


**FEASIBILITY STUDY  
FOR  
THE PLANT RENOVATION  
PADALARANG PULP AND PAPER MILL  
IN  
THE REPUBLIC OF INDONESIA  
(SUMMARY)**

OCTOBER, 1984

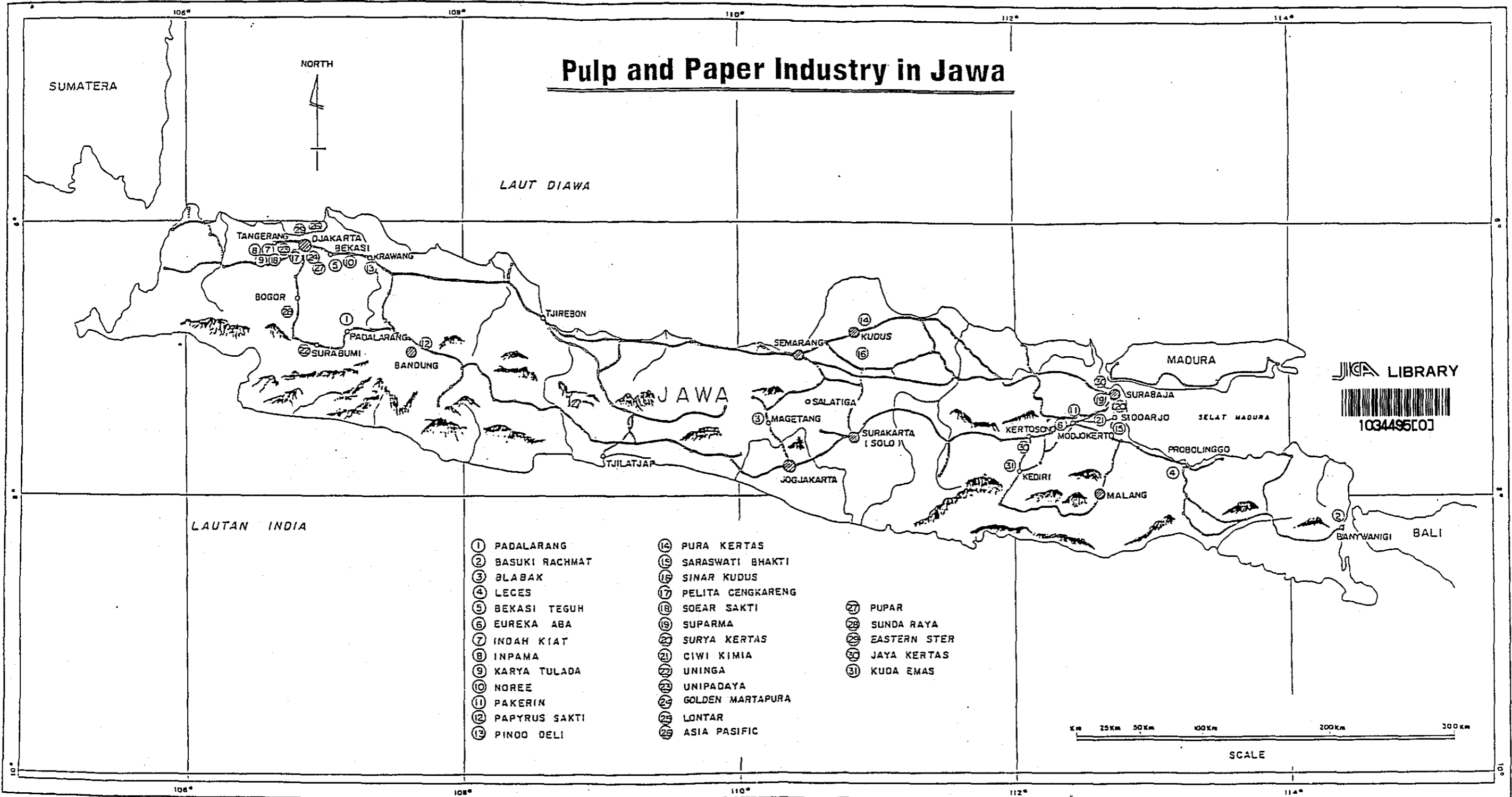
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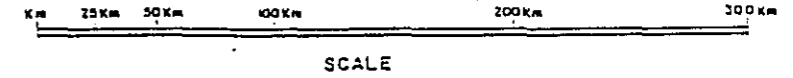
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# Pulp and Paper Industry in Jawa



- |                  |                     |                |
|------------------|---------------------|----------------|
| ① PADALARANG     | ⑭ PURA KERTAS       |                |
| ② BASUKI RACHMAT | ⑮ SARASWATI BHAKTI  |                |
| ③ BLABAK         | ⑯ SINAR KUDUS       |                |
| ④ LEGES          | ⑰ PELITA CENGKARENG |                |
| ⑤ BEKASI TEGUH   | ⑱ SOEAR SAKTI       | ⑳ PUPAR        |
| ⑥ EUREKA ABA     | ⑲ SUPARMA           | ㉑ SUNDA RAYA   |
| ⑦ INDAH KIAT     | ㉒ SURYA KERTAS      | ㉒ EASTERN STER |
| ⑧ INPAMA         | ㉓ CIWI KIMIA        | ㉓ JAYA KERTAS  |
| ⑨ KARYA TULADA   | ㉔ UNINGA            | ㉔ KUDA EMAS    |
| ⑩ NOREE          | ㉕ UNIPADAYA         |                |
| ⑪ PAKERIN        | ㉖ GOLDEN MARTAPURA  |                |
| ⑫ POPYRUS SAKTI  | ㉗ LONTAR            |                |
| ⑬ PINOO DELI     | ㉘ ASIA PASIFIC      |                |



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In this report the following currency exchange rates are used:

Values up to Oct. 1978	US\$1 = Rp425
Values from Nov. 1978 to Feb. 1983	US\$1 = Rp625
Values from Mar. 1983 to Feb. 1984	US\$1 = Rp1,000

When calculating new investment and others for financial analysis

US\$1 = ¥230

US\$1 = Rp1,000

Major Data on Padalarang Paper Mill (current status vs. after renovation)

No.	Item	Unit	Common matters (bef./aft. renovation)	Unit I – PM1		Unit I – PM2		Unit II – PM3	
				Present	After renovation	Present	After renovation	Present	After renovation
A	General								
-1	Construction work/Builder			1922/Holland		1932/Holland		1975/Japan	
-2	Reconstruction work/Builder			1973/Japan		1973/Japan		–	
-3	No. of employees	person	785						
-4	Distance fr. Djakarta	km	150						
B	Mill operation		(present/after renov.)						
-1	Annual production	ADt/yr	6,706/8,084.5	2,022	2,979	1,745	2,201	2,939	2,904.5
-2	Annual sales	Rp 1,000/yr	9,235,723/10,997,433	3,432,548	4,368,344	1,185,152	1,832,876	4,618,023	4,796,213
-3	Total cost	Rp 1,000/yr	8,434,580/9,222,083	–	–	–	–	–	–
-4	Profit after tax	Rp 1,000/yr	353,550/685,914	–	–	–	–	–	–
-5	Major sales terr.			Djakarta, Bandong	ditto plus exp.	Djakarta, Bandong	ditto plus	Semarang, Surabaya	ditto
-6	Main grades mfd.			Specialty, P/W Drawing, Manila Carton	ditto plus exp. of straw pulp	Special thin, P/W	Semarang, Solo Medium-grade cigarette, special thin papers	Medium-grade cigarette, a small qty. of high-grade cigarette	High-grade cigarette, a small qty. of medium- grade cigarette
C	Main equipment								
-1	Self-use straw pulp plant	BD kg/d	5,400/10,500	–	–	–	–	–	–
-2	Pulp stock prep. plant	BD kg/d	–	11,800	13,800	3,500	10,000	11,000	12,000
-3	Paper plant (reel prod.)	AD kg/d	–	7,680	10,800	5,380	7,740	10,310	10,100
-4	Finishing plant (prod. finished)	AD kg/d	–	6,770	9,830	4,640	7,040	9,280	9,170
D	Utilities								
-1	Power contracted	kVA	3,120	–	–	–	–	–	–
-2	Power consumption	kwh/day	–	6,910	ab. 11,000	4,840	ab. 8,500	25,260	ab. 24,800
-3	Steam generating capacity	kg/day	228,000/336,000	–	–	–	–	–	–
-4	Steam consumption	kg/day	–	26,880	37,800	18,830	27,090	41,240	40,400
-5	Water in-take capacity	m <sup>3</sup> /day	8,630	–	–	–	–	–	–
-6	Water consumption	m <sup>3</sup> /day	–	1,150	1,300	807	930	1,550	1,520
-7	Effluent treating capacity	m <sup>3</sup> /day	0/4,500						
E	Production efficiency								
-1	Total yield	%	–	76.4	85.7	78.1	86.6	86.0	86.0
-2	Total efficiency	%	–	68.5	77.2	67.2	73.8	82.0	82.0

