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Final Report to UNIDO Contract No. 70/67

"ADVICE ON MANAGEMENT OF STATE-OWNED INDONESIAN PAPER MILLS"

02883

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TS/ IMS/67/002

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D.C.N. 27/3/74

TS/1175/67/002

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Summary of Contents:

Betrifft **Advice on management of state-owned Indonesian paper mills**

INTRODUCTION

This report was worked out on behalf of the UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION after termination of consultant services performed by Diplom Kaufmann and Paper Engineer Hans Hermann Dittner in the months of July to October 1971 and March to May 1972 in Indonesia.

The advice on management of state-owned Indonesian paper mills was given on basis of the Contract 70/67 dated 27th April, 1971, to GOLLWITZER INGENIEURPLANUNG & CO. for the provision of local services of one paper engineer to the management of the state-owned paper mills in Indonesia. This involved a direct advisory activity towards the Indonesian counterparts, especially with regard to assistance in paper mill operation and assistance in paper marketing in Indonesia.

Therefore this final report contains not the details of the activities of Mr. Dittner in Indonesia. During the assignment, there was occasion to make suggestions and recommendations of major or minor importance, which could partly be realised immediately. In this connection it is referred to the short Narrative Mid Term Report, page 1 - 34, dtd. 30st April 1972, which was elaborated after the end the first field work. In this final report, however, it was tried to comprise the results of the market research and the recommendations for concentration, specialization and expansion of the state-owned Indonesian Paper Mills, from the point of view of this 5-months consulting activity in Indonesia.

As stipulated, the consulting work was only laid out for the assignment of one man to Indonesia. He should comment on economic as well as technical aspects. The targets of Mr. Dittners main activities slightly moved from the contractual services as the Indonesian Government (Director General of the Department of the Chemical Industry) requested a paper market research survey and proposals for short, medium and, if possible, long term planning projects of the state-owned Indonesian paper industry and another expert from UNIDO became active at the same time in the field of technical consultation. Furthermore, instead of the three paper mills, stated in the contract, the seven state-owned Indonesian paper mills (of which one has in the meantime been closed) had to be included into the consultation. Mr Dittner has complied with the additional wishes of the Government and of the Indonesian counterparts in coordination with the local UNDP office and UNIDO, as far as possible within the scope of the unchanged time of assignment.

For the support of the activity of Mr. Dittner we have to thank to the Director General Agus Sujono and all persons of the Department of the Chemical Industry, the managers of the visited paper mills and the Cellulose Research Institute at Bandung. Furthermore, we are grateful to the counterparts of the

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Management Institute of the University of Indonesia, who were of assistance in obtaining information, as well as to the ladies and gentlemen in the UNDP Office in Jakarta, who helped to remove organizational problems.

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1. THE PAPER MARKET IN INDONESIA

1.1 General Aspects of the Paper Market in Indonesia

Within the scope of the consultation an investigation of the total Indonesian paper market was made. The essential results of this investigation are stated in the following.

1.11 Actual Paper Consumption in Indonesia

The investigations regarding paper consumption, which have been carried out until now, lead to different values (see table 1)

Table 1

The Various Reports on Paper Consumption 1966 - 1971
in thousands of metric tons

Year	MIUI[1]	IPPA[2]	WB[3]
1966	49,4	-	54,6
1967	75,6	70,8	76,3
1968	105,7 c)	85,2	99,2
1969	96,1	103,2	104,3
1970	148,7	122,5	134,5
1971[u]	156,7	137,9	-

Sources:
1) The Management Institute, University of Indonesia
2) Indonesian Pulp and Paper Association
3) World Bank

c) Corrected Value, u = upgraded

The figures of consumption, stated in table 1, do not include converted paper products and printing products.

Besides the evaluation of the available investigations of paper consumption Mr. Dittner has therefore performed his own investigations, amongother by studying the import statistics, including converted paper products.

On the basis of these investigations as well as the carefully estimated

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domestic paper production the quantities of consumption of paper and paper products can be assumed as follows:

1966:	54 000 tons p. a.
1967:	78 000 tons p. a.
1968:	92 000 tons p. a.
1969:	111 000 tons p. a.
1970:	161 000 tons p. a.
1971:	179 000 tons p. a.

The above mentioned figures have to be considered with the reserve that an official statistical census of overall paper consumption in Indonesia has not yet been carried out or that it is still incomplete. As an example, data on the production of paper and cardboard by private enterprises are still lacking.

At the estimated consumption of approx. 180.000 tons per year in 1971 and a population figure of about 120 million in Indonesia a very small value of a per capita consumption of about 1,5 kg in 1971 is resulting.

1.12 Long Term Aspects of the Paper Consumption in Indonesia

Due to the low actual per capita consumption the development of the Indonesian paper consumption during the next decades will be above average, even in comparison with the growth in the developing countries.

At an estimated medium increase in population of about 2,5 % (at present 2,6 % p. a.) for the next three decades and the assumed per capita consumption according to column 2 the figures of the paper consumption in Indonesia, shown in table 2, can be assessed:

Table 2

Estimate of the Future Paper Consumption of Indonesia in Approximate Figures

Year	per capita consumption (kg p. a.)	Population (in millions of inhabitants)			Estimated Paper Consumption (1000 tons p. a.)
		Jawa	other Islands	Total	
1970	1,37	76	41	117	160
1980	3,0 e	95	51	146	440
1990	7,0 e	119	64	183	1.300
2000	20,0 e	149	80	229	4.600

e = rough estimate

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These rough figures only are given to demonstrate the size and the future importance of the Indonesian paper market.

As comparison the actual yearly per capita paper consumption of the neighbouring countries is adduced: (Source: PPI, July 1973)

Philippines	10,6 kg
Malaysia	20,2 kg
Singapore	58,0 kg
Taiwan	37,2 kg
Thailand	6,4 kg
Indonesia	1,5 kg

It is the sense of such a rough long term investigation to point out the necessity of a well-timed long term development planning of the Indonesian paper industry and its best raw material supply. (The cycle from planting to pulping of timber amounts to 15 years or more in Indonesia.) Also short and medium term decisions have to be coordinated with the foreseeable long term development and the considerable extension of the Indonesian paper industry, which has to be planned to meet the demand of the local market.

1.13 Medium Term Prognosis of the Paper Consumption in Indonesia

The development of the Indonesian Paper Consumption within the last years is shown in Table 1, page 5.

For the period from 1970 to 1975 various institutions have estimated the following average growth rates to the consumption of paper in Indonesia (Table 4, page 8):

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Table 4

Comparison of Several Forecastings	
Reporter	Increase p. a. 1970 - 1975
The Management Institute University of Indonesia	4 %
Paper Association of Indonesia Asian Industrial Development Council World Bank Report	about 11 %
Canadian International Development Agency	16,5 %
Growth rates of GNP at equal prices	6 - 7 %
FAO-estimation for Africa, Asia (Without Japan and P. R. of China), Oceania	approx. 5 %
Sources: BAPPENAS and other Sources	

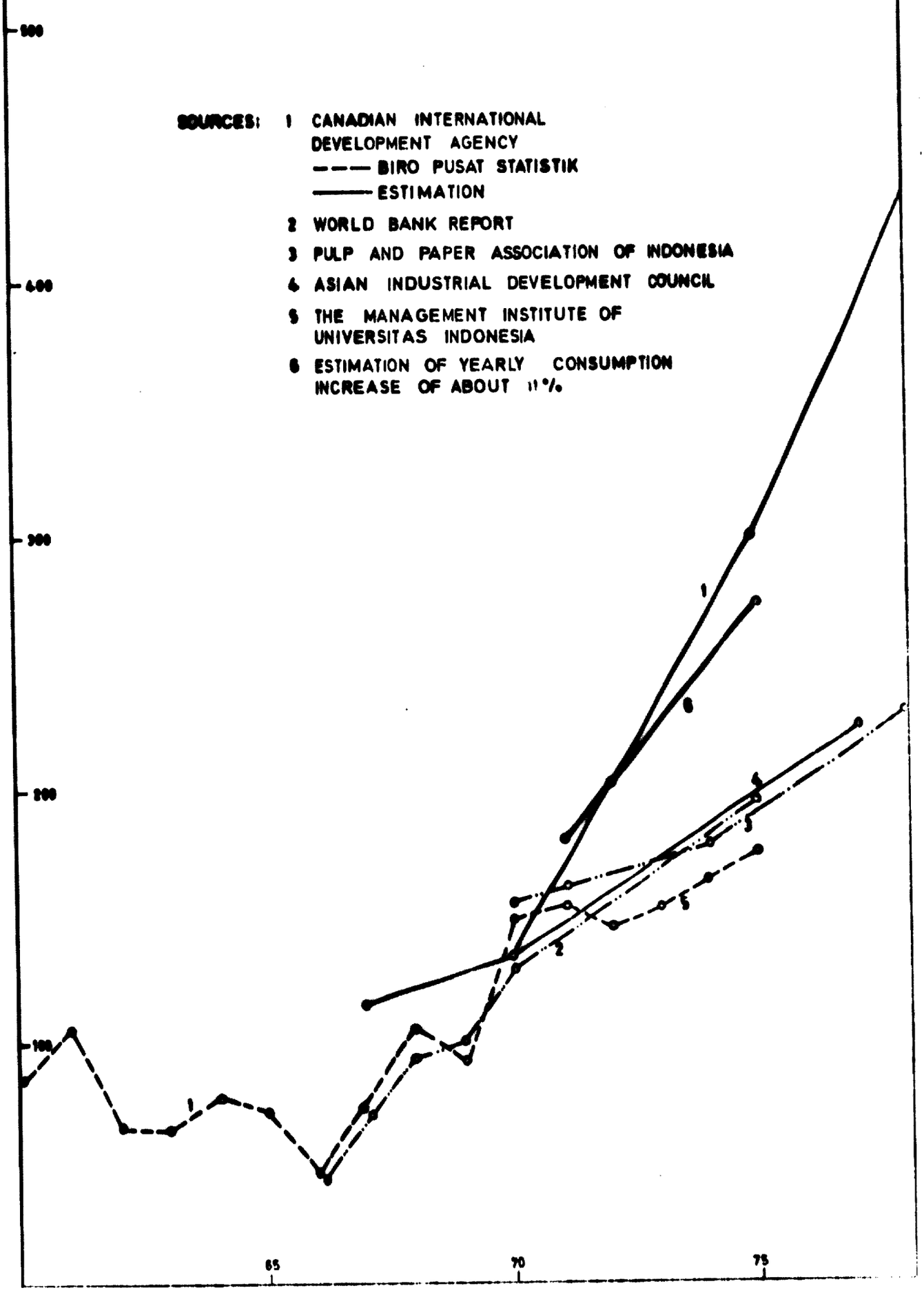
The various forecasts on the future development of the paper consumption in Indonesia are depicted in a diagrammatic comparison in table 5

The estimates of the Management Institute are, in our opinion, far too low; they fall short of the annual growth rates estimated for the GNP. Moreover, corresponding with the applied formula, a lower consumption of paper was estimated for 1972.

The estimates of the Pulp and Paper Association, of the World Bank, and of the Asian Industrial Development Council lie close together with regard to their growth trend; their starting points, however, are fixed on too low a level.

The estimates of the Canadian team, on the contrary, are considerably more optimistic. They also correspond with the assumption that an industrialization phase has begun in Indonesia. It is true, though, that the influence of a slight backlog demand should not be underestimated and that the development to be expected might proceed along a line somewhat beneath the forecast of the Canadian team.

TABLE: 5	PAPER CONSUMPTION OF INDONESIA COMPARSION OF DIFFERENT ESTIMATIONS	PAGE 9



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With regard to all studied documents and the discussions, held in Indonesia, as well as under the assumption of a yearly increase of the GNP of 6 - 7 %, as planned, the growth of the paper consumption in the next years is estimated to 10 - 12 %. This results in the following figures:

1971: 179 000 tons p. a.
1972: 199 000 tons p. a.
1973: 222 000 tons p. a.
1974: 246 000 tons p. a.
1975: 273 000 tons p. a.

1.14 Domestic Paper Production

From the aprox. 179,000 tons paper consumption in 1971 some 25,000 tons were supplied by the Indonesian paper mills (of this about 23,000 tons from the state-owned paper mills). That means that only 14 % of the domestic market could be covered by own production (1972 appr. 16%).

This production was essentially achieved by the seven state-owned paper mills (of which one has in the meantime been closed). Annex 1, Table 3 shows the location of the state-owned paper mills. Exports of the Indonesian paper mills are negligible.

The following table shows the development of the paper production of the state owned paper mills.

Table 6

Production of the state-owned paper mills in Indonesia 1967-1972

Year	Gross-Production	Net Production
1967	8,6	-
1968	11,3	-
1969	15,9	-
1970	21,7	18,4
1971	27,1	23,2
1972 p	34,1	30,2

p = planned
Sources: Indonesian Pulp and Paper Association

Concerning the relatively small production figures of the private paper mills no statistics are available.

1972 the total turnover of the state-owned paper industry is about 4,000 million rupiahs.

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Table 7 (page 13) gives a condensed summary of locations, capacities, production and sales of the seven state owned paper mills in 1971.

The production figures shown in table 7 (the actual production of the mills ranged from 1,800 tons to 7,800 tons in 1971) illustrate that compared with the development in the industrial countries and the neighbouring states, all Indonesian paper mills are too small.

Average production rates of paper mills in some Asian countries in 1970 and 1972 shows the following table:

People's Republic of China	185 tons/day	(1970)
Philippines	70 "	(1972)
Singapore	60 "	(1972)
India	50 "	(1970)
Pakistan	40 "	(1970)
Taiwan	35 "	(1972)
Sri Lanka	35 "	(1970)
Thailand	30 "	(1970)
Indonesia	20 "	(1972)

In 1972 the state-owned Indonesian paper mills employed approx. 3,650 people at a planned production of about 30,000 tons p. a. Thus the production amounts to 8,2 tons per capita of employees, only.

