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**Report No. 11076**

**PERFORMANCE AUDIT REPORT**

**INDONESIA**

**NUCLEUS ESTATES AND SMALLHOLDERS  
PROJECTS IV, V AND VI  
(LOANS 1835, 2007 AND 2126-IND)**

**SEPTEMBER 2, 1992**

**Operations Evaluation Department**

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## ABBREVIATIONS

ARP	Assisted Replanting Projects
BAPPENAS	National Development Planning Agency
BRI	Bank Rakyat Indonesia
CDC	Commonwealth Development Corporation
CPS	Central Projects Staff (World Bank Department prior to the 1987 reorganization)
CWC	Coconut Working Centers
DGE	Directorate General of Estates
ED	Executive Director (World Bank)
ERR	Economic Rate of Return
FFB	Fresh Fruit Bunch
GCC	Group Coagulating Centers
GDP	Gross Domestic Product
GOI	Government of Indonesia
IBRD	International Bank for Reconstruction and Development
LIBOR	London Inter-Bank Borrowing Rate
LNG	Liquefied Natural Gas
LPP	Lembaga Pendidikan Perkebunan (Estates Training Institute)
MOA	Ministry of Agriculture
NES	Nucleus Estate and Smallholders
NSSDP	North Sumatra Smallholder Development Project
PCR	Project Completion Report
PIR	Wholly GOI-financed Nucleus Estate and Smallholders Projects
PMU	Project Management Units
PAR	Performance Audit Report
PTP	State-owned Estate Enterprise
RSI	Resident Staff in Jakarta
SAR	Staff Appraisal Report
SCDP	Smallholder Coconut Development Project
SRDP	Smallholder Rubber Development Project
TA	Technical Assistance
WSSDP	West Sumatra Smallholder Development Project

Office of Director-General  
Operations Evaluation

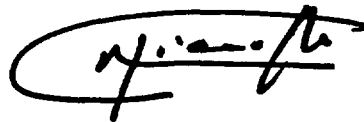
September 2, 1992

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Performance Audit Report on Indonesia - Nucleus Estates and Smallholders Projects IV, V and VI (Loans 1835, 2007 and 2126-IND)

Attached, for information, is a copy of a report entitled "Performance Audit Report on Indonesia - Nucleus Estates and Smallholders Projects IV, V and VI (Loans 1835, 2007 and 2126-IND)" prepared by the Operations Evaluation Department.

Attachment

A handwritten signature in black ink, enclosed in a hand-drawn oval. The signature is stylized and appears to be "M. J. ...".

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PERFORMANCE AUDIT REPORTINDONESIANUCLEUS ESTATES AND SMALLHOLDERS PROJECTS IV, V AND VI  
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MAPS IBRD 23618  
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PERFORMANCE AUDIT REPORT

INDONESIA

NUCLEUS ESTATES AND SMALLHOLDERS IV, V AND VI PROJECTS  
(LOANS 1835, 2007 AND 2126-IND)

PREFACE

This is a Performance Audit Report (PAR) of Nucleus Estate and Smallholders (NES) IV, V and VI Projects, involving IBRD loans in the amounts of US\$42.0 million, US\$161.0 million and US\$68.1 million respectively. The loans were approved on April 17, 1980, May 28, 1981 and April 13, 1982 respectively. US\$16.3 million (39 percent of the amount) of NES IV was cancelled; US\$66.9 million (42 percent of the loan amount) of NES V was cancelled; and US\$45.8 million (67 percent of the loan amount) of NES VI was cancelled. The closing dates for NES IV was December 31, 1988 (2 years behind schedule), for NES V was December 31, 1990 (2 years and six months behind schedule) and for NES VI was June 30, 1989 (one year behind schedule). Dates of final disbursement were: NES IV, July 13, 1989; NES V, June 7, 1991; and NES VI, January 11, 1990.

The PAR is based on the Project Completion Reports (PCRs) of the projects,<sup>1/</sup> the Staff Appraisal and President's Reports, the Loan Agreements, the transcripts of the Executive Directors' meetings at which the projects were considered, on a study of project files and discussion with Bank staff who were associated with or knowledgeable about the projects. An OED mission visited Indonesia in January-February 1992 and discussed the effectiveness of the Bank's assistance with officials of the Directorate General of Estates (DGE), Team Khusus (a special team in DGE for NES projects), Ministries of Agriculture and Finance and BAPPENAS. The Mission met with beneficiary farmers, and management and field staff of the PTPs involved in the implementation of the projects. The kind cooperation and the extremely valuable assistance of GOI staff in the preparation of this report is gratefully acknowledged.

The PCRs provide a reasonable account of the projects' implementation experience. However, whereas the PCRs assessed all three projects as satisfactory, the PAR assessed NES IV as satisfactory but NES V and VI as unsatisfactory. The unfavorable PAR ratings for the latter two projects is based on reestimated economic rates of return that are less than 10%, major problems during implementation and the unlikely prospects for achieving sustainable benefits. The PAR elaborates on specific aspects such as project evolution and design, agricultural impact and project economics, and some specific issues related to a lesson learning experience.

Following standard OED procedures, copies of the draft PAR were sent to GOI officials for comments. The comments received from DGE are reproduced as an Attachment to the PAR.

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<sup>1/</sup> Project Completion Reports: i) Indonesia Nucleus Estate and Smallholder IV Project (Loan 1835-IND), Report No. 8511, April 10, 1990; ii) Indonesia Nucleus Estate and Smallholders V Project (Loan 2007-IND), Report No. 10163, December 13, 1991; and iii) Indonesia Nucleus Estate and Smallholders VI Project (Loan 2126-IND), report No. 9368, February 21, 1991.





PERFORMANCE AUDIT REPORT

INDONESIA

NUCLEUS ESTATE AND SMALLHOLDERS IV PROJECT  
(LOAN 1835-IND)

BASIC DATA SHEET

<u>Item</u>	<u>KEY PROJECT DATA</u>		
	<u>Appraisal Estimate</u>	<u>Actual or Current Estimate</u>	<u>Actual as % of Appraisal Estimate</u>
Total Project Costs (US\$ million)	64.5	39.5	61%
Loan Amount (US\$ million)	42.0	---	---
Disbursed (US\$ million)	----	25.7	61%
Cancelled (US\$ million)	----	16.3	39%
Economic Rate of Return	19%	14% <sup>1/</sup>	
Institutional Development	----	Partial	

CUMULATIVE ESTIMATED AND ACTUAL DISBURSEMENTS

	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>
Appraisal Estimate (US\$ million)	1.0	8.0	16.5	37.5	42.0	---	---	---	---
Actual (US\$ million) <sup>1/</sup>	1.2	5.3	6.9	11.0	13.1	15.4	16.0	18.2	25.7
Actual as % of Appraisal (%)	120	66	42	41	35	37	38	43	60
Date of Final Disbursement:	July 13, 1989								

<sup>1/</sup> Cancellation US\$ 16.3 million (US\$ 12 million on 8/8/85 and US\$ 4.3 million on 7/13/89)

PROJECT DATES

	<u>Original</u>	<u>Actual</u>
Identification	---	11/78
Preparation	---	2/79
Appraisal	---	7-8/79
Negotiations	---	2/25/80
Board Approval	---	4/17/80
Signing (Credit Agreement Date)	---	5/16/80
Effectiveness	8/19/80	8/11/80
Closing Date	12/31/86	12/31/88
Project Completion	6/30/86	12/31/88

STAFF INPUTS  
(staff weeks)

	<u>FY74</u>	<u>FY75</u>	<u>FY76</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>TOTAL</u>
Preappraisal	49.0	0.6	0.6	27.9													78.1
Appraisal				13.0	53.7												66.8
Negotiation					13.1												13.1
Supervision					4.8	8.3	8.4	6.6	6.7	4.9	17.3	13.9	13.3	19.1	0.6	1.9	105.9
Other				1.0	6.0						0.3	0.5					7.8
<b>TOTAL</b>	<b>49.0</b>	<b>0.6</b>	<b>0.6</b>	<b>41.9</b>	<b>77.6</b>	<b>8.3</b>	<b>8.4</b>	<b>6.6</b>	<b>6.7</b>	<b>4.9</b>	<b>17.3</b>	<b>13.9</b>	<b>13.3</b>	<b>19.1</b>	<b>0.6</b>	<b>1.9</b>	<b>271.7</b>

<u>MISSION DATA</u>						
	<u>Date</u> (mo./yr.)	<u>No. of</u> <u>Persons</u>	<u>Staff Days</u> <u>in Field</u>	<u>Specialization</u> <u>Represented<sup>b/</sup></u>	<u>Performance</u> <u>Rating<sup>c/</sup></u>	<u>Types of</u> <u>Problems<sup>d/</sup></u>
Appraisal	6/79	7	---	FA, A, AE, PE	NA	NA
Negotiation	2/80	5	5	FA, E, A, L, C	NA	NA
Supervision I <sup>a/</sup>	12/80	1	2	CE	1, 2	T, F
Supervision II	8/81	2	4	CE, A	1, 1	T
Supervision III	3/82	1	2	A	1, 2	M
Supervision IV	4/83 <sup>e/</sup>	---	---	---	2, 2	F
Supervision V	4/83	2	3	A, FA	2, 2	F
Supervision VI	10/83	3	3	A	2, 2	F
Supervision VII	6/85	3	---	A, FA	2, 4, 2, 3	
Supervision VIII	4/86	5	---	A, FA, CE, PE	2, 3, 3, 3	
Supervision IX	8/86 <sup>e/</sup>	---	---	---	2, 3, 3, 3	
Supervision X	3/87 <sup>e/</sup>	---	---	---	2, 3, 2, 3	
Supervision XI	11/87	3	2	A, PE	2, 3, 2, 3	
Supervision XII	1/88	1	2	A, AE	---	
Supervision XIII	9/88	3	1	A	3, 3, 2, 3	

OTHER PROJECT DATA

Borrower: Government of Indonesia  
 Executing Agency: PTP X  
 Fiscal Year GOI: April 1 - March 31  
 Fiscal Year PTP: January 1 - December 31  
 Name of Currency: Rupiah (Rp)  
 Exchange Rate: Appraisal Year US\$1.00 = Rp.625  
Intervening Year  
 Nov. 16, 1978 - March 30, 1983 US\$1.00 = Rp.625-900  
 March 31, 1983 - Sept. 11, 1986 US\$1.00 = Rp.909-1100  
 Sept. 12, 1986 - Dec. 1990 US\$1.00 = Rp.1640-1860

Follow-On Projects:

Name: Nucleus Estate and Smallholder V, VI, and VII  
 Loan Number: Loans 2007, 2126 and 2232  
 Amount (US\$ million) 161.0, 68.1, 154.6  
 Approval Year 1981, 1982, 1983

<sup>a/</sup> For the smallholder oil palm component only. PCR's ERR for this component was 19%. PCR also included ERRs for the smaller rubber factory and palm oil mills which produced an ERR of 22% for the project as a whole. The audit expects the ERR for the project as a whole to be over 14%.

<sup>b/</sup> Specializations are: A = Agriculturalist; AE = Agricultural Economist; C = Controller's Representative; CE = Civil Engineer; FA = Financial Analyst; PE = Processing Engineer.

<sup>c/</sup> Performance ratings are: 1 = Problem-free of minor problems; 2 = Moderate problems; 3 = Major problems receiving adequate attention; and 4 = Major problems not receiving attention. Where sequence of four figures is shown (from June 1985), the ratings refer to availability of funds, project management, development impact and overall status, respectively.

<sup>d/</sup> Types of problems are: T = Technical; F = Financial; and M = Managerial.

<sup>e/</sup> The resident staff in Indonesia were in continuing contact with the project. Only formal supervision is included in the table.

<sup>f/</sup> Updated 590.

PERFORMANCE AUDIT REPORT

INDONESIA

NUCLEUS ESTATE AND SMALLHOLDERS V PROJECT  
(LOAN 2007-IND)

BASIC DATA SHEET

KEY PROJECT DATA

<u>Item</u>	<u>Appraisal Estimate</u>	<u>Actual or Current Estimate</u>	<u>Actual as % of Appraisal Estimate</u>
Total Project Costs (US\$ million)	322.0	181.9	57%
Loan Amount (US\$ million)	161.0	---	---
Disbursed (US\$ million)	----	94.1	58%
Cancelled (US\$ million)	----	66.9	42%
Economic Rate of Return	16%	6 <sup>2/</sup>	
Institutional Development	----	partial	

CUMULATIVE ESTIMATED AND ACTUAL DISBURSEMENTS

	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>
Appraisal Estimate (US\$ million)	2.0	18.0	51.0	86.0	120.0	156.0	161.0	---	---	---
Actual (US\$ million)	2.3	13.8	40.6	48.6	57.1	65.4	76.2	83.9	89.6	94.1
Actual as % of Appraisal (%)	117.0	77.0	80.0	56.0	48.0	42.0	47.0	52.0	56.0	58.0
Date of Final Disbursement:	June 7, 1991									

PROJECT DATES

	<u>Original</u>	<u>Actual</u>
Identification	---	4/78
Preparation	---	2/80
Appraisal	---	10/80
Negotiations	---	4/81
Board Approval	---	5/81
Signing (Credit Agreement Date)	---	6/81
Effectiveness	---	9/81
Closing Date	6/88	12/90
Project Completion	12/87	12/90

STAFF INPUTS  
(staff weeks)

	<u>FY72</u>	<u>FY77</u>	<u>FY78</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>TOTAL</u>
Preappraisal		1.9	11.9	12.9	23.6												50.3
Appraisal					112.6												112.6
Negotiation					6.0												6.0
Supervision	0.1				2.9	22.0	21.5	15.1	14.5	20.0	37.9	44.3	26.9	20.6	30.4	1.1	257.5
Other					13.5						0.2	0.5		0.4	0.3		14.4
Total	0.1	1.9	11.9	12.9	158.6	22.0	21.5	15.1	14.5	20.0	38.1	44.3	26.9	21.1	3-/7	1.1	440.8

<u>MISSION DATA</u>						
	<u>Date</u> (mo./yr.)	<u>No. of</u> <u>Persons</u>	<u>Staff Days</u> <u>in Field</u> <sup>b/</sup>	<u>Specialization</u> <u>Represented</u> <sup>c/</sup>	<u>Performance</u> <u>Rating</u> <sup>d/</sup>	<u>Types of</u> <u>Problems</u> <sup>e/</sup>
Appraisal	10/80	7	n.a.	AE, TC, FA, EG	n.a.	n.a.
Supervision I	6/82	1	n.a.	AG	2	O,F
Supervision II	10/82	1	n.a.	ED	---	---
Supervision III	11/82	2	n.a.	2AG	---	---
Supervision IV	05/83	2	5	AG, FA	3	F
Supervision V	06/83	2	5	AG, FA	2	M
Supervision VI	07/83	2	3	AG, FA	1	---
Supervision VII	07/85	3	17	TC, FA	2	F, M
Supervision VIII	04/86	7	30	ED, TC, EC, AG	2	F, M
Supervision IX	02/87	5	7	FA, TC, ED	3	M
Supervision X	10/87	3	30	FA, TC	3	F, M
Supervision XI	08/88	3	26	FA, TC	3	F, M
Supervision XII	04/89	3	15	TC, FA	3	F, M
Supervision XIII	05/90	2	19	TC, FA	3	F, M
Completion	03/91	1	26	TC	n.a.	n.a.

OTHER PROJECT DATA

Borrower: Government of Indonesia  
 Executing Agencies: PTP VII, XI, XIII, XXIII  
 Fiscal Year GOI: April 1 - March 31  
 Fiscal Year PTP: January 1 - December 31  
 Name of Currency: Rupiab (Rp)  
 Exchange Rate: Appraisal Year US\$1.00 = Rp.625  
Intervening Year  
 Nov. 16, 1978 - March 30, 1983 US\$1.00 = Rp.625-900  
 March 31, 1983 - Sept. 11, 1986 US\$1.00 = Rp.909-1100  
 Sept. 12, 1986 - Dec. 1990 US\$1.00 = Rp.1640-1860

Follow-On Projects:

Name: Nucleus Estate Smallholder VI and VII  
 Loan Number: Loans 2126 and 2232  
 Amount (US\$ million): 08.1 and 154.6  
 Approval Year: 1982 and 1983

<sup>a/</sup> The audit's reestimated ERR for the project as a whole is 6% at best -- this is accepting the PCR's analyses of the coconut components which are rather optimistic. The PCR reestimated ERR was 11% for the project as a whole.

<sup>b/</sup> PCR mission estimates based on Bank's project files.

<sup>c/</sup> Specializations are: AG = Agriculturalist; ED = Education Specialist; EG = Engineer; FA = Financial Analyst; TC = Tree Crops Specialist.

<sup>d/</sup> Performance ratings are: 1 = Problem-free of minor problems; 2 = Moderate problems; 3 = Major problems.

<sup>e/</sup> Types of problems are: O = Organizational, F = Financial and M = Managerial.

PERFORMANCE AUDIT REPORT

INDONESIA

NUCLEUS ESTATE AND SMALLHOLDERS VI PROJECT  
(LOAN 2126-IND)

BASIC DATA SHEET

<u>KEY PROJECT DATA</u>			
<u>Item</u>	<u>Appraisal Estimate</u>	<u>Actual or Current Estimate</u>	<u>Actual as % of Appraisal Estimate</u>
Total Project Costs (US\$ million)	190.0	69.9	37%
Loan Amount (US\$ million)	68.1	---	---
Disbursed (US\$ million)	----	22.3	33%
Cancelled (US\$ million)	----	45.8	67%
Cofinancing (CDC, US\$ million)	28.0	n.a.	
Economic Rate of Return <sup>a/</sup>	11-18%	<10	
Institutional Development	----	partial	

<u>CUMULATIVE ESTIMATED AND ACTUAL DISBURSEMENTS</u>								
	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>
Appraisal Estimate (US\$ million)	0.7	8.0	22.0	40.0	40.0	68.1	---	---
Actual (US\$ million)	1.1	3.5	9.5	13.8	13.8	18.3	20.2	22.3
Actual as % of Appraisal (%)	157	44	43	35	35	27	30	33
Date of Final Disbursement:	January 11, 1990							

<u>PROJECT DATES</u>		
	<u>Original</u>	<u>Actual</u>
Identification	---	12/79
Preparation/Preappraisal	---	6/80
Appraisal	---	8/81
Negotiations	---	2/82
Board Approval	---	4/82
Signing (Credit Agreement Date)	11/81	4/82
Effectiveness	---	7/82
Closing Date	6/88	6/89
Project Completion	12/87	6/88

<u>STAFF INPUTS</u> (staff weeks)																
	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>TOTAL</u>
Preappraisal	0.2		2.2	0.6	1.3	0.2										4.5
Appraisal						34.1										34.1
Negotiation				0.4		7.8										8.2
Supervision						0.6	12.3	9.2	13.1	13.1	20.8	17.4	9.1	10.8	1.0	107.5
Other				1.1	1.4	9.5				0.2	0.3			0.3		12.7
<b>Total</b>	<b>0.2</b>	<b>0.0</b>	<b>2.2</b>	<b>2.1</b>	<b>2.7</b>	<b>52.1</b>	<b>12.3</b>	<b>9.2</b>	<b>14.5</b>	<b>13.3</b>	<b>21.1</b>	<b>17.4</b>	<b>9.1</b>	<b>11.1</b>	<b>1.0</b>	<b>167.0</b>

MISSION DATA

	<u>Date</u> (mo./yr.)	<u>No. of</u> <u>Persons</u> <sup>b/</sup>	<u>Staff Days</u> <u>in Field</u>	<u>Specialization</u> <u>Represented</u> <sup>c/</sup>	<u>Performance</u> <u>Rating</u> <sup>d/</sup>	<u>Types of</u> <u>Problems</u> <sup>e/</sup>
Through Appraisal	08/81	6(2)	28	AE, A, PE		
Appraisal through Board	02/82	2		CE		
Board through Effectiveness	07/82					
Supervision I	06/82	1	14	A	2	M
Supervision II	01/83	3(2)	10	A	2	M, F, T
Supervision III	08/83	2(1)	10	FA, A	3	F, M, T, P
Supervision IV	11/83	2(1)	6	FA, A	2	F, M
Supervision V	09/84	3(1)	8	FA, A	3	F, M, T, P
Supervision VI	02/85	2	10	A, FA	3	F, M, T, P
Supervision VII	07/85	2	8	A, FA	3	F, M
Supervision VIII	12/85	3(1)	10	A, FA, CE	3	M, F, T
Supervision IX	09/86	2	8	A, F	3	M, F
Supervision X	07/87	2(1)	7	A	3	M, T, F
Supervision XI	03/88	1	10	A	3	M, T, F
Supervision XII	02/90	1	8	FA	3	M, T

OTHER PROJECT DATA

Borrower: Government of Indonesia  
 Executing Agencies: PTP XII, XIII and XXVIII  
 Fiscal Year GOI: April 1 - March 31  
 Fiscal Year PTP: January 1 - December 31  
 Name of Currency: Rupiah (Rp)  
 Exchange Rate: Appraisal Year US\$1.00 = Rp.625  
Intervening Year  
 Nov. 16, 1978 - March 30, 1983 US\$1.00 = Rp.625-900  
 March 31, 1983 - Sept. 11, 1986 US\$1.00 = Rp.909-1100  
 Sept. 12, 1986 - Dec. 1990 US\$1.00 = Rp.1640-1860

Follow-On Projects:

Name: Nucleus Estate and Smallholder VII  
 Loan Number: Loan 2232  
 Amount (US\$ million): 154.6  
 Approval Year: 1983

- <sup>a/</sup> ERR for the project as a whole was not estimated at appraisal. However ERR for the six components varied between 11% and 18% at appraisal. The PCR reestimated the ERR for the project as a whole to be 12%. The audit has not reestimated the coconut components due to data unreliability but expects the ERR for the project as a whole to be much below 10%.
- <sup>b/</sup> Most missions comprised Bank and CDC staff. The number in parenthesis indicates mission members from CDC.
- <sup>c/</sup> Key to specialization: FA = Financial Analyst; A = Agriculturalist; AE = Agricultural Economist; CE = Civil Engineer; PE = Processing Engineer.
- <sup>d/</sup> Key to Status: 1 = Problem-free of minor problems; 2 = Moderate problems; 3 = Major problems.
- <sup>e/</sup> Key to Problems: F = Financial; M = Managerial; T = Technical; P = Political.

PERFORMANCE AUDIT REPORT

INDONESIA

NUCLEUS ESTATES AND SMALLHOLDERS PROJECTS IV, V AND VI  
(LOANS 1835, 2007 and 2126-IND)

EVALUATION SUMMARY

Introduction

1. Nucleus Estates and Smallholders (NES) Projects IV, V and VI, the subjects of this audit, are part of a series of seven NES projects that were approved by the Board over a 5-year 2-month period between November 1977 and January 1983. The first three in the series were audited by the Operations Evaluation Department (OED) in 1989. NES VII, the last of the series is nearing completion. The NES projects were expected to generate productive employment at relatively low cost and raise the farm incomes of landless and near landless families. At appraisal NES IV, V and VI were estimated to cost US\$576.5 million of which the Bank commitment was US\$271.1 million.<sup>1/</sup>

2. Prior to the start of the NES program the treecrop sector in Indonesia had been the beneficiary of seven Bank-supported treecrop development projects, including two tea development projects and another -- the first Transmigration and Rural Development project -- involving smallholder settlement based on rubber. One of the other projects, the North Sumatra Smallholder Development established (in 1973) the first Project Management Unit (PMU) directly under the Directorate General Estates (DGE). During the course of implementation of the NES program, which mainly supported rubber, oil palm and coconut, seven

more rubber, oil palm and coconut projects were also approved and concurrently implemented through other programs. In 1987, these three treecrops accounted for 29 percent of revenues from all estate crops, about 5 percent of agricultural GDP and 48 percent of total agricultural exports. Indonesia accounts for 25 percent of the world supply of rubber and coconut-derived products and 20 percent of the world supply of palm oil.

Objectives

3. NES IV, V and VI were broadly in line with GOI's agricultural sector objectives of settling poor landless families on unutilized land in Java and the outer islands, raising their rural incomes, increasing production of estate crops and reversing the decline of exports and foreign exchange earnings. Establishing smallholder settlements and planting of estate crops adjacent to a PTP (state-owned estate enterprise) comprised the main activity of these projects. The rationale was to utilize the technical and managerial resources of PTPs to promote and guide smallholder development.