## INTRODUCTION

### 1. Background and Circumstances of Investigation

- (1) In compliance with the request of the Government of Japan who had received a request from the Government of Republic of Indonesia, the Japan International Cooperation Agency determined to dispatch an investigation team to the Republic of Indonesia to evaluate the feasibility of the plant (pulp and paper) renovation project of Padalarang Pulp and Paper Mill (hereinafter called PPM) and Basuki Rachmat Pulp and Paper Mill (hereinafter called BRPP).
- (2) The preliminary survey team, which had been dispatched prior to this investigation team, conferred with the Indonesian party during the period of December 21 to 28, 1983 as to the scope of investigation to be made and the preliminary survey team and the Indonesian party signed an agreement on December 26, 1983.
- (3) Based on the said agreement, this investigation team conducted the field investigation during the period of February 26 to March 27, 1984 and reviewed the investigation results in detail. This writing reports the investigation results.

### 2. Purpose of Investigation

The purpose of this investigation is to make a diagnosis of BRPP and PPM and to study the feasibility of renovating the two mills, as well as to prepare a renovation program with the main target set on the higher efficiency of production and improvement of the product quality.

### 3. Scope of Investigation

In order to accomplish the purpose as described above, the investigation team confirmed the policy of the Ministry of Industry, Indonesia, surveyed the market conditions and investigated both mills on their operations, facilities and management practices. The investigation team integrately evaluated the investigation results from the technical and financial viewpoints.

## Chapter 1. SUMMARY OF RENOVATION PLAN

### 1-1 Future Prospects

- (1) As a result of implementation of this renovation project, the profitability of the mill as a whole is expected to be improved.

The two paper machines of Unit 1 can perform better profitability with the renovation of equipment and can extend their life equipment-wise. Thus, the performance of Unit 1 will contribute adequately to the profitable operation of the mill, enabling accumulation of own equity to provide for the future expansion of PM 4.

Education and training of employees to be performed in parallel to the renovation of the equipment will bring about a successful result in augmenting the willingness and capability on the part of the whole employees to install an additional machine, PM 4.

- (2) The future direction that PPM should choose is the exclusive manufacturer of thin papers and cigarette paper, in particular.

Looking into the balance of demand and supply of cigarette paper in Indonesia and the possibility of some private companies entering into the cigarette paper business in the future, somebody may have an illusion that the further expansion of the cigarette paper making equipment would be much risky as a national enterprise to choose. However, we are of the opinion that now is the time to pursue aggressive policy toward the expansion, taking into account the saving of foreign currency and the export of part of the production expanded.

- (3) Indonesian pulp and paper industry holds the leading position among the five members of ASEAN. As regards the cigarette paper, no project is seen for the construction of a cigarette paper mill among the rest of four member countries even though there may be a concern about the over-supply of cigarette paper in the domestic market. The establishment of "the quality guarantee system"; and the cost reduction efforts will enable PPM to secure export market without saying the stable sales to the domestic market.



## 1-2 Basic Policy of Renovation Plan

The objectives of this renovation project are to check up the defective parts of the existing equipment in operation in terms of productivity and cost of production, and to carry out remedial measures in an overall and concentrated way so that the mill will be reactivated. Education and training of the employees for the improvement of operational and managerial techniques are also an important phase of the project.

### (1) Self-use pulp plant

- |    |  |                             |
|----|--|-----------------------------|
| 1) | Improvement of pulp yield                | Bl. pulp, from 25% to 35%   |
| 2) | Reduction of production cost             | From Rp 499/kg to Rp 345/kg |
| 3) | Improvement of unit consumption of steam | From 6.0 t/t to 4.5 t/t     |

### (2) Unit 1 (stock preparation, PM 1, PM 2 and finishing)

Improvement of quality and total yield (from 76.4% to 85.7%) and improvement of various efficiencies and cost reduction.

- |    |  |                                |
|----|--|--------------------------------|
| 1) | Improvement of total efficiency        | From 68.53% to 77.17%          |
| 2) | Improvement of sheet making efficiency | From 86.95% to 95.43%          |
| 3) | Increase of machine speed              | From 39.4 m/min to 51.4 m/min. |
| 4) | Improvement of operation efficiency    | From 90.8% to 89.7%            |
| 5) | Improvement of finishing yield         | From 87.32% to 90.63%          |
| 6) | Stabilization of chemical add-on       |                                |

### (3) Unit II (stock preparation, PM 3 and finishing)

Improvement of quality (minimizing weight variation) and partial change of grades to more profitable items.

- |    |  |
|----|--|
| 1) | Lessening of basic weight variation and reduction of sales loss due to over-weight |
| 2) | Reduction of unit consumption of power for refining                                |
| 3) | Development of products in bobbin  |

**(4) Maintenance and utilities sections**

Reduction of total cost is aimed at by improvement of facilities of the auxiliary sections also.

- 1) Improvement of steam cost
- 2) Standardization and simplification of parts by means of reinforcing the ability of own machine shop
- 3) Instrumentation system is to be improved
- 4) Better maintenance of water supply line
- 5) Reduction of loads in the effluent for the betterment of environments

**(5) Others**

The test room is to be equipped with more adequate facilities of measuring and testing of products.

**(6) Improvement of the managerial and control technics by education and training of employees.**

1-3 Equipment Renovation Plan (1)