Table 8 (page 14) provides a survey of the whole production programme of the state owned paper mills. From this it can be seen that, roughly, the following percentage of paper are marketed:

writing and printing papers within the normal weight range	80 %
light weight papers	1 %
heavy weight papers	14 %
packaging papers	5 %
total	100 %

Important market sections are the areas of administration (office) and education.

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Table 8 further shows that nearly all state-owned paper mills offered the same types of paper on the Indonesian market, which turned out to be disadvantageous during the past years, especially in the field of wood-free writing and printing papers with a ruinous price competition in the field of simple and cheaper paper grades.

In this sector the Indonesian papers at present hold a market share of between 35 and 40 per cent.

The increase of the production of paper by the state-owned mills is percentual, but not absolutely, exceeding the growth of the domestic consumption:

effective production increase	1970 - 1971:	4,800 tons = approx.	25 %
planned production increase	1971 - 1972:	7,000 tons = approx.	30 %
(estimated growth of paper consumption	1971 - 1972:	20,000 tons = approx.	11 %)

TABLE 7

PAPER PRODUCTION IN INDONESIA (1971)

No.	Paper Mill	Island	Start of operation		Average designed capacity in tons		Target	Production in 1971 in		Sales in 1971		Remarks: present daily 6)
			PM I	PM II	daily	yearly	1971	Gross[4]	Net[5]	in t	in Mio. Rp	gross produc.
1.	P.N.P.K. PADALARANG	West Jawa	1923	1929	12	3.600	3.600	4.477	3.249	3264	459,9	about 14
2.	P.N.P.K. LETJES	East Jawa	1940	1970	30	9.000	8.240	8.940	7.818	c7183	1001,0	30
3.	P.N.P.K. BLABAK	Centre Jawa	1961	-	24	7.200	3.600	4.113	3.351	3321	444,1	13
4.	P.K. Basuki RACHMAT BANJUWANGI	East Jawa	1969	--	30	9.000	6.650	7.608	7.022	7111	855,0	30
5.	P.K. GOWA	Sulawesi	67/72[1]	--	30	9.000	3.800	2.000	1.791	c 380	54.0	30
6.	P.K. MARTAPURA	Kalimantan	1972	--	10	3.000	---	---	---	---	---	3[2]
7.	P.K. PERMANTAN SIANTAR	North Sumatra	closed 1970	--	--[3]	---	---	---	---	---	---	-
	State-own Indonesian Paper Mill in 1971:				136	40.300	25.890	27.138	23.231	21469	2814,9	120

Source: Pulp and Paper Association

1) In full operation 1.1.1972
2) Run-in at beginning of 1972
3) Designed capacity 15 t/day
4) after PM
5) after finishing
6) mid. 1972

c) It must be noted that some different values were given by the companies.

Table 8

PAPER PRODUCTION PROGRAMME IN 1971 (metr. t)

Sorts of paper	P.N.P.K. Padalarang		P.N.P.K. Letjes		P.N.P.K. Blabak		P.K. Banuki Rachmat Banjuwangi		P.K. Gowa 1)		Total	
	Product.	Sales	P.	S.	P.	S.	P.	S.	P.	S.	Product.	Sales
Cigarette	173	200	--	--	--	--	--	--	--	--	178	200
light weight	93	94	--	--	--	--	--	--	--	--	93	94
normal	1.854	1.862	7079	6532	1840	1726	6873	6896	800	347	18.446	17.363
heavy weight	288	297	129	170	--	--	--	--	--	--	417	467
cover	836	811	378	264	1320	1461	--	--	--	--	2.531	2.536
kraft-packaging	--	--	235	217	c191	135	148	215	c991	c243	1.565	810
	3.249	3.264	7818	7183	3351	3322	7021	7111	1791	590	23.230	21.470

Remarks: 1) not in full production, testing start Sept. 1971

sources: corrected values of IPPA

c) It must be noted that some different values were given by the companies.

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1.15 Imported Paper

Our own investigations into the quantities of paper differ in some cases widely from those of other reporters. Possible causes may be attributable to an incomplete census and to the fact that even the data available from the Statistical Office are at variance. Various cross-checks carried out with the aid of export statistics of some countries exporting to Indonesia resulted in additional inconsistencies, above all in paper classification. The results of these checks are believed to substantiate the presumptions expressed by the Indonesian side, that false customs declarations are often made in order to save customs duties. Therefore, it must be mentioned that the details of Indonesian imports statistics must be regarded with caution.

Table 9 gives a summary of the import figures and percentual shares at the total consumption of the past years (1966-1970) as well as an estimate for 1971 and 1972 (for 1971 consumption figures were upgraded and for 1972 a domestic net production of 30,000 tons p.a. is assumed). Hereby only imports of converted products are not mentioned, their shares are near on average with about 3 % total paper consumption.

The present share of imported paper amounts to about 81 % of the overall paper consumption (converted and printed paper products included at about 84 %). Also when considering the possible production increases, mentioned in this Report, the import share is believed to decrease only negligible till 1975.

Table 9

Indonesian Imports of Paper

Year	Total Paper Consumption - 1000 t -	Imported Paper - 1000 t-	Approx. Share - % -
1966	54	40.1	74
1967	78	67.9	87
1968	92	79,6	87
1969	111	94.1	85
1970	166	140.9	85
1971	179	148.0	83
1972	199	161.0	81

Source: Own research in PUSAT STATISTIK

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Compared with other Asian developing countries, Indonesia, by actual import figures, ranks among the top group of all countries importing paper. India, the two Chinas, and, most recently, the Philippines are pursuing a largely self-sufficient paper market policy with import restrictions and the build-up of large capacity plants.

The first place of all countries exporting paper to Indonesia is held by Japan. Its share, by quantity, has increased by about 35 % in 1968/1969 to about 50 % in 1970/1971. Japan is followed by the People's Republic of China and the USA with 10 % each. The trade markets of Singapore, Hong Kong and Taiwan with a combined total of about another 10 % are also of some importance. Ranking next are the EEC with about 7.5 %, Scandinavia with 5 %, and Australia with about 2 %.

A more detailed assessment of the important type of imported paper is given in Section 1.2.

With respect to value, the following papers and paper products were imported:

Year	Papers (in millions of rupiahs)	Paper Products (in millions of rupiahs)	Total (in millions of US $)
1970	11,685	1,650	34.5
1971	13,600	1,370	appr. 36.6

until August 1971: 1 US $ ≙ 385 rupiahs
after August 1971: 1 US $ ≙ 415 rupiahs

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1.16 Market Price Situation

Imported papers are levied with 65 % import taxes and some minor customs duties. Due to the high share of imported papers and the dominating position of the domestic wholesale trade (see also figure 1.17) the following statements are resulting with regard to the price situation:

- The domestic wholesale and the import trade are in a position to influence prices, sales quantities, and the qualities of the paper, with the respect that domestic paper is classified as inferior quality type and is priced at about 12 % to 15 % below actual market prices.

- The published list prices of imported paper, are frequently lowered by special discounts of the manufacturers or importers and are fixed below the published list prices of equivalent Indonesian types of paper. Annex 2, table 10 gives a detailed summary of the fixing of the price for HVS-paper 60 g/m^2 in 1972). As an example, the list prices of imported HVS/HVO paper (wood-free writing and offset printing) in 1971 amounted to US $ 276.95 per metric ton. The actual price asked from wholesalers or importers, however, figured at 240.-- US $ per metric ton.

- Cyclical or other production surpluses of the major importing countries can have the effect of severe price pressures on the domestic market by temporary price cuts in the form of special offers.

- A so-called "grey-market" of imported paper is continually dodging the government's protective customs measures by means of false declarations or other illegal manipulations. As an example, HVS types of paper, for which customs duties of 10 % are to be paid, can be declared as newsprint for which no customs duty has to be paid.

- The state-owned Indonesian paper mills have over many years allowed themselves to be pushed into reciprocal price competition, and this even on the level of second-grade types of paper for which the profit prospects are less favourable.

- As a result those market conditions (also external factors) led to a deterioration of the profits and to difficulties in liquidity.

Prices and price trends for the main paper type of 5 mills from the beginning of 1970 till the midst of 1972 are shown in Annex 2 (table 10). Hereby, the increase of the general living costs in Indonesia of approx. 8 % in 1970 and approx. 4 % in 1971 has to be considered.

The dependence from import prices and paper wholesalers can considerably be observed out of the fluctuations of the selling prices.

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1.17 The Distribution of Paper in Indonesia

The distribution of imported paper, which presently accounts for more than 80 % of the Indonesian market, is handled via import firms or via manufacturer owned branches or agencies. Imported paper is sold to the wholesale trade, with very few exceptions, e.g. security and banknote paper and special paper, which is bought directly from the manufacturer. Also raw materials, such as pulp, etc., are sold by agencies in Indonesia.

As summarized for the individual paper mills in Annex 3, (table 11) approx. 91 % of the entire paper sales of the state owned paper industry went into the paper trade, with the bulk of it, going into the wholesale trade. The remainder of about 9 %, mostly special paper, goes directly into the industry or to the government. This lays bare one of the weakest points of the Indonesian paper industry, namely the industry's complete dependence on the paper wholesale trade.

The paper sale of the state-owned paper mills is in the hands of a small number (approx. 10 companies) of wholesalers, who have a sales network of dealers and agents at their disposal. These dealers and agents, while being dependent on their respective major wholesalers, are spread over the whole of Jawa and the islands, enabling a side-by-side competition. The wholesale trade itself or the distributor supplies the processors and/or paper shops. In most cases the wholesaler has his own processing facilities with which the paper is processed or cut to folio format size.

Apart from their trade with Indonesian paper, these wholesalers also import paper, above all from Japan and Chinese sources, or special types of paper which are not produced in Indonesia, also from other countries.

Historically, the Indonesian paper mills, after taking over the former Dutch positions which handled the paper trade in Indonesia via three quite large wholesale companies - had at first supplied the market directly. It was primarily the payment difficulties of the clients that led to an engagement of the wholesale trade - mostly consisting of Chinesefirms - which, among other things, also dealt with the problem of financing.

It is relatively difficult to form any clear impression of the pricing in this trade. A large portion of their receipts, especially the profitable ones, are admitted by the paper dealers to be received via business transactions that can be ascribed to the "grey" area of marketing, e.g. the wholesale trade takes it over to grant interim financing.

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As reported by the state-owned paper mills, payment in respect of suppliers to government agencies is often delayed for periods from between two and five months. Considering the tight liquidity of the Indonesian paper industry, such a long payment period is intolerable. Hence, the wholesalers take over the business, effect payment within about two weeks, and debit the government agencies with the respective amount.

The paper import harbours are the traditional centres of the paper trade and it is largely from there that the distribution of domestic types of paper is controlled.

The most important trade places are:

Island:	1. Category:	2. Category:
Jawa	Jakarta Surabaya Semarang	Surakarta Tjirebon
Sumatra:		Medan
Sulawesi:		Pandang

All of the above places are ports, except for Surakarta.

The regional distribution of the domestic paper production is summarized in Annex 4, table 12 .

At this consideration must be given to the fact that in the reports of the paper mills only the wholesaler's trading places are specified as areas of delivery. As far as further distribution is concerned, which may also include the distribution to other areas, the paper mills have hardly any information; neither is the trade in a position or prepared to give any such information. The data must be reported here as rough percentage values only, since the informations given by the Indonesian paper mills show inconsistencies which could not be clarified in detail in the short period available.

Delivery from the ports of Jakarta and Surabaya concentrates chiefly on Sumatra, Kalimantan and on the eastern islands, which do not appear in this list. It is probable, though, that a considerably larger portion of paper from the imported quantities is supplied to the other islands. Jawa itself is believed to account for more than about 90 % of the domestic paper production and probably for more than about 80 % of all paper required. This assumption is considered to result roughly in the following distribution picture for 1971:

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Area	Population (in millions)	Share %	Consumption of paper	Share %
			(in 1000 t)	
Jawa	77	64	145 - 150	80
other islands	43	36	30 - 35	20
Indonesia	120	100	179	100

For Jawa, this represents a per capita consumption of about 2.3 kg, and of about 0.75 kg for the other islands.

Also within Jawa, there is believed to be a west-east downward trend. Another such downward trend is believed to exist between the urban regions and the rural areas. Leaving the surrounding regions out of consideration, the following population figures apply to the most important cities:

Jawa:	Jakarta	4.5 million inhabitants
	Surabaya	3.0 " "
	Bandung	2.8 " "
	Semarang	0.6 " "
	Surakarta	0.4 " "
	Malang	0.35" "
	Jogjakarta	0.35" "
Sumatra:	Medan	0.5 " "
	Palembang	0.5 " "
Sulawesi:	Ujung Pandang	0.4 " "
Kalimantan:	Banjermasin	0.25" "

A roughly similar number of people, although with a considerably lower consumption of paper, is believed to live in the surrounding areas of concentration. With respect to the roughly 20 % of the population living in about 285 towns, an average per capita consumption of nearly 4 kg of paper - within the meaning of paper used and/or converted in that location - can be assumed, with a per capita consumption of about 7.5 kg in Jakarta being considered not very unrealistic.

In the country, however, the average per capita consumption is believed to amount to about 1 kg, and in the other islands below that figure.

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1.2 Detailed Data of Market Sections and a Prognosis of their Paper Demand

1.21 Market Review

More precise knowledge of the individual markets and their potential is necessary for controlled measures of a policy of paper grades and specialization. The critical examination of the available information and the active procurement of new information - carried out in cooperation with the very open minded counterparts - is intended to represent an example and, at the same time, a training measure. This work must be continued

The introduction of a correspondent paper classification of export/import statistics and the paper production is urgently required to improve ways of making comparisons on an international level and to clarify the statistical data. First suggestions were made by Mr. Dittner during his stay in Indonesia.

