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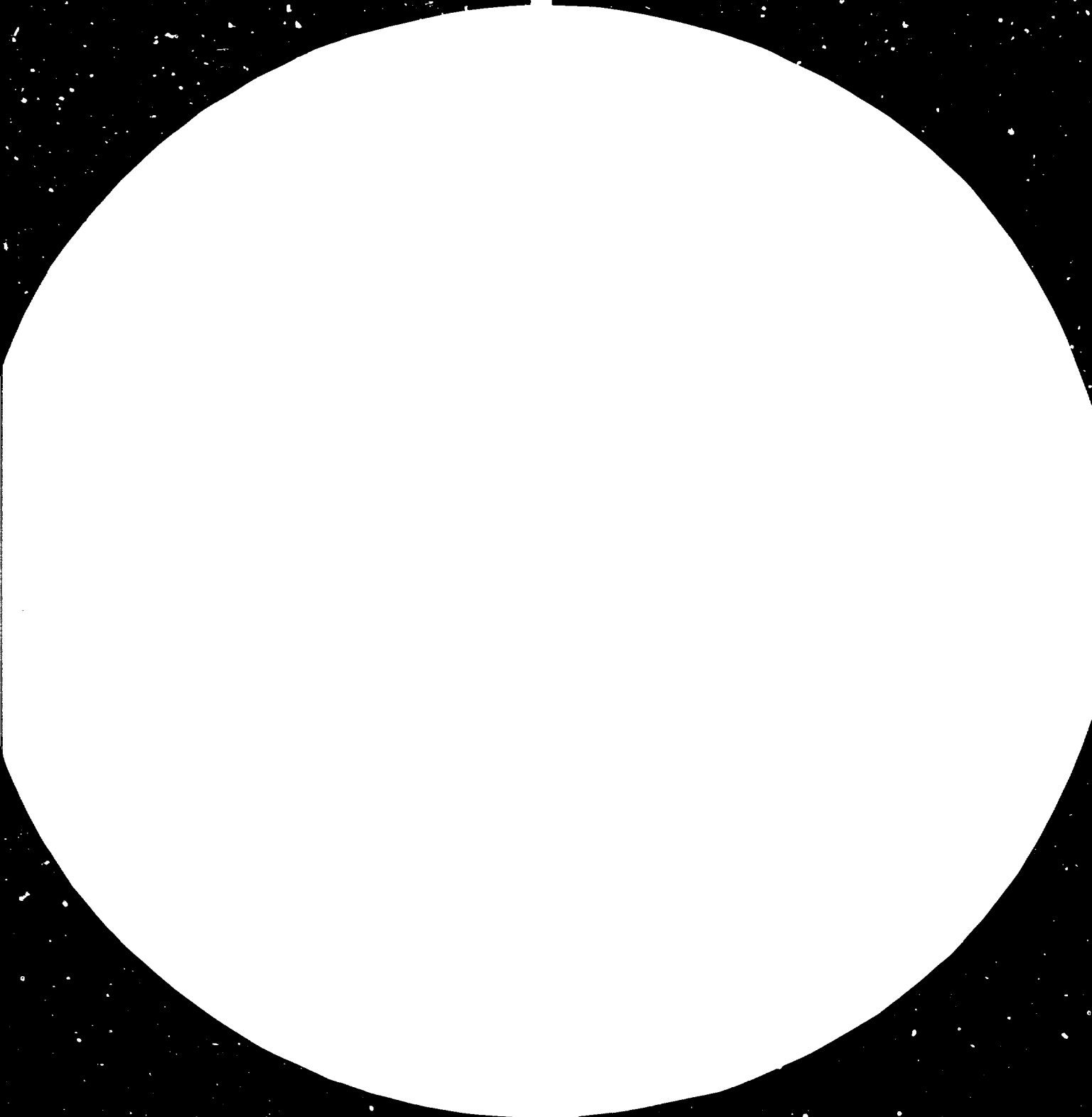
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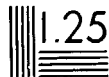
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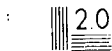
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Resolution Test Chart
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THE PAPER AND BOARD MILL SITUATION IN INDONESIA*

by

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INTRODUCTION

There are 28 paper and board mills in Indonesia today and most are located in Java. Fourteen are integrated mills and the others are non-integrated [without pulping unit (see Table I)].

Paper and board output reached 215,000 tons in 1979, but the installed capacity was 270,000 tons/year. Therefore, utilization was 80% only. The total paper and board consumption was 430,000 tons. It means that per capita consumption was 3 kg. (population in 1979 was 145 million). It was very low compared to the other ASEAN countries. For instance:

Malaysia	-	37 kgs/capita
Singapore	-	59 kgs/capita
Philippines	-	10 kgs/capita
Thailand	--	6 kgs/capita

RAW MATERIALS

In the beginning of the existence of pulp and paper mill in Indonesia which was located in Java, the upper part of the rice straw ("merang") was the only economical raw material that could be readily utilized. But at present, a new variety of rice is being promoted by the government to get a high yield of crops per ha. annually. The variety of rice and the new harvesting system caused less production of upper part of rice straw, thus, its price became more expensive. Everyday, the mill switches over its raw material into the whole part of the rice straw called "jerami." However, "jerami" has leaves and dirt with it.