4. NES IV included establishing 8,000 ha of oil palm in South Sumatra for eventual allocation to the settlers, development of villages (21) and construction of houses (4,000) to settle landless families on unutilized land, upgrading of

village roads (92 km), establishing a palm oil mill (30 ton ffb/hr), and constructing a crumb rubber factory (40 ton/day) for families previously settled under NES I project. NES V included establishing 45,800 ha. (32,400 ha for smallholder and 13,400 ha for estates) of rubber, oil palm and coconuts including processing facilities in several West Java, West Kalimantan and Bengkulu (Sumatra) sites; resettling 19,800 families in West Java and West Kalimantan, establishing an estate and processing facilities in Bengkulu; and providing training and TA for DGE and public and private estates to improve management capabilities. NES VI included establishing/rehabilitating 17,000 ha of rubber and 9,500 ha of coconuts (15,000 ha for smallholders and 11,500 ha for estates); setting up processing facilities in several West Java, Bengkulu and Maluku sites; resettling 8,450 families in West Java and Bengkulu; and providing TA (technical Assistance) to DGE and the public estates to improve management capabilities.

#### Implementation

5. Implementation was considerably slower than had been planned, and all three projects were eventually reduced in scope. NES IV, V and VI were expected to be implemented in six years, six and one half years, and five years and ten months respectively but took additional two years and six months, three years, and six months respectively. Actual costs for all three projects were substantially below appraisal estimates -- 39 percent below for NES IV, 44 percent below for NES V and 63 percent below for NES VI due to reduction in project scope. US\$129 million of a total approved loan amount of US\$271.1 million was cancelled. Cancellations were 40%

for NES IV, 42 % for NES V and 67% for NES VI.

6. Many of the physical targets set out at appraisal were reduced despite the extension of the closing dates of the projects. All three projects were repeatedly described as having problems throughout implementation, and especially through the second half of their implementation years when they were rated in the supervision reports as having major problems.

7. Slower implementation of all three projects was due to a multitude of reasons. Problems included slow plantings due to land acquisition delays; limited response from smallholders already in occupation to the opportunities offered (e.g. West Java); financial problems related to slow budgetary releases and untimely and inadequate levels of counterpart funding; cash-flow problems of PTPs that limited prefinancing of smallholder development activities; overstretched management capacities of PTPs; slow settler recruitment at some sites, and at times a lack of interest on the part of local farmers.

8. Even more significant than slow implementation was the questionable quality of many plantings and substandard field maintenance, as evidenced by substandard growth in the immature phase and low yields in the early harvesting years.

#### Results

9. The quality of available data for measuring the outcomes varied considerably by crop and site. Oil palm production and yields are considered highly reliable, because all smallholder-harvested fresh fruit bunches (ffb) can be assumed to be



sold to the PTPs for processing in their mills in the absence of alternative marketing options in the neighborhoods of the project's oil palm sites. However, much of the recorded production data for the rubber and especially coconut smallholder areas are considered unreliable on account of the uncertain, but often considerable, volume of production which is disposed of by smallholders directly to private traders, rather than marketed to the PTPs. Produce leakage is a serious problem for both rubber and coconut at many sites.

10. On the basis of the above qualifications, actual oil palm yield and production data collected by the Audit confirm the PCR findings that yields and production are turning out to be far below appraisal expectations. In fact, in all cases except one oil palm estate site in West Java, these revised estimates obtained by the Audit are below, and in some cases much below, the PCR estimates. This is due principally to two factors: first, lower actual yields than projected in the PCRs, particularly for the most recent years following loan closing, since which time insufficient quantities of fertilizer have been applied and inadequate field maintenance has resulted. This applies especially to smallholders, most of whom are unable to purchase costly fertilizer, and have little or no access to credit programs for purchasing fertilizer in the years following conversion of their plots and their assumption of management responsibility; and second, shortfall in the areas being harvested as compared with the planted areas reported in the PCRs.

11. Production figures for three rubber project sites, where the data are more reliable, due to vigilance on the part of PTP staff in pre-

venting leakages, indicate yields for the early years of tapping in each case well below the SAR and even the PCR expectations. Extrapolation of these data implies lower than expected production over the remaining productive years. Production and yield data for hybrid coconut collected at evaluation show similar trends to those for oil palm and rubber, but the extremely high leakage undermines the validity of the data. However, it is the Audit's opinion that the PCR correctly points out that coconut is less satisfactory than oil palm and rubber in economic terms and in comparison with SAR expectations. This is due to the very disappointing performance of the hybrids, which are particularly sensitive to fertilizer applications,<sup>2/</sup> low output prices and higher labor costs for processing and conversion to copra. There is, however, some variation in production and yields specific to site and management.

#### Project Economics and Sustainability

12. On the basis of the caveats discussed above, the Audit reestimated ERRs using the same assumptions as those in the PCRs but for actual crop production and area harvested data. It concurs with the PCRs that ex-post reestimated ERRs are consistently lower than those in the SARs. However, the Audit reestimates note an even greater divergence from the appraisal estimates than do the PCRs. The Audit has the advantage of using more recent data -- on average, two to three additional years of actual production data beyond those reported by the PCR -- which were provided by the PTPs and Team Khusus. ERRs for NES V and NES VI are 6% (optimistic) and much below 10% respectively (compared to PCRs reestimates of 11% and 12% respectively). The Audit thus considers NES V and

NES VI to be unsatisfactory. NES IV, smallholder oil palm, which is reestimated to have an ERR of 14% (19% in the PCR) is still within the acceptable range for a satisfactory project in economic terms.

13. The Region has noted the data inconsistencies between the PAR and the PCRs. They agree that "the overall performance of NES V and VI is disappointing". However, they would like to note their difference with the PAR that "without further field verification, we consider that the PCR estimates on yield profiles are probable and aggregate rating of the project likely to be more favorable than judged by the PAR."

14. Sustainability is a major concern in view of the decline in yields and production in the post-implementation period. There are indications of a seriously deteriorating condition in most NES planted smallholders blocks. The evidence shows that benefits are declining appreciably below PCR expectations, and the outlook is far from reassuring if present conditions persist. The immediate cause of the decline appears to be directly related to the more stringent credit and budget climate which prevails in the post-implementation years. As a result, limited supplies of fertilizer and poor field up-keep are adversely affecting yields. The failure of the foodcrop component has also added to the woes of the smallholders. Other factors related to the earlier phases of the project cycle which are affecting the current state of affairs have been discussed in paras. 7-8. The present concern is how to make the most of what has already been invested in the NES projects where feasible. Production from these planted areas needs to be boosted if smallholders and PTPs are to compete successfully in the inter-

national market. Correct fertilization and improved field up-keep would constitute a first step; short term cash flow problems of smallholders would need to be addressed and greater credit availability to smallholders would also improve their situation.

#### Lessons

15. Despite variations in the performance of different components, the strategy of nucleus estate and smallholder development (as embodied in the three projects) has not achieved the objectives that were envisioned. This does not imply that there is something fundamentally wrong with the concept of these projects. The fault, in fact, lies in the execution and design rather than the concept (para 5.1). A few lessons, in view of the multitude of problems and their consequences, are noted.

16. At the time of planning the NES program in Indonesia, opportunities for rapid development of some key non-oil sectors became possible due to increased oil revenues. However, this rationale for accelerating the program became redundant when oil revenues began to dry up and GOI began to face serious constraints in providing timely and adequate levels of counterpart funds. It became apparent that, because of the rapid acceleration given to the program, all seven projects would be unable to build the kinds of institutional structures that are required for longer term viability. A slower approach would have left more sustainable benefits (para. 5.4).

17. All three projects, especially NES V and NES VI, were over-ambitious in scope being based on unrealistic expectations under the existing circumstances in the sense that too

much was attempted too rapidly with rather limited institutional capacities. In particular, the PTPs were over-burdened in their managerial capacity and over-extended in their financial ability to be effective institutions for smallholder development. Thus the rapidity with which the projects were processed and the short interval between projects precluded any opportunity to apply many of the lessons of experience from the earlier to the later projects (paras. 5.5-5.6).

18. NES V and VI were over-packaged with components. They could qualify as eight distinct projects across Java, Sumatra, Kalimantan and Maluku islands and involved seven PTPs in three coconut, four rubber and two oil palm estate components and five coconut, two rubber, three oil palm smallholder components as well as strengthening of the LPP through a training component. This overload and the heavy emphasis given to attaining planting targets during implementation was unfortunate since it adversely affected quality of planting, reduced future yields and affected sustainability and cost recovery (paras. 5.7-5.9).

19. There appears to have been a misunderstanding at appraisal between GOI officials and Bank staff regarding availability status of much of the land selected. As a result, land acquisition problems were a major concern in all three projects. The actual pattern of land holdings were highly fragmented rather than the contiguous land holding patterns that was the assumption in the appraisals. The resultant scattered land holdings increased transportation costs of produce, encouraged leakages to private traders, increased administrative overheads and staff costs, and resulted in processing delays and

poor quality of processed products (paras. 5.10-5.12).

20. Availability of timely and adequate levels of funds for PTPs to undertake smallholder development affected the pace of development activities. PTPs were not financially strong institution with the kinds of financial flexibility required to prefinance smallholder development activities. GOI budget allocation through quarterly tranches were slow, often delayed and less than the full development costs. Furthermore, GOI releases were based on an annual budget while smallholder development activities were programmed on a multi-year basis. Some recent improvements in this arrangement are reported (para. 5.13).

21. Question also ought to be raised as to whether PTPs have been provided adequate incentives (apart from a management fee) to undertake smallholder development. Additional burdens on their limited managerial and stringent cash flow situation arise out of their responsibility for undertaking other domestically financed smallholder development activities. There is a clear need to improve incentives provided to the implementing agencies. However, the future role of the NES smallholder treecrop development approach has to be weighed against alternatives of similar package developments through private sector companies or PMU schemes organized through DGE, and even non-package arrangements incorporating input supply, technical assistance and credit. The political and economic appropriateness of either of the public sector approaches or an increased emphasis on the role for the private sector for smallholder treecrop development will need to be studied by GOI (paras. 5.14-15).

22. Along with exchange rate shifts (during the period of loan signing and project closing) large and belated cancellations, disbursements considerably slower than scheduled in the Loan Agreement and delays in implementation that exact large commitment charges had the equivalent effect of increasing the effective interest rates on the loans. Governments often do not appreciate this high cost of borrowing which can amount to several percentage points above LIBOR and other commercial borrowing rates. Although much of the high cost of borrowing for NES IV, V and VI are due to these exchange rate shifts, the commitment fees paid on the three loans is also considerable -- approximately US\$10.6 million. If the front-end fee of about US\$1 million for NES VI is added, these charges add up to about US\$11.6 million, roughly 8.2% of the total disbursed amount of the three loans. Therefore, these high costs

underscore the fact that it does not pay for the country to borrow for projects that are over-ambitious in scope when the probability of implementing them in a timely fashion is unlikely (paras. 5.18-5.20)

23. Finally, DGE needs to urgently undertake a thorough study and assessment of the current situation as a first step to correcting the apparently deteriorating situation which is unlikely to improve the minimal cost recovery obtained thus far. The present concern ought to be how to make the most of what has already been invested in the NES projects. An understanding of the implications for economic and financial viability could then point the way towards rejuvenation of the program in this difficult international market situation where prices are projected to continue their downward trend (para. 5.21-5.22).

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<sup>1/</sup> For all seven projects the corresponding figures are US\$1.3 billion and US\$655 million, respectively.

<sup>2/</sup> The Region adds that: "Because the planting material was supposed to be hybrid, and is constantly referred to as such, there is a danger that the report may be seen as implying that the choice of hybrid material was inappropriate. Such interpretation would be erroneous, for there is ample evidence available to show that hybrids outperform local cultivars, even under the conditions of mismanagement and abuse reported by the Audit."

## PERFORMANCE AUDIT REPORT

### INDONESIA

#### NUCLEUS ESTATES AND SMALLHOLDERS IV, V AND VI PROJECTS (LOANS 1835, 2007 AND 2126-IND)

### I. INTRODUCTION

#### Context

1.1 This is the audit of the Nucleus Estate and Smallholder (NES) Projects IV, V and VI in Indonesia. They are three of a series of seven projects through which the Government, in line with its agricultural sector objectives, attempted to settle poor landless families on unutilized land in Java and the outer islands, raise their rural incomes, increase production of estate crops and reverse the decline of exports and foreign exchange earnings.

1.2 Rubber, palm oil and coconut, which are the three main estate crops supported by the three projects under audit, are important crops for the Indonesian economy. Indonesia accounts for 25 percent of the world supply of rubber and coconuts and 20 percent of the world supply of palm oil. In 1987, rubber, palm oil and coconut-derived products in Indonesia accounted for 29 percent of revenues from all estate crops (60 percent of estate crop exports), about 5 percent of agricultural GDP (48 percent of total agricultural exports) and 1.4 percent of non-oil/LNG GDP (15 percent of non-oil/LNG exports). The three crops cover 70 percent (6.6 million ha) of the total planted area of estate crops; about four-fifth of their planted area is in the outer islands.<sup>1/</sup>

#### Earlier Smallholder Treecrop Development

1.3 Before the Bank became involved with the NES program in Indonesia it supported the treecrop sector with four IDA credits between 1969 and 1972 supporting development of public sector estates of mainly rubber and, in one instance, tea. In 1973, two smallholder projects, one for rubber and one for tea were approved by the Bank.<sup>2/</sup>

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<sup>1/</sup> Indonesia: Strategies for Sustained Development of Tree Crops, Report No. 7697-IND, December 7, 1989. "Estate crops refer to rubber, oil palm, coconut, tea, coffee, cocoa, sugar, cotton, tobacco, cloves, pepper, etc., although some of these crops are smallholder dominated."

<sup>2/</sup> OED has audited a number of the treecrop projects in Indonesia over the years. These include: i) First and Second North Sumatra Estates (Credits 155/194), Report No. 2033, April 20, 1978; ii) Second North Sumatra Estates (Credit 194), Report No. 2324, December 29, 1978; iii) Tea Project (Credit 259), Report No. 3247, December 23, 1980; iv) North Sumatra Smallholder Development (Credit 358), Report No. 3958, June 9, 1982; v) Transmigration and Rural Development (Loan 1318), Report No. 5157, June 25, 1984; vi) Fourth Agricultural Estates Project (Credit 319), Report No. 4188, November, 1982; and vii) Smallholder and Private Estate Tea Project (Cr. 400), Report No. 4745, October, 1983.

1.4 Since the early 1970's GOI has used different strategies to promote smallholder treecrop development. Apart from the NES approach, which relies on large public sector estates (PTPs), project management units (PMUs) directly under DGE have been used as vehicles, as also have transmigration projects. PMUs undertook planting, replanting and rehabilitation of smallholder estate crops through a "partial" approach where farmers received extension assistance but paid for planting material, fertilizer and field maintenance out of their own resources, and through a "comprehensive" packaged approach where farmers received in addition to management assistance and extension advice, credit in the form of planting materials, fertilizer and herbicides, and remuneration for their labor. All PMUs had similar basic structure but two types of PMUs were differentiated on the basis of credit provided to smallholders and the crops supported (exportable estate crops vs. other estate crops). PMU staff were responsible for identifying land for planting and for the registration of participants. Land clearing was often arranged on contract, with the costs charged to farmers' accounts. The PMU produced planting materials and rented vehicles to deliver them to farmers. PMU staff oversaw planting and provided agro-inputs and cash payments for both establishment and maintenance. After maturity PMU staff provided extension and coordinated marketing and processing.

1.5 The first PMU was established in 1973 under the Bank assisted North Sumatra Smallholder Development Project (NSSDP) and the second was formed under West Sumatra Smallholder Development Project (WSSDP) - a cooperative program between GOI and Germany. During the following years (1974-79), GOI initiated a program for rubber development using PMUs for its Assisted Replanting Projects (ARP) and Group Coagulating Centers (GCC). A similar program using PMUs was set up for rehabilitating and replanting coconut called the Coconut Working Centers (CWCs). These domestically funded projects suffered from a shortage of qualified staff, limited funding, and technical problems.

1.6 In 1980, the Smallholder Rubber Development Project (SRDP I), a second Bank assisted smallholder development project, was designed to establish a National Smallholder Rubber Organization and absorb all ARPs and GCCs. It was envisaged that the program would be financed through continuation of a cess on rubber production (which had been reduced to zero in 1976) and that inputs would continue to be provided free of charge as a grant to smallholders. In the same year the Bank also appraised the first Smallholder Coconut Development Project (SCDP I) using credit arrangements similar to those in SRDP I. Like SRDP I, it also established a management structure outside the DGE structure. In general, the emphasis placed on the PMU-based programs by the DGE intensified during 1979-84 as the number of rubber replanting PMUs and CWCs increased in number.

1.7 In 1974, GOI first began to consider a radically different approach from the PMU programs by using the public sector estates to develop smallholder treecrops in the context of nucleus estate projects. The NES concept was not new and had been tried elsewhere but not in Indonesia. In Indonesia it was based on using suitable PTPs (public sector estate companies) to establish new estates, each providing management and services for the development of associated smallholdings. However, in Indonesia the PTPs had not been tried for this purpose, and only a few at the time were capable of undertaking such major responsibilities. The NES approach allowed GOI to not only use financially and managerially strong PTPs for smallholder development but also to continue to

rehabilitate the weaker PTPs for eventually using their manpower and technical resources to assist smallholders. GOI discussed the merits of the NES concept internally for three years between 1974 and 1977 before resolving key issues and adopting the approach. The key issues related to the size of smallholder treecrop areas, cost recovery, ratio of estate to smallholder development and institutions and personnel to whom project management responsibility was to be assigned. Having resolved the initial round of discussions, the series of NES projects were initiated in 1977. Later GOI also began to initiate fully locally-funded NES projects, known as PIR projects.

### NES Series

1.8 Total loan amounts approved for the three projects under Audit amount to US\$271.1 million, of which US\$142.1 million was disbursed and the outstanding amount of US\$129.0 million was cancelled. The three projects are part of a series of seven NES projects that were approved by the Board over a five-year two-month period between November 1977 and January 1983 at an estimated total cost of US\$1.3 billion of which the Bank commitment was US\$655 million. The NES projects were expected to generate productive employment at relatively low cost and raise the farm incomes of landless and near landless families. The first three NES projects (NES I, II and III) were audited by the Operations Evaluation Department (OED) in 1989.<sup>3/</sup> NES VII, the last of the series, is nearing completion.

1.9 The Audit of NES I, II and III, while rating the projects as satisfactory, reflected on the inadequate preparation that led to poor coordination among Government agencies, delayed budget approval and release of funds, cumbersome procurement practices and the underperformance of the foodcrop components. It also pointed to other institutional weaknesses and poor smallholder plantings. The Audit concluded that not enough appeared to have been learnt from the first three projects of the series in sufficient time for the remedies to be applied to subsequent projects in the series.

## II. THE PROJECTS: OBJECTIVES, DESIGN AND EVOLUTION

### Objectives

2.1 NES IV, V and VI had the following main objectives. They were broadly in line with GOI's agricultural sector objectives. These were: a) to settle poor landless families on unutilized land in Java and the outer islands; b) raise rural incomes of these families in the poverty target groups; c)

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<sup>3/</sup> PAR: Indonesia Nucleus Estate and Smallholders I, II, and III Projects (Loans 1499-IND, 1604-IND and 1751-IND), Report No. 7955, June 30, 1989.

increase the production of estate crops such as oil palm, coconut and rubber; and d) reverse the trend of declining exports and foreign exchange earnings which resulted from the shift to domestic consumption.

2.2 Specifically, NES IV included --- development of 21 villages and construction of 4,000 houses to settle poor landless families on unutilized land in South Sumatra Province, block plant 8,000 ha of oil palm for eventual allocation to the settlers, upgrade 92 Km of village roads, establish a 30 ton FFB/hr palm oil mill for processing smallholder production and construct a crumb rubber factory with a 40 ton/day capacity for 2,250 families previously settled under the NES I project. The project would also provide basic health services through the GOI's provincial health program, primary and secondary education facilities and technical assistance to strengthen PTP X's capacity in estate engineering, financial management and assistance to DGE with program support and start-up funds for a future NES project. NES IV was to be implemented in just over 6 years.

2.3 NES V included three major elements --- the development of estate and smallholder treecrops, the upgrading of existing estates and training and technical assistance (TA) for DGE and public and private estates to improve management capabilities. The project would establish 45,800 ha. (13,400 ha. for the estates and 32,400 ha. for smallholders) of rubber, oil palm and coconuts, including processing facilities in West Java, West Kalimantan and Bengkulu; resettle 19,800 families in West Java and West Kalimantan; establish an estate and processing facilities for PTP XXIII in Bengkulu; and provide training and TA mentioned above. NES V was to be implemented in 6 years and 7 months.

2.4 NES VI would establish or rehabilitate some 17,000 ha. of rubber and 9,500 ha. of coconuts (11,500 ha. for the estates and 15,000 ha. for smallholders) and provide processing facilities in West Java, Bengkulu and Maluku; resettle 8,450 families in West Java and Bengkulu; and rehabilitate and expand PTP XXVIII in Maluku. It would also provide 73 man-years of consultant services as TA to DGE and the public estates. NES VI was to be implemented in 5 years and 8 months.

### Design

2.5 The NES approach essentially involved activities for smallholders and public sector estates (PTPs). Establishing smallholder settlements and planting of estate crops adjacent to a PTP comprised the main project initiative. The rationale for doing so was to utilize the technical and managerial resources of the PTPs to promote and guide smallholder development. The NES approach also included components to expand the PTPs' own estate plantings and strengthen their implementation capacity to undertake smallholder settlement. The rationale for this was to secure PTP commitment to act as agents for smallholder development. However, NES I and II implementation, which were largely PTP centered, evidenced delays in budget preparation and receipt of funds by the nucleus estate and slow rate of progress of infrastructure development. Thus in NES III and in this cohort under audit (NES IV, V and VI), a larger central and provincial government role was envisaged to speed up project implementation. This was done by



modifying the project organization and delegating greater autonomy in project implementation to the nucleus estate and establishing in MOA, a team (Team Khusus) to assist in implementing NES projects. While in the first two NES projects project managers were appointed by and responsible to the DGE, in the subsequent NES projects, the President Directors of the nucleus estates appointed the project managers.

2.6 Under the NES approach the Government assigned tracts of bushland for development by the PTPs on the Government's behalf in block planting. The GOI allocated funds to the PTPs to clear land, build settler infrastructure and housing, provided employment and established and maintained the tree crops to maturity. Participants were employed as labor and are on probation as settlers for an initial period of three years. At the end of the three years, if they are judged to be suitable, they were to receive full title to their holdings. Individual credit agreements were then to be made with Bank Rakyat Indonesia (BRI), their titles being retained until repayments are made. Once the crops mature, the participant would assume full responsibility for their holdings and for the repayment of the development costs.

### Evolution

#### NES IV

2.7 Identification and Preparation. The site and scope of NES IV changed several times in the years prior to its appraisal. It was first envisaged, by Bank staff in 1976, as a coconut project to be prepared using project preparation funds in NES I. By 1978 this idea had been changed by DGE into a proposal for a project dealing with several properties belonging to PTPs XI, XII and XIII and surrounding smallholder areas in the western and southern parts of West Java Province, for which a consultant feasibility study was launched.

2.8 But, by early 1979 the West Java proposal in turn had been succeeded by a proposal for a 12,000 ha. oil palm and foodcrops development for 4,000 settler families close to a PTP X estate near Betung in South Sumatra. Bank Resident Staff in Jakarta (RSI) expressed some misgivings at the magnitude of this proposal, on the grounds that PTP X was already experiencing difficulties in dealing effectively with its on-going commitments under NES I.

2.9 A pre-appraisal mission in February 1979 reiterated the earlier Bank concern at PTP X's limited capacity for implementation, but nevertheless advanced the project design to include 8,000 ha. of smallholder oil palm and 4,000 ha. of foodcrops plus a 40 ton. per hour fresh fruit bunch (ffb) palm oil mill and a palm oil bulking facility, together with settler housing, roads and infrastructure, to be undertaken by PTP X with the help of a technical assistance team.

2.10 Appraisal took place in May-June 1979. The project as presented at pre-appraisal was accepted, except that the palm oil mill was reduced to 30 ton ffb, while a 40 ton per day crumb rubber factory for a nearby PTP X-assisted

smallholder rubber settlement supported under NES I was added, to be built in two 20 ton stages.

2.11 During appraisal it was discovered that the originally selected project site, which the pre-appraisal mission had assumed would be available for settlement, could not be used because of prior occupancy claims by local villagers, and an alternate site was selected. The appraisal also recognized serious managerial and technical weaknesses in PTP X, which was under great strain from commitments entered into under three other Bank-supported projects,<sup>4/</sup> and strengthening of PTP X's engineering capacity, including employment of new staff and consultants, were proposed as conditions for loan negotiations. It was expected that further organizational and managerial support would be forthcoming from the DGE's Team Khusus.<sup>3/</sup>

2.12 The review of the appraisal report by several Bank staff stressed the importance of strengthening managerial and technical staffs at both the DGE and PTP levels, and the need for effective training in those areas. The project was approved by the Board on April 17, 1980, after a short discussion which centered around the macroeconomic prospects faced by the country. One Board member expressed concern over delays in implementation in Bank-assisted projects in Indonesia. Staff admitted that the trend was disturbing but that joint implementation reviews between the Bank and GOI officials, which had been initiated earlier, were likely to be useful in correcting the situation, and that the GOI budget allocation system had recently been improved as part of a major administrative reform.