In this connection the aimed international standardization of the paper classification should be taken into consideration as well as the interests of the Indonesian paper industry, caused by the domestic market.

A summary of the demand within the individual types of paper is shown in Annex 5, table 13.

Writing and printing paper roughly accounts for 45 % of the quantities of paper required in Indonesia. Newsprint accounts for 20 %, packaging types of paper for another 25 %. While the total consumption of newsprint, household papers and paper products, as well as special construction papers and cardboards must be covered through imports, approx. 25 % of all printing and writing paper required is produced at home, with the percentage in the sub-group of normal-weight paper even exceeding 30 %. The packaging paper and cardboards from the production of domestic private companies added, the quantity of all packaging paper produced in Indonesia does not even reach 10 %.

1.22 Newsprint

Newsprint is no longer produced in Indonesia since attempts at Permantang Siantar, Sumatra, to build up much too small a capacity of 5,000 tons p.a. have been discontinued.

The present total consumption of about 35,000 to 40,000 tons p.a. is covered by imports for which foreign currencies of nearly 3,000 million ruphiahs (About 7 million US $) must be spent. As shown in the graph Annex 6 (table 14); the development of the consumption has taken a very abrupt course. Numerical figures of the newsprint imports are included in Annex 9, table 18.

Betrifft **1. The paper market in Indonesia**

The newsprint consumption is influenced by the fact that Indonesian authorities are granting licences to publishers. Part of the imported newsprint, is used for purposes other than newsprint, e. g. for

- printed matter
- brochures
- telephone directories
- copy-books
- cigarette wrapping paper, etc.

A large portion of these quantities is delivered in reams. Part of these quantities are also believed to result from the false declarations mentioned under Para. 1.15. Computed from previous statistics, the following quantities can be expected to be consumed in 1971:

Consumption of Newsprint	in reels	in plano	Total
Newspapers and magazines	19 700	2 200	21 900
General printing, converting and false declaration	12 600 mostly in plano		12 600
Total consumption	< 60 %	> 40 %	34 500

The roller trimmed widths of the machines on which newspapers and periodicals are printed are mainly (86 %) 90 cm, the rest 84 cm and 60 cm. The format sizes are 61 cm x 92 cm (about 82 %) and 55 cm x 75 cm (about 18 %).

According to Grafica Nasional, the development of the consumption of paper for newspapers and periodicals in Indonesia can be computed as follows:

- 1970: 19,410 tons p. a.
- 1971: 20,930 tons p. a. (+ 9.4 %)
- 1972: 21,930 tons p. a. (+ 4.8 %; planned)

In 1972 in Indonesia there have been 306 publishing houses for newspapers and periodicals with a total number of copies of about 2 960 000 and an average weight of about 7,4 kg per type and year.

Betrifft **1. The paper market in Indonesia**

Predominantly, the qualities of imported newsprint correspond with international standards, although some of it have a simpler quality and darker colour than the newsprint used in industrialized countries. The printing quality of almost all daily newspapers must be considered not very satisfactory, attributable to the relatively simple production conditions prevailing in the printing and engraving shops.

Most of the weekly, bi-weekly and monthly periodicals are procured on newsprint containing ground wood pulp; in some cases assorted paper or paper suitable for cutwork printing, is used. A statistical breakdown could not be ascertained.

The consumption of daily newspapers, weeklies and monthlies is to more than 80 % concentrated in Jawa, especially in the area of Jakarta.

The following quantities of paper are expected to be required in 1972:

Publications	Total Quantities (tons)	in Reels (tons)	in Plano (tons)
Daily newspapers	17,585	16,095	1,490
Weeklies	3,967	3,330	637
Bi-weekly and monthly periodicals	377	260	117
Newspapers and Periodicals, total	21,929	19,685	2,244

At the imports of newsprint the dominating position is no longer held by South America but now by Japan. While the imports from the People's Republic of China and the USSR have remained on relatively the same level, the imports from Canada and from Scandinavian countries have declined. Details of the past 4 years are shown in the following table:

Betrifft 1. The paper market in Indonesia

Table 15

The shares of the Important Newsprint Exporting Countries 1968 - 1971				
Exporting Country	Shares of Imports in % 1968	1969	1970	1971
Japan	2.2	0.8	62.0	51.0
South America	66.0	55.0	11.0	22.0
P.R. China	7.4	7.0	10.0	7.5
USSR	3.5	2.5	2.5	-
Canada	1.5	15.0	8.5	4.0
Scandinavia	10.0	15.0	3.7	3.5
Austria	-	-	--	5.7
Other Countries	9.4	4.7	2.3	6.3
Total	100.0 %	100.0 %	100.0 %	100.0 %
Source: Calculation based on information of PUSAT STATISTICS				

A fairly safe prognosis of the future newsprint requirements can hardly be given, as this prognosis is influenced by the following factors:

- the mentioned usage of declarated newsprint paper for other purposes
- economic growth, increase of advertising
- liberal press policy
- increase of the consumer requirements with regard to make-up and quality
- competitive situation to other media, especially television
- possibility of national self-sufficiency with newsprint from the domestic production, thus, increase of the licences and quotas for publishing houses.

The increase of newsprint consumption is assumed to be underproportional to the development of the other paper consumption. The reasons for this are the influences of the other mass media in the developing country of Indonesia and the fact that about 80 % of the population live in the country, outside towns.

Betrifft 1. The paper market in Indonesia

Any analysis of future market alternatives for newsprint and similar paper in Indonesia must be accompanied by a study of the supply conditions of this market section in all of south-east Asia.

Differing estimates of other reporters are shown in Annex 6 (table 14) for Indonesia and in Annex 7 (table 16) for the S.E.A. countries.

As a preliminary résumé it can be stated that the future demand for newsprint paper will range within the following dimensions:

- in Indonesia	1975:	approx. 40,000 - 60,000	tons p.a.
	1980:	approx. 70,000 - 100,000	tons p.a.
- in S.E.A. countries	1975:	approx. 270,000 - 300,000	tons p.a.
	1980:	approx. 320,000 - 450,000	tons p.a.

Conditions of international competition dominant in this market require that only a large-capacity plant capable of economical operation will be in a position to export newsprint to other south-east Asian countries. Projects with different raw material supply are followed up in the Philippines, Malaysia as well as Indonesia.

The question as to whether such projects are any alternatives to the domestic production of newsprint and, if so, their value as only an interim solution has to be examined and they are dependant on the developing economic ties of the S.E.A. countries.

1.23 Printing, Writing and related Paper

The paper summarized in this grade are woody and woodfree writing and printing paper according to their kind, mostly main or also special grades, such as cyclostyle, gummed printing paper, etc.

(Annex 8 , table 17 gives an outlook of the most essential grades).

1. The paper market in Indonesia

The most important characteristics of these types of paper are:

Office paper	for administration, industry, trade, banks, postal and transport requirements, etc., business paper, forms, ledgers, notebooks and writing pads, reels, etc.
School paper	for instructional material, textbooks, exercise books, sketch blocks, etc.
Communication and information	for books, brochures and periodicals
Advertising	for catalogues, prospectuses, posters, calendars
Industry	for printed packaging materials, labels, etc.
Private consumption	for stationery, greetings-cards, etc.
Art paper	

Printing and writing paper are responsible for approx. two-third of Indonesia's paper consumption. The consumption of this kind of paper, broken down into the major production sectors, can be taken for the past years from Annex 9, table 18 .

Annex 10, table 19, includes a rough analysis broken down into the major market sectors for the last two years as well as a rough estimate of the potential future requirements.

The processors of these papers are, above all,

- printing shops
- bookbinding shops and
- paper processing shops

which, however, do not process only the main and special grade writing and printing paper, i.e. the types dealt with in this section, but also newsprint, as the printing shops are often connected with the publishing houses. Another special feature is the combination of many fairly large printing shops with trade establishments. They often appear as retailers and frequently run book or stationery shops, chiefly combined with the sale of office commodities.

In addition, a number of printing shops also manufacture other office commodities, such as rapid binders, files, writing pads and notebooks,

1. The paper market in Indonesia

envelopes, as well as school commodities, such as exercise books, sketch blocks, etc. kraft paper, various types of cardboard and paperboard are also used for these products.

The statistics of the Direktorat Jeneral Peridustrian Ringgan dan Kerajinan Rakjak, which are now in the process of being established, provide a good survey of the situation of the Indonesian printing and paper processing shops, though other types of paper and cardboard may be contained therein.

Concerning the influences of other market areas, such as advertisement, processing for other industrial purposes, private consumption and art printing on the consumption of book and writing paper, only a few figures are available.

The medium growth rate regarding the consumption of writing and printing paper can be estimated at about 12.5 %.

Printing and writing papers are also mainly imported from Japan, only small parts from East Asian Countries, no more than 10 % from Europe.

In the following there are given some hints to the individual market sections:

Printing Paper:

According to the statistical data contained in the "Grafika"-survey, the quantities of paper required by the printing shops of all five regions of the island of Jawa in 1970 can be assessed at more than 60,000 tons.

The total quantities of paper required by all printing shops in Indonesia in 1970 can be roughly estimated at 70,000 - 75,000 tons; approximately a half of it will be used as printing and writing papers.

As mentioned before the use of newsprint for other kinds of printed matter is likewise considerable. At the end of 1971, the book-printing shops in Indonesia working chiefly by the letterpress printing method accounted for roughly 84 % of the total of some 1,100, while those working chiefly by the offset printing method made up about 16 %.

The offset printing machines, during the past one and a half years, increased by roughly 40 %. While for the production of offset printing paper, the Indonesian paper mills, at present, do not have sufficient equipment at their disposal, immediate steps should be taken so that offset printing paper can be produced for the quickly growing market in Indonesia.

1. The paper market in Indonesia

The development of the capacity of the Indonesian printing shops is being greatly boosted and this development is expected for the first three years of this decade to figure at around 50 %. Thus, most of the printing machines available will be new and more efficient.

Consequently, higher demands will be also made on the quality of printed matter, which, not least, will have repercussions on the quality of the printing paper in demand.

Close contacts between the Indonesian paper industry and the printing industry are necessary.

Although the production of books is still very small especially the production of text books in the field of education will strongly increase.

Converted Paper:

Out of the evaluation of the statistical material (Direktorat Jenderal Perindustrian Riggan dan Kerajinan Rakjat) and when taking into consideration the firms which are not registrated, it can be assumed that bookbinding and paper processing shops are processing approx. 40.000 tons p.a. printing paper, by way of a second working operation.

Thin Fine Paper:

The requirement of thin fine paper, such as onion skin, airmail, manifold, carbonizing and other kinds of thin paper, which ist not exactly determined in the statistics, is believed to actually amount to about 6,500 tons p.a. Rate increments are believed to follow a line somewhat above the average growth rate of printing and writing paper, since the use of manifold is very widespread in Indonesia.

In 1975, it is expected that the consumption of this type of paper will be in excess of 10,000 tons p.a. It is believed that the share of special technical and better-quality types of paper, such as airmail, carbonizing, etc., will then account for 20 %. At present, the import share of thin fine paper is in excess of 75 %.

School Paper:

The bulk of writing paper processed goes into the school sector. Enquiries in Jawa and on some of the islands have shown that on average, the requirements of school paper per pupil in 1970 were about 1,5 kg. Of this for exercise books: 1,3 kg and new books:approx. 0,17 kg, leaving out of consideration private purchases. (See also Annex 11, table 20). Thus, the young people are in the highest group of paper consumers.

1. The paper market in Indonesia

Office Paper Market (state office paper):

Enquiries made at some of the head offices of Indonesian ministries in Jakarta and a simple estimate show that the government authorities' requirements of paper amount to approx. 3,000 tons p. a. The requirements of the other administrative authorities and outside the capital will probably amount to about another 5,000 tons p. a.

As already mentioned in Section 1. 17, the direct supply of the state authorities by the paper mills involves certain difficulties.

Computer Paper:

At present, there are 14 larger computers in Indonesia; medium-sized computers are at present making a more rapid advance. Continuous business forms for computer output are imported or printed on two printing machines in Indonesia. Tests with paper from the P.N.P.K. Padalarang have given good results. The rise in the increase in the paper required for computers is described by Indonesian experts as extremely high; a similar development can be observed in this paper sector in other countries.

Xerox Copying Paper:

This copying paper, which works indirectly, is produced out of calendered fine paper. In the first year of sales, 1971, some 150 Xerox-copying machines were sold in Indonesia. Suppliers estimate that, for the time being, about 20 tons p.a. will be required. Supplies of this kind can be attractive for the Indonesian paper industry because they are continually supplied as contract paper by system suppliers and are purchased direct from the paper manufacturers. At present, Xerox paper is obtained from Fuji-Xerox in Japan.

Envelopes:

During the past years the uncertainties in post delivery have hindered the developments of the postal system.

HVS, HHS and kraft paper are used to manufacture envelopes, and mainly kraft paper for despatch bags. Over half of the paper used for envelopes, estimated roughly at 3,000 tons p.a., is HVS - mostly with kraft pulp contents. Roughly 75 % of the envelope paper required is imported at present. In addition, some 50 tons of ready-made envelopes are imported each year. As chiefly paper containing kraft pulp is used for manufacturing envelopes and despatch bags, this is an attractive market, especially for P. K. Basuki Rachmat in Banjuwangi.

1. The paper market in Indonesia

Bristol and Cardboard:

The consumption of bleached bristol, index, white and coloured cardboard and covers has risen considerably in the last few years.

1967:	about	3,500 tons p.a.
1968:	"	5,000 tons p.a.
1969:	"	7,000 tons p.a.
1970:		12,100 tons p.a.
1971:		18,300 tons p.a.