Location	Breakdown of main equipment			Investment (Rp)	Effects expected
	Description of equipment	Q'ty	Specification		
1. Self-use pulp plant				476,956,000	
	1. Straw cutter	1	3 ADt/d		1. Shortening of cooking cycle and increased prod. Bl. pulp 5.42 to 10.5 BDt/d
	2. Belt conveyor	4	3 ADt/d		2. Improv. of cooking yield, reduc. fiber loss in effluent 25% to 35%
	3. Conveyor scale	1	3 ADt/d		3. Input ratio of straws to ton of pulp cooked is to be improved 6.0 to 4.5 t/t
	4. Digester overhaul	5			
	5. SUKP Dump chest	1	20 m <sup>3</sup>		Reduction of straw pulp cost Rp 499 to Rp 345/kg
2. Unit 1					
Stock preparation	1. Hydra pulper & conveyor	1	10m <sup>3</sup> x 110 kW	928,696,000	1. Stock consistency to be stabilized Reduct. of sales loss due to over-wt. 10 to 5%
	2. Chest with agitator	4	20m <sup>3</sup>		2. Stabilization of freeness
	3. Double disk refiner	1			3. Improv. of dust removal effect
	4. CRC & head tank	4			4. Stabilization of chemicals add-on
	5. Liquid cyclon	1			
	6. Vibrating screen	2			5. Expected value: Total eff. 68 to 76% Total yield 77 to 86%
	7. Thickner	2			
	8. Clay storage tank	1	10m <sup>3</sup>		
	9. Dyes storage tank	2	2m <sup>3</sup>		
PM1	1. C.R.C. with head tank	1		825,217,000	1. Total eff. of PM1 is to be upper 68 to 78%
	2. Pressure screen	1	1.6 dia. 75 kW		2. Total yield is to be improved 77 to 86%
	3. Vibrating screen	1	20 dia.		3. Increased machine speed and production due to renov. of drive part. 40 to 60 m/min.
	4. Table roll	22	80 dia. 2,500ℓ		
	5. Suction box	4			
	6. Suction couchroll	1	560 dia. 2,490ℓ		
	7. Shaking machine	1			
	8. Sectional DC drive	8			
PM2	1. C.R.C. with head tank	1		638,696,000	1. Total eff. of PM2 is to be upped Same as PM1
	2. Suction box	4	200 width		2. Total yield is to be improved Same as PM1
	3. Suction couchroll	1	560 dia. 2,490ℓ		3. Increased machine speed and production due to renov. of drive part 60 to 80 m/min.
	4. Chemical press	1	3-roll type		
	5. D.C. drive for couch	1	37 kW DCM		
	6. Lineshaft DC drive	1	45 kW DCM		
Finishing	1. Slitter rewinder	1	2,200W 1,500 dia.	279,304,000	1. Refinement of finished products and development of new market.

1-3 Equipment Renovation Plan (2)

Location	Breakdown of main equipment			Investment (Rp)	Effects expected
	Description of equipment	Q'ty	Specification		
3. Unit 2	1. DDR	1	110 kW	470,870,000	1. Reduction of sales loss due to over-wt. 8% to 4% 2. Improv. of power consumption rate for refining 3. Sales expansion of cigarette paper for rolling on machine
	2. C.R.C. with head box	1			
	3. Hydro foil	5			
	4. Mark press backup roll	2			
	5. Bobbin slitter	1	1,200 width		
4. Maintenance and Utilities	1. Package boiler	1	14 kg/cm <sup>2</sup> x 14 t/h	839,957,000	1. Reduction of steam cost 2. Reduction of fiber loss in the effluent 3. Preventive maintenance system is to be set up by introducing instrumentations for various controls Thus, operating efficiency is to be improved.
	2. Knife grinder	1			
	3. Milling machine	1			
	4. Mano-meter	1			
	5. Transformer	1			
	6. Effluent pond	1	500m <sup>3</sup>		
	7. Warehouse	1	500m <sup>2</sup>		
5. Others	1. Porosity meter	1		22,435,000	1. Quality stabilization is expected with intensified control.
	2. Niagara beater	1			

#### 1-4 Education and Training

In parallel to the renovation of equipment, education and training of the employees should be made in order to solve various problems on management and controls. Education and training will be performed in the following manner:

(1) Education and training abroad

- a. Number of persons: 14 persons in a total of 28 man-month
- b. Contents: Quality control, operation control, equipment control, labor control and sales control

(2) Education and training at the mill site of PPM.

Under this renovation project, it is scheduled that the technical guidance should be rendered by foreign technical experts. These experts to be dispatched to PPM should endeavor to transfer the technical software as much as possible to the employees of PPM.

The number of foreign experts to be dispatched is scheduled to be six persons with a total of 12 man-month.

(3) Education and training programs to be continued

The following methods should be taken:

- a. Opening of a course to give the employees the common sense of paper making as a whole.
- b. By classifying the employees into several ranks, an education system should be established to hold several courses for freshmen, group leaders, superintendents, middle management class, etc.
- c. Circle activities by jobsites and proposal systems should be introduced and the OJT (on the job training) should be actively pursued.
- d. Establishment of overseas training system.

## 1-5 Implementation of Renovation Project

- (1) We recommend that the overall scheme to secure the profit consistently and to contribute to the development of the area, where the mill is located, should be carried out, dividing it into short-term, middle-term and long-term plans.

- a. Short-term plan

Improvement items pointed out by the investigation team during the field investigation and any items that can be started among the items described in this report are put into practice.

- b. Middle-term plan

This renovation project is implemented as a major project in the fourth 5-year plan (1984 – 1988). The project is to start its work in 1985 and the whole work is to be completed in two years and two months.

- c. Long-term plan

A new paper machine is installed as a project in the fifth 5-year plan (1989 – 1993) depending on the situation of fund availability, trend of the domestic market and results of the middle-term plan. In order to implement the plan, further study and review of the plan will be required.

## (2) Implementation System

- a. Since this renovation project is essentially a renovation project of the existing plant, we recommend that the control system that the plant possesses is fully utilized and at the same time, a renovation project execution team is organized.
- b. In order to complete this project successfully, we recommend that PPM receives assistance of engineers of a foreign consultant or foreign paper making company, who have experience in such renovation work as this project.

(3) Implementation schedule

The renovation work is to be started in 1985 and completed within a period of 2 years and 2 months. The shutdown period of the paper machines for the renovation work will be 30 days, 21 days and nil for PM 1, PM 2, and PM 3 respectively.

(4) Total funds to be invested

a. Total funds to be required for the implementation of the middle-term plan follow:

	Unit: Rp 1,000
(A) Equipment cost	4,237,999
(B) Engineering fee	403,630
(C) Construction work	1,240,891
(D) Operation supervision	139,079
(E) Training fee	211,270
(F) Overhead	211,900
(G) Contingency	429,144
<hr/>	
Total	6,873,913
(H) Interest payable during renov. work	836,652
(I) Repayment of loans	151,304
(J) Initial working capital	120,739
<hr/>	
Grand total	7,982,608

b. Procurement of funds

Equity: 30%

Long-term loan: 70%

(The terms and conditions for the loan are not decided yet. The above percentages are used provisionally for the purpose of financial calculations.)

	<u>Foreign currenty</u>	<u>Local currency</u>	<u>Total</u>
Equity	—	2,394,782	2,394,782
Long-term loan	5,026,087	561,739	5,587,826
<hr/>			
Total funds invested	5,026,087	2,956,521	7,982,608

## 1-6 Financial Analysis and Economic Evaluation

### (1) Conditions used for financial analysis

- a. Conversion rate : US\$1 = Rp1,000  
: US\$1 = ¥230
- b. Fiscal term : January to December
- c. Rate of effectuation of renov. work : 1987 (85%) 1988 and thereafter (100%)
- d. Total funds invested and way of procurement  
Equity : 30% Long-term loan: 70%  
Unit: Rp 1,000

	<u>Foreign currency</u>	<u>Local currency</u>	<u>Total</u>
Equity	—	2,394,782	2,394,782
Long-term loan	5,026,087	561,739	5,587,826
<b>Total funds invested</b>	<b>5,026,087</b>	<b>2,956,521</b>	<b>7,982,608</b>

- e. Rate of interest for long-term loans

Foreign currency: 12% Local currency: 16%

(The terms and conditions for the loan are not decided yet. The above interest rates are used provisionally for the purpose of financial calculations. Incidentally, the use of the provisional figures will not affect the I.R.R.O.I. substantially.)

- f. Term of repayment of long-term loans

2-year deferment and repayment in 10-year even installment (once every year)



g. Depreciation

Machinery and equipment	10 years
Structure and buildings	30 years
Vehicles	5 years

h. Corporate tax

Corporate tax is to be imposed on the profit alone.

