably request.	LA, Section 4.06(b)	Partly complied with	Concurred with PCR

Covenant	Reference to Loan Agreement	Status of Compliance per PCR	OEM Remarks
7. Without limiting the generality of the foregoing, the Borrower shall furnish, or cause to be furnished, to the Bank quarterly and annual progress reports on the carrying out of the Project and on the operation and management of the project facilities. Such reports shall be submitted in such form and in such detail and within such a period as the Bank shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the period under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following period.	LA, Section 4.07(b)	Partly complied with	Concurred with PCR
8. Promptly after physical completion of the Project, but in any event not later than six (6) months thereafter or such later date as may be agreed upon for this purpose between the Borrower and the Bank, the Borrower shall prepare and furnish to the Bank a report, in such form and in such detail as the Bank shall reasonably request, on the execution and initial operation of the Project, including its cost, the performance by the Borrower of its obligations under the Loan Agreements and the accomplishment of the purposes of the Loans.	LA, Section 4.07(c)	Complied with	Concurred with PCR
9. The Borrower shall take all action which shall be necessary on its part to enable ABPNG to perform its obligations under the ABPNG Financing Agreement and shall not take or permit any action which would interfere with the performance of such obligations.	LA, Section 4.11(a)	Partly complied with	Concurred with PCR
10. The Borrower shall ensure that all land, rights in land, and other rights or privileges required for the Project are acquired or otherwise made available on a timely basis so as to avoid delay in project implementation. Specifically, the Borrower shall make available approximately 6,500 ha of suitable Government land as agreed upon by the Borrower and the Bank for the purposes of the Project; and shall arrange for an additional 4,000 ha of customary land to be allocated to the cultivation of oil palm under the Project. Only customary land blocks which are subject to the appropriate Clan Land Usage Agreement shall be included in the Project. In the event that a site previously agreed upon by the Bank and the Borrower for project activities is or become unavailable, or is found to be unsuitable for the Project, the substitution of a new site shall be arranged by the Borrower.	LA, Schedule 6, para. 6	Partly complied with	Concurred with PCR. Locals' resentment against Government land given to outsiders delayed land leasing.

Covenant	Reference to Loan Agreement	Status of Compliance per PCR	OEM Remarks
11. The Borrower shall ensure that all Government land to be provided for the Project shall be free and clear of any encumbrances and that the smallholder blocks to be developed on such land shall be a minimum of 6.5 ha each, of which 4 ha shall be cleared and planted with oil palm and 0.5 ha shall be cleared for food gardens. The Borrower shall enter into 99-year renewable leases with Participating Smallholder with respect to such Government land.	LA, Schedule 6, para. 7	Complied with	Concurred with PCR
12. For the purposes of financing the Field Development Costs through Smallholder Loans, the Borrower shall cause ABPNG to enter into an agreement (the Smallholder Credit Agreement) with each Participating Smallholder on terms and conditions satisfactory to the Bank which shall, inter alia, provide as follows: Except as the Borrower and the Bank may otherwise agree, each Smallholder Credit Agreement shall provide for (i) a repayment period of 4-8 years following a grace period of at least 3 years, and (ii) interest at the rate of 11 percent per annum which shall be capitalized during the grace period.	LA, Schedule 6, para. 9(a)	Complied with	Concurred with PCR
13. ABPNG shall maintain an individual loan account for each Participating Smallholder which shall be debited with the Participating Smallholder's share of Field Development Costs in accordance with ABPNG's standard procedures currently in effect for smallholder oil palm loans or as may otherwise be agreed to by the Bank.	LA, Schedule 6, para. 9(b)	Complied with	Concurred with PCR
14. Repayment of Smallholder Loans shall be effected by the Nucleus Estate deducting not more than 50 percent of the FFB produce payments due to each Participating Smallholder and remitting such amount directly to ABPNG to be credited to the Participating Smallholder's loan account.	LA, Schedule 6, para. 9(c)	Complied with	Complied with RDB's records are not complete, thus, some growers have overpaid their loans.
15. The Borrower shall exercise its rights under the Master Agreements to conduct an annual review of the cost coefficients used by the Nucleus Estates in calculating FFB farmgate prices in order to ensure that the FFB prices paid to Participating Smallholders reasonably reflect the prevailing world market prices for oil palm products. The results of such review shall be reported to the Bank within one month after they are available.	LA, Schedule 6, para. 12	Not complied with	Not complied with