About 80 % are white or chiefly coloured index or cover qualities. To what extent clay-coated or dispersion coated cardboards and other coated products for packaging requirements are included in these figures, cannot be ascertained from statistical records available. On the basis of the market information, however, this must be assumed. About 80 % of the total consumption is imported. The consumption of heavy weight and cover paper or cardboard is likely to roughly double by 1975 compared with 1971. The proportion of white bristol probably amounts to some 7,000 tons p.a.

Other related Fine Paper:

We have also to mention the multipurpose bond papers, especially the paper used for reproduction purposes, the body stock for communication and copying and the special index cardboards for punch, computer and accounting cards and security and banknote paper. In the P.N.P.K. Padalarang, diazo paper is manufactured in OCE licence, while all other paper and cardboard of this kind is imported.

1.24 Coated Printing and Converted Grades

Apart from a fairly old conversion plant for producing diazo paper in the P.N.P.K. Padalarang there are no converters in Indonesia. Regarding the figures of consumption no statistical material is available. A study of the market carried out in 1970 by P.N.P.K. Letjes shows that 14 major printing shops and paper processing plants require

clay-coated paper:	4,750 tons p.a.
clay-coated cardboard:	1,260 tons p.a.

chiefly for soft packaging for cigarettes and other packaging. It can be assumed with certainty that in the event of good coated paper being produced in Indonesia, further markets for products such as book and exercise book covers, cigarette boxes, food packaging, gummed paper etc. can be opened up.

1. The paper market in Indonesia

1.25 Cigarette Paper

There are some difficulties in ascertaining the exact requirements for cigarette paper, because the production and import statistics for cigarette paper do not agree with those of the cigarette production.

The Ministry for Light Industry gives the capacity of all cigarette paper factories as 43,200 million pieces. For 1970, the following paper consumption can be worked out from the cigarette production (including 10 % waste) for

-	white cigarettes:	660 t	finest cigarette paper
-	clove cigarettes:	1,510 t	common cigarette paper
-	hand made cigarettes:	300 t	newsprint and other paper
	total	2,470 t	

This calculated quantity contrasts with an imported quantity about three times larger.

A comparison of the Indonesian cigarette consumption with other countries gives the following results (1970):

USA:	4,000	cigarettes per capita and year for men and women over 17 years
Fed. Rep. Germany:	2,000	cigarettes idem
Indonesia:	1,400	cigarettes per capita and year only for men over 17 year

So far, it has not been possible to find any precise explanation for the purpose for which this paper given in the statistics is actually consumed, especially since the consumption of filter cigarettes in Indonesia is very low. It can be regarded as certain that is must be a matter of high-quality fine paper as the average price is around 225 rupiahs per kg.

1.26 Packaging Paper and Paper Products

The domestic purchasing of packaging paper (kraft and packaging paper) amounted in the state-owned paper mills to 810 tons in 1971.

1. The paper market in Indonesia

That is a little over 2 % of the total consumption. To this can be added the nearly equal quantity from the purchases of small private paper mills, so that today only about 5 % of the requirements of packaging paper has been covered by domestic production.

A production of 3,247 tons of kraft paper is planned for 1971. The quality and price of imported kraft paper have, for the time being, repeatedly thwarted the attempts, to realize the available plans for the enlargement of the two domestic kraft pulp and paper mills (Banjuwangi and Gowa). For packaging paper a very high growth rate for the consumption (approx 20 %) can be assumed.

In the following there are some hints regarding the individual market sections:

Sacks and Paper Bags:

While in the trading sector of wrapping paper, bags made of hand-stuck newsprint (import of used newsprint in 1971 about 2,000 tons), plastic bags in the town and bags woven from local plants in the country, industrially manufactured paper bags and carrying bags made of kraft paper are competing for the market, industrial large-scale consumers are promoting the consumption of kraft paper, which will continue to grow rapidly in the future.

The Pulp and Paper Association of Indonesia has had the annual consumption of kraft paper for larger projects from the sectors cement and fertilizer industry, and other industries investigated and ascertained for this and the future repelita. Accordingly, the following consumption of kraft sack paper has been worked out to be:

1967 to 1970:	consumption uncharged
to 1974:	32,600 tons
to 1978:	74,500 tons

To what extent the newly set up plastic sack factories represent a competition in certain fields of application, should be examined before further plans are made.

Corrugated Boxes:

In Indonesia, there is one major corrugated paper factory on an international scale and four smaller ones. In addition, another eleven small works are mentioned as potential processors of corrugated paper. Their production capacity at present can be estimated at about 15,000 tons to 20,000 tons per annum, the capacity of the processors is given as 15,000 tons a year. As a result of the research undertaken by the

1. The paper market in Indonesia

Pulp and Paper Association of Indonesia, in the coming years the following consumption of corrugated paper can be expected; with a projected rate of increase of 15 %:

Consumption of corrugated paper

1970:	13,500 tons p.a.
1971:	15,600 tons p.a.
1974:	22,000 tons p.a.
1978:	35,200 tons p.a.

Enquiries at the corrugated paper manufacturers confirm the rapid increase of the demand. At present, corrugated boxes are chiefly manufactured in the Indonesian factories from kraft paper and semi-chemical fluting.

Supposing possible demand of 25,000 t/year in 1975 - the following quantities may be assumed:

corrugated coverpaper (60 %):	15,000 t
kraftliner and similar (one third)	
topliner and coarse paper (two thirds)	
medium (40 %):	10,000 t
semichemical fluting (one third)	
mixed fluting (two thirds)	

With a possible wastage of about 1/3 from manufacturing waste and market deliveries of used corrugated cardboard boxes, it is expected that some 17,000 tons of raw materials at that time are needed each year, thus making the setting up of a machine to produce topliner and mixed fluting an attractive proposition .

Wrapping and Industrial Converting:

There is no production in Indonesia of strong light-weight wrapping paper. The market, and particularly the trade, therefore, resorts to new and old newsprint and more and more plastic bags. Roughly 1,000 tons p.a. of corrugated kraft paper are imported mainly for industrial packaging purpose. For 1974/75 a market demand of about 3,000 tons p.a. of machine-glazed wrapping paper can be expected in Indonesia.

1. The paper market in Indonesia

The possible requirements of coated wrapping papers for 1972 are estimated as follows:	Quantities
gummed tapes:	300 - 400 t
packaging paper for soap:	400 t
packagings for bisquits, crackers, sweets and confections:	200 - 400 t
innerliner for sacks:	later on several hundred tons
flexible wrappings for industrially fabricated ice-cream, snacks, food, meat, fish, cosmetics, etc:	starting
exercise books and blocks from coloured and gummed paper:	starting

The consumption of glassine, greaseproof and parchment, which amounts to 4,00 - 5,00 tons p. a. in Indonesia, is likely to decrease in the years to come in favour of cellophane and plastic foil.

Special industrial paper, suchas electrotechnical paper, battery paper, filter paper and the like are either used in relatively small quantities, or their production is because of the difficulties in procuring the raw materials so expensive or technically not possible on the existing plants, that this matter is not dealt with further.

Solid-machine Board and Wet-machine Board:

Exact statistical data for the various sorts of cardboard, especially with regard to their intended use, are not available. In presenting the import figures for cardboard for various purposes, therefore, the varying margins from all available sources are given:

1966:	1 500 - 1 700 tons p. a.
1967:	4 100 - 6 200 tons p. a.
1968:	2 700 - 6 900 tons p. a.
1969:	4 000 - 9 400 tons p. a.
1970:	7 400 -10 700 tons p. a.

1. The paper market in Indonesia

Possible requirements in the single kinds of utilization of board are roughly estimated as follows:	Quantity
Bookbinding board cover for big exercise books, text books, a.s.o., blocks and letter files:	4,000 - 5,000 tons
Friction board for printing shops, paper converting and other shops:	smaller amounts
Wet machine boxboards, multiple uses in cooperation with corrugating-mills:	several 100 tons
Different kinds of shoe-hardboard and leatherboard:	several 100 tons
Motor car boards and trunk boards	about 50 t or more
white board for beer mags and for packaging in converted products	about 100 tons
Board sand plates for construction units, insulating boards	see para. 1.28

Summing up, the outcome is that an efficient solid board factory in Indonesia can find good sales for its products.

1.27 Household and Sanitary Paper and Paper Products

The imports of tissue and similar products run at present on average at about 500 tons p.a. In addition, there are some 200 to 300 tons per year of fancy paper products, which are often used in Indonesia to wrap up presents. The total value of these imports is about 250 million rupiahs, a little over 0,5 million US $.

Toilet paper is almost exclusively used by foreigners and a top group of purchasers. More chances are seen for paper handkerchiefs.

Printed paper serviettes, for the most part on normal fine paper, are also a marketable article. The sale of cellulose wadding, especially for hospital use, will increase.

1. The paper market in Indonesia

As tourism increases a total market for sanitary paper products made of tissue, cellulose, crepe paper, tissue paper and fine paper amounting to about 1,500 - 2,000 tons p.a. can be expected for 1975.

In addition to the tissue paper and products, processed paper products of a wide variety, for example printing products such as playing cards, games, picture books, greetings cards and other products, especially those for the stationery trade are imported. For these in 1971 about 4,600 tons can be estimated, valued at 1,25 million rupiahs, equal to 3 million US $.

1.28 Construction Paper and Board

Construction paper comprise in particular

- wall coverings,
- roofing felts,
- floor coverings (felt base),
- decoration and core paper.

Apart from some isolated uses, this paper does not have a large market in Indonesia. Only the systematic expansion of housebuilding programmes can make the use of larger quantities and the establishment of a production base for this kind of paper an attractive proposition.

Of greater interest is the use of construction board for which there are already some smaller plants in Indonesia. The market for wet-processed building boards, wall boards, insulating boards and for particle boards could not be examined in detail within the short assignment in Indonesia.

On average it seems reasonable to expect for the coming years a market of around 10,000 to 15,000 tons p.a. for construction paper and board.

1.3 The Procurement Market

1.31 Raw Materials and Chemicals

For 1972, roughly the following requirements of fibrous material for all the state-owned Indonesian paper mills with an expected net production of about 27,000 tons are anticipated:

imported chemical woodpulp	1,400 tons p.a.
domestic rice-straw-pulp	13,300 tons p.a.
domestic bamboo pulp	12,500 tons p.a.
domestic wood pulp (hardwood pulp, mostly short fibred and also small amounts of groundwood)	2,880 tons p.a.
Total fibrous raw material	30,000 tons p.a.

I. The paper market in Indonesia

For imported pulp, the cost price paid by the paper mills is between 92.650-and 115.000,- rupiahs per ton and on average about 85 % more expensive than the average price for domestic straw pulp and about 70 % more expensive than domestic bamboo pulp. This price advantage and the economical use, especially for agriculture, stand opposite to the inferior qualitiy of the domestic pulp. This greatly impairs the productivity of the paper machines and entails higher losses of material and paper.

Up to now, the paper mills have purchased their raw auxiliary and working materials (including spare parts) on their own and independently of one another.

1.32 Machines and Spare Parts

All existing paper mills in Indonesia have been delivered from abroad. Factories for the production of equipment for pulp mills, transportation and treatment of fibrous materials, paper machines and related equipment are not yet existent in Indonesia. Even wires, felt and spare parts have to be purchased from abroad, against foreign exchange. For that reason f.i. no remarkable changes or extensions to increase output have been made to the existing paper machines in the P.N.P.K. Padalarang for 40 years. Basic improvements or expansion of the capacity are on average carried out on a paper machine in a cycle of about every seven years in industrialised countries for reasons of technical progress and profitability.

The first extensions of this kind are now planned for the two older paper machines in Padalarang and for the new paper machine in Letjes.

1.33 The Financial Means Market

The situation on the Indonesian capital market is extremely difficult for an industrial concern, as the interest on capital is, with a few exception, in the range of 30 % p.a. This considerably affects the international competitive ability. Foreign loans are granted on far more favourable conditions in connection with supplies, and as far more favourable credit facilities are also available to internationally acting wholesalers to finance their sales (see Section 1.17).

The profits situation of the state-owned paper mills is bad:

1971 the turnover of the paper mills amounted to about 2.815 million rupiahs, the profit, however, came to only 0.2 %. In view of the relatively high rate of protective customs duty, this is hardly a satisfactory result, even if the considerably higher efficiency of the foreign competition

is taken into consideration.

1.34 The Labour Market

In Indonesia there is an acute lack of fully trained graduate cellulose and paper engineers.

The general level of training of the engineers, and of the foremen as well, is basically good, although not specialised enough in the tasks of the paper industry. There are no extensive opportunities for qualified personnel to exchange their experience. Suitable training also seems to be largely lacking for foremen and machine operators.

Even executives receive an income which frequently forces them to take a second job; which impairs efficiency. Under these conditions the work performed by the engineers and technicians must be rated very highly.

In principle there is no shortage of unskilled workers and workers who are able to be trained.

Annex 12, table 21, is giving a review over the numbers of labour force of the state-owned paper mills. Besides the high numbers of persons employed in administration as well as in the factory itself, which do include the permanent staff and the daily workers, the difference of the productivity of the individual factories is considerable.

P.N.P.K. Padalarang	5,2 t/man and year
P.N.P.K. Letjes	11,6 t/man and year
P.N.P.K. Blabak	4,6 t/man and year
P.K. Basuki Rachmant Banjuwangi	8,7 t/man and year
P.K. Gowa	9,4 t/man and year

By way of comparison, these performances are roughly one-tenth of what medium-sized European paper mills produce per man and year. The net turnover per employee and year, about one million rupiahs, equivalent to 2,400 US $, is also about one-tenth of the turnover in continental European paper mills.

The proportion of wage and salary costs, inclusive of social and similar additional expenses, is between about nine and thirteen per cent calculated from the turnover ex works. In their relative size, they are about one third compared with medium-size European paper mills.

2. RECOMMENDATIONS ON PAPER MILL OPERATIONS

2.1 Targets of the Indonesian Paper Mills

The results of the market research and investigations in the different paper mills have conclusively produced the following main strategic targets for the state-owned paper mills:

- concentration of the existing relatively small paper mills, favorably in one merged company, for better coordination of all activities of the mills.
- specialization of the production of the mills to reach best possible productivity.
- expansion of the state-owned paper industry to capture larger sections of the domestic market.