Profit  $\leq$  Rp 10 million: 15% of profit

Rp 10 million < profit  $\leq$  Rp 40 million: 25% of profit

Rp 40 million < profit 35% of profit

(2) Results of financial analysis

a. Profit and loss by years

As shown in the profit and loss calculation by years, Table 13-14-1, PPM can realize the profitable account throughout the period. Also, there will be no shortage of funds throughout the period.

b. The rate of operation corresponding to the break-even point will be improved to 79% after the renovation as against the present rate of 84%. The management of the mill will become more sound than now. (Ref. to table attached)

c. I.R.R.O.I. and pay-out period will be 13.8% and 5.10 years respectively.

The sensitivity analysis is shown below:

Plus or minus 5% of sales price

	<u>-5%</u>	<u>0</u>	<u>+5%</u>
I.R.R.O.I (%)	7.29	13.80	19.73
Pay-out period (yr)	6.88	5.10	4.06

Plus or minus 5% of the funds invested

	-5%	0	+5%
I.R.R.O.I. (%)	14.80	13.80	12.88
Pay-out period (yr)	4.89	5.10	5.31

The above analysis indicates that this investment is a worthwhile investment.

d. Financial indexes

The following indexes were studied:

- Ratio of net profit to sales (%) =  $\frac{\text{Net profit aft. Tax}}{\text{Total sales}} \times 100$
- Ratio of profit to investment (%) =  $\frac{\text{Net profit bef. Tax}}{\text{Total investment}} \times 100$
- Debt service ratio =  $\frac{\text{Deprec. + Int. payable (long-term)} + \text{Net prof. aft. tax}}{\text{Repayment of long-term loan} + \text{Int. payable (long-term)}}$

Year	Ratio of net profit to sales	Ratio of net profit bef. tax to investment	Debt service ratio
1. 1987)	1.3 %	2.7 %	177.7 %
2. (1988)	3.5	7.2	205.1
3. (1989)	5.2	10.8	208.1
4. (1990)	6.2	13.1	215.6
5. (1991)	6.7	14.0	228.9
6. (1992)	7.1	14.9	244.1
7. (1993)	7.5	15.7	261.1
8. (1994)	7.8	16.4	279.9
9. (1995)	8.1	17.1	302.2
10. (1996)	8.4	17.8	328.9

Various indexes calculated show the smooth progress of financial capability of PPM. There is no concern about the financial situation. The rate of profit is at a reasonable level.

Table 13-14-1 Annual Statement of Profit and Loss

(Unit: 1,000 RP)

Items	Present	- 2 (1985)	- 1 (1986)	1 (1987)	2 (1988)	3 (1989)	4 (1990)	5 (1991)	6 (1992)	7 (1993)	8 (1994)	9 (1995)	10 (1996)	Remarks
Sales (Q'ty, t)	9,235,723 (6,706)	9,235,723 (6,706)	8,976,683 (6,508)	10,674,711 (7,845.3)	10,997,433 (8,084.5)	10,997,433 (8,084.5)	10,997,433 (8,084.5)	10,997,433 (8,084.5)	10,997,433 (8,084.5)	10,997,433 (8,084.5)	10,997,433 (8,084.5)	10,997,433 (8,084.5)	10,997,433 (8,084.5)	
Manufacturing cost														
Variable cost	5,722,949	5,722,949	5,577,196	6,023,233	6,052,922	6,052,922	6,052,922	6,052,922	6,052,922	6,052,922	6,052,922	6,052,922	6,052,922	
Personnel expenses	1,526,264	1,526,264	1,526,264	1,526,264	1,526,264	1,526,264	1,526,264	1,526,264	1,526,264	1,526,264	1,526,264	1,526,264	1,526,264	
Depreciation (present) (A)	328,657	328,657	328,657	328,657	328,657	112,816	0	0	0	0	0	0	0	
Depreciation (new) (A)	0	0	0	786,187	786,187	786,187	786,187	786,187	786,187	786,187	786,187	786,187	786,187	
Other fixed cost	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	309,000	
Total	7,886,870	7,886,870	7,741,117	8,973,341	9,003,030	8,787,189	8,674,373	8,674,373	8,674,373	8,674,373	8,674,373	8,674,373	8,674,373	
Operating income	1,348,853	1,348,853	1,235,566	1,701,370	1,994,403	2,210,244	2,323,060	2,323,060	2,323,060	2,323,060	2,323,060	2,323,060	2,323,060	
Selling expenses	180,500	180,500	180,500	180,500	180,500	180,500	180,500	180,500	180,500	180,500	180,500	180,500	180,500	
Administrative expenses	367,210	367,210	367,210	367,210	367,210	367,210	367,210	367,210	367,210	367,210	367,210	367,210	367,210	
Total	547,710	547,710	547,710	547,710	547,710	547,710	547,710	547,710	547,710	547,710	547,710	547,710	547,710	
Total cost	8,434,580	8,434,580	8,288,827	9,521,051	9,550,740	9,334,899	9,222,083	9,222,083	9,222,083	9,222,083	9,222,083	9,222,083	9,222,083	
Interest payable														
Present	264,912	264,912	264,912	264,912	264,912	264,912	264,912	264,912	264,912	264,912	264,912	264,912	264,912	
New (Long-term loan)	0	0	0	584,974	530,652	475,826	421,000	366,178	311,352	256,530	201,704	146,878	92,057	
New (Short-term loan)	0	0	0	89,878	73,878	57,878	41,878	25,878	9,878	0	0	0	0	
Total	264,912	264,912	264,912	939,764	869,442	798,616	727,790	656,968	586,142	521,442	466,616	411,790	356,969	
Profit	536,231	536,231	422,944	213,896	577,251	863,918	1,047,560	1,118,382	1,189,208	1,253,908	1,308,734	1,363,560	1,418,381	
Corporation tax	182,681	182,681	143,030	69,864	197,038	297,371	361,646	386,434	411,223	433,868	453,057	472,246	491,433	
Profit after tax (B)	353,550	353,550	279,914	144,032	380,213	566,547	685,914	731,948	777,985	820,040	855,677	891,314	926,948	
(A + (B))	682,207	682,207	608,571	1,258,876	1,495,057	1,465,550	1,472,101	1,518,135	1,564,172	1,606,227	1,641,864	1,677,501	1,713,135	
Loan repayment (Foreign)				452,696	456,870	456,870	456,870	456,870	456,870	456,870	456,870	456,870	456,870	
Loan repayment (Local)				100,000	100,000	100,000	100,000	100,000	61,739	0	0	0	0	