Covenant	Reference to Loan Agreement	Status of Compliance per PCR	OEM Remarks
16. The Borrower shall provide, or cause to provide, the necessary funds and other support on a timely basis to the agencies concerned with the operation and maintenance of the project facilities, to ensure that the various facilities provided, constructed, or upgraded under the Project are operated, managed, maintained, and repaired, both during the period of project implementation and thereafter, by the concerned agencies in accordance with sound administrative, financial, engineering, agricultural, maintenance, and operational practices.	LA, Schedule 6, para. 20	Partly complied with	Concurred with PCR
17. Project benefit monitoring and evaluation activities shall be undertaken in accordance with the Bank's <i>Guidelines on Project Benefit Monitoring and Evaluation for Agriculture, Irrigation, and Rural Development Projects</i> . The Project Logistics Officers shall make an annual comparison of baseline information obtained from the application forms for settlement on Government land submitted by Participating Smallholders and from field interviews with Participating Smallholders cultivating customary land with crop production and farmer income information maintained on computer by the Nucleus Estates, and shall compile aggregate data on average production and income for each smallholder settlement and village oil palm area assess the benefit monitoring and evaluation findings. The results of these annual benefit monitoring activities shall be included in the annual progress reports submitted to the Bank by the Project Officer.	LA, Schedule 6, para. 23	Partly complied with	Concurred with PCR Baseline data for participating smallholders were not collated for use.

ABPNG = Agricultural Bank of Papua New Guinea, DPI = Department of Primary Industry, FFB = fresh fruit bunch, ha = hectare, LA = loan agreement, OEM = Operations Evaluation Mission, PCR = project completion report.

PROJECT PHYSICAL ACHIEVEMENTS

Table A3.1: Project Physical Achievements
(Actual versus Appraisal Targets)

Type of Development	Area Planted (hectares)											Total Number of Farmers
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Total	
Village												
Actual	-	378	471	588	309	152	355	508	87	248	3,096	968
Appraisal	3,056	912	120	-	-	-	-	-	-	-	4,088	1,231
New Settlements												
Actual	-	-	-	240	336	752	340	871	300	872	3,711	763
Appraisal	-	48	2,384	1,600	-	-	-	-	-	-	4,032	1,008
Total												
Actual	-	378	471	828	645	904	695	1,379	387	1,120	6,807	1,731
Appraisal	3,056	960	2,504	1,600	-	-	-	-	-	-	8,120	2,239
Cumulative Total												
Actual	-	378	849	1,677	2,322	3,226	3,921	5,300	5,687	6,807	-	-
Appraisal	3,056	4,016	6,520	8,120	-	-	-	-	-	-	-	-

- = magnitude zero.

**Table A3.2: Achievements in Agricultural Support Services
Social Infrastructure and Incremental Staffing**

Component	Appraisal	PCR	PPAR
Extension Support			
Offices/Stores	9	9	9
Staff Housing	42	42	42
Vehicles	52	47	47
DAL Incremental Staff	47	45	45
RDB (formerly ABPNG)			
Offices	2	0	0
Staff Housing	8	0	0
Vehicles	2	0	0
Incremental Staff	10	2	2
Community			
Community Buildings	6	6	6
Power Stations/Generators	6	6	6
Police Housing	14	14	14
Police Vehicles	14	6	4
Police Incremental Staff	18	11	11
Classrooms	33	33	33
Staff Housing	46	46	46
Incremental Staff	57	61	61
Health Facilities			
Aid Posts	9	9	9
Staff Housing	11	11	11
Vehicles	1	1	1
Incremental Staff	10	8	8
Department of Works Support			
Office/Stores	8	-	8
Staff Housing	10	-	10
Vehicles	4	-	4

- = magnitude zero, ABPNG = Agricultural Bank of Papua New Guinea, DAL = Department of Agriculture, and Livestock, PCR = project completion report, PPAR = project performance audit report, RDB = Rural Development Bank.