#### NES V

2.13 Identification and Preparation. Much uncertainty existed regarding the location and scope of NES V during the early preparation phase. In late 1978 a steering committee at DGE level was considering a project in the vicinities of Bengkulu in West Sumatra and Lampung in South Sumatra, which was to include a tea component. By mid-1979 this expanded to a larger project embracing nucleus estates belonging to PTP's XI, XII and XIII and neighboring smallholder areas in the western and southern parts of West Java Province. Concern at the possible size of the project led, in September 1979, to a tentative agreement being reached between RSI and DGE staff to restrict the project to activities associated with PTP XI. However, a Bank pre-appraisal mission in October 1979 reverted to the earlier DGE proposal for a project embracing a limited number of components in areas belonging to PTP's XI and XIII in West Java Province, which included palm oil, rubber and hybrid coconut developments, but rejecting the tea component.

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<sup>4/</sup> Fourth Agricultural Estates Project (Credit 319), Nucleus Estates I project (Loan 1499), and Transmigration and Rural Development Project (Loan 1318).

<sup>3/</sup> A special team in DGE for Nucleus Estate and Smallholders Projects.

2.14 In mid-1980 GOI proposed an expansion in the pre-appraised project's scope with the addition of three components in the pipeline for future NES projects. The increased project scope and cost prompted a Part I country Executive Director (ED) to express concern at the ambitious nature of the project proposal. Preference for a project which dealt only with technical assistance and training rather than any further capital investment on crop development was expressed. Other reservations expressed by several Bank staff, including those from CPS, concerned the limited absorptive capacity of the DGE/PTP system relative to the size of the project, and the strain on their managements imposed under earlier NES loans already under implementation.

2.15 Appraisal took place in November 1980. The expanded project was accepted with minor changes in planting targets, and deletion of one of the three components that was added. The review of the draft appraisal report centered around the question of cost recovery from smallholders, which was to be effected mainly through deductions from the price paid to producers for their produce by the parent nucleus estates. CPS commented that recovery would be very problematic in the case of coconut and rubber due to the ease with which growers could divert their produce to middlemen. The SAR was also criticized for its lack of detail on the financial status, and profit and loss forecasting of the PTPs, which would have a bearing on their ability to service the smallholders.

2.16 Negotiations were carried out in April 1981 and the Board approved the project in May. At Board presentation, Bank staff stressed the importance attached to institutional strengthening through training, particularly at the management levels. A Board member queried the large expatriate consultant input and wondered how long Indonesia would remain dependent on foreign expertise in the treecrops sector. The staff acknowledged that trained manpower was in fact the fundamental constraint, which explained the heavy emphasis given to training under the project.

## NES VI

2.17 Identification and Preparation. In mid 1979 GOI proposed appointing consultants, to be financed from preparation funds in NES III, to prepare a project covering parts of Bengkulu and Lampung provinces of southern Sumatra and including cocoa, coffee, tea, coconut and rubber developments under the control of PTPs XXIII and XXVI. A Bank identification mission, carried out in conjunction with a pre-appraisal of NES V in November 1979 modified this proposal to the extent of dropping the Lampung component and reformulating the Bengkulu component to include a total of 32,500 ha. distributed over three separate project sites in the Bengkulu neighborhood.

2.18 Further modification and additions were made through 1980 on the basis of additional feasibility studies. So that by mid 1981 a revised project brief indicated that the Bengkulu component for PTP XXIII had been downsized to 21,250 ha., but sites were added in West Java and in Maluku Province to increase the total proposed planted area to 49,250 ha.

2.19 Appraisal took place in August 1981. Reductions were made to the pre-appraisal planting targets because of concern at institutional and managerial constraints. This was done by dropping the Bengkulu cocoa component and by considerably reducing the coconut and food crop areas in West Java and Bengkulu. The total area of proposed crops at appraisal was thereby reduced to 28,190 ha., although the project still comprised four major components distributed over three island groups and involving three PTPs.

2.20 The SAR was very favorably received within the Bank at the review stage. CPS staff noted that the project was a repeater with "no special problems or difficulties". A note of concern in the Bank files came from the Office of the Vice President, Operations, which questioned the economics of the coconut investment and asked for more details on the financial status of the PTPs in the final SAR. Prior to the Board Presentation, one ED queried why NES VI was being presented so soon after NES V, even though only 26 percent of the earlier loans in NES's I through IV had been disbursed. Bank staff responded by saying that the program was now running smoothly after experiencing earlier difficulties.

2.21 At Board presentation in April 1982, Bank staff painted a reassuring picture of the NES program to-date. Implementation of earlier projects in the series were said to be progressing steadily, thanks to the considerable technical, managerial and financial expertise existing in the GOI-owned estate sector, which was being used to assist smallholders through the projects. The Board was advised that the next stage would be sector lending, with GOI doing more of the appraisal and supervision, as it was already doing through an identical, wholly domestically-financed program. The Board approved the project without question.

### III. IMPLEMENTATION

3.1 Project implementation is fairly described in all three PCRs. This PAR discusses implementation in a historical and sequential manner and highlights the generic issues and problems that beset all three projects during implementation. It focuses on those issues of implementation that have important bearing on project performance and outcome.

#### Costs and Loan Amounts

3.2 Appraisal estimate vs actual project cost comparisons, and loan approval amounts and final cancellations for all three projects are shown in Table 1 below. Actual costs for all three projects were substantially below SAR estimates --- 39 percent below for NES IV; 44 percent below for NES V and 63 percent below for NES VI. This was due to the reduced scope of the projects than had been planned as a result of the numerous problems such as land acquisition, provision of counterpart funds, budgetary problems and a host of others that are adequately describe in the next section. The result was large, but delayed cancellations of the approved loan amounts. Total loan amount approved for the

three loans was US\$271.1 million, of which 40 percent for NES IV, 42 percent for NES V and 67 percent for NES VI (US\$129.3 million) were eventually cancelled due to non-utilization.

A. <u>Project Costs</u>	<u>NES IV</u>		<u>NES V</u>		<u>NES VI</u>	
	<u>Appraisal Estimate</u>	<u>Actual</u>	<u>Appraisal Estimate</u>	<u>Actual</u>	<u>Appraisal Estimate</u>	<u>Actual</u>
Smallholder Development	19.0	19.8	103.1	68.8	52.2	28.9
Nucleus Estate Development	12.1	13.2	76.3	89.3	63.0	35.4
Program Support	5.0	6.5	29.3	23.8	17.7	5.6
Contingencies	<u>28.4</u>	----	<u>113.3</u>	----	<u>57.1</u>	----
Total Project Costs	64.5	39.5	322.0	181.9	190.0	69.9

B. <u>Financing</u>	<u>NES IV</u>		<u>NES V</u>		<u>NES VI</u>	
	<u>Planned</u>	<u>Actual</u>	<u>Planned</u>	<u>Actual</u>	<u>Planned</u>	<u>Actual</u>
IBRD	42.0	25.4	161.0	94.1	68.1 <sup>a/</sup>	22.3
CDC/Other External Sources	----	----	----	----	36.9 <sup>a/</sup>	14.8 <sup>b/</sup>
Domestic Sources	<u>22.5</u>	<u>14.1<sup>c/</sup></u>	<u>161.0</u>	<u>87.8<sup>d/</sup></u>	<u>86.1</u>	<u>32.8</u>
Total	64.5	39.5	322.0	181.9	191.1 <sup>a/</sup>	69.9

- <sup>a/</sup> Of which, CDC was to finance US\$28.0 million and suppliers credit would finance US\$8.9 million.
- <sup>b/</sup> US\$14.8 million was financed by CDC as of April 30, 1990. CDC financed most of the remainder after the project completion.
- <sup>c/</sup> Of which, Ministry of Finance financed US\$10.2 million, nucleus estate financed US\$3.2 million and the Provincial Government financed US\$0.7 million.
- <sup>d/</sup> Of which, the Government financed US\$48.9 million and the PTPs themselves financed US\$38.9 million.
- <sup>e/</sup> Including US\$1.1 million capitalized front end fee.

3.3 Table 1 shows that for NES IV actual costs for the smallholder and nucleus estate development and program support components were more or less in line with SAR estimates without contingencies, but actual costs are considerably smaller when including contingencies at appraisal. For NES V and NES VI, actual costs for smallholder and nucleus estate development and program support were considerably less than had been planned for. There were substantial reductions in the scope of all three projects. The physical details of project design and implementation achievements of the respective components are shown in Table 2. A discussion of implementation experience of each project follows.

TABLE 2: Physical Details of Project Design and Implementation

Project Executing Agencies	NES IV		NES V		NES VI	
	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual
<u>Smallholder Development</u>						
No. of Settler/Smallholder families <sup>a/</sup>	4,000	4,000	19,800	15,127	8,450	6,200
Area of Oil Palm (ha)	8,000	8,000	19,000	12,498	-----	-----
Area of Rubber (ha)	-----	-----	3,700	2,585	9,500	5,800 <sup>b/</sup>
Area of Coconut (ha)	-----	-----	9,700	7,460	5,500	4,950
Area of food crops and house lot (ha)	4,000	4,000	7,350	5,110	1,700	1,220
No. of Villages	21	11	73	n.a.	21	n.a.
No. of Houses New	4,000	4,000	15,700	10,677	5,950	2,601
No. of Houses Rehabilitated	-----	-----	4,100	2,189	1,580	576
<u>Nucleus Estate Development</u>						
Palm Oil Mill (ton/hr capacity)	1x30	1x30 <sup>c/</sup>	1x35; 1x30	1x35; 1x30	-----	-----
Crumb Rubber factory (ton/day capacity)	1x40	1x40	1x30	1x30	1x40 <sup>d/</sup>	1x40 <sup>e/</sup>
Copra processing mill (ton/day capacity)	-----	-----	2x25	2x25; 1/25 (upgrade)	1x48; 1x24	1x48; 4x24 <sup>f/</sup>
Area of oil palm (ha)	-----	-----	7,500	8,229	-----	-----
Area of rubber (ha)	-----	-----	5,000	4,617	6,140 <sup>g/</sup>	3,614 <sup>h/</sup>
Area of coconut (ha)	-----	-----	880	700	3,500 <sup>i/</sup>	3,520 <sup>j/</sup>
<u>Roads</u>						
Primary Roads (km)	46	21	211	320	61	n.a.
Secondary Roads (km) New/Rehabilitated	48	65	386	580	330	340
Access Tracks (km) New	105	107	525	n.a.	741	576
Access Tracks (km) Rehabilitated	-----	-----	-----	n.a.	160	n.a.
<u>Program Support</u>						
Consultants (man months)	200	uncertain	683	513	882	uncertain <sup>k/</sup>
Implementation time (yrs.)	6.2	8.7	6.6	9.6	5.7	7.2

<sup>a/</sup> NES IV 2.0 ha. oil palm, 0.9 ha. food crops, 0.1 ha. house lot per family.  
NES V, West Java 1.5 ha oil palm, rubber or coconut, 0.3 ha. food crop, and 0.2 ha. house lot per family; West Kalimantan 2 ha. oil palm, 1 ha. foodcrop and house lot per family. NES VI, West Java 1.5 ha. coconut, 0.3 ha. food crop, and 0.2 ha. house lot; West Sumatra 2.0 ha. rubber, 0.8 ha. food crop (with possibility of subsequent conversion of 0.5 ha. to tree crop), and 0.2 ha. house lot per family.

<sup>b/</sup> GOI/CDC financed planting of an additional 600 ha. after project closing.

<sup>c/</sup> This was an expansion to an existing mill, not a new mill as intended at appraisal. Two other palm oil mills were also rehabilitated.

<sup>d/</sup> Plus rehabilitation of a 1x9 t/d and a 1x8 t/d copra mill.

<sup>e/</sup> Plus rehabilitation of 1x40 t/d crumb rubber factory.

<sup>f/</sup> Plus one mill financed by CDC funds. Starting 3/92.

<sup>g/</sup> Plus rehabilitation 1,370 ha.

<sup>h/</sup> Plus rehabilitation of 1508 ha.

<sup>i/</sup> Plus rehabilitation 480 ha.

<sup>j/</sup> Plus rehabilitation of 484 ha.

<sup>k/</sup> Uncertain, but somewhat lower than appraisal. However, extensive use of consultants services were availed.

#### NES IV

3.4 The project was declared effective on August 11, 1980. The first four supervision missions, through 1981/82, reported satisfactory progress in most areas -- oil palm plantings, initial housing contract, first intake of settlers, absorption of local occupiers as participants in the project, management under a new, dedicated and effective President Director and a financially sound PTP.

3.5 By mid 1983, the situation was deteriorating. PTP X began to face financial problems and was described in supervision reports as technically insolvent. This situation was attributed to a fall in profitability of its agricultural products, due partly to an over-valued rupiah and to its need to borrow in order to pre-finance many of its project activities because of slow and inadequate release of funds by GOI for work completed. Development of the food crop areas was inhibited by an absence of funds needed to provide heavy initial fertilizer dressings.

3.6 By mid 1985, the project was continuing to deteriorate and was rated as facing serious problems. These were: below capacity settler intake; below capacity operations of the palm oil mill built under NES I (and being used to process the early production from the smallholder areas) due to design and operating problems; delayed land titling; overstretched management reflected in a deterioration in land preparation, crop planting and maintenance standards; unsatisfactory oil palm harvesting standards; lack of fertilizer applications to the mature smallholder oil palm areas; and precarious financial situation of PTP X. The situation remained the same through 1986. However, the closing date for the loan was extended to December 1987 in the expectation that the quality of implementation would improve under the direction of a dynamic new chairman of Team Khusus appointed towards the end of 1986. Further extensions of the loan were subsequently made and the loan was finally closed on December 31, 1988.

3.7 A final supervision, in September 1988, reported that the project still faced major problems, in spite of improvements effected at the Betung palm oil mill following the arrival of the technical consultants and the introduction of a training program. However, none of the desired changes had taken place at the senior management level, raw rubber was again accumulating outside the Tebenan crumb rubber factory, 280 ha. of oil palm plantings had been ruined by rodents and wild pig, and the process of settler selection, land certification and loan conversion continued to be seriously delayed.

#### NES V

3.8 The project was declared effective on October 21, 1981. Again, a good early start was made, in large part due to the availability of start-up funds in the Bank's NES IV loan. However, the situation quickly deteriorated. The widely scattered locations of the several project sites complicated the Bank's supervision task, which was largely handled by RSI staff supplemented from time to time by Bank Headquarters staff. The large number and wide geographic

dispersion of project activities reduced the frequency of visit to individual PTP components which included seven separate nucleus estate and/or smallholders sites on three of the main islands controlled by four PTPs together with the LPP training component.

3.9 As early as 1983 a number of problems were evident:

- i) In West Java land acquisition problems began to severely affect implementation. Problems were experienced in carrying out the planting program in the smallholder areas due to the difficulty in gaining control over the lands in question because of opposition from other land claimants and the unwillingness of many of these smallholders to participate in the project.
- ii) The extent and quality of the coconut plantings was also adversely affected by insufficient supplies of hybrid seed nuts and late planting in many areas.
- iii) Financial difficulties were adding to the problems of PTP XIII, which was responsible for the Cimerak site, arising from its over-commitment in the development of 10,000 ha. of coconut and GOI independently financed smallholder rubber project. Financial difficulties were also affecting PTP XI, which was responsible for the Ciemas, Bantar Jaya, South Banten and Sanghyangdamar components. The PTPs financial problems were compounded by constraints imposed through the GOI budgeting system, in that budget allocations were frequently received late and in smaller amounts than appropriate due to under-pricing of unit costs on the part of the GOI central budgeting authority.<sup>6/</sup>
- iv) Other project development activities were also proceeding less satisfactorily with regard to designing, tendering and constructing palm oil and rubber processing facilities, and the construction program for settler houses.
- v) More serious, however, was the questionable quality of many plantings. In some cases the quality of the hybrid coconut seed nuts was inferior,<sup>2/</sup> while others had been planted on unsuitable soils.<sup>3/</sup> Field maintenance in many immature stands was also substandard as evidenced by poor frond condition, indicating the need for correct fertilization.

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<sup>6/</sup> In 1983 the Bank introduced a Special Action Program, (SAP) for Indonesia, which gave some relief to the country at a time when it was experiencing a financial crisis, due in large part to declining oil revenues. Under the SAP, disbursement percentages on most NES loan categories were increased.

<sup>2/</sup> The Region adds that: "In most cases this meant that the seed were illegitimate -- the product of dwarf palm self-pollination -- and thus, not hybrids at all. Some may also have been harvested while immature or germinated in transit, and thus been damaged".

<sup>3/</sup> The Region affirms that: "Site selection was bad, late plantings resulted in losses due to water stress, fertilizer applications were late and inadequate, maintenance was substandard and mammalian pest damage was extensive".



3.10 The situation with the LPP component improved in mid-1985 when the training consultants finally took up their appointments. Good progress was made through the remaining project years, under new LPP management, in making the courses more practical and responsive to the needs of the PTPs.

3.11 Through 1988 smallholder settlement remained behind schedule and local budget allocations continued to lag behind requirements. Field maintenance standards were reported in supervision reports to be poor on many of the smallholding components, particularly at Ngabang, and considerable pest damage to oil palm and coconut holdings pointed to the need for a major rehabilitation effort, including replanting in some particularly badly affected spots. Delays in plot surveys of smallholdings, combined with the poor quality of the trees in many plots, was slowing down the conversion program. Overall, progress of project implementation remained generally unsatisfactory. The project was rated as experiencing major problems from early 1987 onwards.

3.12 Supervisions reported in 1989 and 1990 that considerable progress was made in resolving several problems. But, overall quality remained unsatisfactory. Rehabilitation efforts were described as still inadequate and smallholders were considered to be in need of extension advice on field maintenance and harvesting. Access roads and settler house construction standards were reported as sub-optimal. The Bank remained concerned at the continuing local budget shortfalls. The loan closed on December 12, 1990 after several extensions had been made.

## NES VI

3.13 The project was declared effective on July 23, 1982. Again, the sense of euphoria generated through the project appraisal and loan approval process was quickly replaced by reality. Operations under the PTP XXVIII component on Seram Island in Maluku Province, financed from initiating funds in NES V, faced problems immediately. The first supervision report considered all staff to be inexperienced and management inadequate. PTP XXVIII's component at Bengkulu was reported to be in much better shape but groups of farmers were refusing to cooperate, resulting in enclaves of non-project land within the project area, which added to the difficulties and costs of development. PTP XII operations at Cikaso and Agrabinta were reported as uneven, with land preparation proceeding satisfactorily at Cikaso, but more variable at Agrabinta, where management needed tightening. Its performance was rated as facing moderate problems.

3.14 In June 1983, less than one year after effectiveness, the project was rated as experiencing major problems, of a financial, managerial, technical and political nature. The financial and managerial problems were viewed as particularly critical. The financial problems arose from a shortage of working capital and the difficulties experienced by PTPs in repaying existing debts due to funding losses from unprofitable operations. These problems were similar to those being experienced at the same time by the PTPs responsible for NES IV and V. The case of PTP XXVIII was especially acute as it had exhausted its equity and had acquired large debts.

3.15 A litany of these problems persisted for six years through 1989. The four systemic issues repeated over and over in supervision reports were: (a) delayed release of budgetary funds; (b) lack of funding and implementation programs for upgrading substandard smallholder plantings; (c) delayed establishment of an inspection service for tree crops, and (d) delayed conversion and recovery of smallholder loans. They make for sober reading. The problems project rating was retained right through to loan closing. Slow releases of GOI budgetary funds, and releases in smaller amounts than agreed due to unilateral reductions to the unit cost estimates for various types of civil works, were a constant source of concern to those responsible for implementation at the field level, and to the Bank, which regularly referred to this problem in post-supervision letters to GOI. Along the way several planting targets were reduced, to conform more closely with the capacity or capability of PTP managements and staffs in dealing with their implementation responsibilities. A GOI request for extension of the closing date by one year, to June 1989, was agreed to by the Bank, but the Bank's agreement letter was accompanied by a five page list of conditions to be met. However, the Bank declined a further extension to the loan, which closed on June 30, 1989.

#### Overview of Implementation

3.16 Overall, the implementation of all three projects (NES IV, V and VI) highlight rather similar experiences. In 1987, a supervision report commenting on the implementation of all three projects summed up the problems very succinctly. A letter was sent from the Bank to GOI. The letter drew the GOI's attention to what it described as persistent systemic problems, identified during a tree crop sector review carried out by the Bank in 1985.<sup>2/</sup> Suggestions for addressing these problems included (a) improving the clarity of lines of authority and responsibility to promote efficiency and accountability; (b) increasing the adequacy of the monitoring and incentive structure at the management unit level for encouraging high quality work and discouraging poor performance; (c) training of personnel at all levels; (d) developing a well functioning cost recovery mechanism; (e) approving and releasing funds from the GOI budget in a more timely fashion; and (f) establishing reasonable unit costs for different activities, taking into account variability in costs between regions. The letter concluded that unless the systemic problems were resolved expeditiously, achievements under the projects would fall far short of their targets.

### IV. PROJECTS' OUTCOME

#### Production and Yields

4.1 In reviewing the PCRs the evaluators noted an apparent contradiction between the PCR reestimated ERRs of 22%, 11% and 12%, for NES IV, V and VI respectively, and the litany of problems identified through the project

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<sup>2/</sup> The Major Tree Crops: A Sector Review, Report No. 5313-IND, April 15, 1985.

implementation periods which led all three projects to be classified as problem projects through the second half of their implementation years. For this reason the evaluators examined and analyzed available production and yield data for the post-project completion years. Oil palm production and yield figures are considered highly reliable, because all smallholder-harvested fruit bunches can be assumed to be sold to the PTP for processing in the PTP palm oil mills in the absence of alternate marketing options in the neighborhoods of the project's oil palm sites. However, much of the recorded production data for the rubber, and especially coconut smallholder areas are considered unreliable on account of the uncertain, but often considerable, volume of production which is disposed of by smallholders directly to private traders as copra and as fresh fruits, rather than marketed to the PTPs. This happens because private traders offer smallholders a better price than do the PTPs, which impose deductions from the market price for produce delivered as a means for credit recovery. Produce leakage is a serious problem for both rubber and coconut at many project sites, except in a few special situations where alternate marketing opportunities are limited or where PTP security measures are effective in reducing or preventing off-project sales. As a result, implications for any cost recovery scheme is adversely affected.

4.2 The more reliable figures up to 1991, in the main provided by Team Khusus for smallholder areas and by PTPs for estate planting blocks, have been used to compile yield curves for comparison with SAR and PCR estimates, and these are reproduced in Annex 1. Extrapolations for future years, based on actual yield data for the early production years through to 1991, are also shown, and the yield expectations derived in this manner have been used to reestimate the ERRs for each project.

4.3 Revised yield curves have been compiled for all six oil palm project sites, namely NES IV, PTP X Betung smallholders, and NES V, PTP VII Ngabang Nucleus Estate and smallholders, and PTP XI (South Banten) Kertajaya and Kertaraharja Nucleus Estates and Pandeglang smallholders.

4.4 Actual oil palm yield and production data collected by the audit confirm the PCR finding that yields and production are turning out to be far below appraisal expectations, and are in fact, in all cases except Kertajaya Estate, running below, and in some cases much below, the PCR revised estimates. This is due principally to two factors: (a) lower actual yields than projected in the PCRs, particularly for the most recent years following loan closing and the preparation of the PCRs, since which time financing for costly fertilizer inputs and field maintenance has been inadequate. This applies especially to smallholders, most of whom are unable to purchase fertilizer, and have little or no access to credit programs for financing their inputs in the years following conversion of their plots and their assumption of management responsibility;<sup>10/</sup> and (b) shortfalls in the areas being harvested as compared with the planted areas reported in the PCRs. These are especially important in the Betung and Ngabang smallholder areas, with shortfalls from the PCR area figures of about 2,400 and 1,100 ha. respectively.

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<sup>10/</sup> For instance, the Pandeglang smallholders oil palm area is a particularly extreme example of this problem.

4.5 Yield curves have also been compiled for three rubber project sites, namely NES V, PTP XXIII Seluma nucleus estate and PTP XI Sanghyangdamar smallholders, and NES VI, PTP XXIII Seluma smallholders, where the data are more reliable, due to vigilance on the part of PTP staff in preventing leakages (Annex 1). Yields for the early years of tapping are in each case well below the SAR and even the PCR expectations, which implies lower than expected production over the remaining productive years, as indicated by the audit yield curve extrapolations for those years.