Table 13-15-1a Break-even Point for Every Kind of Paper

PM	Kinds	Basis weight	Present					Improved					Remarks
			Daily production	Operation profit	Fixed cost	Break-even point	Ratio of operation	Daily production	Operation profit	Fixed cost	Break-even point	Ratio of operation	
			t/D	Rp/kg	1000 Rp	t/day	%	t/day	Rp/kg	1000 Rp	t/day	%	
1	H.V. Offset Pth	60	6.98	33.8	3,264	96.6	1,384	9.90	247.8	4,254	17.2	174	(1) Annual fixed cost (present) Personnel expenses 1000 Rp (1000 Rp) Depreciation 1,526,264 (1000 Rp) Other fixed cost 328,657 Selling expenses 309,000 Administrative expenses 180,500 Interest paid 367,210 Interest paid 264,912 Total 2,976,543 2,976,543 (1000Rp) ÷ 911.95 (day) = 3,264 (1000 Rp/day) (2) Annual fixed cost (after improved) Personnel expenses 1000 Rp Depreciation 1,526,264 Other fixed cost 863,200 Selling expenses 309,000 Administrative expenses 180,500 Interest paid 367,210 Interest paid 633,554 Total 3,879,728 3,879,728 (1,000 Rp) ÷ 911.95 (day) = 4,254 (1000 Rp/day)
	Cylostyle Pth	69	9.22	15.2	3,264	214.7	2,329	11.25	179.1	4,254	23.8	212	
	Mail zegel	80	4.99	1,202.8	3,264	2.7	54	8.91	1,426.4	4,254	3.0	34	
	Banderol	60	6.91	1,588.8	3,264	2.1	30	9.26	1,824.9	4,254	2.3	25	
	Reform	120	7.62	473.6	3,264	6.9	91	9.87	672.0	4,254	6.3	64	
	S.P.R. Biasa	80	5.82	1,282.7	3,264	2.5	43	9.75	1,588.6	4,254	2.7	28	
	Cheque putih	100	5.24	125.8	3,264	25.9	494	9.60	314.1	4,254	13.5	141	
	Kertas water mark	100	4.99	718.2	3,264	4.5	92	9.40	959.7	4,254	4.4	47	
	Post wesel	175	7.49	59.2	3,264	55.1	736	10.08	244.7	4,254	17.4	173	
	Kartu post Ch	175	7.49	7.2	3,264	453.3	6,052	10.15	189.7	4,254	22.4	221	
	Couverture warna	60	7.49	450.5	3,264	7.2	96	10.43	499.8	4,254	8.5	81	
	Omslog warna	80	7.83	62.6	3,264	52.1	665	11.18	107.6	4,254	39.5	353	
	Omslog warna	200	8.87	42.9	3,264	76.1	858	11.55	86.7	4,254	49.1	425	
	Omslog biru tua	70	8.23	- 83.4	3,264	-	-	11.39	- 48.5	4,254	-	-	
	Straw pulp export	200						10.63	417.8	4,254	10.2	96	
		PM1 average		6.78	923.4	3,264	3.5	52	9.99	892.1	4,254	4.8	
2	H.V.S. Putih	50	6.81	- 536.4	3,264	-	-	9.56	-346.2	4,254	-	-	
	Cylostyle Pth	69	9.22	15.2	3,264	214.7	2,329	11.25	179.1	4,254	23.8	212	
	Doorslag Pth	28	3.18	- 27.8	3,264	-	-	5.11	145.8	4,254	29.2	571	
	Bank post	44	4.65	- 50.6	3,264	-	-	7.93	178.8	4,254	23.8	300	
	Sigarer putih	26	3.18	345.8	3,264	9.4	296	5.29	579.2	4,524	7.3	138	
	Kraft coklat	45	6.80	62.8	3,264	52.0	765	8.92	98.3	4,254	43.3	485	
	PM2 average		5.87	7.6	3,264	429.5	7,317	7.41	242.5	4,254	17.5	236	
	PM1 & 2 average		6.33	499.2	3,264	6.5	103	8.70	616.1	4,254	6.9	79	

Table 13-15-1b Break-even Point for Every Kind of Paper

PM	Kinds	Basis weight	Present					Improved					Remarks
			Daily production	Operation profit	Fixed cost	Break-even point	Ratio of operation	Daily production	Operation profit	Fixed cost	Break-even point	Ratio of operation	
			t/D	Rp/kg	1000 Rp	t/day	%	t/day	Rp/kg	1000 Rp	t/day	%	
3	Goldenbird	26	9.39	538.6	3,264	6.1	65	9.39	559.2	4,254	7.6	81	
	Silver bird	26	9.20	570.6	3,264	5.7	62	9.20	589.9	4,254	7.2	78	
	Sig. Eagle	26	8.54	748.3	3,264	4.4	52	8.54	773.4	4,254	5.5	64	
	Sig. Coklat	26	8.54	518.4	3,264	6.3	74	8.54	538.8	4,254	7.9	92	
	PM3 average		9.28	555.4	3,264	5.9	64	9.17	603.6	4,254	7.0	76	
	Total average		7.35	523.8	3,264	6.2	84	8.87	611.6	4,254	7.0	79	

(3) Economic evaluation

- a. The management and operation of the mill will become more sound and smooth. As a result, PPM will be in a position to further contribute toward the development of the area, where the mill is located, and the stable employment of labor in the area.
- b. Better utilization of domestic resources.
- c. By way of the increased production of cigarette paper, PPM can serve for a saving of foreign currency. In addition, export of straw pulp will be useful for securing increased earning in foreign currency.

## **Chapter 2. SUMMARY OF INVESTIGATION RESULTS**

### **2-1 Government Policy of Indonesia Toward Pulp & Paper Industry**

#### **2-1-1 Policies Given to Pulp and Paper Industries**

- 1) The Indonesian Government sets a policy of completing three major expansion and new installation projects in the fourth 5-year plan (1984 – 1988), satisfying the domestic demand for newsprint paper, kraft paper and kraft liner, as well as developing the paper industry into an export oriented industry.
- 2) The existing paper mills are still far from being competitive in the international market both on the quality and cost, and these mills require protection by means of tariff and others.
- 3) For this reason, The Indonesian Government takes measures to encourage to optimization and rational enlargement of the existing paper mills for the purposes of establishing the foundation as an export industry as far as it is possible.

#### **2-1-2 General Policies toward Basuki Rachmat Pulp and Paper Mill and Padalarang Pulp and Paper Mill**

- 1) The Indonesian Government has set the major policies as follows:
  - a) Optimization of production scale
  - b) Production of grades that are internationally competitive
  - c) Effective use of domestic raw materials and import restrictions
  - d) Activation and stabilization of employment as regional industries
  - e) Switch to an export-oriented industry
  - f) Raising of equipment efficiencies with relatively small investment
  - g) Change to an energy saving industry
  - h) Utilization of secondhand equipment will be permissible
  - i) Necessity for education of all the employees

## 2-2 Market

### 2-2-1 Demand and Supply of Paper in Indonesia (Government statistics)

#### 1) Production, import, export and consumption

	Production t/y		Export/Import t/y		Consumption	
	Actual	Capacity	Export	Import	t/y	Kg/capita
1982	329,688		5,200	306,955	631,483	4.20
1983	374,379	505,000	10,706	267,105	630,778	4.10
1984		676,000		228,850	670,000	4.30

- 2) According to the statistics of production, import, export and consumption of paper in Indonesia during the period from 1976 to 1983, printing and writing paper is in the status of over-supply while the most part of specialty paper and cigarette paper are dependent upon imports.

In addition, the demand and supply forecast in the future until the year of 1990 indicates that the printing and writing paper will continue to be in the status of over-supply.

### 2-2-2 Estimated Requirement of Specialty Paper

Official statistics on individual items of specialty paper are not available. The investigation team made their own survey, getting information from private sources and so on. Demand estimate thus obtained is shown in the table attached.

Selection of some promising grades for future production is to be made out of various grades listed on the Table.

The prices of various types of specialty paper are kept much higher than printing and writing paper owing to the tariff protection at a higher rate.