FINANCIAL AND ECONOMIC REEVALUATION

A. Methodology and Assumptions

1. The methodology used in the economic reevaluation follows the Bank's *General Guidelines for Economic Analysis of Projects* issued by the Economics and Development Resource Center. The main assumptions in the reestimation of the economic internal rate of return (EIRR) are as follows:

- (i) All benefits are converted into constant 1999 prices using the World Bank manufacturing unit value index for international prices and the local consumer price index where appropriate. All benefits and cost are expressed in kina.
- (ii) The economic life of the Project for the purpose of financial and economic evaluation is assumed to be 25 years; i.e., from 1988 to the year 2014. The Project started generating incremental benefits in 1991.
- (iii) Actual farmgate prices (adjusted to 1999 constant terms) for palm oil is used for the period 1992-1998. For 1999, the average January to March prices is used as the price for this year. Prices for 2000-2014 are based on the World Bank commodity price forecast (Table A4.1). The World Bank expects international palm oil prices to fall gradually from the 1998 level of \$644 per ton (t) to an average of \$414 per t for the period 2000-2010.
- (iv) A standard conversion factor of 0.9 is used to adjust project cost to international terms.

B. Crop Budgets and Yields

2. The crop budget for 1 hectare of oil palm based on the financial prices is shown in Table A4.2. The average yields for oil palm over the productive life of the crop is estimated at 15.2 t per hectare. This yield profile is assumed to be the same for oil palm grown in settlements and villages. From the farmer's viewpoint, investment in oil palm cultivation provides a high return (26.9 percent) on investment.

C. Farm Income With and Without the Project

3. Farmers participating in the Project are currently enjoying a high level of income. In most cases, they are receiving more than 15 times their without project income. It is expected that, even with the decline expected in palm oil prices, the average farmer in the project area will be enjoying a net income of over K4,000 per year (Table A4.2).

D. Reestimated EIRR

4. Based on the above assumption, the EIRR for the Project is reestimated at 13.8 percent (Table A4.3). The financial internal rate of return is 12.6 percent (Table A4.4).

Table A4.1 : Derivation of Financial and Economic Farmgate Prices for Crude Palm Oil, Palm Kernel, and Fresh Fruit Bunch
(in constant 1999 prices)

Item	Actual									Projected			
	1991	1992	1993	1994	1995	1996	1997	1998	1999 ^a Jan-Mar	2000	2005	2010	Average 2000-2010
Crude Palm Oil													
\$/t													
Malaysian, 5% bulk c.i.f. N.W.Europe	332	369	356	480	527	465.3	504.5	644.2	604	463	379	341.1	414
MUV index (1990 = 100)	102	107	106	110	119	114	109	104	105	105	105	105	105
\$/t (constant 1999)	339	394	379	528	628	530	549	670	637	488	400	359	436
Freight, Port Moresby-European Ports	82	85	85	88	95	91	87	83	80	80	80	80	80
FOB prices, Port Moresby (\$)	250	284	271	391	432	374	417	561	524	383	299	261	334
Exchange rate (K/\$)	0.96	0.96	0.98	1.01	1.28	1.32	1.44	2.03	2.38	2.38	2.38	2.38	2.38
FOB price, Port Moresby (K/t)	240	272	266	395	552	494	601	1,139	1,247	911	712	621	794
Transport charges + margin	5	5	5	6	6	6	5	5	5	5	5	5	5
Ex-mill value (K/t)	235	267	260	390	547	488	596	1,134	1,242	906	707	616	789
Palm Kernel ^b													
CIF Singapore (\$/t)	199	221	214	288	316	279	303	387	362	278	228	205	248
\$/t (constant 1999)	204	236	227	317	377	318	330	402	382	293	240	216	262
Freight, Port Moresby-Singapore	61	64	64	66	72	68	65	62	60	60	60	60	60
FOB price, Port Moresby (\$/t)	142	172	163	251	305	250	264	340	322	233	180	156	202
FOB price, Port Moresby (K/t)	137	165	160	253	391	330	381	689	766	553	428	371	480
Transport charges + margin	5	5	5	6	6	6	5	5	5	5	5	5	5
Ex-mill value (K/t)	132	160	155	248	385	324	375	684	761	548	423	366	475
Fresh Fruit Bunch (K/t)													
Ex-mill, financial ^c	60	69	67	101	144	128	155	293	322	234	183	159	204
Processing cost	12	12	12	16	16	16	20	20	24	24	24	24	24
Manufacturer's margin (5%)	3	3	3	5	7	6	8	15	16	12	9	8	10
Government levy and taxes	1	1	1	1	1	5	5	5	5	5	5	5	5
Transport cost to mill	8	12	12	14	14	15	15	15	16	16	16	16	16
Financial farmgate price ^d	36	41	39	65	106	85	107	239	261	178	129	106	149
Farmgate price as % of ex-mill	60	59	58	64	73	67	69	81	81	76	70	67	73
Economic farmgate price	39	43	42	69	110	89	111	244	267	183	134	111	154