After a year, some mills were constructed to use bamboo, wood and bagasse, due to the lack of rice straw. The materials consumed for raw materials (1979) were as follows:

wood	-	74,750 tons
bamboo	-	32,700 tons
bagasse	-	57,500 tons
rice straw	-	106,550 tons

PROCESS

The process used for pulping was soda, sulfate and Neutral Semi-Sulfite (NSSC). The total pulp production was 73,865 tons in 1979. The other 14 mills are non-integrated and they use imported pulp and waste paper as raw materials. Pulp import was 108,981 tons and waste paper used was 85,450 tons.

PAPER MACHINE

There are 44 pieces of paper machines that belong to 28 mills. Two types were used, Fourdrinier and Cylinder Mold. The data of the machines are as follows:

Type	Pcs.	Width of Wire (m)	Speed (m/minute)	Capacity on reel ton/year
Fourdrinier	24	1.7 - 3.05	30 - 350	210.462
Cylinder Mold	20	1.35- 2.5	20 - 110	92.272
Total	44			302.734

UTILITIES

Water

Water source for most mills is from the river but some use spring and deep water. The effluent of paper mills are now becoming the problem because there are not yet effluent standards.

Steam

Steam for all mills is generated from a steam boiler with oil for their fuel.

Electric Power

Most mills use owned generators and some use power from the town's electricity company (PLN).

Labor

Total labour force working at paper mills -- 8,771 men with educational background broken down as follows:

- 2,144 men from basic school
- 1,577 men from elementary school
- 2,443 men from high school
- 231 men from academy
- 2,376 men from basic school (without diploma).

PRODUCTION AND CONSUMPTION OF PAPER AND BOARDS

PAPER CONSUMPTION

Paper and board consumption for 1980 and 1985 is projected as follows:

TABLE NO. 2: PROJECTED PAPER & BOARD CONSUMPTION

	1978	1979	1980 *	1985 *
1. Cultural paper	157.779	166.596	176.000	234.000
2. Industrial paper	160.553	180.935	202.000	336.000
3. Others	40.864	47.209	55.000	106.000
	359.196	394.740	433.000	676.000
Population (million)	142	145	148	166
Per capita consumption	2.5	2.7	2.9	4.0

* Projected

DOMESTIC PRODUCTION

By the end of 1979, there are 6 government-owned integrated pulp and paper mills and 23 privately-owned paper and board mills in operation with total installed capacity of 270.000 tons.

Production for 1978 & 1979 follows Table 1.

TABLE 1: LIST OF INTEGRATED AND NON-INTEGRATED MILLS IN INDONESIA

NO.	MILL	TYPE
1	Asia Pacific Agung	Non-Integrated
2	Delta	- do -
3	Eureka Aba	- do -
4	Karya Tulada	- do -
5	Noree	- do -
6	Papyrus Sakti	- do -
7	Pelita Cengkareng	- do -
8	Pindo Deli	- do -
9	Pupar	- do -
10	Saraswati Bhakti	- do -
11	Surya Kertas	- do -
12	Unipa Daya	- do -
13	Indah Kiyat	- do -
14	Pura	- do -
15	Basuki Rahmat	Integrated
16	Bekasi Teguh	- do -
17	Blabak	- do -
18	Gowa	- do -
19	Inpama	- do -
20	Letjes	- do -
21	Golden Martapura	- do -

NO.	MILL	TYPE
22	Padalarang	Integrated
23	Sinar Kudus	- do -
24	Sumber Indra Jaya	- do -
25	Uninga	- do -
26	Pakerin	- do -
27	Tjiwi Kimia	- do -
28	Suparma	- do -

TABLE NO. 3: PAPER AND BOARD PRODUCTION

Kind of Paper	1978	1979	1980*	1985*
1. Cultural paper	99.232	157.179	121.925	187.460
2. Industrial paper	55.377	56.336	121.100	136.600
3. Others	600	640	1.500	1.500
	<u>155.203</u>	<u>214.155</u>	<u>244.575</u>	<u>325.560</u>

* Projected

List of the pulp and paper mills in operation is in Table No. 4. The unfilled demand for 1978 & 1979 and projected:

TABLE NO. 5: THE UNFILLED DEMAND

Kind of Paper	1978	1979	1980*	1985*
1. Cultural paper	58.547	9.417	(-)54.075	46.540
2. Industrial paper	105.176	124.549	(-)80.900	199.400
3. Others	40.264	46.569	53.500	104.500

* Projected

From the unfilled demand estimate for 1980 and 1985, it is apparent that development prospects would be in newsprint and industrial grade, especially cement bag paper and kraft liner, all mass-produced type of paper requiring big capacity and investment to be competitive.