Table 3-3-1 Forecast of Demand for Paper (1984 - 1990)

Unit: ton

Kinds	1983	Growth Rate	1984	1985	1986	1987	1988	1989	1990
Glassine Paper	1,700	0%	1,700	1,700	1,700	1,700	1,700	1,700	1,700
Greased-proof Paper	1,200	1	1,212	1,224	1,236	1,248	1,260	1,273	1,700
Carbon Base Paper	2,000	2	2,040	2,080	2,120	2,160	2,203	2,247	2,292
N.C.R.	2,400	5	2,520	2,646	2,778	2,917	3,063	3,216	3,377
Base Paper for Lamination	2,000	9.5	2,190	2,398	2,626	2,875	3,148	3,448	3,776
Manifold	7,500	5	7,875	8,269	8,682	9,116	9,572	10,051	10,554
Ribbed Kraft Paper	7,500	9.5	8,213	8,993	9,846	10,782	11,807	12,928	14,156
Onion Skin	150	2	153	156	160	162	165	169	172
Soap Wrapper	1,500	5	1,575	1,654	1,736	1,823	1,914	2,010	2,111
Tracing Paper	100	9.5	110	120	131	144	157	172	188
Cigarette Paper	15,000	7	16,050	17,174	18,376	19,662	21,038	22,511	24,086
Computer Paper	3,600	20	4,320	5,184	6,221	7,465	8,958	10,750	12,900
Transfer Paper	240	2	245	250	255	260	265	270	275
W/P Pap. (incl. coated paper)	160,000	5	168,000	176,400	185,220	194,481	204,205	214,415	225,136
Newsprint	120,000	5	126,000	132,300	138,915	145,860	153,154	160,811	168,852
Kraft Liner, Corrugating medium	250,000	9.5	273,750	299,976	328,233	359,415	393,560	430,945	471,885
White Board	105,000	9.5	114,975	125,898	137,858	150,954	165,295	180,998	198,193
Sack Kraft	45,000	5	47,250	49,613	52,093	54,698	57,433	60,304	63,319
Total	724,890		778,178	836,035	898,185	965,722	1,038,897	1,118,218	1,204,258
Population (estimation): mil.	158.1		161.6	165.2	168.7	172.2	175.6	179.1	182.7
Consumption per capita	4.6		4.8	5.1	5.3	5.6	5.9	6.2	6.6
IPPA'S ANNOUNCEMENT	630,778		709,000	790,000	864,000	949,000	1,140,000	1,270,000	-
Consumption per capita	4.0		4.4	4.8	5.1	5.5	6.5	7.1	-

### 2-2-3 Characteristics of PPM looked from the market

#### 1) Grades of products

- a. The products of Unit I (the older line, having two paper machines) are favored with the Government protection, this unit having the longest history as the paper mill in Indonesia. However, the demand for their products is levelling off due to the coming of the competitive products made by the other companies into the market and also due to the sluggish growth in demand in general. Under the circumstances, it is found difficult to fill the machine spaces with profitable grades alone. So, the commodity type of paper for general use is also made on the machines. The cost of production at Unit 1, however, is very high. It is difficult for PPM to compete with the other makers in the sector of commodity type of paper.

The surplus capacity which becomes available from the increased production should be used for the production of medium grade cigarette paper. As for the surplus of straw pulp, it should be sold for export.

- b. Unit II (the naming for the latest line), started operation 10 years ago as the only cigarette paper machine in Indonesia. The higher grade of cigarette paper competitive in quality with the foreign cigarette papers imported should be made on the machine on a trial basis with a view to save the foreign currency spent for the imports of cigarette paper. For this purpose, PPM should build up enough production technology and marketing ability.

#### 2) Geographical position

- a. The sales territories of Unit I consist of 85% in Djakarta area and 25% in Bandung area. Thus, the mill is favorably located in the proximity of the consuming areas.
- b. The sales territories of Unit II consist of the middle part of Jawa and eastern Jawa.

The location of Unit II is not ideal. In view of relatively high added value product, however, the transportation cost incurred to some extent will not be critical to the sales of cigarette paper to the users at a distance.

3) Users

- a. More than 50% of Unit I products are for governmental or semi-governmental use.
- b. The users of Unit II products are Tobacco manufacturers for producing hand-rolled cigarette.

The equipment of Unit II should be renovated for allowing production of higher-grade cigarette paper for use of machine-rolled cigarettes at tobacco factories.

4) Production equipment and cost of production

- a. Although Unit I is an unique equipment, production cost is remarkably high by about Rp 200/kg. It is needless to say that efforts should be made seriously to lower the cost of production. On the other hand, the ratio of the production of specialty paper should be raised, utilizing the specialized production facilities endowed to Unit I. The sales development of specialty paper is to be pursued, at the same time.
- b. Unit II has no defect equipment-wise for production of cigarette paper. The installation of a new bobbin slitter is required for production of cigarette paper in bobbin. Measures should be taken to lessen the sales loss due to the over-weight of the product. Thus, an improved profitability should be aimed at.

5) Market evaluation of mill products and sales price

- a. Unit I produces a high percentage of specialty paper. The products are sold at relatively good prices irrespective of their quality. However, the market needs are for improved and stable quality.

- b. The products of Unit II are sold at much lower prices as compared with imported paper as shown below.

SILVER BIRD	Rp 6,300/riem
GOLDEN BIRD	Rp 6,500/riem
EAGLE	Rp 8,500/riem
Imported	Rp 10,000 to 15,000/riem

Establishment of production technology to compete with imported paper and the market development are critically needed.

### 2-3 Current Situation of Mill

#### (1) Circumstances of Establishment

As the first paper mill in Indonesia, it was established in 1923. In 1924 the paper machine No. 1 started the production of writing and printing paper and specialty paper for governmental use utilizing straw pulp as raw material. In 1932 the paper machine No. 2 was installed additionally.

In 1975 the paper machine No. 3 was installed receiving the Japanese cooperation, and started the operation as unique cigarette paper producing machine in Indonesia.

#### (2) Location: Padalarang City, Bandung Prefecture, Western Jawa State

#### (3) Plant site: 10 ha

#### (4) Sales records (1983)

Unit I	(Paper machines No. 1 and 2)	4,067 t
Unit II	(Paper machine No. 3)	3,007 t

#### (5) Number of Employees: 785 (1983)

#### (6) Main Installations (as of 1984)

- a. Pulp equipment:
- 5.9 ADt of daily production, 5 units of vertical digester and 1 unit of globe digester
- b. Paper making equipment:
- Paper machine No. 1 10t of daily production, 2,400 mm of wire width  
 Paper machine No. 2 2.5 t daily production, 2,250 mm of wire width  
 Paper machine No. 3 10 t of daily production, 2,440 mm of wire width
- c. Finishing equipment: 1 set
- d. Utilities
- |              |                 |                         |
|--------------|-----------------|-------------------------|
| Power source | Purchased power | 3,120 KVA               |
|              | own generation  | 220 kW x 3              |
| Steam        | Boiler          | 4 units                 |
|              | Capacity        | 9.5 t/h                 |
| Mill water   | Fountain        | 8,630 m <sup>3</sup> /d |

## 2-4 Review of Managerial and Control Problems

### 2-4-1 Mill Management

Varieties of products are manufactured on the three paper machines. Processes are rather complicated and some of them are old fashioned. Yet, the mill management is well performed.

### 2-4-2 Quality Control

Quality control is well performed. For the betterment of the mill performance, however, it will be necessary to set up the quality guarantee system. For this purpose, all the division and sections, namely, management, production, engineering, maintenance, research and development, clerical, accounting, purchasing, sales and so on should participate in TQC to develop quality consciousness and challenging attitude to problems in a collective effort.

#### 2-4-3 Production Control and Sales Control

- 1) *It is important to reinforce the sales force to provide for the increased production. The sales organization should be strengthened and capable men should be positioned in such organization.*
- 2) *The environments of the jobsite should be improved. The book keeping system should be well maintained for enabling prompt and correct actions on necessary controls.*

#### 2-4-4 Purchase Control

- 1) *Moisture content of purchased straws should be checked more severely.*
- 2) *For the production of higher grade cigarette paper, the selection of CaCO<sub>3</sub> of better quality should be re-studied.*

#### 2-4-5 Operation Control

*Definitions of total yield, total efficiency, operation efficiency, finishing yield, etc. should be clarified. The target values should be set per respective grades and operation control should be performed accordingly.*

#### 2-4-6 Cost Control and Finance Control

*Data on cost control and finance control are kept on hand well. The problem is how to utilize those data in direct connection with operation control for the lifting of cost consciousness of the operators.*

#### 2-4-7 Equipment Control

- 1) *Although most of the equipments are aged, those are well maintained with repair expenses as low as less than 5% of the total sales.*

*However, introduction of preventive maintenance is recommended, taking into consideration the economical balance between a certain increase in the cost of repair*

and the merit obtained by such repairs made along the principle of preventive maintenance.