CIF = cost, insurance, and freight, FOB = free on board, MUV = manufacturers' unit value, t = metric ton.

^a 1999 prices are average prices for the period from January to March 1999.

^b Palm kernel projected prices assumed as 60 percent of palm oil prices.

^c Extraction rate is 22.88 percent for oil and 4.97 percent for kernel.

^d Standard conversion factor assumed as 0.9

Source: World Bank Commodity Forecasts, November 1998.

Table A4.2: Oil Palm Farm Budget
(K/ha)

Item	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007 to 2012
Labor (person-days)	80	60	32	29	30	31	32	33	34	34	34	34	34	34	30	30	30	30	30	30
Cost																				
Labor at K5/person-day	400	300	160	145	150	155	160	165	170	170	170	170	170	170	150	150	150	150	150	150
Planting material	200	20																		
Fertilizer	10	20	50	50	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Allowance	154	342	198	161																
Others ^a	60	110	150	200	200	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Total cost	824	792	558	556	435	390	395	400	405	405	405	405	405	405	385	385	385	385	385	385
Benefits																				
Yield - t FFB/ha				7	10	12	14	15	18	18	18	18	18	18	16	16	16	15	15	15
Price - K '000/t				36	41	39	65	106	85	107	239	261	178	168	158	148	138	129	129	129
Gross income				254	406	466	916	1,590	1,537	1,929	4,297	4,697	3,199	3,023	2,530	2,373	2,216	1,930	1,930	1,930
Net benefits	(824)	(792)	(558)	(302)	(29)	76	521	1,190	1,132	1,524	3,892	4,292	2,794	2,618	2,145	1,988	1,831	1,545	1,545	1,545
Gross margin ^b	(424)	(492)	(398)	(157)	121	231	681	1,355	1,302	1,694	4,062	4,462	2,964	2,788	2,295	2,138	1,981	1,695	1,695	1,695
FIRR (%)	26.88																			
NPV @ 10%	7.06 thousand kina																			

FFB = fresh fruit bunch, FIRR = financial internal rate of return, ha = hectare, NPV = net present value, t = metric ton.

^a Includes cost of farm tools and chemicals.

^b Gross margin is defined as net revenue plus the imputed cost of farm labor.