The advantages resulting out of these targets are comprehensively stated in the following:

2.11 Concentration

A concentration and merger of the state-owned paper mills to form a single concern was already proposed at the beginning of the investigation, because even then the importance of such a measure was apparent for a number of other proposals.

This target was taken up by the decision of the Directoratof the Chemical Industry to merge the plants Padalarang, Letjes and Blabak, which are equipped with German machines, as well as the pulp and paper mills Gowa and Banjuwangi, equipped with Japanese machinery. This should only represent the first step, because only after merging all plants the dimension of a medium-sized European paper mill can be reached.

This concentration offers the following advantageous possibilities:

- The potential of all the mills allows a qualified, dynamic management to be built up, especially for the following enterprising functions:
  - management and business policies
  - planning and control
  - marketing (including market research, sales policies, distribution organization)
  - investments
  - procurement
  - training personnel

2. Recommendations on Paper Mill Operations

- The inefficient overlapping of planning work is avoided (such as, for example, the development of effective organizational measures for purposes of control). There are considerable advantages in intensifying these functions specially for the Indonesian paper industry.
- Because of the uniform management in a single concern, concentration is favourable for product specialization, which would otherwise be difficult to achieve on account of the rivalry between the mills.
- The possibility to set up a generally accepted paper standardization, quality rules and quality control, e.g. by cooperation with the Cellulose Research Institute at Bandung.
- The same applies to the introduction and supervision of uniform systems for costing, the production- and profit planning.
- Funds available for investment purposes can be concentrated and used where they will be most effective. Competing investments are not possible. Liquidity risks are lower.
- The increased procurement potential makes more favourable purchasing terms possible.
- The creation of a joint selling organization produces the possibility of an aggressive marketing, the establishment of regional sales offices, possibly with intermediate stores. The price decreasing internal competition of the paper mills will be removed.
- The training possibilities improve through this merger.

It should be explicitly noted, that a concentration of this kind can also lead to problems. (Danger of a puffed up administation, curtailment of the initiative of the plant directors, topmanagement personal or technical inadequacies can be magnified for the whole concern, etc.)

2.12 Specialization

Through the specialization of the individual paper mills to certain production programmes and tasks, as recommended more detailed in chapter 2.3, the following advantages became obvious:

- Raising production by means of better utilization of the paper machines (e.g. low stoppages for changes in programme) and special fitting out of the plants according to the product.
- Increase in productivity and quality through a product-trained personnel.

2. Recommendations on Paper Mill Operations

- Better possibilities and conditions for new product development and product improvement in competition with the imported paper,
- therefore also a more purposeful sales promotion, closer contacts to paper processors and paper users.

It has to be mentioned that the removal of the fully competitive conditions between the individual paper mills (favourable with regard to the above mentioned aspects) can also be dangerous as competition creates special efforts and efficiency of the individual mill managements.

2.13 Expansion

At present no one of the existing state-owned paper mills works with satisfactory profit. In order to reach this target besides the specialization an expansion of the existing capacities is necessary, which is described in para 2.3 and 2.4.

The Indonesian paper market, of which at present only about 16 % of the demand can be covered by the domestic production, is protected through import customs amounting to 65 %. Therefore the strongly increasing paper market of Indonesia justifies the later establishment of large production units.

As most of the paper machines installed are capable of development, in the view of the authors of this report the existing small Indonesian paper mills can survive (restriction for Martapura Mill) and guarantee a smooth transition to the phase of using larger and more economic new plants.

Even if no economic profit can be obtained (it can be attained, see chapter 3) from the national economic view it seems not to be favourable to close the existing mills. For instance, the foreign exchange savings out of the domestic production cannot be summoned up against customs for paper imports, which have to be paid in local currency. Due to the unemployment in Indonesia discharged workers cannot be employed otherwise. For the domestic raw materials (e.g. rice straw, bamboo) no other utilization is given whereas collection and transportation create an additional work and an extra income for the farmers.

The aforementioned national economical arguments against the closing of the existing mills are in favour of the foreseen target of expansion; that means, the build up of new capacities, recommended in para 2.4.

2. Recommendations on Paper Mill Operations

2.2 Quality of the Indonesian Papers

In the following the most important results of the investigation are summarized which have been carried out during Mr. Dittner's stay in the Cellulose Research Institute of Bandung and then in Germany.

2.21 Light Weight Paper, Manifold for Typing

Thin fine paper is usually used as typewriting flimsy. It must be possible to write on this papers with a typewriter and ink. As the only manufacturer of white and coloured manifold the paper mill at Padalarang is to be considered. The breaking lenghts of manifold from Padalarang are between 4070 and 4850 m on average, but considerably exceeding the necessary (3 rd class typing manifold 30 - 40 g/m^2 = 3.000 m, 4 th class 30 - 40 g/m^2 = 2.500 m).

It would be of greater advantage to give the paper a more expensive looking finish, and to pay less attention to the strength.

2.22 Normal Paper for Writing, Typing and Printing

These papers are produced in all of the six working state-owned paper mills in Indonesia.

Rather poor appearance and finish of the domestic production are the reasons, that the papers can only be sold at lower price than the import paper.

The values of brighness are:

Blabak	70 %
Padalarang	72 - 73 %
Letjes	70 - 78 %
Banjuwangi	76 - 80 %

Only the paper from the Banjuwangi plant is near the usual international standards of 82 - 86 %.

The number of dirt spots and chunky fibres is several times greater in Indonesian paper than in paper from other industrialized countries from which part of the writing paper imported to Indonesian comes.

The cloudiness of paper from Banjuwangi in particular and also from Blabak (samples from 1971) indicates inadequate sheet formation.

2. Recommendations on Paper Mill Operations

The printability properties of the Indonesian paper are not yet satisfactory. In particular, it is the insufficient uniformity of the smoothness of the paper's surface which, to a varying degree, negatively influences the printing qualities. Whilst the paper qualities of the HVS paper from Padalarang and Banjuwangi with its medium weights per unit of volume of 0.835 - 0.900 g per cm^3 and 0.815 to 0.890 g per cm^3 would be more suitable for writing paper qualities, the paper grades of the other paper mills are, at present, more suited to printing paper. The HVS paper from Blabak with an average weight per unit of volume of 0.550 to 0.635 g per cm^3 and the Letjes PM I with an average of 0.610 to 0.695 g per cm^3 should, however, be increased to 0.700 to 0.800 g per cm^3 through appropriate measures in as far as paper from there is to be used for printing purposes. HVS paper from PM II Letjes is in the standard range.

It is suggested that an IGT tester should be purchased for the Cellulose Research Institute to make it possible to carry out better investigations into printing techniques in Indonesia than hitherto.

More detailed investigations showed weight differences (g/m^2) of the paper web in the range of + 5.7 %. Fluctuations of that kind are far to high for good printing paper for machine handling. It is unlikely that the situation on the other paper machines is as unfavourable, but nor is it satisfactory as the observations show.

From a large number of random checks (680) of paper reams on the market it turned out that, when the extreme values, which could in some case be due to a false declaration of the area weight, are eliminated, an excess weight of 4,7 % on average in all paper mills constantly is produced.

The finding concerning the different plants were for

- Blabak in 72 % of all cases 8,7 % excess weight
- Padalarang in 72 % of all cases 7,4 % excess weight
- Banjuwangi in 72 % of all cases 7,0 % excess weight
- Letjes in 95 % of all cases 6,2 % excess weight

Random checks on operating paper machines showed that it was common to work with excess weights.

Though in Indonesia the same importance is not attached to a constant equilibrium moisture point for printing paper (normal value: 40 - 60 % at 20°C, in a pile) as in other countries, it was noticed that in all plants the paper leaving the paper mills had too high a dry content.

For these reasons it is urgently recommended that equipment to control the area weight and the moisture should be installed. For the time being,

2. Recommendations on Paper Mill Operations

stricter area weight checks should be carried out at once by hand.

When it is considered that over 90% of the paper produced is sold in reams, with an excess weight of four to five per cent and a dry matter content which is two to three per cent too high, when furthermore considering that it is envisaged to work an average of about one to two per cent in the lower allowable variation - these factors together involve, at a rough estimate, a possible extra production of 7 - 10% for sales amounting to approx. 200 million rupiahs. The costs of purchasing area weight and moisture control installations of some 10 million rupiahs per paper machine and the costs of a continual statistical operation and quality control would be amortized shortly.

The strength properties of Indonesian HVS paper are assessed in the following graph in Table 22 in comparison with the quality classes of the German DIN standards. The particular purpose, for which these 5 quality classes are used, can be taken from the following chart:

Quality Class	USE		
	writing	typing	printing
1	durable documents	-	-
2	important documents	-	-
3	foolscap and writing paper for important matters	foolscap and typing paper for important matters	printing paper of first grade
4	normal foolscap and writing paper with or without watermark, draft paper, book writing paper	normal foolscap and typing paper ledger paper	printing paper of second grade
5	foolscap and writing paper for secondary purposes	ordinary foolscap and typing paper	printing paper of third grade

2. Recommendations on Paper Mill Operations

Better strength values for writing paper of the first and second classes can, accordingly, be produced only in the older plant of PM I in Letjes and the two older plants in Padalarang. For the first class of use, however, the dynamic properties of the double foldings and of the tensile strength would have to be improved still further. This applies equally to the writing paper at present being produced in Blabak an the PM II of Letjes, which can be classified in the medium range classes of use. Thus, the HVS paper from Banjuwangi, however, can be put only into the last class. The same applies to the HVO grades (offset printing paper) from Banjuwangi, whose strength values range far beyond the limits of international standards.

2.23 Fine Paper for Duplicating

Duplicating papers are produced in Padalarang, Letjes, Blabak and Banjuwangi mills.

Table 23 shows a comparison of the quality of Indonesian duplicator (cyclostyle) paper an the DIN +) standards with regard to their static and their dynamic strengths. The quality status of the Indonesian paper is disproportionately high, with the exception of the cyclostyle from Banjuwangi. It is certain that in Indonesia many reports, manuals and frequently used printed products are printed on cyclostyle. Nevertheless, this excessively high quality of the Indonesian duplication paper does not seem to be necessary.

2.24 Heavy-weight Paper

These papers, i. g. bristol, office cardboard, cover are produced in Padalarang, Letjes and Blabak mills. Strength values of these Indonesian papers are considerably above the values demanded by international standards (see table 24)

The appearances of the Indonesian products are inferior to the imported grades in this group. Chunky fibres and bad stains as well as too low a white content are indications that the stock preparation and in particular, the stock sorting are in need of improvement.