- 2) Steam cost represents 10 to 30% of production cost. Heat control should be thoroughly pursued.
- 3) Mill water must be saved more strictly. Recovery of pulp stock and chemicals must also be made more effectively.

## 2-5 Review of Various Technical Problems

We pointed out the problems to be improved or corrected in regard to the present way of operations, various controls and the defective part of equipment, etc. It is hoped that our recommendation be put in practice, starting from whichever practicable, with a view to make them use for the stabilization of quality and improvement of profitability.

### 2-5-1 Self-use Pulp Plant

- 1) Moisture content of purchased straws has an average of 40%. Some of them are in the state of rotting having more than 50% of moisture content. Such straws of defective quality causes lowering of cooking yield. More strict control is required for collection, acceptance and storing of straws.
- 2) The existing straw cutter is obsolete and does not work to cut the straws properly. It should be replaced by a new cutter.
- 3) Due to the defective packing gland of digesters, the cooking time has a wide variation.
- 4) Due to the unstable consistency of the stock at the dust removal process, the dust removal efficiency is lowered and fiber loss in the effluent becomes higher, resulting in the trend of lowering the pulp yield down to 25% of late.

Measures to lessen the fiber loss in the effluent is required by means of installation of C.R.C., keeping in good condition of Cowan screen, basket, etc.

## 2-5-2 Unit I (PM 1 & 2)

### 1) Stock Preparation

(1) Pulper is used for dissolving of pulp. No control is made to the add-on of water, resulting in a consistency variation. Control is to be made on the water add-on. Installation of C.R.C. is required.

(2) Due to the improper way of feeding pulp and the handling of broke in sorting and moving, the pulp stock is contaminated with dirt and foreign matter.

The strengthening of dust removal facilities and the control of the working conditions are required.

(3) The use of DDR for refining of pulp stock is not controlled adequately. The operators should become skilled in the operation of it.

(4) Mixing of pulp stock is the main function of the beaters.

The beaters are aged and not maintained in good condition, resulting in the contamination with dirt and foreign matter and the variation of stock consistency.

The beaters should be removed to the change to the refiner chest system. The rate of chemicals add-on should be kept uniform.

### 2) PM 1

Total yield	76.4%
Total efficiency	68.53%
Production finished	6.77 t/d
Range of basis weight	50 to 200 g/m <sup>2</sup>
Quality of products	A lot of dirt and pinholes seen, quality being deteriorated.

As shown above, PM1 has many problems in terms of total efficiency and quality of products. More strict control of stock consistency and intensified dust removal system are



required. The improvement of dewatering device on the wire part and the drive system are also required.

### 3) PM2

Total yield	78.1%
Total efficiency	67.2%
Production finished	4.64 t/d
Range of basis weight	26 to 69 g/m <sup>2</sup>
Quality of products	A lot of dirt and pinholes seen, quality being deteriorated.

As shown above, PM2 also has many problems in terms of total efficiency and quality of products. More strict control of stock consistency and intensified dust removal system are required. The improvement of dewatering device on the wire part and the drive system are also required.

### 2-5-3 Unit II (PM3)

No serious problems are found with the equipment and operations. Quality-wise, however, there is a slight handicap as compared with the imported cigarette paper. The change of CaCO<sub>3</sub> to the better grade produced in France, etc. must be tried to make test samples with a view to improve the product quality.

The higher rate of power consumption is peculiar to the mill making thin papers. When the refining equipment is to be additionally installed in the future, disk refiner, conical refiner, etc. should be introduced to use more cutting of fibers in the refining process for the reduction of power consumption. At the same time, the lessening of creases caused by non-uniform drying of sheet could be achieved.

### 2-5-4 Finishing Section

The recent needs of the market are for more products in roll and in bobbins. Under this renovation project, the installation of a rewinder and a bobbin slitter is scheduled.

## 2-5-5 Maintenance and Utilities

### 1) Boiler

The three boilers out of the existing four boilers are outdated and have very poor heat generating efficiency. Thus, the average steam cost at PPM is as high as Rp 21,670/t. With the use of the latest type of water tube boiler, steam cost on the average should be about Rp 16,000/t in view of its factor of evaporation. Installation of a water tube boiler to replace the existing old boilers is required.

### 2) Water supply

The source of the mill water is fountains in the mountainous area. The effective amount of water available is 100 lit./sec as against the right of procurement of 200 lit./sec (nearly 17,000 m<sup>3</sup>/d).

The elevated water tank in the mill site is time-worn and is not used. Hence, the variation of water pressure takes place, causing adverse effect on the quality of products. The old elevated water tank should be replaced by a new tank for reducing the fluctuation of water pressure.

### 3) Effluent Facilities

The government regulations set forth pollution control measures to the group of factories newly constructed at a certain developing area. The central government, however, has to deem stabilization of employment as the first priority given to existing factories. As to the pollution problems, only mild control is executed by the local government agencies. As a matter of fact, PPM has no facilities to treat the effluent. The effluent is being discharged into the adjacent paddy field. Farmers rather welcome it because it is useful as fertilizer.

PPM should construct a simple type of sedimentation pond for the recovery of fibers in the effluent. At the same time, the load contained in the effluent should be reduced with the use of the said pond.

#### 4) Maintenance of machinery and equipment

Machine tools are old fashioned. Even if they can be used, the problems are lack of accuracy of the machining work and low working efficiency.

With the installation of new machine tools, the preventive maintenance system should be established and standardization, simplification and inter-changeability of parts are to be realized.

### 2-6 Raw Materials for Pulp

- (1) Straw, bagasse, corn stalks, etc. are usable as the materials of the general types of paper. PPM has a long experience in the making of straw pulp. Due to the recent improvement of the species of the rice plant, the procurement of MERANG PANJANG has become difficult. The most part of the straw now collected are MERANG KAPALA and JERAME (92%), which have very high moisture content of about 40%. The quality of straw has deteriorated and the amount of supply is not stable. It is learnt that PPM is considering the use of bagasse and corn stalks as the substitute for straws. Bagasse may be available in the amount of 3,000 ADt per year from the CIREBON sugar plant. As to corn stalks, however, the amount collectable and the methods of collection are questionable. In addition, crusher and sorter will be required for removal of pith. The treatment of a relatively small amount of corn stalks will not be payable in view of the pith removing equipment to be invested. Rather than to seek for the substitute materials, the strengthening of the straw collection setup and the guidance to the collectors on the effective way of collection and the proper way for the storage should be pursued so that the increased collection of straws having uniform quality can be assured.
- (2) ROSELA as a material for cigarette paper has been test cooked and made into paper on the commercial line. The reasons for not being used now are the increased price of the raw ROSELA up to Rp 500/kg (three times as high as the past price). At this price, it is not attractive as the material for cigarette paper. In addition, the use of ROSELA causes pin-holes in the sheet. It is not a desirable material for use at PPM.
- (3) As a raw material, the cultivation of LINUM is in the progress and test cooking of it into pulp is being carried out. The LINUM is so-called flax, which is widely used as the material for cigarette paper in many countries.

We have already made technical assistance to PPM in 1978 on the cooking of flax produced in Mainland China. It is practicable to make pulp from flax in the quantity of 1,000 AD kg with the existing equipment of PPM.

When the existing cooking equipment becomes obsolete and the scrap and build becomes necessary, considerations should be given to the installation of a continuous cooking equipment to treat the necessary amount of straws, bagasse and flax with it.

The timing should be matched with the installation of PM 4 in order to optimize the effect of investment. It is hoped that PPM will keep this matter in mind as the future problem.