Table A4.3: Estimate of Economic Internal Rate of Return

Item	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
Project Cost (K '000)																									
Oil palm development	280	619	1,139	1,494	1,816	2,106	2,465	2,479	3,014	2,801	2,452	2,382	2,255	2,218	2,222	2,220	2,210	2,199	2,185	2,173	2,157	2,150	2,130	2,130	2,130
Houses	0	0	197	268	418	258	272	233	585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infrastructure	1,310	3,720	3,318	2,729	2,983	2,745	1,952	1,766	615	615	615	615	615	615	615	615	615	615	615	615	615	615	615	615	615
Support services	502	1,425	1,271	1,045	1,134	1,051	747	676	338	338	338	338	338	338	338	338	338	338	338	338	338	338	338	338	338
Total Cost	2,092	5,763	5,925	5,536	6,331	6,160	5,437	5,155	4,552	3,754	3,405	3,335	3,208	3,171	3,175	3,174	3,164	3,152	3,139	3,126	3,110	3,103	3,083	3,083	3,083
Benefits																									
Output ('000t FFB)				3	4	15	24	34	46	59	70	85	94	100	104	106	107	106	104	101	99	98	95	94	93
Price (K/t)				39	43	42	69	110	89	111	244	267	183	169	154	140	125	111	111	111	111	111	111	111	111
Gross income (K '000)				102	164	626	1,636	3,720	4,064	6,553	17,093	22,647	17,155	16,813	16,071	14,760	13,456	11,728	11,509	11,263	10,998	10,828	10,502	10,406	10,363
Net revenue (K '000)	(2,092)	(5,763)	(5,925)	(5,434)	(6,167)	(5,534)	(3,800)	(1,435)	(488)	2,799	13,688	19,312	13,948	13,642	12,896	11,586	10,292	8,576	8,371	8,137	7,888	7,725	7,419	7,323	7,280
EIRR (%)	13.83																								
NPV @ 10%	K11.08	million																							

EIRR = economic internal rate of return, FFB = fresh fruit bunch, NPV = net present value, t = metric ton.

Table A4.4: Estimate of Financial Internal Rate of Return

Item	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
Basic data																									
Total area (ha)	378	471	828	645	752	695	871	387	1120																
No. of houses	0	0	80	109	170	105	110.75	95	238																
No. of settlers	0	0	60	84	150	85	90.75	75	218																
No. of villagers	118	147	184	97	48	111	159	27	78																
Total participants	118	147	244	181	198	196	250	102	296																
Cost (K '000)																									
Oil palm development	311	687	1,266	1,660	2,018	2,340	2,739	2,755	3,348	3,112	2,724	2,646	2,505	2,465	2,469	2,467	2,456	2,443	2,428	2,414	2,397	2,389	2,367	2,367	2,367
Houses	0	0	218	298	464	287	302	259	650																
Infrastructure ^a	1,456	4,134	3,687	3,033	3,292	3,050	2,169	1,962	683	683	683	683	683	683	683	683	683	683	683	683	683	683	683	683	683
Support services	558	1,583	1,412	1,161	1,260	1,168	830	751	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72	375.72
Total cost	2,325	6,404	6,583	6,151	7,035	6,845	6,041	5,728	5,057	4,172	3,783	3,705	3,564	3,524	3,528	3,526	3,515	3,502	3,487	3,473	3,456	3,448	3,426	3,426	3,426
Benefits																									
Output ('000 t FFB)				3	4	15	24	34	46	59	70	85	94	100	104	106	107	106	104	101	99	98	95	94	93
Price (K/t)				36	41	39	65	106	85	107	239	261	178	168	158	148	138	129	129	129	129	129	129	129	129
Gross income (K '000)				96	153	585	1,553	3,594	3,893	6,302	16,745	22,170	16,670	16,752	16,482	15,658	14,857	13,590	13,336	13,050	12,743	12,547	12,189	12,057	12,007
Net revenue	(2,325)	(6,404)	(6,583)	(6,055)	(6,881)	(6,260)	(4,488)	(2,134)	(1,164)	2,130	12,962	18,465	13,106	13,229	12,954	12,131	11,342	10,087	9,848	9,577	9,287	9,099	8,743	8,631	8,582
FIRR (%)	12.58																								
NPV @ 10%	K8.29 million																								

FFB = fresh fruit bunch, FIRR = financial internal rate of return, ha = hectare, NPV = net present value, t = metric ton.

^a Annual infrastructure maintenance cost assumed as 3 percent of total cost from year 1996 onwards.