+) German standard

TABLE: 22	QUALITY POSITION OF INDONESIAN HVS PAPER REGARDING BREAKING LENGTH AND FOLD ○:	PAGE 46

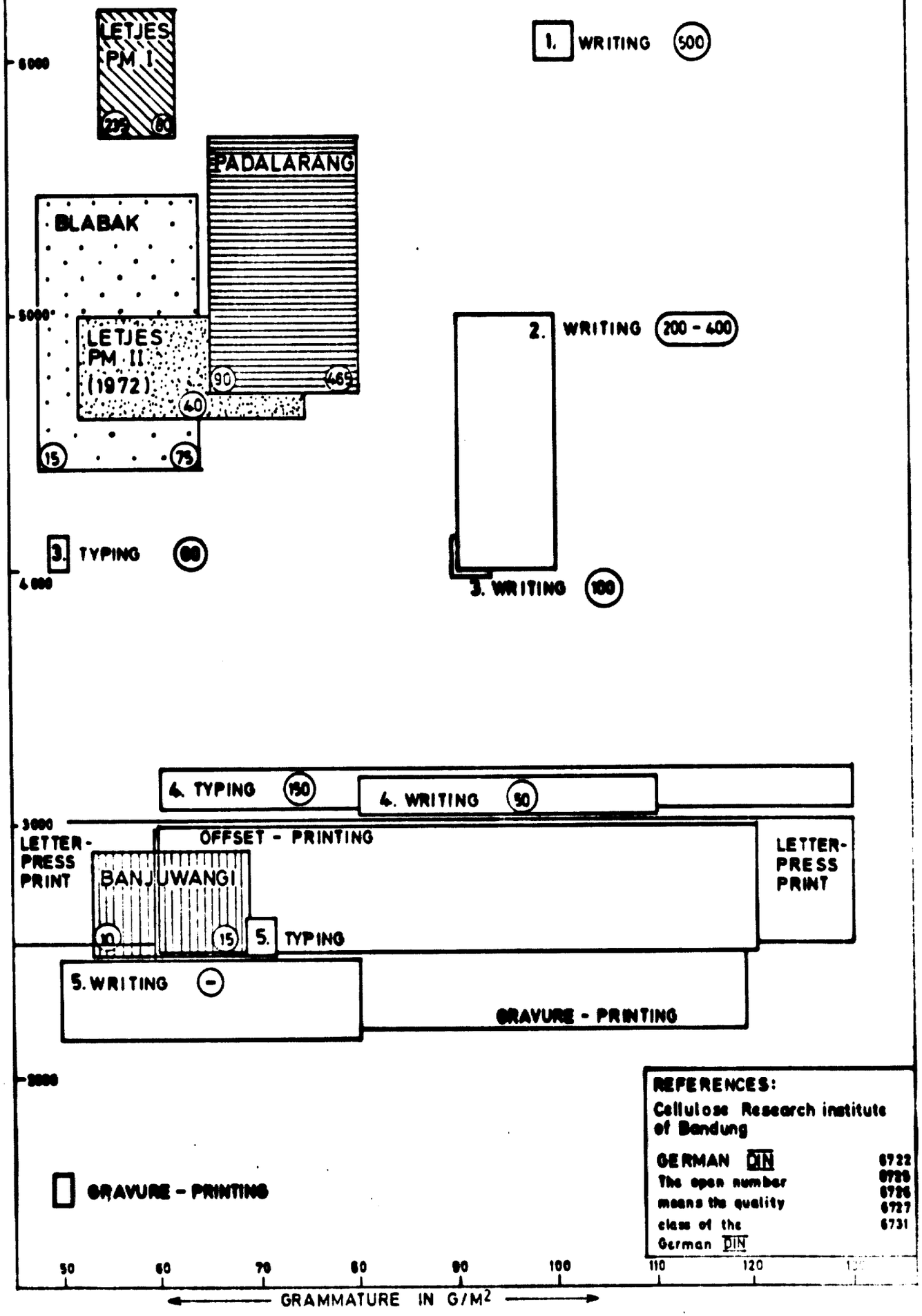
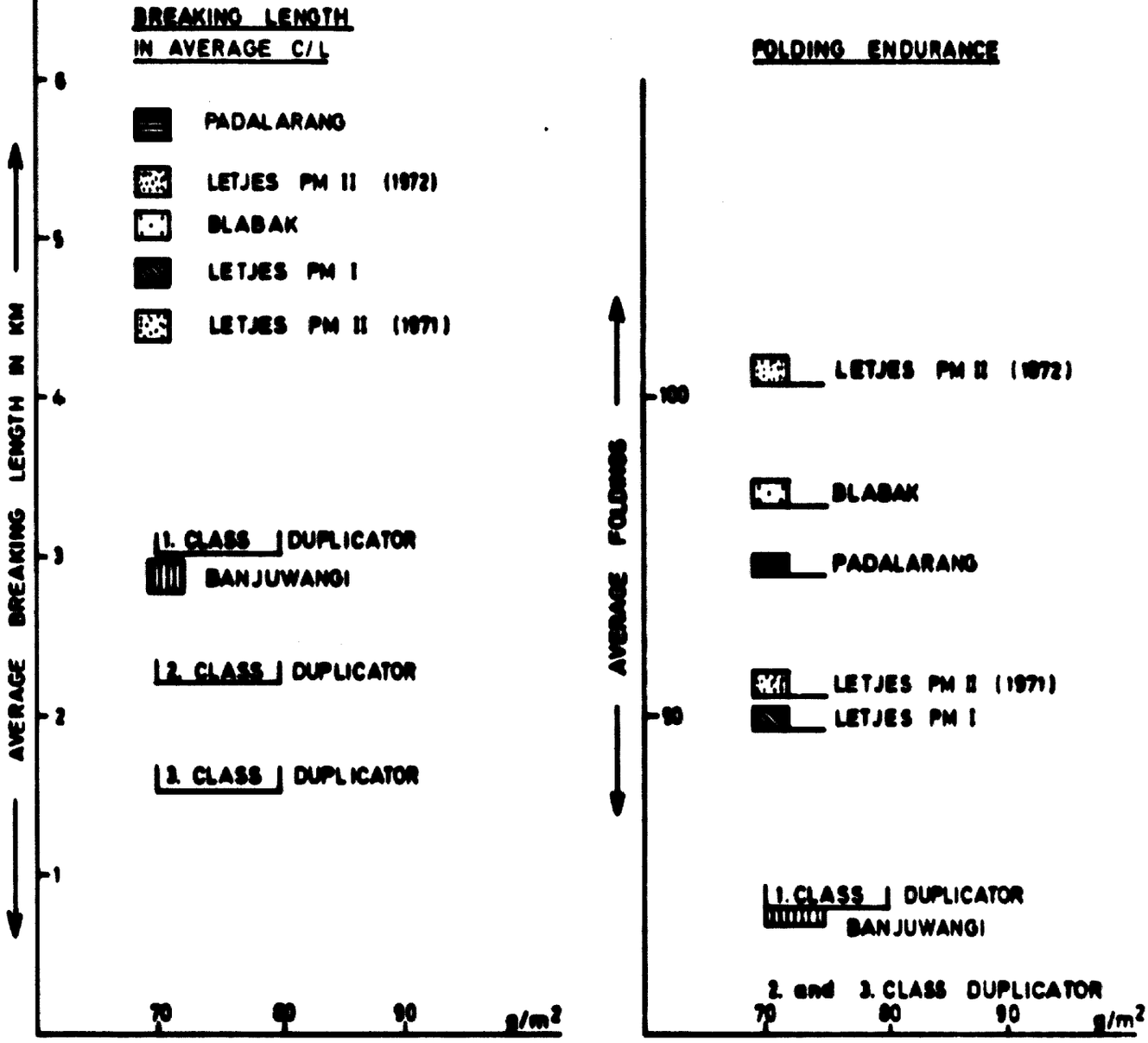


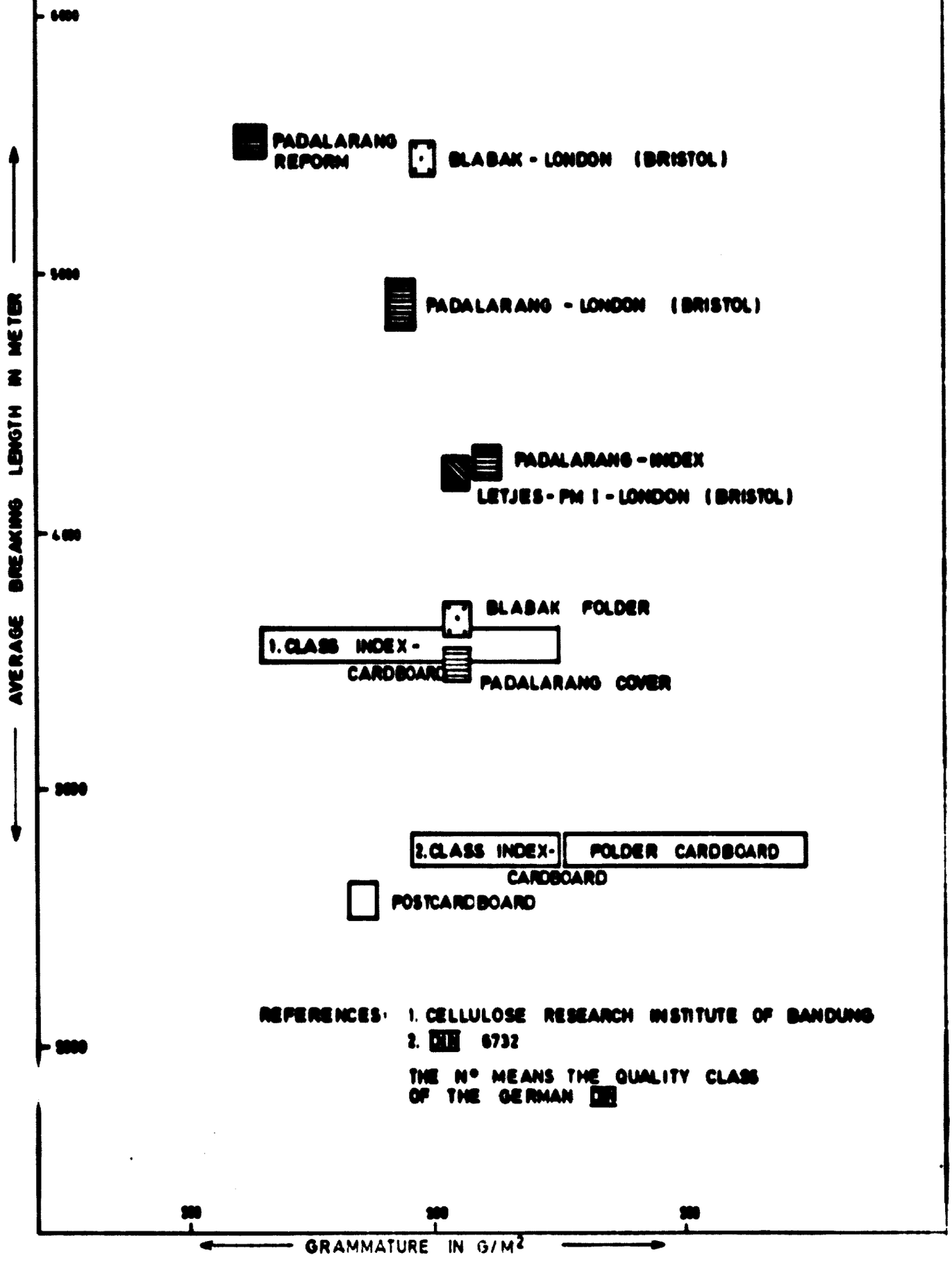
TABLE: 23	QUALITY POSITION OF INDONESIAN DUPLICATOR (CYCLOSTYLE) PAPER REGARDING BREAKING LENGTH AND FOLD	PAGE 47



REFERENCES: 1. CELLULOSE RESEARCH INSTITUTE OF BANDUNG
2. [illegible] 6734

THE NUMBER MEANS THE QUALITY CLASS OF THE GERMAN [illegible]

TABLE: 24	QUALITY POSITION OF INDONESIAN BRISTOLS AND OFFICE CARDBOARDS REGARDING BREAKING LENGTH.	PAGE 48



REFERENCES: 1. CELLULOSE RESEARCH INSTITUTE OF BANDUNG
2. DIN 6732

THE N° MEANS THE QUALITY CLASS OF THE GERMAN DIN

2. Recommendations on Paper Mill Operations

2.25 Improvement of Quality, Research and Development

In these fields a close cooperation with the Cellulose Research Institute of Bandung is recommended.

This institute, established in 1968 with German Capital Aid, laid down the following tasks in its "Activities":

- Research and Development
- Production of Chemicals and Engineering Services
- Lectures and Training, Publications
  Covering the field of rayon-cellulose, paper-pulp, paper and protection against environmental pollution.

This does not rule out any future expansion of activities, in other complementary fields, as

- Development of special papers
- Paper processing (coating, printing, packaging)
- Corresponding plastics and so called plastic papers
- Non-woven in connection with rayon research
- Extrusion techniques in connection with the use of plastic foils etc.

Beside of the research on the efficient use of domestic fibrous materials and pulp processing programmes, important for the state-owned paper mills, which had been discussed with Mr. Dittner, it is recommended, that this institute should be stronger engaged in the paper sector.
Due to the fact that no other paper research institute or paper technical college exists in Indonesia, the name of the "Cellulose Research Institute" could be changed into "Cellulose and Paper Research Institute" and it could be incorporated into the merged Company of the state-owned paper mills.

The Cellulose and Paper Research Institute should take the initiative in sponsoring a paper standardization for Indonesian paper. This should be co-ordinated with the competent authorities, the Indonesian and international standardization boards and with other interested economic bodies and the paper industry. Concrete proposals have already been made to the Indonesian counterparts on the ways and means of tackling this, and documents have been handed over or sent in.

In any event, it will be advisable to adopt the ISO-Standards to this work and, generally, to build up on these; this by no means rules out a consideration of national peculiarities, which may become necessary.

2. Recommendations on Paper Mill Operations

The suggested use of the Institute for providing neutral opinions to supervise and observe the customs regulations also belong into this sphere of activity.

A first proposal for necessary equipment for a paper research and development department has been explained to the management of the Institute. For the first procurements which are urgently required for the paper testing laboratory, the following testing equipment is proposed, in addition to the air-conditioning plant to be supplied in Indonesia:

I.	Laboratory equipment		
1.	Jokro Mill	DM	21,260,--
2.	Brecht-Holl Classifier	DM	9,055,--
3.	Sheet Making Machine, ZBTF	DM	10,335,--
4.	Freeness Tester, Type SR 1	DM	1,350,--
5.	Freeness Tester, Candian Std.	DM	3,100,--
6.	I.G.T. Printability Tester Model AIE	DM	6,600,--
7.	2 Quachant Balanees, Model QW 200	DM	754,--
8.	2 Bample Cutter P.S. 100	DM	394,--
9.	Brightness Tester	DM	760,--
10.	P.H.Meter, Type 111, complete with standard electrodes for ordinary measurements and paper surfaces	DM	1,405,--
11.	Stiffness Tester according to Schlenker	DM	1,420,--
12.	Abrasion and rubbing tester, System OSER	DM	2,525,--
13.	Sunfree Pyrometer M 103	DM	590,--
14.	Mierosege Projector, Type 4014/B	DM	10,907,--
	Laboratory equipment	DM	70,455,--

(As the information on this equipment was obtained in Germany, the price are quoted in DM free the German place of despatch without packaging and other charges, price level 1972).

The proposed equipment for setting up a paper pilot plant:

II.	Pilot Plant Equipment
1.	Paper machine
2.	Hydra pulper
3.	Refiner
4.	Screener and Centri-cleaner equipment
5.	Pumping equipment
6.	Control and regulating equipment

2. Recommendations on Paper Mill Operations

The supply costs in Europe amount to 400.000,-- DM

As the Martapura paper mill could be used as an operational plant (See Chapter 2,36) with a small paper machine, the paper machine to be established in Bandung can be kept very small in its appurtenances (pilot machine with approx. 60 cm width). This enables fundamental statements to be made on the suitability of new raw materials for the manufacture of paper and on the effect of mixing raw materials and the use of ancillary materials with sufficient operational safety.

A summary of the possible resp. recommended activities of the Institute was already included in the Mid Term Report, but it should only be considered as first impulse.

2.3 Production Programme of the Different Paper Mills

2.31 Padalarang Paper Mill

Technical Data and Production

Raw material: Rice straw with approx. 10 % imported pulp

Paper machines: PM I (Escher-Wyss, 1922) with trimmed width 2050 mm, paper weights 50 - 250 g/m^2

PM II (Escher-Wyss, 1929) with trimmed width 1990 mm, paper weights 25 - 70 g/m^2

Production: Light weight, normal and heavy weight writing and printing paper, cover (detailed production programme 1971 see Annex 14, table 26).