## **2-7 Comment on Additional Installation of PM 4**

### **2-7-1 Background of PM 4 Project**

- 1) PPM has a long history of making cigarette paper, having technical capability of manufacturing low and medium grade cigarette paper as well as semi-high grade cigarette paper.
- 2) PPM now produces 25% of the domestic demand for cigarette paper. The rest of 75% of requirement is still dependent upon the imported cigarette paper.
- 3) PPM had been given a license to produce 6,000 tons of cigarette paper by the Ministry of Industry. PPM filed a practical plan to meet the license with the Ministry of Industry in 1978.
- 4) For the future development of PPM themselves and for the development of the area where PPM is located, an early materialization of PM 4 project is desirable.

### **2-7-2 Problems to be Faced with**

- 1) Tobacco industries are rather conservative. Unless the stable supply of cigarette paper having satisfactory quality competitive with the imports cigarette paper is made sure, successful sales to new customers will be difficult to achieve.
- 2) Unless production of cigarette paper equivalent to the French products is attainable, PM 4 will not bring a profit.

- 3) Some of the tobacco manufacturers and paper mill have a strong will to manufacture cigarette paper by themselves. If all these plans come to a realization, there may be an over-supply of the cigarette paper domestically made.

#### 2-7-3 PM 4 Plan in Relation to This Renovation Project

- 1) Under this renovation project, PM 3 will be made possible to produce semi-high grade cigarette paper in the quantity of 440 tons per year.

- a. Physical characteristics of EAGLE brand now produced will be kept unchanged. The appearance quality will be improved (removal of slime and dirt). Such an improved product will be delivered to the users to sound their evaluation. The sales of the improved product should be developed steadily in this manner.

- b. Improvement of quality up to the level of French product

*In order to improve softness, combustibility and marking appearance, which are the points inferior to the French products, the change of CaCO<sub>3</sub> to the French produce should be tested. Improved samples of the product thus manufactured should be submitted to the users for evaluation purposes. Taking account of the market reaction, further improvement of quality should be pursued if needful with the final target of the market development.*

- 2) Intensified sales activities

The visitation of users should be made at least once a month for collection of customers' information, their needs for the quality and for prompt action against any claims or complaints. For such purposes, education of salesmen to give them sufficient knowledge about the product is an important matter.

- 3) The production ratio of high grade cigarette paper should be raised and the market share of it should be stepped up. Such activity based on the long-range vision to prepare for the PM 4 project is of prime importance. We take it that the PM 4 project is a problem to be taken up within the scope of a long term plan.

## 2-8 N.C.R.

### 2-8-1 N.C.R. Reviewed from The Market

Annual requirement in 1982 in Indonesia is estimated at 2,000 tons. For 10 years to come, annual growth of demand is estimated at 5%. Until 1982, all the NCR has been imported in the processed and completed form. P.T. Pusakarya commenced secondary processing of NCR in 1983 with the use of the base papers imported. In addition, P.T. Ciwi Kimia and P.T. Pakerin have been planning integrated production from base paper to secondary processing of NCR. The over-supply of NCR is foreseen in the near future. It will be difficult to enter into the NCR market.

### 2-8-2 N.C.R. from Technical Viewpoint

- 1) The base paper is mainly 40 g/m<sup>2</sup>
  - a. free from pin-holes
  - b. free from dirts and foreign matter
  - c. dimensional stability
- 2) Conditions for production of base paper
  - a. Chemical woodpulp, thorough removal of dirts is required.
  - b. Paper machine should be equipped with pin-hole and dirts detector.
- 3) Coloring agent (micro capsule) and developing agent are patented chemicals. Licensing of the patents is required.
- 4) Air-knife coater is generally used for coating the coloring agent in capsule. In case of resin type of coloring agent, high consistency coating is applied with the use of roll coater or blade coater. The installation is very expensive.
- 5) Cautions to be paid for processing and for finished products
  - a. Any dirts of foreign matter contained in the base paper will cause sheet break in the coating process, low coating efficiency and the loss of paper and coating chemical.

- b. Any dirt on the paper will cause confusion with the dots typed.
- c. Any pin-holes in the base paper will cause strike-through of the coloring agent resulting in serious troubles.
- d. Caution must be paid for handling the products. Improper handling will cause coloring of the products and the value as the product will be lost.

As mentioned above, the manufacture of the base paper of NCR involves various technical problems. This renovation project will not include NCR as the item to be developed. However, the plan to manufacture NCR should not be given up totally. The mill should plan to manufacture the base paper on the trial basis some day and have it test coated on the test coater to be installed at the training center. In so doing, the mill should learn how to make the base paper and how to coat it to complete the finished product.

## CONCLUSION AND RECOMMENDATIONS

1. This study was carried out to take the form of renovation with the target that PPM will maintain profitability for years to come pursuing the means enabling PPM to contribute to the development of the area as a sole paper and pulp enterprise in the area toward the future and that PPM will strengthen the foundation enabling it to take a great stride forward at the next stage such as installation of a new paper machine.
2. The outline of the best available plan is as follows:
  - 1) Means for reduction of production cost (Unit 1)
    - a. Reduction of cost of self-made bleached pulp (Rp 499/kg to Rp 345/kg) and increased production (5.42 BDt/d to 10.5 BDt/d)
    - b. Reduction of steam cost (Rp 21,670/t to 16,000/t)
    - c. Saving of resources by means of improving the total yield (77% to 86%)
    - d. Reduction of effluent contamination
  - 2) Means for production increase (Unit I)
    - a. To improve the daily production, increasing the machine speed (30 to 50%) and raising the total efficiency (68% to 76%)
    - b. Thus an additional production of 1,378 t is expected per year.
  - 3) Means concerning the sales increase and the selling price improvement (Unit 1 and 2)
    - (1) Unit 1
      - a. Selling price restoration by quality improvement (3%)
      - b. To change in part non-profitable grades to profitable grades



(2) Unit 2

To reduce the production ratio of common grade cigarette paper and to increase the production ratio of higher grade cigarette paper.

4) Means of improvement on management technique and operation technique

Education and training of a total of 28 man-month

5) Total funds required

Rp 7,982,608,000 (5,026,087,000 of foreign currency included)

6) Period of time required for the renovation work

26 months

7) Total number of employees

Unchanged

3. Market

Sales expansion products to be expected are those to replace the papers now imported and the export of an increased portion of straw pulp.

So, the expanded sales can be performed without disturbing the market conditions of Indonesia. Moreover, such sales contribute to a saving of foreign currency.

4. Raw Materials for Self-made Pulp

To be collectable from the suburbs of the plant.

5. In case the best available plant is carried out

1) The I.R.R.O.I. after tax is 13.80%

The pay-out period is 5.1 years.

- 2) After-tax profits Rp 353,550,000 in 1983 (Actual)  
Rp 1,051,002,000 after 1990
- 3) During all the period of realization of the plan there is no fund shortage. The repayment of long-term loans is possible and a sound financial condition can be maintained.

6. From the above-mentioned study result the renovation plan is feasible.

We recommend that the plan be put into practice as early as possible.

7. To carry out this renovation plan successfully, the following matters are recommended:

- 1) The stabilized and improved quality of products and the reduction of production cost are fundamental needs for any enterprise to survive.

In this report defective points on operation, management and installation and countermeasure to be taken for the improvement were indicated wherever needful.

Since there are many indications which can be carried out immediately, it is recommended that the quality improvement and the profit improvement be achieved by making use of our advices, putting them into practice to start from whichever accessible.

- 2) To attain the goal of this plan the improvement of hardware as well as software is very important, the two phases being inseparable as if both wheels of a vehicle. A good balance between the hardware and software should be kept.
- 3) In order to carry out this plan smoothly, it is considered to be a good means to receive the guidance of foreign consultants and the engineers of foreign paper mills with long experience.

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