4.6 Production and yield data for hybrid coconut collected at evaluation show similar trends to those for oil palm and rubber, but the extremely high reported leakage seriously undermines the validity of the data. Thus no attempt has been made to reproduce yield curves or extrapolate production for coconut. The PCRs correctly point out that coconut is less satisfactory than oil palm and rubber in economic terms and in comparison with SAR expectations due to the very disappointing performance of the hybrids which are particularly sensitive to fertilizer application,<sup>11/</sup> low output prices<sup>12/</sup> and high labor costs for processing and conversion to copra. There is, however, some variation in production and yields specific to project site and management.

#### Economic Rates of Return

4.7 Based on the above discussion the audit reestimated the ERRs for all the oil palm components and some of the rubber components where data was more reliable. These are shown in Table 3, which also shows ERRs reestimated by the PCRs and those at the time of appraisal in the SAR. The audit reestimated ERRs use the same assumptions as those in the PCR with one major exception -- more recent, actual crop yield data. Also, the Audit corrected the PCR harvested area data where required (see footnotes in Annex 2). Detailed analysis for each component is also shown in Annex 2. The Audit has the advantage of using more recent data -- on average two to three additional years of actual production data beyond those reported by the PCRs -- which were provided by the PTPs and Team Khusus, the same sources from which the PCR data was obtained.<sup>13/</sup>

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<sup>11/</sup> The Region adds that: "Because the planting material was supposed to be hybrid, and is constantly referred to as such, there is a danger that the report may be seen as implying that the choice of hybrid material was inappropriate. Such interpretation would be erroneous, for there is ample evidence available to show that hybrids outperform local cultivars, even under the conditions of mismanagement and abuse reported by the Audit."

<sup>12/</sup> The Region notes that, "...the smallholders improved their income by diverting product to private traders, thereby depriving the PTPs of the opportunity to recover the credit. Had the latter executed the projects correctly, there would have been far less incentive for smallholders to cheat."

<sup>13/</sup> The Region has noted the data inconsistencies between the PAR and the PCRs. They agree that, "... the overall performance of NES V and VI is disappointing"; however, they would like to note their difference with the PAR that "... without further field verification, we consider that the PCR estimates on yield profiles are probable and aggregate rating of the projects likely to be more favorable than judged by the PAR".

TABLE 3: Comparisons of Economic Rates of Return

	<u>SAR</u>	<u>PCR</u>	<u>AUDIT<sup>a/</sup></u>
<u>NES IV</u>			
<u>Oil Palm</u>			
Betung (SH), PTP X	22	19	14
NES IV, Overall <sup>b/</sup>	19	22	>14
<u>NES V</u>			
<u>Rubber</u>			
Sanghyang Damar (SH), PTP XI	15	15	13
Bengkulu (NE), PTP XI	17	14	11
<u>Oil Palm</u>			
Ngabang (NE+SH), PTP VII	19 <sup>c/</sup>	11	negative
South Banten (NE+SE), PTP XI	14 <sup>c/</sup>	11	2
Ngabang (SH), PTP VII	15	12	3
South Banten (SH), PTP XI	13	12	negative
<u>Coconut</u>			
Bantar Jaya & Ciemas (SH), PTP XI	14	6.0	unreliable data
Cimerak (SH), PTP XIII	18	0	unreliable data
Cimerak (NE), PTP XIII	17	4	unreliable data
NES V, Overall	16	11	6 <sup>d/</sup>
<u>NES VI</u>			
<u>Rubber</u>			
Bengkulu, Seluma (SH), PTP XXIII	14	11	7
Agrabinta (NE), PTP XII	12	10	unreliable data
<u>Coconut</u>			
Cikaso (SH), PTP XII	13	13	unreliable data
Agrabinta	18	14	unreliable data
<u>Rubber &amp; Coconut</u>			
Agrabinta (NE), PTP XII	12	12	unreliable data
<u>Rubber, Coconut, Cocoa</u>			
Seram (NE), PTP XXVIII	13	11	unreliable data
NES VI, Overall	NA	12	<10 <sup>e/</sup>

- <sup>a/</sup> In general, the audit reestimated ERRs assumptions are the same as in the PCRs except where the audit was able to obtain more recent, actual yield or planted area data (which were somewhat different in a few cases). Details are presented in Annex 2 and differences with PCR assumptions are explained in footnotes.
- <sup>b/</sup> The NES IV PCR reestimated overall ERR for NES IV to be 22%, which also included ERRs for rubber factory and palm oil mills. Audit has reestimated only the Betung Smallholder Oil Palm component. ERR for the NES IV project as a whole would be greater than 14%.
- <sup>c/</sup> For NE component only.
- <sup>d/</sup> At best 6%, accepting PCR's analyses of the coconut components which the audit believes to be optimistic.
- <sup>e/</sup> Overall ERR for NES VI was not estimated at appraisal. ERRs for the coconut components were not reestimated at audit due to unreliable data. However, the audit believes for reasons mentioned in the text, that the ERRs in all cases would be below 10% and for the overall project would also be much below 10%.

4.8 PCR vs SAR economic rates of return: The ERRs reestimated at the time of project completion and as reported in the PCRs were in general lower than those at appraisal. For the smallholder component in NES IV, the decline from 22 percent to 19 percent was reported by the PCR to be due to delays in implementation and lack of food crop development. This decline would have been larger had it not been offset by the smaller than expected increase in development costs per hectare, price increase for FFB<sup>12/</sup> and a production increase of 40 percent for palm kernel compared to 4 percent assumed in the SAR due to the introduction of the pollinating weevil.

4.9 For NES V, the decline from an ERR of 16% (SAR) to 11% (PCR) for the project as a whole is explained by the decline in forecasted international prices of rubber, oil palm and copra, delayed benefits resulting from implementation delays and lower yield expectations due to substandard smallholder plantings. Substandard plantings were a result of poor field establishment and maintenance due to faulty management by the PTPs, inadequate funding, delays in the release of funds for fertilizer and other inputs, inadequate project monitoring and implementation by Team Khusus and lack of inspection services within DGE. Wild animal damage to oil palm plantings was an additional factor, especially at South Banten.

4.10 For NES VI (which lacked an overall ERR estimate at appraisal), ERRs of the various components reported in the PCR were all lower than the SAR estimates. Again, the reasons cited for the decline were lower forecasted international rubber and copra prices, delayed benefits resulting from implementation delays and lower yield expectations due to substandard plantings. The reasons for substandard plantings are similar to those mentioned in the previous paragraph.

4.11 Audit vs PCR economic rates of return: The audit concurs with the reasons cited in the three PCRs that led to a decline in the ex-post reestimated ERRs. However, benefiting from the availability of actual production and yield records for the post-completion years, the audit notes an even greater divergence with the SAR estimates than do the PCRs. The audit reestimates show that NES V and VI which had PCR reestimates of 11 percent and 12 percent respectively are really much lower. The audit estimates show an ERR of 6% (at best) overall for NES V and much below 10% for NES VI. NES IV, smallholder oil palm, which shows an ERR decline from 19% to 14% is still within the acceptable range in economic terms.

4.12 Four NES V oil palm components, both smallholder and nucleus estates, show very poor results. The overall ERR for the oil palm components is about zero; the two rubber components show ERRs of just over 10%<sup>13/</sup>; and the coconut components were not reestimated by the audit due to unreliable data. However, the PCR correctly points out that the coconut component failed. It attributes

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<sup>12/</sup> Note, however, that by the time of NES V and NES VI project completion, international prices began to drop once again.

<sup>13/</sup> Note, however, that poor smallholder tapping standards, as evidenced by excessive bark consumption and panel damage, will also have a detrimental effect on yields over the longer term as a result of which the ERR would be smaller than that reestimated here.

the failure to: i) acceptance of difficult sites in West Java in the project design, e.g. the elevated, windy and steep site proved unsuitable for cultivating coconut in Ciemas; ii) land ownership problems and disinterest of participants, e.g. at Cimerak; iii) a lack of prior experience in hybrid coconut which was a new crop to PTPs XI and XIII; and iv) low copra prices compounded by delays in establishing processing facilities in the area. The audit notes additional reasons. These are: v) sub-optimal fertilizer application; vi) excessive weed and intercrop competition, including widespread cultivation of cassava in some areas (where farmers are very poor), an especially competitive plant for available nutrients; vii) less than satisfactory seednut selection; viii) unsuitable soils; and ix) limited extension services. Given these and even accepting the PCR's estimates for the coconut components (which the audit believes is over-optimistic at 6%, 0%, 4%) the overall ERR, despite the acceptable performance of the rubber components, is 6% at best. NES V is thus considered unsatisfactory.

4.13 NES VI is also considered unsatisfactory. For rubber in Bengkulu the audit reestimated the ERR to be about 7% compared to PCR's estimate of 11% due to lower actual yields reported in recent years. Again, the detrimental effects on yields as a result of the poor smallholder tapping standards mentioned earlier have not been considered in the analysis which would lower the reestimated ERR even more. For coconut, in the absence of processing facilities on-site so far in Cikaso the audit expects that the cash benefits generated from the increased production will be much lower than forecast in the PCR. The delay in benefits as a result of this absence of processing facilities on-site for the initial years of the project will surely lower the ERR reported in the PCR. As a result, the ERR for the Cikaso smallholder coconut component and Cikaso nucleus estate component will be considerably lower than the PCR estimate of 12.5% and 9.6% respectively. In Agrabinta, the absence to date of an on-site processing facility is compounded by the poor quality of the Agrabinta-Cikaso road which is virtually impassable during the rainy season. The opportunities for transporting the coconut out of the Agrabinta area is minimal as a result of which the audit expects the cash benefits generated from the increased production will again be considerably smaller, and the reestimated ERR much lower than that of 14% reported in the PCR. Overall, for NES VI, the ERR at the time of audit is considered to be much below 10%.

## V. FINDINGS AND LESSONS

### Overview

5.1 Overall, although there have been indirect benefits and some variation in the performance of the various components, the strategy of nucleus estate and smallholder development as embodied in NES IV, V and VI has not achieved the objectives that were envisioned. This does not imply that there is something fundamentally amiss about the nucleus estate and smallholder development concept of using the technical and managerial resources of PTPs to promote and guide smallholder development. The fault lies in the design and execution rather than the concept.

5.2 Significant concerns relate to the litany of problems that plagued all three projects throughout their implementation (paras. 3.1-3.36). This is illustrated by the performance ratings assigned by the supervision missions throughout implementation, and especially through the second half of their implementation years when all three projects repeatedly were described as having major problems. The audit's economic analyses show that NES V and VI outcomes are unsatisfactory but NES IV, despite its implementation woes, can still be classified as satisfactory in economic terms. This is a somewhat pessimistic assessment compared to the PCRs, which rated all three projects as satisfactory, but with reestimated ERRs for NES V and VI only marginally above 10%. On balance though, the audit's final judgement (NES IV: satisfactory, while NES V and VI: unsatisfactory) is based on the implementation experience of the individual projects, the economic rate of return and the prospects for achieving sustainable benefits, which appear to be pretty slim for the latter two projects.

5.3 The discussion in the following section is intend as a contribution to a better understanding of the issues, and thus provides lessons for guidance in developing similar projects, either in Indonesia or in other borrower countries.

#### Over-ambitious Expectations and Limited Capacity

5.4 With the benefit of hindsight, it is clear that the projects were over-ambitious in scope and expectations in the sense that too much was being attempted with rather limited institutional capacities. NES IV, V and VI were approved between April 1980 and February 1982, and the entire program, NES I through VII between November 1977 and January 1983 -- a period of 5 years and 2 months. Some of the reasons advanced at the time for accelerating the program were understandable in the sense that increasing oil revenues had created many possibilities for rapid development of some key non-oil sectors in the country. However, when revenues from oil began to dry up, GOI began to face serious constraints in providing timely and adequate levels of counterpart funds. It became apparent that because of the rapid acceleration given to the program, all seven projects (especially the expanded scope and increasing size from NES V onwards) would be unable to build the kinds of institutional structures that are required for longer term viability.

5.5 A prime example of the above was the limited capacity of PTPs to undertake smallholder development. They were over-burdened in their managerial capacity and over-extended in their financial ability to be effective institutions for smallholder development. At the time of project preparation the PTPs and nucleus estates responsible for implementation did not have the capacity to implement the projects effectively, and settlers (participants) were not adequately informed of project specifics, receiving only limited involvement of the PTPs.

5.6 The rapidity with which the projects were processed precluded any opportunity to apply many of the lessons of experience from the earlier to the later projects. Feedback during implementation of experiences gained from the earlier projects to the design of the more recent could have led to a more



satisfactory outcome based on a progressive strengthening of the DGE/PTP institutional structure if the intervals between Board presentation of consecutive projects had been extended.

5.7 The projects were also overloaded with components, especially NES V and VI, and simply too much was packaged into the latter two projects. NES V and VI would really qualify as eight distinct projects spread across Java, Sumatra, Kalimantan and Maluku islands and involved seven PTPs in three coconut, four rubber and two oil palm estate components and five coconut, two rubber and three oil palm smallholder components, as well as strengthening of the LPP through a NES V training component. The projects show clear signs of hasty and inadequate preparation of some of the components. A case in point has been the foodcrop components in each project. All settlers (participants) received a plot of land for growing foodcrops while waiting for their treecrops to mature and also to supplement their treecrop income in later years. However, the foodcrop components have been a failure as correctly pointed out in the PCRs. It is now clear that project preparation did not properly analyze the feasibility of growing foodcrops at many of the settlement sites, especially in the outer islands because of adverse slope or soil quality conditions (a factor which also constrained the implementation of the earlier Bank-assisted transmigration projects). Besides wrongly evaluating the environment conditions, proper analyses were never undertaken of whether smallholder families would be willing or able to provide labor for foodcrop cultivation when they were fully occupied on their mature treecrop lots once the development phase was over. The fact, that in most cases, foodcrop lots allotted to smallholders were at a distance from their treecrop and house lots made the labor constraint even worse.

#### Quantitative Targeting vs Sustainability

5.8 The heavy emphasis given during implementation to planting targets attainment was unfortunate since it adversely affected the quality of plantings during the establishment and immature phases and is in part responsible for the reduced future yield expectations. The implications for sustainability and cost recovery are of major concern. Smallholders' perception of low expected incomes from their allocated lots has made conversion of land titles and smallholders' assumption of loan liabilities, the first step towards recovering costs, painstakingly slow. The conversion process has lagged seriously behind schedule.

5.9 It was stipulated that, at the end of the third year of planting for coconut, fourth year for oil palm and fifth year for rubber, expenditures would be converted into standardized credit for which individual smallholders would be liable to BRI. It appears that at the moment no more than 15 percent of the total smallholder planted areas in the three projects have been converted.<sup>14/</sup> The actual amount of funds recovered is even smaller, perhaps as low as 5%. Additionally, there are bureaucratic reasons which have added to the conversion

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<sup>14/</sup> The NES VI PCR reports, ".....conversion has been completed in respect of only 22% of the 10,750 ha of smallholder rubber and coconut established under the project. For the five NES projects completed to date, only about 11% of planting developed under these projects have been converted."

delay such as, for instance, involved land survey and registration procedures. The cumulative delay resulting from these problems has added to the already existing financial strains of the PTPs. This also poses a long term burden on GOI which is unlikely to be able to recover much of the development expenditures incurred and will continue to fund the maintenance of the land that was expected to be converted but has so far been postponed.

### Land Availability

5.10 Another issue which deserved closer consideration than it received at preparation and appraisal is that of land availability. During project preparation Bank staff sought assurances that the lands on which the smallholder plantations were to be sited were either the property of GOI or would be acquired with relative ease and in a short period of time. Unfortunately, this did not prove to be the case. There was clearly a misunderstanding between GOI officials and Bank staff as to the availability status of much of the land selected, and the ease and rapidity with which land occupied under customary rights could be repossessed by GOI for project purposes. Provincial government authorities expressed optimism that cooperation of local land occupiers to utilize their land could be undertaken promptly, and Bank staff accepted their assurances uncritically in spite of previous experience of the difficulties encountered in other Bank-assisted projects in Indonesia.<sup>15/</sup> The SARs mentioned that agreement had been reached with GOI prior to the project that the land on which the smallholder components would be sited belonged to the Government. Thus the SARs designed the projects on the assumption that contiguous blocks of land would be available for development. However, in almost all instances this did not materialize and land acquisition problems were a major concern in all three projects.

5.11 Maps attached to this report illustrate the complexity of the actual land distribution patterns. These maps, based on the SAR maps, show the locations of the project areas as expected at appraisal and the areas actually developed. The actual patterns have several undesirable features. In most cases the actual smallholder areas are highly fragmented, particularly at the West Java project sites. For example, in Ciemas in West Java, where 4,000 ha of contiguous coconuts development were planned actual attainment was about 2,200 ha widely scattered in small pockets over an area covering 1,500 sq. km of often difficult terrain. In other instances, the proposed smallholder project sites were shifted to adjacent areas for reasons of limited land availability at the chosen sites. The conditions at the alternate sites, in terms of soil, topography or access, were often inferior. For example, one of the two originally proposed oil palm sites at Ngabang had to be dropped and a limited development of 6,200 ha concentrated on the second site, which includes large areas of low fertility soil.

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<sup>15/</sup> See, for example, Indonesia: Beef Cattle Development Project, Credit 335, PPAR, Report No. 3994, which noted that the project was experiencing serious problems of land availability at the time of the third supervision in October 1974, to an extent that only 20,000 ha of an appraisal target of 80,000 ha could be acquired.

5.12 The implications of these land problems on PTP and smallholder finances are of concern. The scattered distribution of land holdings, in often difficult terrain, increases the transportation costs of ffb, coconuts and latex, encourages leakages of smallholder produce to private traders, increase administrative overheads and staff costs and results in delays in the processing of the produce resulting in deterioration in quality of the processed products.

Counterpart Funds, Budgetary Issues and Incentives for PTPs to undertake Smallholder Development

5.13 Availability of timely and adequate levels of funds for PTPs to undertake smallholder development continued to be a problem as it did in the first three projects. Financial studies of PTPs have shown that most of them are financially weak institutions which have great difficulty in pre-financing smallholder, or even their own nucleus estate development activities. In theory, PTPs' financial needs for NES smallholder development are met from the GOI budget through quarterly DIP allocations. However, in practice, these were frequently delayed, particularly in the early part of the fiscal year, and often failed to meet the full development costs incurred. Furthermore, the Government's release of funds are based on an annual budgeting program while smallholder development activities are programmed on a multi-year basis. This quite often puts the PTPs in a cash stringent situation. The PTPs do not often have the flexibility to undertake smallholder development from their own resources, despite the expectation at appraisal that they could pre-finance smallholder development activities.

5.14 Moreover, questions also arise as to whether PTPs have been provided appropriate incentives to undertake smallholder development activities, particularly since it often puts additional burdens on their limited managerial and stringent cash flow situations. The management fee received by the PTPs for undertaking smallholder development (about 10%) are not nearly enough to encourage them to fully commit themselves to the welfare of the smallholders. They have to concurrently undertake other domestically financed smallholder development activities such as PIR trans and other Government-sponsored programs which add to the competition for limited financial resources claimed by the NES program.

5.15 There are clearly three ways to go. The first, would be to provide the right incentives such as smoother financing arrangements for PTPs and enhanced credit facilities for smallholders; the second, would be to use the line agency (DGE) in the PMU scheme, again with the required changes in financing and smallholder credit arrangements; and the third, would be to transfer the responsibility of promoting and guiding smallholder development to the private sector. In other words, the future role of the NES smallholder treecrop development approach has to be weighed against alternatives of similar package development through private sector companies or PMU schemes through DGE, and even non-package arrangements incorporating input supply, technical assistance and credit. The Audit is not in a position to comment on the political and economic appropriateness of either of the public sector approaches or an increased role of the private sector except to emphasize the points that GOI needs to examine

the options and that greater incentives are needed to encourage the implementing institutions to commit themselves more positively for developing smallholder treecrops.

Financial Costs of Implementation Delays, Slow Disbursements and Loan Cancellations

5.16 The over-ambitious design and multitude of problems that collectively caused delays in project implementation resulted in cancellation of large amounts of the loans, especially for NES V and VI. Total cancellations for the three loans amount to US\$129 million or 47% of the total approved loan amounts of US\$271.1 million. Cancellations did not follow reasonable delay in implementation but were postponed until the disbursements had fallen far behind the Loan Agreement schedules. Given the implementation delays and slow disbursements, the question is: should cancellations have taken place sooner, after a reasonable review period, as this would have saved GOI substantial commitment fee charges?

5.17 The Bank, for its part, rated all three projects as having major problems throughout the second half of their implementation phase and frequently reminded GOI of the need to rectify some of the problems being encountered. Eventually, when improvements failed to materialize and disbursements continued to fall behind, the Bank encouraged GOI to seek cancellations. The GOI, for its part, did not view the implementation delays as seriously as the Bank during much of the implementation period, and at times gave the impression that the problems would simply go away. As a result, NES IV took 24 months beyond its original closing date to be formally closed with only 61% of its approved loan amount disbursed; NES V took 30 months beyond its original closing date to be formally closed with only 59% of its approved loan amount disbursed; and NES VI took 12 months beyond its original closing date to be formally closed with as little as 33% of its approved loan amount disbursed.<sup>16/</sup>

5.18 In addition to the exchange rate shifts, the slow disbursements of loan funds (compared to the Loan Agreement schedules) combined with large, belated cancellations with all three loans and the commitment charges paid have resulted in a very high cost to GOI. The effective interest rates as a result are considerably higher than the fixed rates of 8.25%, 9.6% and 11.6% for NES IV, V and VI respectively applicable at the time of loan approval.<sup>17/</sup> In our discussions with GOI's Ministry of Finance, they expressed serious concern regarding these large cancellations and the adverse implications as reflected in

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<sup>16/</sup> The Region would like to note that, "... much of surplus loan funds arose because of the successful major devaluations of the rupiah, coupled with the degree of local cost financing and the relatively low local inflation rates following devaluation."

<sup>17/</sup> An attempt was made, although based on some restricting assumption, to calculate an effective interest rate. These are shown in Annex 3, Cash Flow Summary Table, where the assumptions have also been listed. Caution ought to be used in the interpretation of these high effective interest rate figures because of the exchange rate shifts involved.

a higher effective interest rate. They also expressed interest in seeing this issue addressed in our audit.

5.19 Although much of the reason for the high effective interest rates is due to the exchange rate shifts, commitment fee charges together with the front-end fee (for NES VI) are also quite substantial. These are shown in the cash flow schedules in Annex 3 which decomposes the "actual cash flow" into front-end fee, commitment fees, disbursement amount, interest payments and repayment amount. For NES IV, V and VI commitment fees actually paid add up to US\$10.6 million, and including the front-end fee for NES VI, the total is about US\$11.6 million. This is nearly 8.2% of the total disbursed amount of the three loans. These figures imply that the cost to GOI in purely financial terms has been very high, a matter which should be of considerable concern to them.

5.20 These high costs of borrowing underscore an important lesson for the Borrower, i.e., that it does not pay to borrow for projects that are over-ambitious in scope, particularly when the probability of implementing them (as appraised) in a timely fashion can only be a remote possibility. It may well have been worthwhile at appraisal to have designed these projects with fewer components that demanded less of the existing institutions, based on a realistic assessment of the managerial capability and financial ability of these institutions. A greater emphasis on quality of investments and less on attainment of quantitative targets would also have been more desirable.

#### Further Analyses

5.21 The Audit constructed comparative annual yield curves for representative oil palm and rubber blocks. These provide a basis for comparing SAR expectations, PCR estimates and those estimates provided in this Audit on the basis of actual yield data and extrapolations made from the actual data for future years. These are preliminary analyses based on limited data. Nevertheless, they highlight a decline in yields and production in the post implementation period which is evidence of a seriously deteriorating condition of most NES planted blocks. The evidence shows that benefits are declining appreciably below PCR expectations, and the outlook is far from reassuring if present conditions persist. The immediate cause of the decline appears to be directly related to the more stringent credit and budget climate which prevails in the post implementation years. As a result, limited supplies and availability of fertilizer and poor field up-keep are adversely affecting yields. Other factors related to the earlier phases of the project cycle which are influencing the current state of affairs have been discussed in paras. 5.4 - 5.15. Production from these planted areas needs to be boosted if the smallholder and PTPs are to compete successfully in the international market without additional Government subsidies. The concern for cost recovery is most pressing as very little is likely to be recovered if the present situation persists. Thus the present concern is how to make the most of what has already been invested in the

NES projects, especially in situations where it is still economically feasible to do something.<sup>18/</sup>

5.22 GOI, and DGE in particular, needs to urgently undertake a thorough study and assessment of the current situation. Careful analyses of all yield and production data for past years, conducted by Team Khusus, would be helpful as a first step in correcting the apparently deteriorating situation. Based on such analyses, a realistic assessment of future yields and potentials of the area planted under the NES projects could be made. This has so far not been done. It would provide a much better understanding of the present situation than was possible on the basis of the limited data collected during the audit. An understanding of the implications for economic and financial viability could then point the way towards rejuvenation of the whole program. This would be particularly appropriate in the current environment in which the international markets for the products are becoming more and more competitive and international prices are projected to continue their downward trend.