1970:	Gross production:	4422 tons
	Net production:	3718 tons (= 16,3 % losses)
1971:	Gross production:	+)
	PM I 2680 tons = 96 % of evaluated production	
	PM II 1797 tons = 106 % of evaluated production	
	Total gross production:	4477 tons
	Net production:	3249 tons (= 27,5 % losses)
1972:	Planned net production: (taking into account the projected rebuilds for the end of 1972)	3310 tons

+) The evaluated production (100 %) is given here as rounded value based on:

2. Recommendations on Paper Mill Operations

365 days	=	1095 shifts	=	100,00 %
less holidays	=	19 "	=	1,73 %
less yearly overhaul	=	42 "	=	3,83 %
less weekly overhaul	=	48 "	=	4,37 %
less breakdown	=	84 "	=	7,65 %

100 % evaluated production = 902 shifts = 82,42 %

Mr. Dittner proposed, to introduce 900 shifts = 7200 working hours as base for all paper machines.

95 % utilization = 1040 shifts can be obtained by good planning and preparation.

After the intended rehabilitation of the old paper machines and the planned raising of production by about 10 % and an optimum rate of utilisation (95 %) gross production could reach 5,400 tons p. a. and net production approx. 4,600 tons p. a. (Reducing the waste losses in the finishing sector to about 15 %).

Recommended Specialization and Improvement of PM I

Low output and working width force to a multiple programme of office paper and bristol grades as

- reprographic paper,
- computer printout-paper for business-forms,
- first and second class office writing and typing with watermarks,
- tabulating card stock matrix stock

Also first and second quality cardboard should be produced on PM I (roughly 1.500 tons p.a.).

- cardboard for visiting cards, business cards, special cards, menus, drawing board,
- cardboard for special printing purposes,
- cardboard for special office purposes,
- cardboard for embossed greetings cards, etc.

The cost analysis (see Annex 21, table 32) shows best results for paper exceeding 100 g/m^2.

Mr. Dittner suggested on his first visit of the mill, in addition to the now newly installed wet pulp preparation plant with pulper and refiner, the old one with defibrator and pulp engine be retained. Also that a soaking drum with holes be built in for soaking the pulp, which would

2. Recommendations on Paper Mill Operations

simplify the technical operation of this older production line, lower the power requirements and improve the quality. The multiple purpose paper machine should be fitted out with a sizepress, a groved roller or a dandy water mark installation and a pope reel, as well as a new headbox. Other parts of the plant are to be renewed accordingly. Better machines in the finishing part, suitable second-hand and reconditioned equipment with low investment costs could be set up, namely rereelers with reel-cutting equipment, a calender, a format embossing machine and a new small format cross cutter, suitable for thin paper grades.

Before starting the investments a feasibility study has to be performed. Only a simultaneous production increase (it seems to be possible to produce approx. 15 tons/day instead of the actual 9,3 tons/day, obtained in 300 days) can justify additional investments for the old paper machine. Under this conditions it should be possible, to make use of PM I till the end of the seventies.

Recommended Specialization and Improvement of PM II

The exclusive use of PM II for manifold, aerogramme, onion skin, carbonizing and similar light-weight grades of fine paper is recommended. It is not advisable to produce duplicating paper on this plant.

Part of the paper should be processed into carbon black and one-time carbon, computer print-out forms and waxed paper and onion skin. A small part can be printed to make fancy paper and also be processed into small serviettes.

As mentioned before it is planned to rebuild this machine at the end of 1972, raising the capacity by about 10 %.

2.32 Letjes Paper Mill

Technical Data and Production

Raw Material:	Mainly rice straw, with bagasse (3,5 %), local collected waste paper (15 %) and 10 - 20 % imported pulp.
Paper Machines:	PM I (Escher Wyss, 1939) with trimmed width 2100 mm, paper weights 30 - 230 g/m^2
	PM II (Escher Wyss, 1970) with trimmed width 2400 mm, paper weights 50 - 120 g/m^2

Betrifft **2. Recommendations on Paper Mill Operations**

Production: Light weight (only PM I), normal and heavy weight writing and printing paper, bristol and manila (only PM I)

(Detailed production programme 1971 see Annex15 table 27)

1970: Gross production: 7792 tons
Net production: 6260 tons
(= 19,7 % losses)

1971: PM I 3277 tons = 89 % of evaluated production (902 shifts)
PM II 5650 tons = 92 % of evaluated production (902 shifts)

Total gross production: 8927 tons

Net production approx: 7800 tons
(= 13 % losses)

1972: Planned net production: 8250 tons

An enlargement of the paper mills Letjes is planned and we deal with it in the following.

Recommended Specialization and Improvement of PM I

The optimum productivity and performance of the PM I can best be achieved by specialising the plant on one production group only, as far as possible. Suitable for this for 1973/74 would be the production of coated base paper for the new clay-coating plant to be set up. In this way the use of this older plant can be ensured for several years to come.

This calls for an increase in the use of longfibered materials for the plant of the PM I, (15 - 30 %), a raise of the production of the paper machine, including a pope reel, activating the size press and setting up a rereeling machine.

It is planned to expand the older PM I from the present average output of 12 tons per day to an average of 15 tons per day. It should, however, be examined by a special study, wether it would be possible to reach 18 tons a day. An expansion by almost 50 % seems possible from the technical point of view. The problems surrounding the expansion of the pulp plants can be largely eliminated by supplying market woodpulp, or pulp from Banjuwangi.

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The establishment of a coating plant for one side coated papers (day coater) with a capacity of about 6000 tons p.a. for covering the market demand of coated papers of the paper grades, produced on PM I, is recommended.

Recommended Specialization and Improvement of PM II

The paper manufactured on the PM II should be chiefly used in the following sectors:

- school writing and drawing paper,
- normal paper for writing, typing and printing (possible with the Garuda-groved roller water mark for governmental office paper).

An increase in the present average daily capacity of 20 tons a day to 25 to 30 tons a day can be achieved on the basis of the available machine data with a larger share of long fibred raw materials, as imported wood pulp. (Annual capacity for the PM II of approx. 8000 tons p.a.).

A further increase in the capacity of the PM II will result from the evaluated expansion of the plant to 50 to 65 tons a day. As the manager of the P.N.P.K. Letjes could personally see for himself in Germany +), the expansion of the PM II to bigger output seems possible.

A feasiblity study concerning the enlargement of the Letjes paper mills is being prepared.

2.33 Blabak Paper Mill

Technical Data and Production

Raw material:	Rice straw with 100 - 30 % imported pulp.
Paper machine:	Escher Wyss - De Pretto, (1961) with trimmed width 2200 mm, paper weights 50 - 200 g/m²
Production:	Normal and heavy weight writing and printing paper, cover and packaging paper.
	(Detailed production programme 1971 see Annex 16table 28).

+) Visit by Mr. Oetjok B.Notokoesoemo to the paper mill of Messrs. P.K. Temming AG, Glückstadt (PM with TW. 2,400 mm for fine paper and cardboard, 55 tons a day) and paper mill of Messrs. Bruderhaus, Dettingen (PM with TW 2,400 mm - 100 tons a day of fine paper) both running in Westgermany.

2. Recommendations on Paper Mill Operations

As subsequent equipment for paper finishing is more narrowly designed, the useful width is reduced by about 15 %. Only approx. 60% of the designed capacity is achieved. Other essential reasons for this low quantity are to be found in the inadequate performance of the Pomilio Celdecor plant, and in power shortages of the diesel plant.

1970:	Gross production:	3608 tons
	Net production:	3070 tons (= 15 % losses)
1971:	Gross production:	4113 tons
	Net production:	3351 tons (= 18 % losses)
1972:	Planned net production:	3400 tons

Recommended Specialization and Improvement

Optimum quantities and higher profit can be achieved with the heavier weight classes (100 - 225 g/m^2) as second quality cardboard (better qualities produced at Padalarang, PM I):

- simple greetings card cardboard
- fancy cardboard
- picture book cardboard
- cardboard for postcards
- cardboard for prospectuses
- cardboard for simple printing purposes
- tally sheet and file card cardboard

Additionally to this programme of roughly 2000 tons p.a. a third quality pulpwood cardboard or bristol (approx. 4000 tons p.a.) should be produced at Blabak, as

- manila board
- index board
- folio board
- board for rapid binders
- cover board for office purposes
  - for school books and exercise books
  - for pocket books
- cardboard for albums

In addition, pulpwood cardboard is especially suitable for packaging purposes, such as, for example:

2. Recommendations on Paper Mill Operations

- envelope board
- wet machine board
- better cardboard for boxes
- cardboard for cigarette packets

This programme for Blabak envisages about one-third of the grades in the higher price class and about two-thirds of the grades in the medium and simple price class. Roughly 75% of all heavy-weight paper and light-weight cardboards are likely to be colored, the rest white or off-white.

A general revision plan for the P. N. P. K. Blabak to be set up immediately, is proposed which adapts the plant capacity to the best performance and better salable products by designing the paper machine for heavy weight grades.

By modernising the headbox and expanding the dry end the capacity of the paper machine can be raised to about 35 - 30 tons a day, although here another bottleneck occurs in the water supply.

With regard to designing the plant to producting qualitatively better grades of cardboard, there are three basic possibilities to choose from:

a) installation of a second headbox or extending it into a multi-Fourdrinier machine (second wire section).

b) production of heavy weight paper (for example of 100 and 225 g/m^2) and setting up a separate laminating plant, possibly with a coating installation. Nowadays, weights of between 350 and 450 g/m^2 can be produced at lower cost on this board liner laminating machine with the kinds of cardboard made up accordingly than on a cardboard box machine.

c) the combination of both possibilities. The essential advantage of doing this is that high quality surface is achieved, which increases especially the competitiveness of the domestic kinds of cardboard as against the imported products.

Initial measures to raise productivity, are the use of more wood pulp, ground wood and waste paper. Furthermore the operating with continual statistical operational and qualitiy controls to obtain the exact data necessary for further improvements and to avoid at once the losses of pulp and paper, the installation of an area weight and humidity control plant and removing the defects and shortages in the diesel plant.

A detailed investigation of the feasibility and economic result of such rehabilitation of the plant is recommended. An initially increased production to 5000 tons p. a. would cover about 25% of the domestic demand of the heavier weight classes paper specified above for production in Blabak mill.

2. Recommendations on Paper Mill Operations

2.34 Banjuwangi Paper Mill

Technical Data and Production

Raw material: Bamboo

Paper machine: Toyomenka/Ide Iran Works, Japan (1963) with trimmed width 2370 mm, paper weights 50 - 190 g/m^2

Production: normal and heavy-weight writing and printing paper, cover, kraft packaging paper.

(Detailed production programme 1971 see Annex 17, table 29).

1970:	Gross production:	5372 tons
	Net production:	4951 tons (= 7,8 % losses)
1971:	Gross production:	7608 tons
	Net production:	7022 tons (= 7,8 % losses)
1972:	Planned net production:	7100 tons

To the losses stated in the statistic it is recommended, that all paper losses be accurately determined and recorded, so that genuine comparative values can be set up.

The designed capacity of 30 tons a day, equal to 9,000 tons per annum (300), was achieved in mid - 1972, so that this production quota could be generally given for 1973. The qualities, however, which can be attained on the machine are not very high. (Compare on this the graphs Chapter 2.2).

The programme of the paper mill was confined to the grades writing 50 and 60 g/m^2 and kraft 90 g/m^2. By only a slight change in production, a high productivity is, thus, achieved. Basically, this decision was right, and no change is recommended, but measures to improve the quality and to lower the costs.

In order to improve the production both as regards quality and the technical process, rebuilding operations are necessary concerning

- headbox
- press section
- calender
- rereeling machine with slitter

2. Recommendations on Paper Mill Operations

The theoretical output of the plant amounts to 30 tons a day with 60 g/m^2 and with a utilization rate of about 90 %. By stabilising the power source, by building in air circulation plant in the dry end, and by extending the total effected production time, the gross production of this plant can be raised to 35 and 40 tons per day. As the supplier of the paper machine no longer exists and Banjuwangi is, at present, still in an isolated position as far as transport is concerned, sufficient stock of spare parts and maintenance are necessary precautionary measurements to secure a stable production for the P.K. Basuki Rachmat.

The appropriate increase in the bamboo pulp production can be achieved by a modification to the pulping process, especially by using higher pulping temperatures and shorter digestion cycles.

To improve the quality of the paper production the blending with other fibrous raw materials should be evaluated, as also the continous supply of bamboo seems not to be sure for a longer period.

For this purpose, the most appropriate material is wood fibrous materials, both as logs and as woodchips. If logs are transported to the mill, however, a second chip plant should be established. Woodchips could be landed directly and transported to the works from the harbour 4 km away

2.35 Gowa Paper Mill

Technical Data and Production

Raw Material:		**Bamboo**	
Paper Machine:		**Kanematsu (1962)with trimmed width 2400 mm, paper weight 40 - 120 g/m^2**	
Production:		**Light weight and normal weight writing and printing paper, kraft packaging paper (planned production 1972 see Annex 18 , Table 30).**	
	1970:	**Gross production:**	**435 tons (delivery troubles**
		Net production:	**385 tons (= 15% losses)**
	1971:	**Gross production:**	**2000 tons (Start in Sept. 1971)**
		Net production:	**1700 tons (=15 % losses)**
	1972:	**Planned net production:**	**7200 tons**

Paper losses seems not to be measured accuratly as occured. (see also remarks to the percentage of losses at Banjuwangi paper mills, para 2.34)

2. Recommendations on Paper Mill Operations

At present, a team of Jananese consultants is still at work to stabilise the production which has been brought up to the guaranteed daily output of 30 tons a day. That would correspond to a gross production of 9,000 tons per annum (300 days).

Recommended Specialization and Improvement

In order to specialise, it is suggested that chiefly writing and printing paper be produced and that the production of kraft paper be limited to a minimum; just as much as the market expects to purchase with attractive offers.