In Pelita III the Indonesian Government has decided to build 4 mills. First to expand was Leces Mill which reached 90.000 tons/year producing newsprint with bagasse as raw material from the surron of sugar mill. Second was a new mill in Cilacap producing 100.00 tons/year. Others produce cement bag paper for domestic consumption while those in East Kalimantan and Aceh use pine and hardwood as raw

material for pulp production.

Research and development

Research and development for pulp and paper are done by Cellulose Research Institute (CRI) in Bandung. The institute, established last November 14, 1968, consists of 4 divisions namely:

1. The Pulping Division
2. The Paper Division
3. The Cellulose Derivate and Pollution Division
4. The Development Division

The activities of the Institute consist of:

1. Conducting researches aiming at a better utilization of Indonesian fibrous resources for the cellulose industry (pulp, paper and rayon).
2. Developing laboratory research into pilot scale and commercial scale experiments.
3. Furnishing engineering and consulting services to the cellulose industry.
4. Cooperating with other institutions in solving environmental problems especially those caused by the cellulose industry.
5. Training technicians for industries of cellulose products.
6. Cooperating with other agencies, either national or international, in research and other scientific activities.

The Cellulose Research Institute is located at Jl. Raya Dayeuhkolot, 158 Bandung, Indonesia.

Indonesia Pulp and Paper Association (IPPA)

The Indonesian Pulp and Paper Association is a coordinating body of pulp and paper producers located in Indonesia. It was established in Bandung last April 1, 1969 as the first manufacturer association in Indonesia.

The IPPA Board of Directors are:

1. Abubakar Soetikno - chairman
2. Winarko Sulistyono - vice chairman I (Marketing Affairs)
3. Mohamad Sueb - vice chairman II
(Government Relations Affairs)
4. Barnas Sachmana - vice chairman III
(Industrial Relations)

The daily activities are coordinated by Mr. Kahar Haryopuspito who is the Secretary General. The members of IPPA are as follows:

LIST OF THE PULP & PAPER MILLS IN INDONESIA

No.	Mill Name	Design Cap (m TPA)	Kind of Paper Produce
1.	Asia Pacific Agung	3.000	Wrapping and packaging
2.	Basuki Rachmat	13.800	Writing and printing
3.	Bekasi Teguh	12.000	Wrapping and packaging
4.	Blabak	7.200	Writing and printing
5.	Delta	1.200	Cigarette
6.	Eureka Aba	9.000	Board
7.	Gowa	15.000	Writing, printing & coated
8.	Golden Martapura	4.500	Writing and printing
9.	Inpama	1.500	Tissue
10.	Karya Tulada	2.400	Board
11.	Noree	7.500	Board
12.	Padalarang	4.400+1.500	Writing, printing and cigarette
13.	Papyrus Sakti	4.700	Wrapping and packaging
14.	Pelita Cengkareng	6.000	Wrapping and packaging
15.	Pindo Deli	7.000	Writing and printing
16.	Pupar	1.500	Corrugating medium
17.	Pura paper	1.500	Corrugating medium
18.	Saraswati Bhakti	14.000	Writing and printing
19.	Sinar Kudus	1.500	Wrapping and packaging
20.	Sumber Indra Jaya	7.500	Wrapping and packaging
21.	Surya Kertas	9.000	Writing and printing
22.	Suparna	7.500	Board
23.	Uninga	2.000	Corrugating medium
24.	Unipa Daya	3.000	Writing and printing
25.	Tjiwi Kimia	12.000	Writing and printing
26.	Pakerin	15.000	Board
27.	Indah Kiat	33.000	Writing and printing
28.	Alas Helau	-	Not yet in operation

TABLE NO. 4: LIST OF THE PULP AND PAPER MILLS
IN OPERATION

No.	Name of the Mill	Design Cap (m TPA)
1.	Asia Pacific Agung	3.000
2.	Basuki Rahmat	13.800
3.	Bekasi Teguh	12.000
4.	Blabak	7.200
5.	Delta	1.200
6.	Eureka Aba	9.000
7.	Gowa	15.000
8.	Golden Martapura	4.500
9.	Inpama	1.500
10.	Karya Tulada	2.400
11.	Noree	7.500

No.	Name of the Mill	Design Cap (m TPA)
12.	Padalarang	4.400 + 1.500
13.	Papyrus Sakti	4.700
14.	Pelita cengkareng	6.000
15.	Pindo Deli	7.000
16.	Pupar	1.500
17.	Pura	1.500
18.	Saraswati Bhakti	14.000
19.	Sinar Kudus	1.500
20.	Sumber Indra Jaya	7.500
21.	Surya Kertas	9.000
22.	Uninga	2.000
23.	Unipa daya	3.000
24.	Tjiwi Kimia	12.000
25.	Pakerin	15.000
26.	Indah Kiat	33.000
27.	Suparma	7.500