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<sup>18/</sup> The Region cautions that "... for in many of the coconut holdings there may be little worth rehabilitating."

PERFORMANCE AUDIT REPORT

INDONESIA

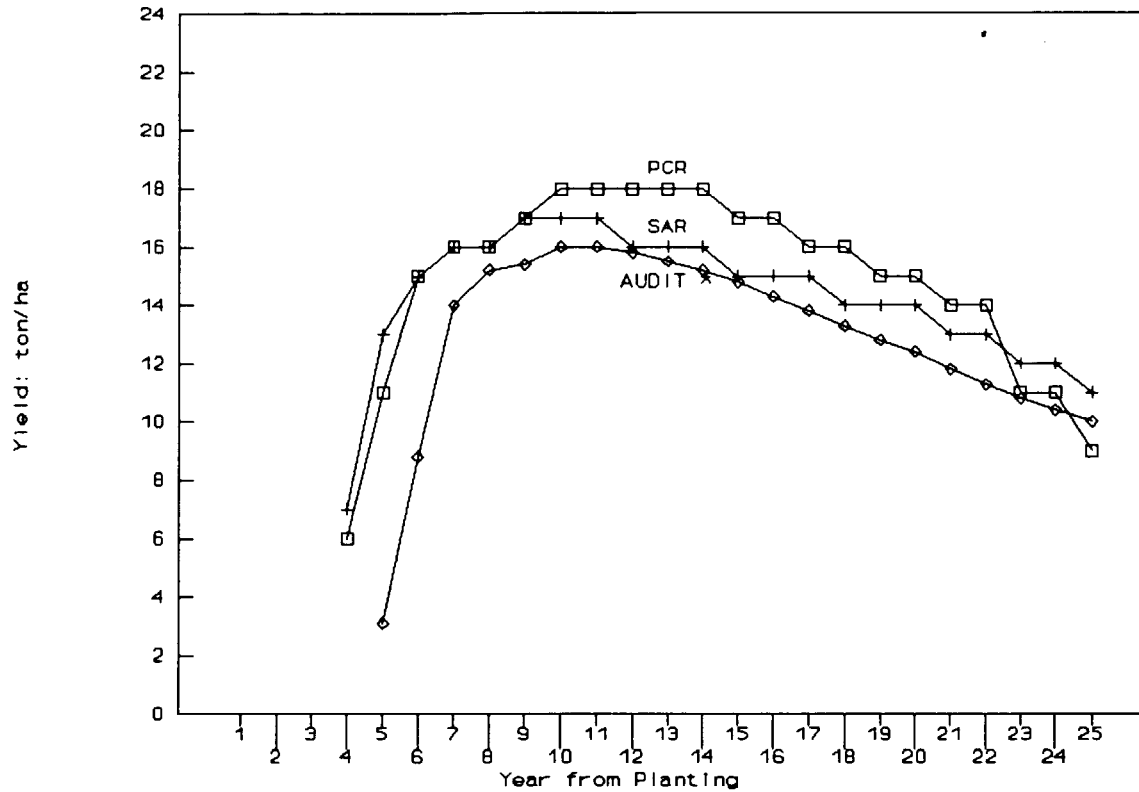
NUCLEUS ESTATE AND SMALLHOLDER PROJECTS IV, V AND VI  
(LOANS 1835, 2007 AND 2126-IND)

Estimated and Actual Yields

The following nine charts showing comparative annual yield curves for representative oil palm and rubber blocks have been constructed from (a) estimates in the SARs and PCRs, (b) actual production or yield data provided to the audit mission during field review in January/February 1992, and (c) extrapolations made from the actual data for future years based on an assumption that conditions observed at the time of field inspection will continue through the expected productive life of the blocks.

# NES IV - PTP X

## Betung Smallholders Oil Palm Yields



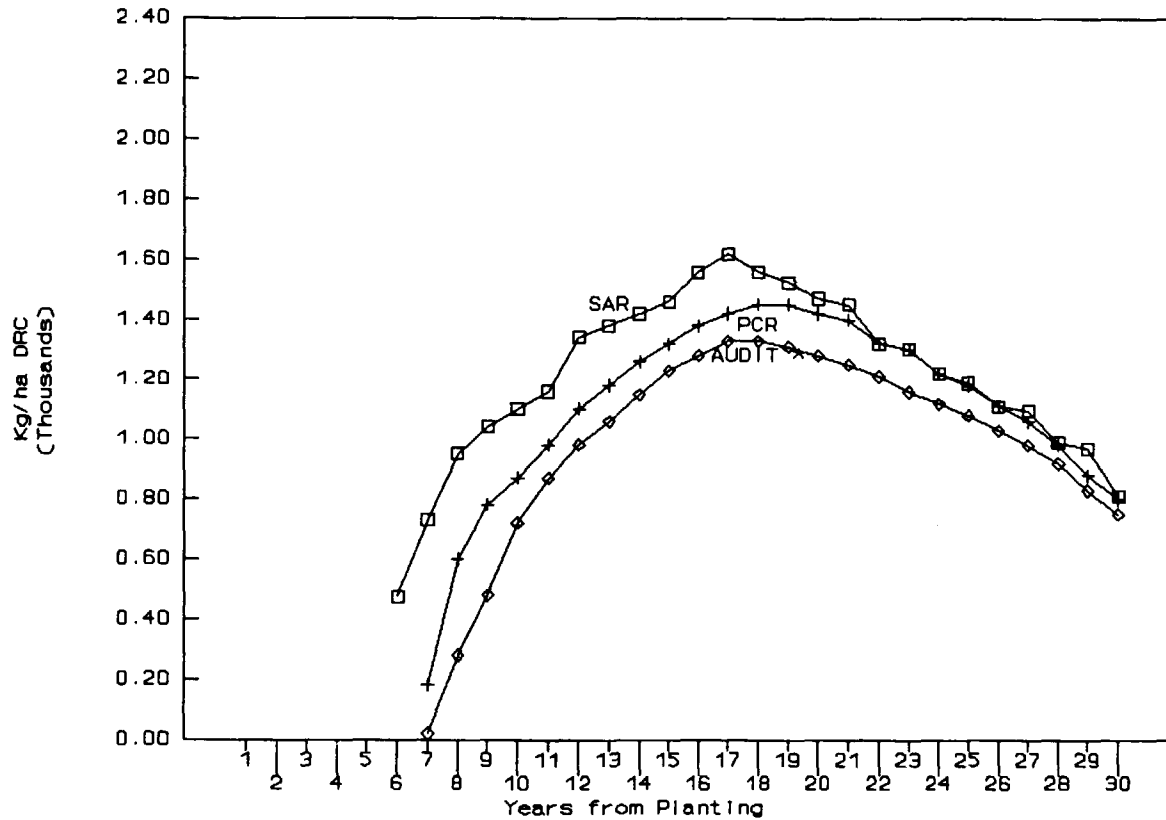
YEAR	FFB/ton/ha		
	SAR	PCR	AUDIT
1			
2			
3			
4	7	6	
5	13	11	3.1
6	15	15	8.8
7	16	16	14
8	16	16	15.2
9	17	17	15.4
10	17	18	16
11	17	18	16
12	16	18	15.8
13	16	18	15.5
14	16	18	15.2
15	15	17	14.8
16	15	17	14.3
17	15	16	13.8
18	14	16	13.3
19	14	15	12.8
20	14	15	12.4
21	13	14	11.8
22	13	14	11.3
23	12	11	10.8
24	12	11	10.4
25	11	9	10

\* The audit curve is a composite based on 5 annual yield records for the year 1991, for 5 blocks totalling 5,624 ha. planted between GOI fiscal years 1981/82 and 1985/86, compared to 8,000 ha. (PCR Table 4). Years 5 through 9 are actual (source: Tim Khusus production records), and years 10 through 25 are extrapolated. Yields are assumed to peak at 16 ton/ha FFB in year 10 and decline to 10 ton/ha by year 25.



## NES V - PTP XI

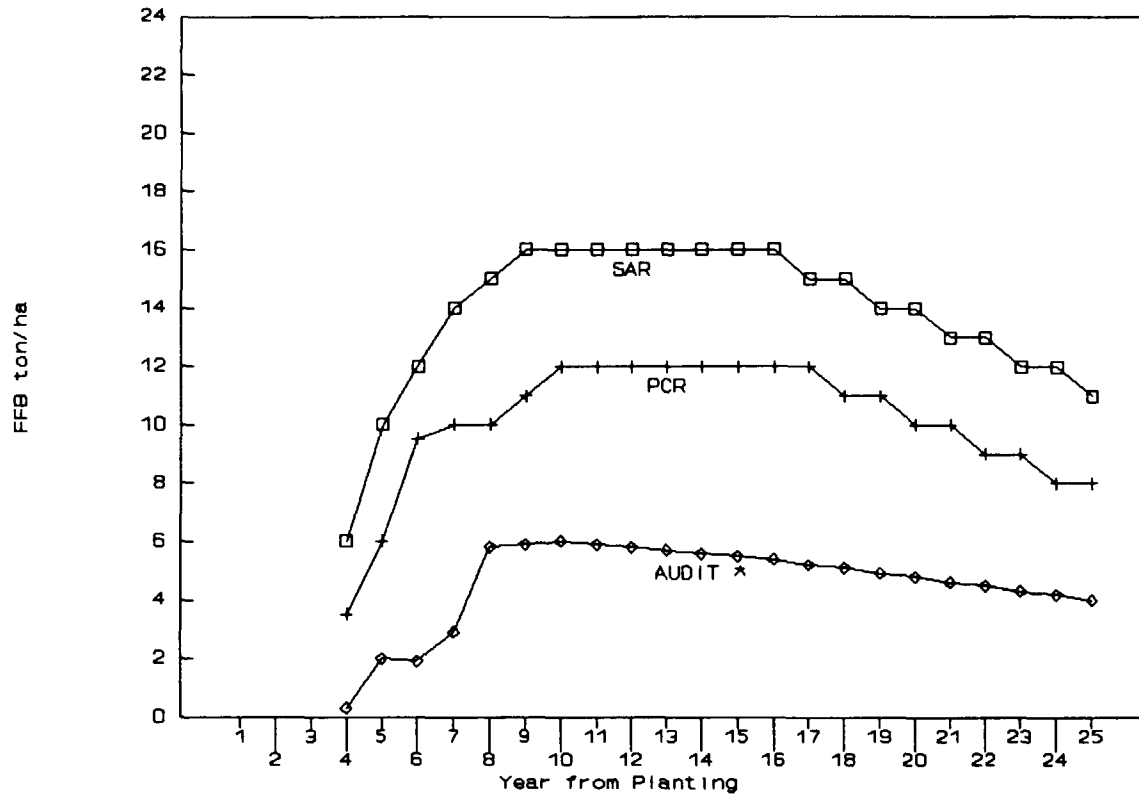
### Sanghyangdamar Smallholders Rubber Yields



YEAR	Kg/ha		
	SAR	PCR	AUDIT
1			
2			
3			
4			
5			
6	475		
7	730	180	20
8	950	600	280
9	1,040	780	480
10	1,100	870	720
11	1,160	980	870
12	1,340	1,100	980
13	1,380	1,180	1,060
14	1,420	1,260	1,150
15	1,460	1,320	1,230
16	1,560	1,380	1,280
17	1,620	1,420	1,330
18	1,560	1,450	1,330
19	1,525	1,450	1,310
20	1,470	1,420	1,280
21	1,450	1,400	1,250
22	1,320	1,320	1,210
23	1,300	1,300	1,160
24	1,220	1,220	1,120
25	1,190	1,180	1,080
26	1,110	1,110	1,030
27	1,095	1,060	980
28	990	980	920
29	970	880	830
30	810	800	750

\* The audit yield curve is a composite based on 11 annual yield records for the years 1988 through 1991, for 3 blocks totalling 831 ha. planted between 1981/82 and 1983/84. Years 7 through 10 are actual (source: PTP XI Sanghyangdamar nucleus estate smallholder records) and years 11 through 30 are extrapolated. Yields are assumed to peak at 1,330 Kg/ha DRC in year 17 and decline to 750 Kg/ha by year 30.

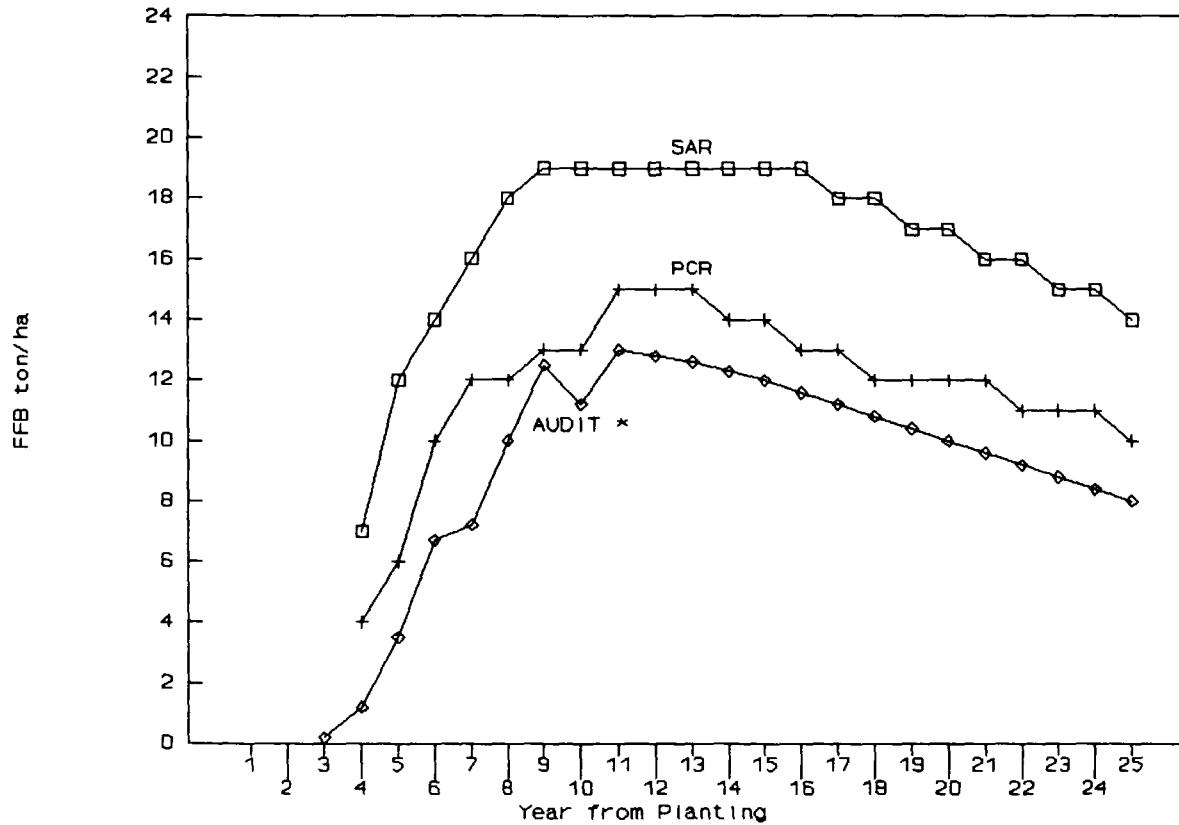
NES V - PTP XI - South Banten  
 Pandegleng Smallholders Oil Palm Yields



YEAR	FFB/ton/ha		
	SAR	PCR	AUDIT
1			
2			
3			
4		3.5	0.3
5	6	6	2
6	12	9.5	1.9
7	14	10	2.9
8	15	10	5.8
9	16	11	5.9
10	16	12	6
11	16	12	5.9
12	16	12	5.8
13	16	12	5.7
14	16	12	5.6
15	16	12	5.5
16	16	12	5.4
17	15	12	5.2
18	15	11	5.1
19	14	11	4.9
20	14	10	4.8
21	13	10	4.6
22	13	9	4.5
23	12	9	4.3
24	12	8	4.2
25	11	8	4

\* The audit yield curve is a composite based on 5 annual yield records for the year 1991, for 5 blocks totalling 6,290 ha. planted between 1981/82 and 1986/87. Years 4 through 8 are actual (source: Tim Khusus production records), and years 9 through 25 are extrapolated. Yields are assumed to peak at 6 ton/ha FFB in years 10 and decline to 4 ton/ha by year 25.

**NES V - PTP XI - South Banten**  
**Kertaraharja Lebak Estate Oil Palm Yields**

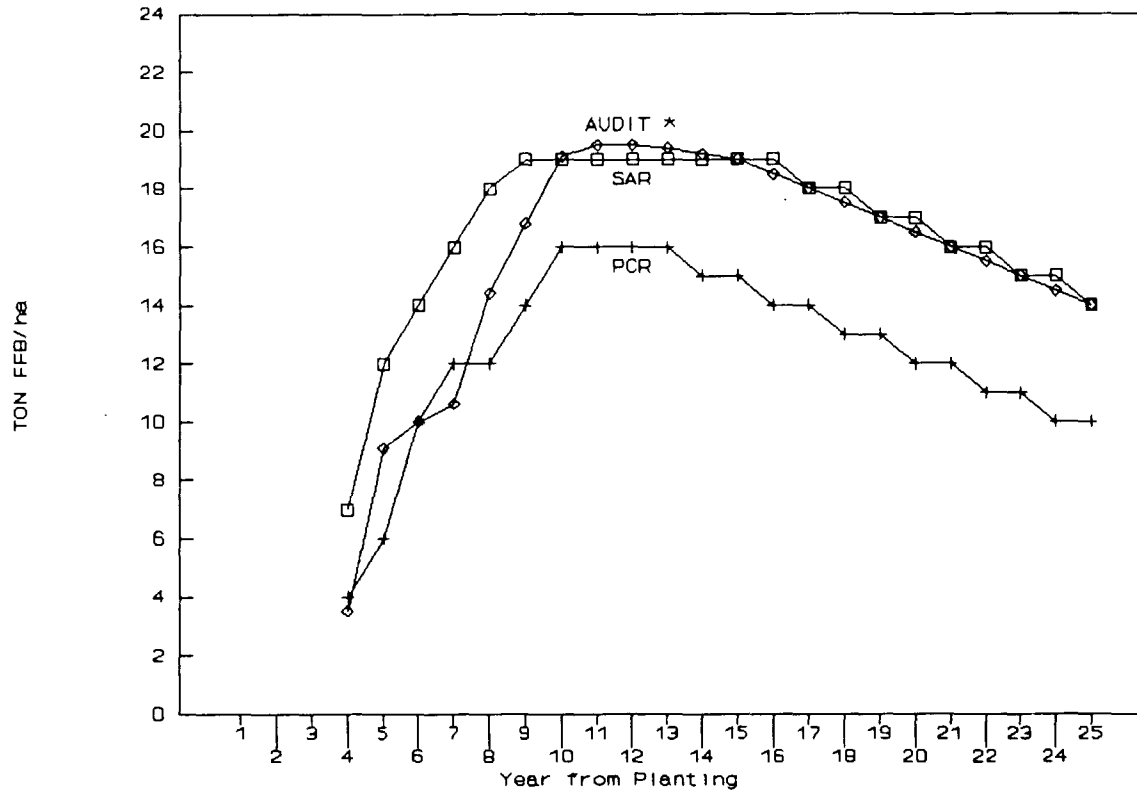


----- FBB/ton/ha -----			
YEAR	SAR	PCR	AUDIT
1			
2			
3			0.1
4	7	4	1.2
5	12	6	3.5
6	14	10	6.7
7	16	12	7.2
8	18	12	10
9	19	13	12.5
10	19	13	11.2
11	19	15	13
12	19	15	12.8
13	19	15	12.6
14	19	14	12.3
15	19	14	12
16	19	13	11.6
17	18	13	11.2
18	18	12	10.8
19	17	12	10.4
20	17	12	10
21	16	12	9.6
22	16	11	9.2
23	15	11	8.8
24	15	11	8.4
25	14	10	8

\* The audit yield curve is a composite based on 27 annual yield records for the years 1985 through 1991, for 6 blocks totalling 2,946 ha. planted between 1981/82 and 1986/87. Years 3 through 10 are actual (source: PTP XI production records), and years 11 through 25 are extrapolated. Yields are assumed to peak at 13 ton/ha FFB in year 11 and decline to 8 ton/ha by year 25.

# NES V - PTP XI - South Banten

## Kertajaya Estate Oil Palm Yields

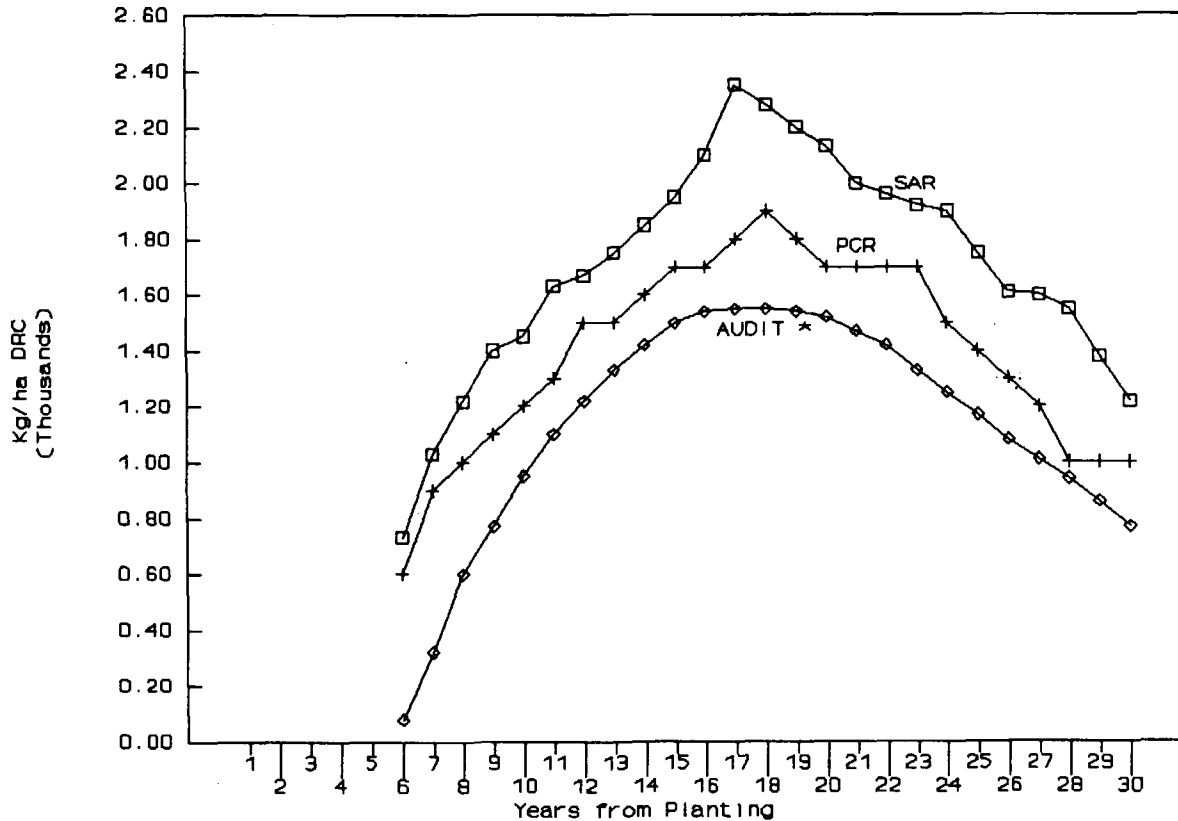


YEAR	FFB/ton/ha		
	SAR	PCR	AUDIT
1			
2			
3			
4	7	4	3.5
5	12	6	9.1
6	14	10	10
7	16	12	10.6
8	18	12	14.4
9	19	14	16.8
10	19	16	19.1
11	19	16	19.5
12	19	16	19.5
13	19	16	19.4
14	19	15	19.2
15	19	15	19
16	19	14	18.5
17	18	14	18
18	18	13	17.5
19	17	13	17
20	17	12	16.5
21	16	12	16
22	16	11	15.5
23	15	11	15
24	15	10	14.5
25	14	10	14

\* The audit yield curve is a composite based on 19 annual yield records for the years 1985 through 1991, from 4 blocks totalling 1,586 ha. planted between 1981/82 - 1983/84 and 1987/88. Years 4 through 10 are actual (source: PTP XI production records), and years 11 through 25 are extrapolated. Yields are assumed to peak at 19.5 ton/ha FFB in years 11 and decline to 14 ton/ha by year 25.

## NES V - PTP XXIII - Bengkulu

### Seluma Nucleus Estate Rubber Yield Kg/ha DRC

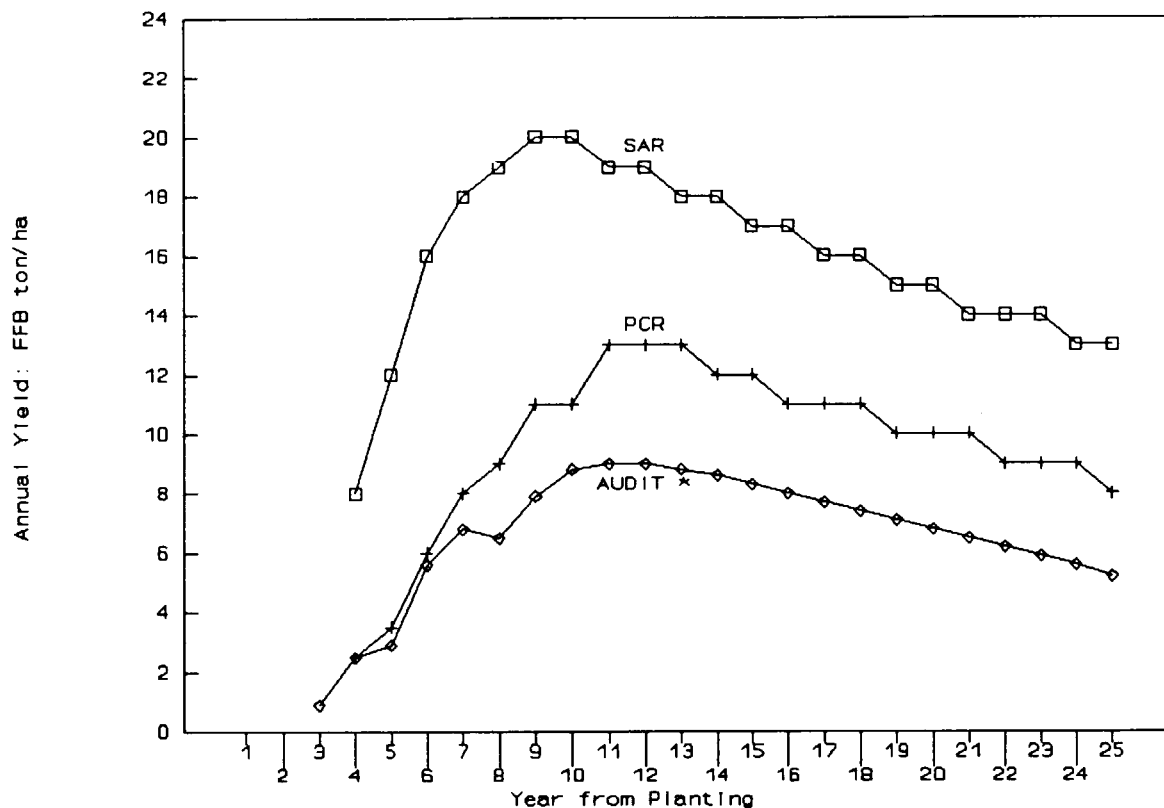


YEAR	Kg/ha		
	SAR	PCR	AUDIT
1			
2			
3			
4			
5			
6	730	600	80
7	1,030	900	320
8	1,220	1,000	600
9	1,400	1,100	770
10	1,450	1,200	950
11	1,630	1,300	1,100
12	1,670	1,500	1,220
13	1,750	1,500	1,330
14	1,850	1,600	1,420
15	1,950	1,700	1,500
16	2,100	1,700	1,540
17	2,350	1,800	1,550
18	2,280	1,900	1,550
19	2,200	1,800	1,540
20	2,130	1,700	1,520
21	2,000	1,700	1,470
22	1,960	1,700	1,420
23	1,920	1,700	1,330
24	1,900	1,500	1,250
25	1,750	1,400	1,170
26	1,610	1,300	1,080
27	1,600	1,200	1,010
28	1,550	1,000	940
29	1,380	1,000	860
30	1,220	1,000	770

\* The audit yield curve is a composite based on 5 annual yield records for 3 blocks totalling 1,491 ha. planted between 1982 and 1984. Years 6 through 8 are actual (source: PTP XXIII Seluma Nucleus Estate records) and years 9 through 30 are extrapolated. Yields are assumed to peak at 1,550 Kg/ha DRC in year 17 and decline to 770 Kg/ha by year 30.

# NES V - PTP VII

## Ngabang Smallholders Oil Palm Yields

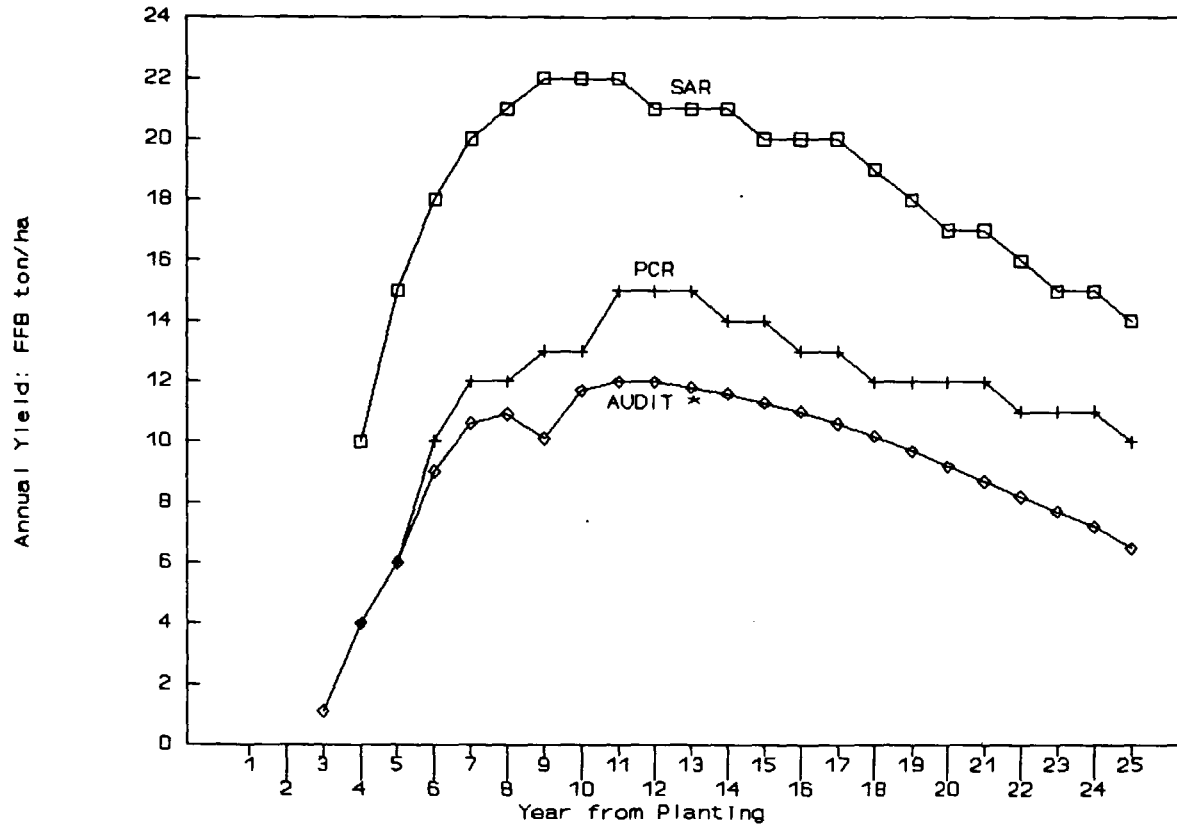


FFB/ton/ha			
YEAR	SAR	PCR	AUDIT
1			
2			
3			0.9
4	8	2.5	2.5
5	12	3.5	2.9
6	16	6	5.6
7	18	8	6.8
8	19	9	6.5
9	20	11	7.9
10	20	11	8.8
11	19	13	9
12	19	13	9
13	18	13	8.8
14	18	12	8.6
15	17	12	8.3
16	17	11	8
17	16	11	7.7
18	16	11	7.4
19	15	10	7.1
20	15	10	6.8
21	14	10	6.5
22	14	9	6.2
23	14	9	5.9
24	13	9	5.6
25	13	8	5.2

\* The audit yield curve is a composite based on 24 annual yield records for the year 1985 through 1991 for 6 blocks totalling 6,207 ha. planted between GOI fiscal years 1982/83 and 1987/88, compared to 8,000 ha (PCR Table 4). A further 712 ha. planted in 1988/89 had not reached production by 1991. Years 3 through 9 are actual (source: Ngabang Estate production records) and years 10 through 25 are extrapolated. Yields are assumed to peak at 9 ton/ha FFB in years 11 and decline to 5.2 ton/ha by year 25.

## NES V - PTP VII

### Ngabang Estate Oil Palm Yields

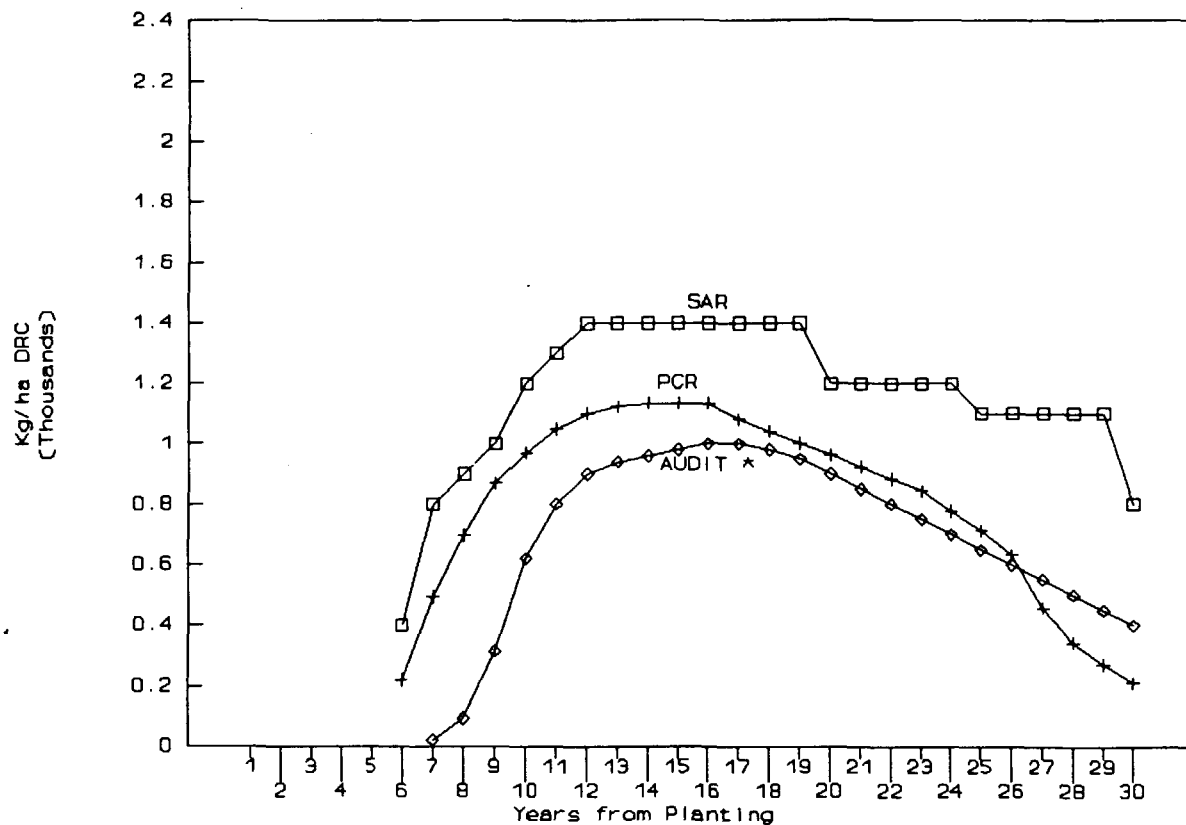


YEAR	FFB/ton/ha		
	SAR	PCR	AUDIT
1			
2			
3			1.1
4	10	4	4
5	15	6	6
6	18	10	9
7	20	12	10.6
8	21	12	10.9
9	22	13	10.1
10	22	13	11.7
11	22	15	12
12	21	15	12
13	21	15	11.8
14	21	14	11.6
15	20	14	11.3
16	20	13	11
17	20	13	10.6
18	19	12	10.2
19	18	12	9.7
20	17	12	9.2
21	17	12	8.7
22	16	11	8.2
23	15	11	7.7
24	15	11	7.2
25	14	10	6.5

\* The audit curve is a composite based on 23 annual yield records for the years 1985 through 1991 for 6 blocks totalling 3,415 ha. planted between calendar years 1982 and 1987, compared to 3,500 ha. (PCR Table 4). Years 3 through 9 are actual (source: Ngabang Estate production records) and years 10 through 25 are extrapolated. Yields are assumed to peak at 12 ton/ha FFB in year 11 and decline to 6.5 ton/ha by year 25.

# NES VI - PTP XXIII - Bengkulu

## Seluma Smallholders Rubber Yield Kg/ha DRC



YEAR	Kg/ha		
	SAR	PCR	AUDIT
1			
2			
3			
4			
5			
6	400	220	
7	800	494	22
8	900	697	93
9	1,000	869	314
10	1,200	970	620
11	1,300	1,048	800
12	1,400	1,099	900
13	1,400	1,123	940
14	1,400	1,135	960
15	1,400	1,135	980
16	1,400	1,135	1,000
17	1,400	1,080	1,000
18	1,400	1,040	980
19	1,400	1,001	950
20	1,200	962	900
21	1,200	923	850
22	1,200	884	800
23	1,200	844	750
24	1,200	778	700
25	1,100	712	650
26	1,100	633	600
27	1,100	458	550
28	1,100	344	500
29	1,100	270	450
30	800	210	400

\* The audit yield curve is a composite based on 4 annual yield records for the year 1991, for 4 blocks totalling 3,432 ha. planted between 1981/82 and 1984/85. Years 7 through 10 are actual (source: Tim Khusus production records) and years 11 through 30 are extrapolated. Yields are assumed to peak at 1,000 Kg/ha DRC in year 16 and decline to 400 Kg/ha by year 30.



Economic Rate of Return Analysis <sup>1/</sup>

NES IV - Betung Smallholder Oil Palm, PTP X

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Planted Area (Ha)		1140	1051	1737	867	829	0	837	888	651															
FFB Yield Assumptions (Ton/Ha)							3.1	6.8	14	15.2	15.4	16	16	15.8	15.5	15.2	14.8	14.3	13.8	13.3	12.8	12.4	11.8	11.3	
FFB Production (Ton):																									
1981 Planting					0	3534	10032	15960	17328	17556	18240	18240	18012	17470	17328	16972	16502	15732	15162	14592	14134	13452	12882		
1982 Planting						0	3258	9249	14714	15975	16185	16816	16816	16606	16291	15975	15555	15029	14504	13978	13453	13032	12402		
1983 Planting							0	5385	15286	24318	24402	26750	27792	27792	27445	26924	26402	25708	24839	23971	23102	22234	21539		
1984 Planting							0	2688	7630	12138	13178	13352	13672	13872	13699	13439	13178	12832	12398	11965	11531	11098			
1985 Planting								0	2570	7295	11606	12601	12767	13264	13264	13098	12850	12601	12269	11855	11440	11026			
1986 Planting									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987 Planting										0	2595	7366	11718	12722	12890	13382	13392	13225	12974	12722	12388	11969			
1988 Planting											0	2753	7814	12432	13498	13675	14208	14208	14030	13764	13498	13162			
1989 Planting												0	2018.1	5728.8	9114	9895.2	10825.4	10416	10416	10285.8	10060.3	9895.2			
Total FFB Production (Ton)						0	3534	13290	30594	50015	68049	80261	89185	98491	110257	119082	122235	121758	120122	117786	114428	111282	107665	103953	
FFB Economic Price (Rp/Hg)						127	99	81	120	109	109	112	116	119	122	126	122	118	115	111	108	106	106	106	
Total Revenue (Rp Million)						0	138	1076	3671	5432	7417	8989	10345	11764	13451	15004	14913	14367	13814	13074	12380	12018	11628	11227	
Costs (Rp Million)																									
Development/Maintenance		1893	2060	3359	4140	5760	1791	1548	1534	4205	2365	2690	2928	2928	2928	2928	2928	2928	2928	2928	2928	2928	2928	2928	2928
Other Expenditure	141	1332	385	738	644	914	1229	68	636	623	592	562	534	508	482	458	435	413	393	373	354	337	320	304	
Overheads	14	173	40	79	85	131	110	471	208	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	
Total Cost (Rp Million)	155	3400	3485	4169	4889	6805	3130	2887	2398	5076	3205	3508	3710	3684	3658	3634	3611	3589	3569	3549	3530	3513	3496	3480	
Net Benefits (Rp Million)	-155	-3400	-2485	-4169	-4889	-6805	-2992	-1011	1273	376	4212	5489	6635	8060	9793	11370	11302	10778	10245	9525	8830	8505	8132	7747	
Economic Rate of Return							13.5%																		

<sup>1/</sup> Assumptions are the same as in the PCR reconstruction except smallholder oil palm yields which were obtained by the audit mission. Estimations are in constant 1988 Rupiah as in the PCR.



Economic Rate of Return Analysis <sup>1/</sup>

NES V - South Banten Smallholder Oil Palm, PTP VII

	1981	1982	1983	1984	1985	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	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Planted Area (Ha)		483	3604	1348	1271	600	336	66																								
FFB Yield Assumptions (Ton/Ha)					0.3	2	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		
FFB Production (Ton)					145	964	918	1481	2001	2030	2094	2030	2001	2713	2705	2637	2688	2512	2463	2367	2210	2222	2174	2077	2029	1938	1933	1932	1932	1932		
1982 Planting																																
1983 Planting																																
1984 Planting																																
1985 Planting																																
1986 Planting																																
1987 Planting																																
1988 Planting																																
Total FFB Production (Ton)					145	1471	4730	8100	12551	21094	28069	28730	28340	26825	26364	26027	25437	24739	23961	23130	22193	21299	20380	19411	18420	17521	16570	15644	14685	13700		
CPO Production at 0.2184 (Ton)					30	306	900	1686	2619	4300	2630	4854	7351	7668	7606	7300	7371	7230	7064	6801	6496	6210	6004	6117	5911	5723	5520	5307	5080	4840		
CPO Economic Price (\$p/Hg)					1282	680	625	767	580	436	390	444	682	572	349	236	202	400	472	430	441	436	412	397	384	384	384	384	384	384	384	
Total Revenue (\$p Million)					30	149	610	1293	1660	1869	2363	2100	4625	4604	4176	2945	2706	3328	3341	3136	2932	2772	2567	2420	2270	2194	2123	2032	1926	1821	1812	
Costs (\$p Million)																																
Development/Maintenance	1806	2604	2172	688	3200	3777	2340	377	327	254	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	
Other Expenditures	904	812	593	487	2375	1470	1400	2349	1164	836	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	
Total Cost (\$p Million)	1900	3416	2765	1175	5575	5247	4057	2136	1693	1100	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	
Net Benefits (\$p Million)	-1900	-3416	-2772	-1174	-1655	-3090	-3420	-1833	-35	679	-263	572	1817	1704	1564	1237	1100	920	732	346	343	343	343	-11	-179	-230	-410	-665	-926	-1272	-1567	
Economic Rate of Return																																

<sup>1/</sup> Assumptions are the same as in the PCR recommendations except smallholder oil palm yields which were obtained by audit mission. Estimations are in constant 1991 Rupee as in the PCR.

Economic Rate of Return Analysis <sup>1/</sup>

NES V - Ngabang Smallholder Oil Palm, PTP VII

	1981	1982	1983	1984	1985	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	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Planted Area (Ha)	500	932	300	350	2500	1604	712																									
FFB Yield Assumptions (Ton/Ha)				2.3	2.9	5.4	6.0	6.5	7.0	8.0	9	9	8.0	8.4	8.3	8	7.7	7.4	7.1	6.8	6.5	6.2	5.9	5.6	5.3	5.1	5.2	5.1	5.2	5.1	5.2	
FFB Production (Ton)				1130	1650	2000	3400	3250	3950	4400	4500	4300	4400	4500	4130	4000	3650	3700	3530	3400	3250	3100	2950	2800	2650	2500	2400	2400	2400	2400	2400	
1982 Planting																																
1983 Planting																																
1984 Planting				750	870	1050	2040	1950	2370	2640	2700	2640	2540	2340	2490	2400	2310	2220	2130	2040	1950	1860	1770	1680	1590	1500	1410	1320	1230	1140	1050	960
1985 Planting						875	1015	1140	2300	2275	2765	2600	2150	2150	2000	2010	1902	1800	1695	1590	1485	1380	1275	1170	1065	960	855	750	645	540	435	330
1986 Planting							850	7250	14000	17000	16250	19750	22000	23500	23500	23000	21500	20750	19750	18750	17750	16750	15750	14750	13750	12750	11750	10750	9750	8750	7750	6750
1987 Planting									4615	4657	8994	10921	10439	12487	14153	14454	14434	14123	13812	13500	13188	12876	12564	12252	11940	11628	11316	11004	10692	10380	10068	9756
1988 Planting									1700	2045	2907	4042	4620	5435	6264	6400	6400	6364	6328	5918	5494	5442	5249	5053	4842	4630	4418	4206	3994	3782	3570	3358
1989 Planting									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990 Planting									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total FFB Production (Ton)				1250	5030	6211	10474	10649	23463	26440	43501	49421	52779	57042	60703	60701	56020	54376	54332	54327	51451	50375	48299	46223	44097	42026	40040	38050	36050	34050	32050	
CPO Production at 0.2100 (Ton)				263	806	1328	2204	2928	3245	7719	9700	10442	11313	12170	13705	13700	12500	12262	11894	11473	10836	10399	10143	9723	9370	9033	8701	8360	8011	7661	7311	
CPO Economic Price (Rp/Rg)				1307	480	425	767	500	426	300	444	402	375	340	326	303	400	470	450	441	426	412	397	384	364	364	364	364	364	364	364	
Total Revenue (Rp Million)				344	205	830	1691	2314	2277	2993	4430	6306	6306	6481	6483	6432	6142	5810	5440	5099	4701	4307	4004	3723	3443	3209	3043	2879	2715	2550	2386	
Costs (Rp Million)																																
Development/Infrastructure	400	1400	1065	1074	2237	2090	2151	2071	1915	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913	1913
Other Expenditure	743	477	499	210	900	2374	2124	2123	934	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936
Total Cost (Rp Million)	1143	2167	1564	1284	3137	2464	4275	4195	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	2849	
Net Benefits (Rp Million)	-1423	-2167	-1564	-230	-804	-644	-2574	-2710	-592	104	1581	3417	3437	3612	3614	3564	3274	2941	2579	2100	1622	1144	665	206	494	530	704	847	130	230		
Economic Rate of Return	3.2%																															

<sup>1/</sup> Assumptions are the same as in the PCR reconstruction except: 1) yield and planted area which were obtained by the smallholder; 2) the planted area for 1987 is somewhat lower than the PCR and planted area for 1988 is zero because the project closed prior to the 1988 planting. Estimations are in constant 1991 Rupiah as in the PCR.

Economic Rate of Return Analysis <sup>1/</sup>

NES V - South Banten Nucleus Estate Oil Palm, PTP VII

	1981	1982	1983	1984	1985	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	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Planted Area (Ha), Serayu	400	800	1200			15																										
FFB Yield Assumption (Ton/Ha)				2.5	9.1	10.4	14.4	16.0	19.1	19.5	19.5	19.4	19.2	19	19.3	19	17.5	17	16.5	16	16.5	16	15.5	15	14.5	14	13.5	13	12.5	12		
Planted Area (Ha), Serarabaja	483	700	472	737	64	420																										
FFB Yield Assumption (Ton/Ha)				1.5	5.5	6.7	7.1	10	12.5	11.2	11	12.0	12.4	12.9	12	11.6	11.3	10.8	10.4	10	9.8	9.3	8.8	8.4	8	7.6	7.2	6.8	6.4	6		
FFB Production (Tons):																																
1981 Planting					1900	5351	1476	9230	13250	13070	13210	14070	13042	12764	12941	12994	12009	12410	12016	11423	11220	11237	10644	10430	10027	9464	9371	8676	8404	8091	7696	
1982 Planting						16762	14477	10250	22406	26400	25790	27131	26893	26564	26164	24301	24740	24005	22230	22512	21760	21921	21174	20431	19406	18941	18196	17451	16706	15961	15216	
1983 Planting							6067	7264	9323	11133	10629	11479	11257	11200	11012	11007	10407	10001	9736	9430	9104	9051	8734	8461	8075	7740	7423	7097	6772	6446	6120	
1984 Planting								3206	7370	9213	8224	9501	9484	9286	9063	8644	8549	8254	7960	7645	7370	7075	6700	6406	6191	5896	5601	5306	5012	4717	4422	
1985 Planting								800	1075	943	1110	1191	1004	1050	1032	998	947	929	884	866	826	791	757	721	680	654	619	585	550	516		
1986 Planting								3200	4794	3264	3476	3293	3264	3136	3136	2963	2794	2622	2451	2280	2109	2030	1764	1593	1424	1253	1083	913	743	573	403	
1987 Planting								293	293	293	293	293	293	293	293	270	263	233	248	240	240	240	240	240	240	240	240	240	240	240	240	
Total Net FFB Production (Tons)					1900	14992	20820	40147	51290	64630	62942	69452	64972	67200	64209	64209	62740	60760	58794	54824	54827	54447	52493	50523	48553	46580	44606	42636	40664	38692	36720	
Total GR FFB Production (Tons)					142	1027	2041	3034	4026	4918	5810	6702	7594	8486	9378	10270	11162	12054	12946	13838	14730	15622	16514	17406	18298	19190	20082	20974	21866	22758	23650	
Total FFB Production (Tons)					2122	17129	21061	43081	61458	69548	70002	76144	72466	74378	73536	74378	73536	71772	70754	69218	68217	67015	65807	64605	63403	62201	61000	59798	58596	57394	56192	
Palm Oil Extraction (%)					21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	
Palm Oil Production (Tons)					446	2397	4323	8610	12947	13725	13599	14091	13517	13790	13564	13491	12617	12091	11470	10890	10370	10011	97209	94264	91319	88374	85429	82484	79539	76594	73649	
Palm Oil Price (Rp/Hg)					1403	542	702	849	644	499	460	330	600	451	425	403	370	342	317	292	267	242	217	192	167	142	117	92	67	42	17	
Palm Oil Revenue (Rp Million)					626	2022	4545	9166	8422	6645	6556	11290	14431	14212	13480	12930	11917	11274	10455	10049	9304	8967	8416	7873	7331	6789	6247	5705	5163	4621	4079	
Palm Kernel Extraction (%)					3.0%	3.3%	3.3%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	
Palm Kernel Production (Tons)					44	600	1007	1852	2644	2376	2542	4000	4090	4152	4100	4094	3927	3821	3710	3596	3482	3421	3312	3197	3079	2964	2847	2732	2616	2501	2386	
Palm Kernel Price (Rp/Hg)					806	294	258	313	401	315	292	400	452	460	493	409	470	457	433	409	384	359	334	309	284	259	234	209	184	159	134	
Total Kernel Revenue (Rp Million)					51	179	269	930	1106	1064	1070	1636	1852	1930	2034	2002	1801	1823	1759	1687	1581	1516	1410	1320	1223	1126	1029	932	835	738	641	
Total Revenue (Rp Million)					677	2200	4975	9266	9609	9009	9426	12924	16483	16122	15514	14930	13790	12997	12410	11737	10976	10304	9654	9006	8358	7709	7060	6411	5762	5113	4464	
Total Costs (Rp Million)	1206	3090	2662	1982	14314	4070	6012	11257	12781	7423	7270	9064	11721	11806	11763	11434	10926	10513	10100	9740	9247	8812	8389	7975	7473	7246	7027	6904	6664	6787	6790	
Plantation/Maintenance	1020	1142	1200	1130	1542	2022	1246	1070	1704	814	549	549	549	549	549	549	549	549	549	549	549	549	549	549	549	549	549	549	549	549	549	549
Factory Inv./Maintenance	220	2727	1303	832	14494	2340	900	3242	4423	912	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	844	
Processing					10	796	172	266	387	743	900	1023	1072	1147	1214	1200	1199	1167	1153	1136	1116	1094	1041	1010	990	947	920	886	825	802	836	
Paid to Smallholders					660	951	2614	5270	3723	4904	3067	6446	9254	9264	9134	8631	8252	7931	7532	7209	6786	6223	5653	5083	4513	3943	3373	2803	2233	1663	1093	
Net Benefits (Rp Million)	-1206	-3090	-2662	-1982	-17837	-3070	-1027	-3023	-2972	2435	2154	3070	4762	4516	3769	3505	2972	2504	2310	1997	1729	1692	1543	1351	1140	1054	919	700	560	304	120	
Economic Rate of Return					1.32																											

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<sup>1/</sup> Assumptions are the same as in the PCR presentation except: (i) more accurate planting area, especially in the later planting years; and (ii) updated smallholder and nucleus estate oil palm yields obtained by the nuclei mission. Discount rates are in 1991 constant Rupee as in the PCR.

## Economic Rate of Return Analysis <sup>1/</sup>

### NES V - Ngabang Nucleus Estate Oil Palm, PTP VII

	1981	1982	1983	1984	1985	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	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Planted Area (Ha)		900	650	1173	117	178	353	30	30																							
FFB Yield Assumptions (Tun/ha)					4	4	5	10.4	10.9	10.1	11.7	12	12	11.8	11.4	11.3	11	10.6	10.2	9.7	9.3	8.7	8.3	7.7	7.3	6.5	6.3	6.3	6.3	6.3	6.3	
FFB Production (Tun):																																
1982 Planting					2030	5000	8020	10300	10682	9000	11664	11760	11760	11564	11360	11076	10780	10380	9996	9504	9016	8526	8036	7546	7056	6370	6370	6370	6370	6370	6370	
1983 Planting				2600	2900	3030	6990	7003	6563	7045	7000	7000	7470	7245	7150	6990	6430	6305	5990	5655	5330	5005	4680	4355	4030	3705	3705	3705	3705	3705	3705	
1984 Planting					6492	7030	10537	12434	12704	11047	13724	14076	14076	13841	13607	13255	12903	12434	11965	11370	10792	10205	9619	9032	8446	7859	7859	7859	7859	7859	7859	
1985 Planting						445	702	1053	1240	1182	1369	1404	1404	1381	1357	1322	1287	1240	1193	1135	1076	1016	950	891	832	771	771	771	771	771	771	
1986 Planting							712	1048	1682	1887	1940	1798	2083	2136	2136	2100	2065	2011	1936	1867	1816	1727	1636	1549	1460	1371	1282	1197	1137	1137	1137	
1987 Planting								1400	2112	3164	3731	3837	3555	4118	4224	4224	4154	4083	3978	3872	3731	3590	3414	3230	3062	2886	2710	2534	2358	2266	2266	
1988 Planting									120	100	270	316	337	303	351	360	340	324	300	270	230	190	150	110	70	30	30	30	30	30	30	
1989 Planting										80	120	100	212	210	202	236	240	240	236	232	226	222	216	212	206	194	184	174	164	154		
Total NE FFB Production (Tun)					2030	8400	17412	23744	29543	32946	35891	37802	40527	40942	40495	40635	40025	39069	37930	36543	35043	33407	31730	30012	28267	26324	24934	23764	22902	22064	21705	
Total SE FFB Production (Tun)					1250	3030	6311	10474	10640	23483	26490	43501	49431	52770	57043	60365	60761	59820	58326	56521	54527	52451	50375	48299	46223	44097	42026	40046	38020	37125	36360	
Total FFB Production (Tun)					3170	11430	23723	34218	43183	59349	72379	81303	90150	94721	98336	101020	100806	98889	96256	93572	91572	89456	87099	84812	82615	80421	78210	76170	74212	72320	70490	
Palm Oil Extraction (%)		17.00	18.00	19.30	20.00	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	
Palm Oil Production (Tun)		870	1216	1626	2084	18364	15494	17927	19304	20945	21100	21719	21673	21263	20796	20012	19230	18660	17950	16837	16012	15160	14407	13707	13024	12411	11841	11311	10811	10311	9811	
Palm Oil Price (Rp/Kg)		1403	562	703	840	664	490	660	652	625	602	570	543	517	522	514	490	464	440	424	400	384	368	352	336	320	304	288	272	256	240	
Palm Oil Revenue (Rp Million)		1233	684	1146	1766	12196	12196	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041	13041
Palm Kernel Extraction (%)		3.30	3.70	3.60	4.00	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	
Palm Kernel Production (Tun)		181	467	560	1696	2634	3144	3032	4790	3426	3955	4391	4721	4653	4600	4530	4460	4390	4320	4250	4180	4110	4040	3970	3900	3830	3760	3690	3620	3550	3480	
Palm Kernel Price (Rp/Kg)		806	390	350	312	401	315	302	400	452	460	495	480	470	477	473	469	464	454	442	430	418	407	395	383	371	359	347	335	323	311	
Total Kernel Revenue (Rp Million)		146	179	197	766	1171	990	1180	1962	2452	2730	3164	3297	3204	3272	3234	3164	3097	3030	2962	2894	2826	2758	2690	2622	2554	2486	2418	2350	2282	2214	
Total Revenue (Rp Million)		1379	1384	1343	1832	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167	13167
Total Costs (Rp Million)		187	2712	2726	3130	7643	12530	2516	13546	18230	2060	2964	3200	11483	12540	12907	13263	13619	13975	14331	14687	15043	15399	15755	16111	16467	16823	17179	17535	17891	18247	
Plantation/Maintenance		30	1400	2043	2354	3111	1956	2050	1064	1057	261	451	451	451	451	451	451	451	451	451	451	451	451	451	451	451	451	451	451	451	451	
Factory Inv./Maintenance		126	1313	682	1902	4140	10062	2344	10317	6160	1364	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	1126	
Processing		40	96	191	287	452	582	723	894	1041	1110	1191	1252	1277	1279	1274	1250	1222	1193	1169	1135	1096	1061	1025	989	953	917	881	845	809	773	
Paid to Smallholders		364	424	931	1070	3631	2832	3634	3018	6095	9833	10430	10723	10673	10430	10176	9771	9000	8200	7400	6600	5800	5000	4200	3400	2600	1800	1000	200	200	200	
Net Benefits (Rp Million)		-187	-2712	-2726	-3130	-4264	-11154	-1917	-4969	-2246	2100	2402	3310	4151	3477	3100	2800	2264	1936	1533	1200	900	471	303	192	-41	-370	-804	-1346	-1888		
Economic Rate of Return																																

1/ All assumptions are the same as in the PCR investment concept: i) nucleus estate and smallholder oil palm yields obtained by the credit mission; and ii) planted area is also the actual reported by PTP VII (somewhat lower than in the PCR). Estimations are in constant 1961 Rupee as in the PCR.

Economic Rate of Return Analysis <sup>1/</sup>

NES V - Bengkulu Nucleus Estate Rubber, PTP XXIII

	1981	1982	1983	1984	1985	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	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Planted Area (Ha)	0	466	417	615	652	621	911	999	326																							
Yield Assumptions (kg/ha)							86	326	660	770	950	1100	1220	1330	1420	1500	1560	1550	1540	1520	1470	1420	1350	1250	1170	1080	1010	940	860	770		
BMC Production (Ton):																																
1982 Planting							37	140	280	350	443	513	569	620	663	699	718	722	722	718	700	665	642	620	583	545	503	471	430	401	359	
1983 Planting								32	123	250	321	396	459	509	555	592	626	643	646	646	634	613	592	555	521	480	450	421	392	359		
1984 Planting									49	197	360	474	564	672	750	818	873	923	947	953	953	947	935	904	873	818	749	720	664	621	570	
1985 Planting									53	209	391	502	619	717	795	867	926	976	1004	1011	1011	1004	991	956	926	867	815	762	704	659		
1986 Planting									30	199	373	470	590	683	756	826	882	932	956	963	963	944	913	882	826	776	727	671				
1987 Planting										73	292	347	463	563	642	702	751	797	831	859	872	878	878	858	828	789	749					
1988 Planting											46	192	339	461	569	659	731	797	851	899	922	928	928	928	923	910	881	851	797	749		
1989 Planting												27	100	202	259	319	370	410	447	472	494	517	521	521	517	511	484	477	447			
Total BMC Production (Ton)							37	182	462	850	1301	2045	3026	3660	4442	5116	5671	6120	6480	6723	6925	7010	7015	6921	6765	6551	6276	5966	5619	5257	4806	
Economic Price (Rp/kg)							2274	2450	2113	1783	1476	1012	1923	2063	2246	2250	2263	2259	2265	2263	2219	2283	2283	2192	2191	2191	2191	2191	2191	2191	2191	
Total Revenue (Rp Million)							85	447	977	1521	2332	3796	5439	7567	9906	11511	12826	13644	14694	15202	15900	15460	15455	15170	14822	14525	13751	13072	12310	11518	10706	
Costs (Rp Million)																																
Development/Maintenance	841	1664	2125	2547	2297	2643	2726	4782	5123	840	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930
Other Expenditure	948	566	479	363	894	1264	1529	1364	4363	590	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599
Overhead/Processing							31	112	190	374	377	314	652	761	841	900	960	1034	1080	1120	1155	1173	1181	1185	1162	1127	1062	1036	997	914	847	
Total Cost (Rp Million)	1009	2230	2604	3012	6191	4907	4306	6100	9436	1812	1915	2052	2191	2299	2379	2447	2506	2572	2626	2666	2692	2711	2719	2723	2700	2665	2620	2574	2525	2452	2383	
Net Benefits (Rp Million)	-1009	-2230	-2004	-2012	-6191	-4907	-4221	-3713	-8679	-301	417	1634	3240	3260	7607	9064	10320	11372	12064	12616	12695	12749	12734	12455	12123	11600	11121	10490	9785	9066	8321	
Economic Rate of Return																																10.75

<sup>1/</sup> Assumptions are the same as in the PCR presentation except nucleus estate rubber yields which were obtained by the audit mission. Estimations are in constant 1991 Rp as in the PCR.

Economic Rate of Return Analysis

NES V - Overall Net Benefits and ERR  
(Rp million -- 1991 constant)

	1981	1982	1983	1984	1985	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				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
<b>Rubber</b>																																			
<b>Smallholder</b>																																			
Sambyang Dumar	-1067	-1428	-1433	-1510	-1246	-1265	-916	-1207	-1000	185	-143	761	1625	2607	3599	4151	4633	4990	5286	5434	5332	5212	5104	4910	4700	4498	4284	4060	3810	3518	3179				
<b>Nucleus Estate</b>																																			
Banghalu PTP XIII	-1000	-2130	-2004	-3912	-4191	-4931	-4221	-5713	-6679	-281	417	1654	3240	5268	7607	9064	10320	11272	12068	12616	12695	12749	12734	12655	12122	11600	11131	10490	9785	9064	8321				
<b>Total Rubber</b>	-2934	-3458	-4257	-5422	-7437	-6196	-5137	-7000	-9759	-86	274	2415	4875	7875	11206	13215	14961	16270	17354	18050	18027	17961	17838	17365	16830	16106	15415	14558	13595	12584	11500				
ERR	12.1%																																		
<b>Oil Palm</b>																																			
<b>Nucleus Estate and Smallholder</b>																																			
Ngabang PTP VII	-107	-2712	-2726	-5150	-4264	-11154	-1917	-4949	-2246	2100	2402	3310	4151	3477	2100	2000	2284	1936	1533	1206	900	671	383	192	-81	-370	-484	-540	-484	-447	-449				
South Banten PTP XI	-1354	-3090	-2643	-1982	-17827	-3070	-1037	-3053	-2972	-2435	2254	3670	4763	4316	3769	3505	2872	2584	2310	1997	1729	1492	1543	1331	1149	1054	919	780	548	304	178				
<b>Total Oil Palm</b>	-1343	-4402	-5369	-7140	-24101	-15024	-2954	-10022	-3210	-265	4458	7100	8914	7793	4967	4305	5154	4520	3643	3283	2718	2363	1648	1523	1068	606	515	232	-116	-263	-471				
ERR	-1.2%																																		
<b>Cocunut</b>																																			
<b>Smallholder</b>																																			
Cimerak PTP XIII	-345	-1000	-1303	-1605	-2347	-2264	-1944	-1269	-707	-98	-446	-70	193	323	688	682	782	882	957	1041	933	837	764	646	505	505	566	552	537	537	523				
Batarjaya & Ciamas PTP XI	-2013	-2471	-2672	-2705	-3017	-3154	-2966	-2213	-1161	-774	-350	315	933	1564	2865	3162	3665	4259	4463	4975	4409	4283	3949	3703	3287	2794	2309	1932	1600	1355	1205				
<b>Nucleus Estate</b>																																			
Cimerak PTP XIII	-210	-473	-1442	-1109	-1226	-912	-580	-460	-394	-54	19	270	411	511	682	676	722	767	807	850	793	744	693	632	610	610	567	567	552	536	536				
<b>Total Cocunut</b>	-2790	-3052	-5499	-5499	-6590	-6130	-4590	-4050	-2262	-916	-977	507	1530	2398	4235	4520	5169	5908	6427	6064	6325	5864	5407	5022	4462	3989	3462	3051	2697	2430	2264				
ERR	4.1%																																		
<b>Total Project Net Benefits</b>	-7297	-14212	-15145	-18061	-26128	-27550	-12649	-21072	-17239	-1267	3953	10110	15326	18066	22400	24040	25206	26400	27624	28119	27000	26108	25093	23910	22300	20861	19392	17841	16176	14751	13293				
ERR, Overall Project	4.2%																																		



Economic Rate of Return Analysis <sup>1/</sup>

NES VI - Bengkulu (Seluma) Smallholder Rubber, PTP XXIII

	1981	1982	1983	1984	1985	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	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Planted Area (ha)	100	1000	1204	1000	26	310	826	743	400																							
Yield Assumptions (kg/ha)							22	93	314	620	800	900	940	960	900	1000	1000	900	930	900	830	800	750	700	650	600	550	500	450	400	350	
BMC Production (Tm)																																
1981 Planting					0	4	17	26	115	149	147	175	179	162	106	106	102	127	147	134	149	140	140	130	121	111	101	93	84	74	63	
1982 Planting		0	22	93	314	620	800	900	940	960	900	1000	1000	900	930	900	830	800	750	700	650	600	550	500	450	400	350	300	250	200	150	
1983 Planting				0	112	376	744	943	1004	1132	1154	1100	1204	1204	1100	1144	1084	1023	943	903	843	783	723	663	603	543	483	423	363	303	243	
1984 Planting				0	24	100	320	670	864	972	1015	1037	1050	1000	1000	1050	1000	1000	972	936	864	810	754	702	640	584	524	464	404	344	284	
1985 Planting					0	1	3	11	32	29	32	34	35	35	36	36	35	34	32	31	30	29	28	27	26	25	24	23	22	21	20	
1986 Planting						0	7	29	97	172	246	379	391	390	304	310	310	304	295	279	264	248	233	217	202	186	171	155	140	124	109	
1987 Planting							0	10	77	260	513	642	745	720	795	811	826	826	811	787	743	704	662	618	574	529	485	440	396	351	307	
1988 Planting									237	623	1063	1206	1206	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
1989 Planting										124	231	304	360	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Total BMC Production (Tm)					0	4	20	263	831	1617	2300	3124	4060	4645	4767	4342	4334	4325	4476	4250	4221	4041	3800	3624	3491	3360	3227	3093	2959	2825	2691	
Economic Price (Rp/kg)					1426	1343	1496	1446	1000	1170	1401	1205	1017	1227	1234	1231	1227	1224	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221
Total Revenue (Rp Million)					0	6	47	301	805	1904	3104	4701	6379	6106	6264	5007	5299	5006	5383	5190	5263	4934	4600	4227	3857	3483	3109	2735	2361	1987	1613	
Costs (Rp Million)																																
Development/Maintenance	1921	6090	6200	2910	2366	2115	2474	1826	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026	1026
Other Expenditure	279	431	951	617	1454	804	263	1723	675	600	600	600	600	600	547	547	547	547	492	492	492	492	492	492	492	443	443	443	443	443	443	
Overheads	210	99	120	20	25	219	426	205	171	154	154	154	154	154	150	130	130	130	124	124	124	124	124	124	124	124	124	124	124	124	124	124
Total Cost (Rp Million)	2310	6640	7450	3560	4755	4214	3263	2164	1601	1780	1780	1780	1780	1780	1721	1721	1721	1721	1652	1652	1652	1652	1652	1652	1652	1652	1652	1652	1652	1652	1652	1652
Net Benefits (Rp Million)	-2310	-6640	-7450	-3560	-4755	-4214	-3263	-2164	-1601	-1780	-1780	-1780	-1780	-1780	-1721	-1721	-1721	-1721	-1652	-1652	-1652	-1652	-1652	-1652	-1652	-1652	-1652	-1652	-1652	-1652	-1652	-1652
Economic Rate of Return	6.92																															

<sup>1/</sup> Assumptions are the same as in the PCL reconstruction except: (i) an average quality has been derived from the A, B, C, D classifications on the basis of 60-20-20-20 ratio; (ii) area planted to 400 ha in 1989 rather than 920 ha mentioned in the PCL; (iii) area planted in 1990 is not included since this happened after the project completion date; and (iv) yields are those obtained by the audit mission. Estimations are in constant 1990 rupiah as in the PCL.

Cash Flow IRR: Summary<sup>1/</sup>

	<u>NES IV</u>	<u>NES V</u>	<u>NES VI</u>
Interest Rate on Loan (%)	8.25	9.6	11.6
Loan Amount (US\$ million)	42.0	161.6	68.1
Cancellation (US\$ million)	16.3	66.9	45.8
Extension of Closing Date (months)	24	30	12
Current Cash Flow IRR (%) <sup>2/</sup>	13.1	16.3	25.3
Real Cash Flow IRR (%)	9.1	11	18.7
Effective Rate over 3 mo. LIBOR (%) <sup>3/</sup>	7.98	10.43	19.12

<sup>1/</sup> This is not a new issue but has been well known to Bank staff, the Board, and borrowing countries, since the first non-dollar borrowings were made by the Bank in the early 1950s.

The Cash Flow Internal Rate of Return (IRR) is based on a number of assumptions:

- a) It does not use the final amortization schedule (with semesterly payments) established after loan closing. Instead, it uses a quarterly schedule where the loan is amortized linearly for each currency (i.e., repayments are made in equal amounts of each currency and at regular times) throughout the period of the loan. Contributions of periodic cash flows to this IRR calculations are weighted by their relative size in the cash flow profile.
- b) The value of the US dollar is declining against the nominated currency or currencies over the period of the loans;
- c) No foreign currency hedging is used by the borrowing member country.

<sup>2/</sup> Due to the above simplistic assumptions, the Cash Flow IRR estimation ought to be interpreted with caution, especially because of the exchange rate shifts involved. Much of the reason for the large current cash flow IRR is explained by these exchange rate shifts. However, commitment fees together with the front-end fee (for NES VI) are also quite large. For NES IV, V, and VI commitment fees actually paid add up to US\$10.6 million, and including the front-end fee for NES VI, the total is about US\$11.6 million (Annex 3, pages 2-4). This is nearly 8.2% of the total disbursed amount of the three loans.

<sup>3/</sup> This effective rate over 3 months LIBOR is not strictly equal to the current cash flow IRR minus the 3 months LIBOR due to compounding in earlier periods, and non-linearities in calculating the cash flow IRR of a series.

NUCLEUS ESTATE AND SMALLHOLDERS IV PROJECT  
(LOAN 1835-IND)

Cash Flow Schedule

Quarter Ending Date	Disbursement Amount Historical US\$	Repayment Amount Market US\$	Interest Payment Market US\$	Commitment Fee Market US\$	Front-End Fee Market US\$	Actual Cash Flow Effect. US\$
30-SEP-80	462,836	0	0	0	0	(462,836)
31-DEC-80	358,785	0	0	92,750	0	(266,035)
31-MAR-81	72,773	0	0	0	0	(72,773)
30-JUN-81	290,905	0	32,852	154,302	0	(103,751)
30-SEP-81	1,442,548	0	0	0	0	(1,442,548)
31-DEC-81	1,754,274	0	73,134	151,894	0	(1,529,246)
31-MAR-82	711,340	0	0	0	0	(711,340)
30-JUN-82	206,802	0	181,537	139,194	0	113,929
30-SEP-82	856,774	0	0	0	0	(856,774)
31-DEC-82	274,327	0	208,921	137,199	0	71,793
31-MAR-83	266,735	0	0	0	0	(266,735)
30-JUN-83	247,939	0	70,126	0	0	(177,813)
30-SEP-83	734,705	0	0	0	0	(734,705)
31-DEC-83	776,498	0	286,907	130,964	0	(358,627)
31-MAR-84	209,745	0	5,353	0	0	(204,392)
30-JUN-84	2,305,686	0	322,749	124,816	0	(1,858,121)
30-SEP-84	677,421	0	0	0	0	(677,421)
31-DEC-84	440,777	0	555,681	232,405	0	347,309
31-MAR-85	192,387	0	0	0	0	(192,387)
30-JUN-85	809,473	0	404,197	111,023	0	(294,253)
30-SEP-85	160,242	0	21,331	0	0	(138,911)
31-DEC-85	315,730	1,273,062	518,756	88,470	0	1,564,558
31-MAR-86	739,607	32,213	28,896	0	0	(678,498)
30-JUN-86	1,112,586	1,169,121	571,091	59,783	0	687,409
30-SEP-86	162,795	0	41,456	0	0	(121,339)
31-DEC-86	293,959	1,211,259	664,342	55,506	0	1,637,148
31-MAR-87	54,356	0	0	0	0	(54,356)
30-JUN-87	113,078	1,371,119	630,311	52,550	0	1,940,902
30-SEP-87	442,533	0	82,523	0	0	(360,010)
31-DEC-87	103,978	1,386,636	700,497	51,856	0	2,035,011
31-MAR-88	1,307,818	0	0	0	0	(1,307,818)
30-JUN-88	278,145	1,412,839	686,700	46,915	0	1,868,309
30-SEP-88	1,149,254	0	31,813	0	0	(1,117,441)
31-DEC-88	2,994,949	1,315,910	698,213	42,790	0	(938,036)
31-MAR-89	864,258	0	0	0	0	(864,258)
30-JUN-89	1,937,013	1,162,927	742,142	28,283	0	(3,661)
30-SEP-89	527,653	0	0	0	0	(527,653)
31-DEC-89	0	1,135,045	809,211	8,451	0	1,952,707
31-MAR-90	0	0	0	0	0	0
30-JUN-90	0	903,974	776,906	0	0	1,680,880
30-SEP-90	0	0	0	0	0	0
31-DEC-90	0	1,002,630	834,278	0	0	1,836,908
31-MAR-91	0	0	0	0	0	0
30-JUN-91	0	930,640	723,677	0	0	1,654,317
30-SEP-91	0	0	0	0	0	0
31-DEC-91	0	926,677	693,999	0	0	1,620,676

NUCLEUS ESTATE AND SMALLHOLDERS V PROJECT  
(LOAN 2007-IND)

Cash Flow Schedule

Quarter Ending Date	Disbursement	Repayment	Interest	Commitment	Front-End	Actual Cash
	Amount	Amount	Payment	Fee	Fee	Flow
	Historical US\$	Market US\$	Market US\$	Market US\$	Market US\$	Effect. US\$
31-DEC-81	0	0	0	370,521	0	370,521
31-MAR-82	761,179	0	0	0	0	(761,179)
30-JUN-82	1,575,193	0	22,779	599,561	0	(952,853)
30-SEP-82	2,973,774	0	0	0	0	(2,973,774)
31-DEC-82	3,000,796	0	219,535	586,984	0	(2,194,277)
31-MAR-83	2,277,986	0	22,638	0	0	(2,255,348)
30-JUN-83	3,250,113	0	475,818	563,681	0	(2,210,614)
30-SEP-83	2,941,293	0	0	0	0	(2,941,293)
31-DEC-83	2,549,457	0	697,296	544,761	0	(1,307,400)
31-MAR-84	10,801,223	0	54,946	0	0	(10,746,277)
30-JUN-84	10,425,559	0	1,314,684	496,772	0	(8,614,103)
30-SEP-84	3,790,926	0	12,128	0	0	(3,778,798)
31-DEC-84	1,349,200	0	1,865,882	440,695	0	957,377
31-MAR-85	863,154	0	11,455	0	0	(851,699)
30-JUN-85	2,008,164	0	2,017,236	427,559	0	436,631
30-SEP-85	939,598	0	0	0	0	(939,598)
31-DEC-85	2,332,374	0	2,531,030	347,580	0	546,236
31-MAR-86	1,466,836	0	51,685	0	0	(1,415,151)
30-JUN-86	3,801,590	0	2,950,766	302,262	0	(548,562)
30-SEP-86	1,822,522	0	171,066	0	0	(1,651,456)
31-DEC-86	1,910,320	5,665,919	3,597,324	283,875	0	7,636,798
31-MAR-87	1,690,954	0	0	0	0	(1,690,954)
30-JUN-87	2,863,277	6,229,763	3,881,759	268,186	0	7,516,431
30-SEP-87	3,909,453	0	16,029	0	0	(3,893,424)
31-DEC-87	2,016,789	6,629,632	3,296,139	245,384	0	8,154,366
31-MAR-88	1,789,332	0	1,021,446	0	0	(767,886)
30-JUN-88	3,072,616	5,879,207	4,044,897	168,393	0	7,019,881
30-SEP-88	2,659,099	0	0	0	0	(2,659,099)
31-DEC-88	1,638,029	5,804,783	4,034,133	146,355	0	8,347,242
31-MAR-89	1,056,108	0	0	0	0	(1,056,108)
30-JUN-89	2,330,593	4,521,345	3,385,917	131,271	0	5,707,940
30-SEP-89	1,024,367	0	41,748	0	0	(982,619)
31-DEC-89	1,802,161	4,788,205	3,612,704	120,028	0	6,718,776
31-MAR-90	1,722,541	0	0	0	0	(1,722,541)
30-JUN-90	1,227,965	4,263,404	3,439,929	0	0	6,475,368
30-SEP-90	886,229	0	0	0	0	(886,229)
31-DEC-90	1,496,575	4,671,190	3,703,305	22,143	0	6,900,063
31-MAR-91	1,529,558	0	194,261	0	0	(1,335,297)
30-JUN-91	498,744	3,861,819	3,156,981	8,367	0	6,528,423
30-SEP-91	0	0	180,250	0	0	180,250
31-DEC-91	0	3,505,260	3,376,107	0	0	6,881,367

NUCLEUS ESTATE AND SMALLHOLDERS VI PROJECT  
(LOAN 2126-IND)

Cash Flow Schedule

Quarter Ending Date	Disbursement	Repayment	Interest	Commitment	Front-End	Actual Cash
	Amount	Amount	Payment	Fee	Fee	Flow
	Historical US\$	Market US\$	Market US\$	Market US\$	Market US\$	Effect. US\$
30-SEP-82	1,006,404	0	0	0	1,006,404	0
31-DEC-82	0	0	39,933	223,980	0	263,913
31-MAR-83	71,480	0	0	0	0	(71,480)
30-JUN-83	0	0	59,558	250,800	0	310,358
30-SEP-83	235,675	0	0	0	0	(235,675)
31-DEC-83	437,562	0	63,735	251,253	0	(122,574)
31-MAR-84	466,953	0	0	0	0	(466,953)
30-JUN-84	1,293,432	0	124,033	247,554	0	(921,845)
30-SEP-84	2,216,841	0	0	0	0	(2,216,841)
31-DEC-84	2,509,744	0	254,758	236,270	0	(2,018,716)
31-MAR-85	373,411	0	17,129	0	0	(356,282)
30-JUN-85	880,192	0	457,262	222,851	0	(200,079)
30-SEP-85	500,372	0	0	0	0	(500,372)
31-DEC-85	492,278	0	646,379	189,212	0	343,313
31-MAR-86	1,243,312	0	0	0	0	(1,243,312)
30-JUN-86	2,057,633	0	787,134	165,495	0	(1,105,004)
30-SEP-86	487,980	0	14,306	0	0	(473,674)
31-DEC-86	244,719	0	1,070,698	156,097	0	982,076
31-MAR-87	175,905	0	0	0	0	(175,905)
30-JUN-87	853,586	0	1,191,710	152,913	0	491,037
30-SEP-87	935,906	0	0	0	0	(935,906)
31-DEC-87	213,068	2,745,802	1,019,748	148,118	0	3,700,600
31-MAR-88	1,050,209	0	388,977	0	0	(661,232)
30-JUN-88	551,936	2,466,779	1,304,646	113,943	0	3,333,432
30-SEP-88	391,483	0	0	0	0	(391,483)
31-DEC-88	326,180	2,444,446	1,238,448	115,360	0	3,472,074
31-MAR-89	1,000,948	0	0	0	0	(1,000,948)
30-JUN-89	175,522	1,970,553	982,907	110,093	0	2,888,031
30-SEP-89	7,569	0	29,397	0	0	21,828
31-DEC-89	670,370	2,052,879	983,199	108,257	0	2,473,965
31-MAR-90	1,452,047	0	0	0	0	(1,452,047)
30-JUN-90	0	691,144	982,304	7,862	0	1,681,310
30-SEP-90	0	0	0	0	0	0
31-DEC-90	0	749,488	1,046,210	0	0	1,795,698
31-MAR-91	0	0	0	0	0	0
30-JUN-91	0	705,380	933,089	0	0	1,638,469
30-SEP-91	0	0	0	0	0	0
31-DEC-91	0	731,269	941,090	0	0	1,672,359



BORROWER'S COMMENT

COMMENTS ON THE DRAFT PROJECT PERFORMANCE AUDIT REPORT  
FOR THE NUCLEUS ESTATE AND SMALLHOLDER PROJECTS IV, V AND VI<sup>1/</sup>

The Draft Project Performance Audit Report of the Nucleus Estate and Smallholder Projects (NES) IV, V and VI presents an incisive analysis and evaluation and a reasonably comprehensive exposition on the subject. Our views on the NES Projects have been presented in Part II of the Project Completion Reports when the Bank's guidelines provided that this part should become a portion of the Project Completion Report. The team preparing this draft Project Performance Audit Report may therefore consider such views including the Part II for the NES Sugar Project and the NES VII Project which will soon be forwarded to the Bank to the extent that these views are applicable to NES IV, V and VI. The following are our comments on what we consider are the substantive portions of this Draft Project Performance Audit Report.

We fully agree with the observation that there is nothing "fundamentally amiss about the nucleus estate and smallholder development concept" and that the "fault lies in the design and execution rather than the concept". Our own evaluation is that the NES concept is sound from an economic, financial and social points of views and if designed considering lessons learned in the past and considering solutions to institutional/organizational, managerial, technical and financial constraints will be a very useful approach to development whether the projects are implemented by government-owned estate crops enterprises and/or private-owned commercial enterprises.

Considering that at present, Indonesia is cultivating about twenty types of estate crops; land and population is not a constraint to economic development; market studies on some of these estate crops show that Indonesia has comparative advantage over other producers; and since the potentials for development are sizeable, utilizing existing approaches for estate crops development and even formulation of new approaches to be implemented on a pilot basis to determine their effectiveness is called for. For example, even only on the aspect of replanting old and damaged rubber and coconut trees and rehabilitation of these trees is already a sizeable job.

The program for estate crops development, therefore, in our opinion has to consider institutional/organizational, managerial, technical and financial constraints in general and as these constraints are relevant to the specific approaches and the economic, financial and social attractiveness of this development compared to other alternatives.

From an economic and financial rate of returns it is suggested that, among others, the following, if possible be included in this Project Performance Audit Report.

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<sup>1/</sup> This Attachment has been retyped in OED since parts of it were not fully legible.

1. A comparison between the price projections per unit of output used in the Staff Appraisal Report compared to the actual prices in the past and the price projections used in this report preferably in graph form similar to the presentation of yield comparisons.
2. A comparison between the Staff Appraisal Report investment cost figures and when available operating cost figures, say on a per unit basis from the actual investment and operating costs. It is further suggested that the expenditures for the smallholder component be broken down into credit and non-credit expenditures.

The objective of the above request is to determine the effects on economic and financial rates of return which are within the control of the government compared to those factors beyond its control.

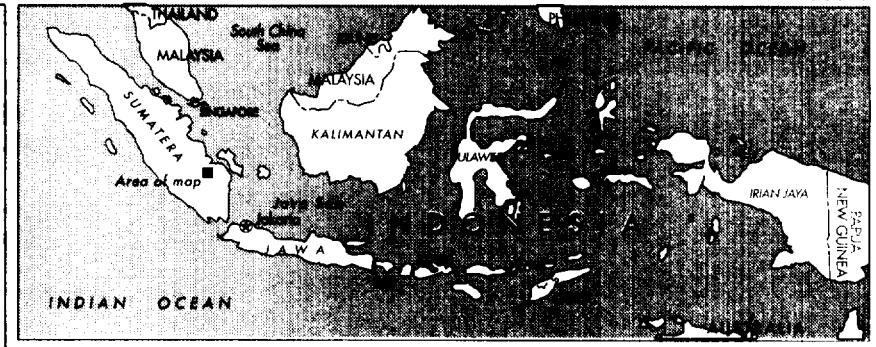
Note: DGE has made comments on yield profiles/comparison SAR, PCR, and PPAR, which has been submitted directly to Mr. Antony Cole during his last visit to Indonesia, May 1992.

Directorate General of Estates  
Tim Khusus PIR  
Jakarta: July 1992

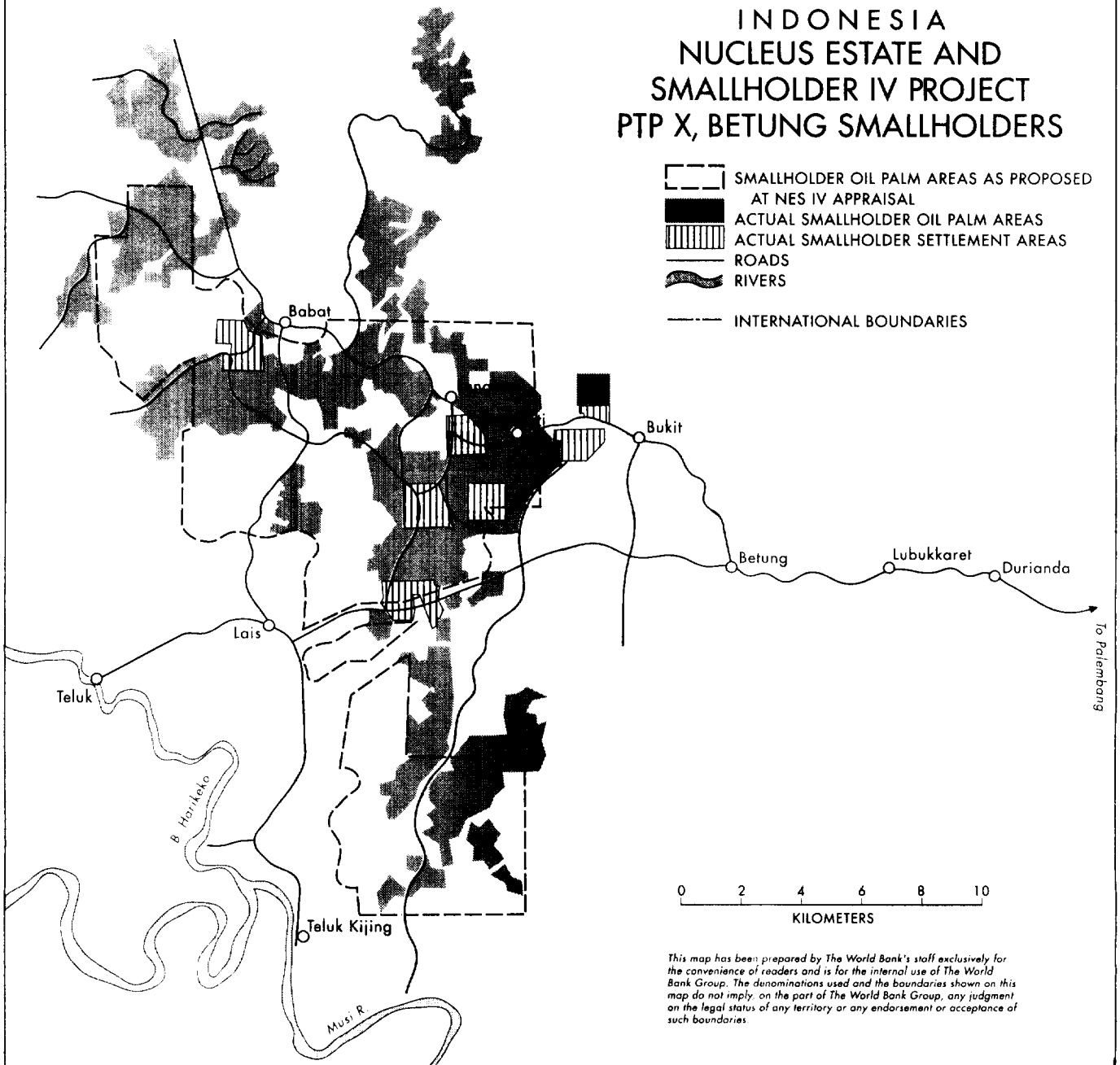


**MAP SECTION**





## INDONESIA NUCLEUS ESTATE AND SMALLHOLDER IV PROJECT PTP X, BETUNG SMALLHOLDERS












- SMALLHOLDER OIL PALM AREAS AS PROPOSED AT NES IV APPRAISAL
- ACTUAL SMALLHOLDER OIL PALM AREAS
- ACTUAL SMALLHOLDER SETTLEMENT AREAS
- ROADS
- RIVERS
- INTERNATIONAL BOUNDARIES

0      2      4      6      8      10  
KILOMETERS

*This map has been prepared by The World Bank's staff exclusively for the convenience of readers and is for the internal use of The World Bank Group. The denominations used and the boundaries shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.*



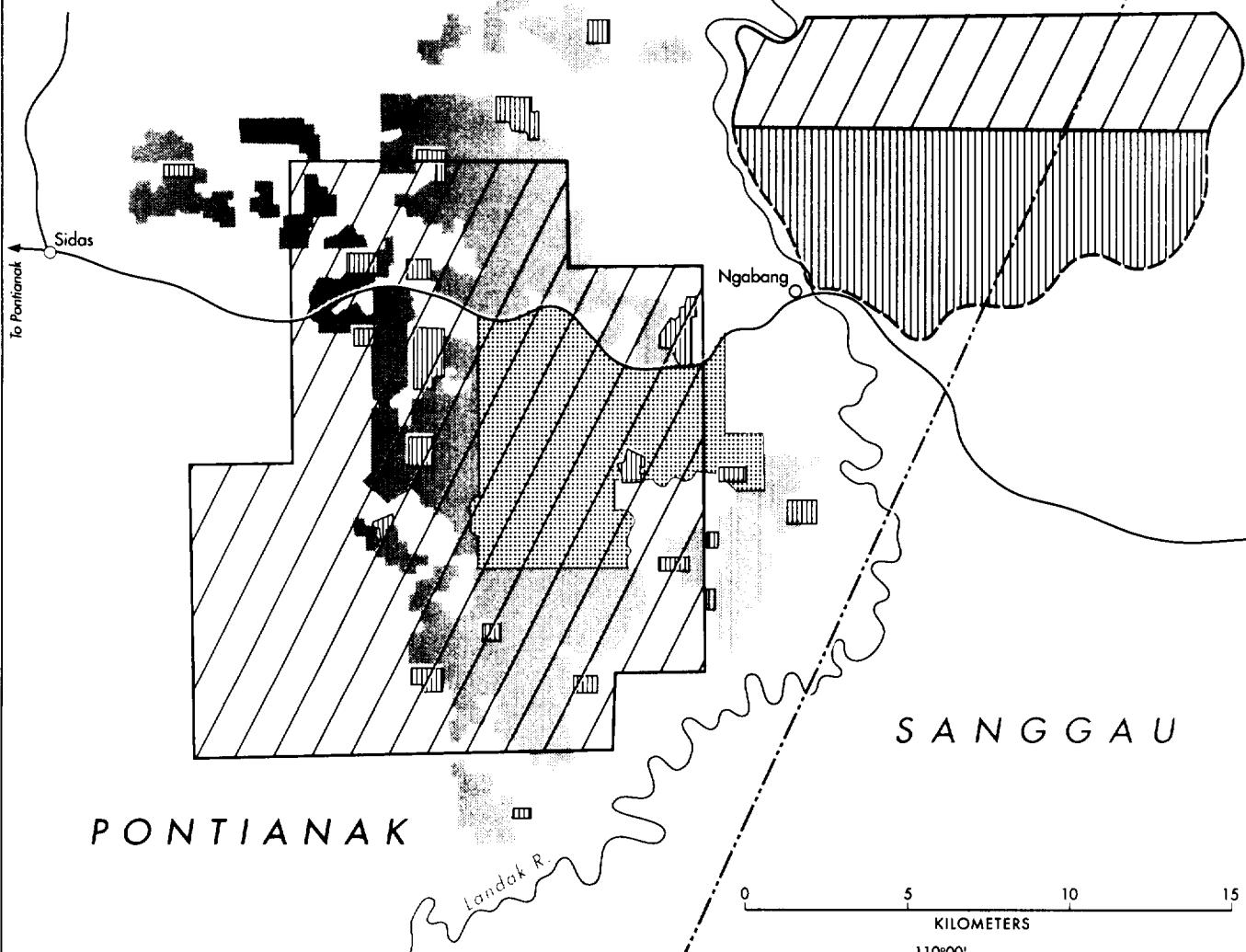
# INDONESIA NUCLEUS ESTATES AND SMALLHOLDERS V PROJECT KALIMANTAN BARAT (NGBANG SITE) PNP VII

-  PTP VII NUCLEUS ESTATE OIL PALM AREA AS PROPOSED AT APPRAISAL
-  SMALLHOLDER OIL PALM AREAS AS PROPOSED AT APPRAISAL
-  ACTUAL PTP VII NUCLEUS ESTATE OIL PALM AREA
-  ACTUAL SMALLHOLDER OIL PALM AREAS
-  ACTUAL SMALLHOLDER SETTLEMENT AREAS
-  ROADS
-  RIVERS
-  DISTRICT BOUNDARY
-  INTERNATIONAL BOUNDARIES

0°30'

110°00'

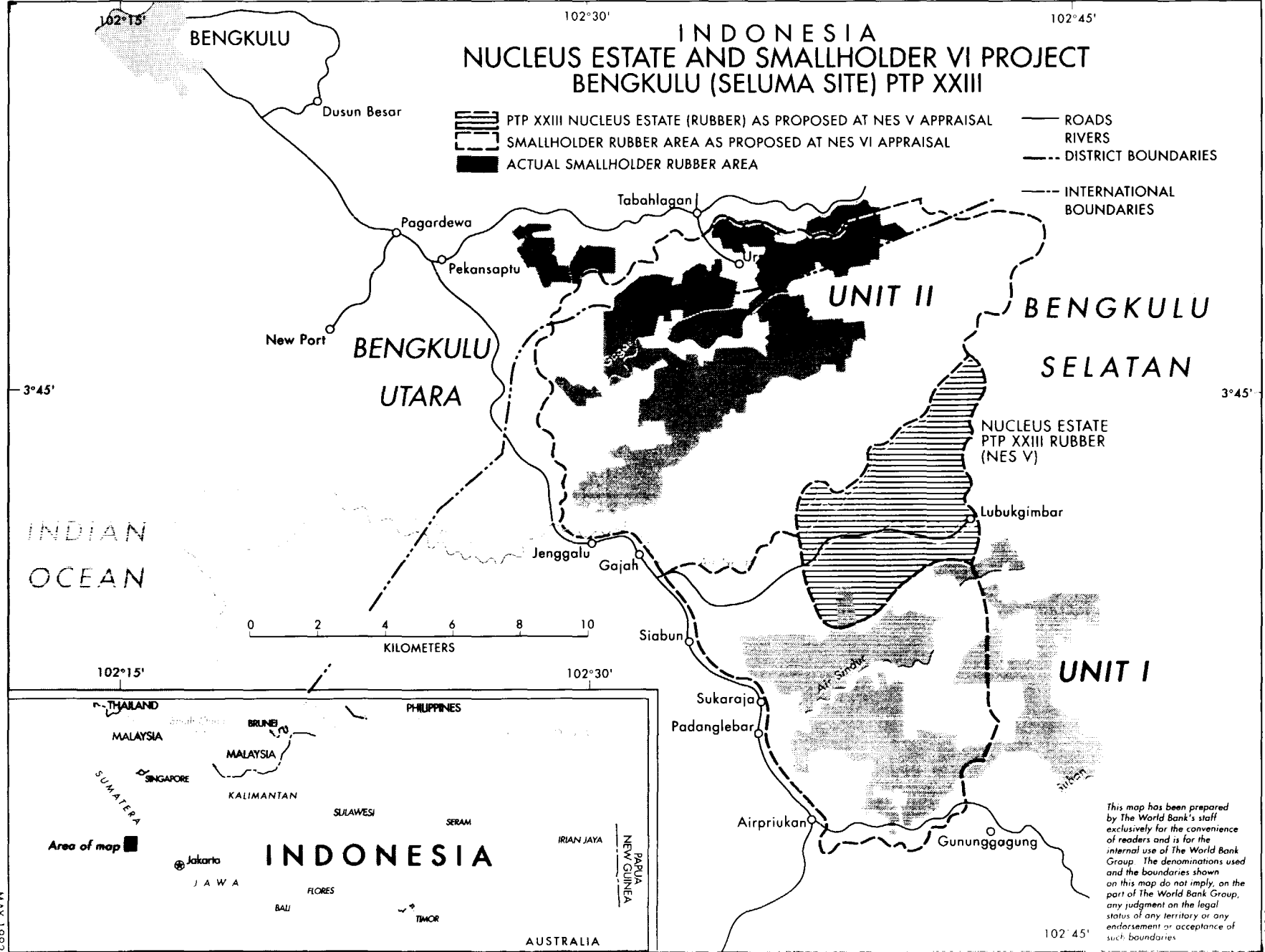
0°30'



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