Should there be a stronger demand for offset paper in the near future, it would be advisable to install a size press, for the operation of which a plan should be worked out without delay.

Because of its location on the island of Sulawesi the Gowa paper mill holds a special position in supplying the country with paper. Since over 90 % of the products have to be transshipped at the port of Ujung Pandan about 18 km away, it should be examined to what extent the other islands, especially Sumatra, should be supplied with writing and printing paper chiefly from Gowa for the next few years. In future the raw material supply as well as the water supply have to be especially taken into consideration.

2.36 Martapura Paper Mill

Technical Data and Production

Raw material:	Wood ground and kraft pulp, and approx. 10 % imported pulp.
Paper Machine:	Japan origin (1960) with trimmed width of 1860 mm, speed 120 m/min, designed capacity 14 tons per day at 60 g/m^2.
Production:	Start of production early 1972 Expected production 1972 approx. 1.500 tons. Estimated future production 3.000 tons p.a.

2. Recommendations on Paper Mill Operations

Recommendations to Martapura Paper Mill

As this plant was not visited by Mr. Dittner, only comments are made with the appropriate reservations.

A basic study for this project should examine whether even under the Indonesian conditions such a small combined plant with sulphate pulp and ground wood production is economically worthwhile at all. Since this project, as also in the case of some other new Indonesian paper mills, is apparently a plant set up primarily out of consideration for regional politics, realistic compromise solutions must be found as far as possible.

I is doubtless right that high quality paper may provide an alternative solution for this small plant. But the Indonesian market still does not require quantities of any size of this kind of paper, and a programme with very wide variations for several grades of high quality paper with many special additives and very high demands on the staff cannot be seen as a genuine alternative for this remote paper mill.

A plan should ascertain with what measures and simple means air dried pulp and ground wood can be prepared in Martapura for the other paper mills.

On the basis of the first production samples submitted, for reasons of quality, the production of duplicating paper presents itself at first, and it should be examined whether exclusively this kind of paper can be produced for the time being.

Furthermore, this small paper machine could be used for testing new fibrous raw materials and for improving their suitability for paper techniques. In this respect, this paper machine can perform useful development work for the Indonesian paper industry in the close co-operation existing with the Cellulose Research Institute of Bandung.

2.37 Pemantang Siantar Paper Mill

Technical Data and Production

Raw material:	Waste paper, mechanical wood pulp and imported pulp
Paper machine:	Japan origin (1962), approx. 2.000 mm wide.
Production:	The mill, started 1962 and rebuilt 1968, was closed according to bad operation conditions in 1970.

2. Recommendations on Paper Mill Operations

Recommendations to Siantar Paper Mill

This plant being not under operation was not visited, so that these suggestions can be submitted only with due reservations.

According to information, the power unit and also part of the wood grinder are still intact. It should be examined to what extent a production of market ground wood is justifiable from the technical and the economic points of view and can be carried out for a limited time as an interim solution. The cardboard grades in Padalarang and in Blabak could be considerably improved in their appearance as far as quality is concerned, by using ground wood.

2.4 Future Expansion of the Indonesian Paper Industry

Regarding this theme - which was not directly included in our scope of work - only some remarks are given which are mainly resulting out of the market research.

2.41 Newsprint

A modern newsprint paper machine for covering the domestic demand could not be considered to be established before 1980 (Estimated domestic demand 70 - 80 000 tons p.a., which enables a minimum production rate of 250 tons per day.). Also the possible usage of an efficient second hand machine at an earlier starting point without secured export possibilities will hardly be favourable.

In case that through respective agreements exports are secured especially to the S.E.A. states with higher paper consumption and to Japan, an earlier start of such a project will be possible.

In case that ground wood is used north Sumatra can be stated as a favourable location. The further development and experience with the raw materials rubber wood and bagasse is noticeable. Due to the high investment costs and the small profits an engagement of the state-owned paper mills in this sector could not be recommended. A private investment on the basis of a joint venture with an efficient newsprint producer seems to be more suitable.

2.42 Fine Paper, including cigarette paper

It is planned, to establish a 5 - 7 tons per day cigarette paper mill near Padalarang. It must be questioned whether such a small mill can cope with the market demands and can face the competition from abroad inspite of the protective tariffs.

2. Recommendations on Paper Mill Operations

As a respective decision has not yet been made, according to our information, a further development of the supply of this paper sector remains to be observed.

2.43 Normal Wood Free Writing and Printing Paper

Owing to the possibilities to expand the production of the existing paper machines PM I and PM II in Padalarang, PM I and II in Letjes and if possible also in Banjuwangi plant (till approx. 100 tons per day, see chapter 2.3) the establishment of a new plant is only recommended for the time between 1975 and 1980. This plant should then be laid out for covering the total demand of the domestic market of common writing and printing paper (approx. 100.000 tons p.a.)

2.44 Heavy Weight Paper for Writing and Printing, Bristol and Cardboard

Recommended extension of PM I in Padalarang and Blabak plant could raise the present domestic supply of about 12 tons per day to approx. the double value.

With relatively low capital investment thus a larger share of the market could be obtained.

A special study for the establishment of a combined laminator/coater plant at Blabak is to be recommended.

At the end of the seventies a multi-Fourdrinier machine should be set up for cardboard qualities of about 100 tons a day.

From that time, only heavy writing and printing paper quantities should be produced in Blabak.

2.45 Packaging Paper and Board

Expanding the production of kraft paper in Banjuwangi to some 2,000 tons per annum and setting up a dispersion coating plant for bleached and unbleached kraft paper to manufacture gummed paper, flexible and industrial wrapping and similar coated paper, also setting up a web-feed press is recommended.

As alternative resp. parallel the stetting up of a used and reconditioned paper machine chiefly for the manufacture of brown and white M.G. and M.F. wrapping paper with an output of about 15 to 25 tons a day should be considered.

This will enable, to prepare the market for domestic wrapping paper and to secure the sales of a large scale kraft paper plant (70 - 100 000 tons p.a.) which has to be established before 1980.

2. Recommendations on Paper Mill Operations

In this connection should be mentioned, that for East Kalimatan a timber based industrial complex with a wood pulp mill of about 500 tons per day and a paper mill for about 300 tons per day liner board, kraft sack paper and writing paper is under evaluation.

In order to overcome an acute shortage of simple corrugated paper, thought can be given to erecting a used and reconditioned paper machine with an initial output of 80 tons a day. This plant, to be set up in the Jakarta region, could be supplied with regional raw materials, such as rice straw or bagasse, apart from the waste paper from the corrugated mills and the area. Most of the output would be purchased by the present corrugated cardboard works.

The small markets for other board make it impossible to give substantial recommendations regarding delivery by domestic plants.

2.46 Tissue

The installation of a tissue plant, favourably a rebuilt unit for economic reasons, could be recommended only for the late seventies; (Capacity about 5000 tons p.a.).

3. MANAGEMENT TECHNIQUES

Preliminary Remarks

During his stay in Indonesia Mr. Dittner advised the counterparts of the Directorate of the Chemical Industry and especially the managers of the individual mills in many single questions. The following chapter contains some critical remarks and recommendations which relate to basical questions of Costing and Management in the Indonesian paper industry. The suggestions can be realized immediately or after brief preparation, since they have been discussed in detail with the counterparts.

3.1 Costing

3.11 Existing Costing Systems in the Mills

The methods of costing in the Indonesian mills are different. Therefore, the decisive cost data are comparable within one mill - from grade to grade - but not between the mills.

For these reasons it is recommended to commission an organizer to give the same names to all records to accounting and production techniques in all the paper mills - including the mills at Banjuwangi and Gowa, which were set up on the basis of different operational accounting systems - and to see that the guidelines are being adhered to.

This should be done as quickly as possible, since the accounting system in Gowa is to be changed by a Japanese expert in the near future.

The following important objections had to be raised:

- In none of the paper factories are exact figures kept of the paper output; either the figures are roughly estimated, and then for the benefit of appearances, or the records are not kept in their entirety and, as was observed, this was done knowingly. Usually only overall records are kept, and not records which relate to the individual grades.

- In the Padalarang paper mill, both PM's are recorded in one cost centre, which does not give accurate comparisons. In addition, groups of grades are formed which then do not allow accurate information to be gathered on the essential grades.

- The principles of valuation are not uniformly applied, as, for example, for rejects. This result in false assumption, for example for the cost analysis for Blabak. Moreover, the Blabak calculation of the pulp [illegible]

have to be re-examined, since the cost centres of power, labour general overheads and depreciations were not included in the apportionment.

- In Banjuwangi and Gowa, the whole accounting systems ought to be adapted to the guidelines set up for the other three paper mills. In Martapura, according to information received, the preliminary work for this is beginning.

Production Control and Comparison

Operational and cost comparisons represent a valuable means of rationalising the concerns, but it is necessary that all recorded data are as comparable as possible.

Some of the immediate advantages are to be found in the possibility

- to decrease the purchasing prices by comparisons. A number of observations in the cost analysis lead to this conclusion.

- to decrease the costs by comparing costs, of raising outputs by comparing outputs and of improving qualities more economically by comparing qualities. In this way, the initial guidelines for a better control of all the mills can be found, which, last but not least, represent a better basis for the price competition with imported paper.

The following data for Production Control and Comparison should be used and recorded at once in all the paper mills:

a) Composition and costs of the consumption of fibrous raw material for certain kinds of paper,

b) hourly output of the paper machine for certain kinds of paper (1,000 mm working width among others),

c) number of workers employed at the PM,

d) utilization of the working width,

e) utilization of the PM speeds,

f) utilization of the PM operational time, (with a breakdown of causes for stoppages)

g) wire and felt change times with detailed data,

h) wire and felt consumption per ton of paper,

i) power and water consumption per ton of pulp,

j) power and water consumption per ton of paper,

3. Management Techniques

k) finishing hours per ton of finished paper,

l) waste on the paper machine and in the finishing, (each listed separately for different kinds of finishing),

m) sorting per hour, per format, per area weight and per grade,

n) hourly output of ream wrapping,

o) hourly output of packaging, etc.

This is the minimum of data required for the control of a paper mill. These data should be subject to a continuous time comparison; they are also the basis of the cost accounting and of the planning and planning account.

Production Time

Production time calculations are first based on the assumption that 300 working days = 7,200 hours can be fully utilized. The span of 300 to 365 days is reserved for holidays, general overhauls, large-scale experiments and the like; the working time of the paper machines can, however, be extended to, for example, 315 or more days. A reason must be given for all performances falling short of these - here given as 7,200 hours. Either they are caused

- by maintenance and daily cleaning or

- by change-overs to other paper grades

and thus, result in the available running time of the machines. This is reduced, where appropriate, by

- interruptions or waiting times, or

- a more or less high paper output of a more or less good production (wastes)

Dividing up the records in this way, has the advantage of creating a system of information, in which the precise reasons are given, which can serve to constantly improve the utilization of the valuable operating time of the paper machine. The existing records (see Annex 13, table 25) do not give a clear and comparable view regarding the downtimes.

As the compilation of the changing times for different paper grades shows, the elimination of small production orders does not bring about any great improvement in productivity:

3. Management Techniques

Paper mills	Changing-time share	lots or production numbers under 5 t	5-10 t	over 10 t	total
Padalarang PM I	48 h = 0.69 %				
PM II	15 h = 0.20 %	70	100	41	211
Letjes PM I	15 h = 1.68 %	21	23	38	82
PM II	15 h = 0.86 %	46	62	167	275
Blabak	n. a.	5	14	141	170
Banjuwangi	45 h = 0.74 %	n. a.	(only contracts over 10 t)		
Gowa	n. a.		only bigger lots		
Martapura	n. a.		only bigger lots		

3.12 Input Analysis and Recommendations to Cut the Costs of Material

Over 35% of the costs for Indonesian paper depend on imports. Of these about one-tenth are used to purchase fibrous raw materials, roughly 50% to purchase pulping chemical and paper chemicals, about 10% to purchase wires, felts, and smaller spare parts, the rest are capital costs to pay for imported plant.

By means of more detailed cost comparisons, especially in the case of auxiliary materials, the production costs, on the one hand, can be decreased considerably, and, on the other hand, the dependence on imports can be reduced. The proportion of the costs for these auxiliary materials in paper mills in industrialised countries is about half as much as in Indonesian paper mills.

The prices respectively the costs of the domestic and imported fibrous materials are set out in Annex 19, Table 31. From this, it can be seen that

- domestic cellulose, at a very rough estimate, is about 25% cheaper than imported cellulose. The cost advantage is roughly half of this,
- the use of Indonesian market hardwood pulp would not only improve the quality of the ricestraw pulp paper, but could also lower the costs according to the proportion used, altogether by about 10%,
- the use of domestic market groundwood is very attractive in any event,
- the use of more favourably priced imported pulp and white waste paper should be examined from case to case.

3.13 Direct Costing and Cost Comparison

Mr. Dittner recommended and explained to the mills the more and more used direct costing system.

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Hereby the product dependant costs are assigned to each product (that means each individual type of paper) on the basis of an exact calculation. The share which could be taken over by the product in order to cover the fixed charges of the mill is resulting out of the time necessary for the production of one unit. Thus, the covering share per hour PM is giving a statistic of the profit-earning capacity of the individual product. Literature on Direct Costing is listed in Annex 27.

The advantages of this system of calculating costs, which is to be additionally applied, are:

- Direct costing is an important basis for decisions for the management, since it allows for each grade of paper, for each grammage and each format, a scale to be set up of their contribution towards covering costs and of the profit remaining in the end for each paper machine.

  The more successful management is in the allotting the paper grades at the upper end of the scale to each paper machine, the higher the yield for the enterprise.

- Direct costing allows a daily success control for each paper machine as well as for sections of the works and of sales to be carried out.

- Direct costing allows to optimise the use of all paper mills.

- Direct costing allows a management to be set up for the separate spheres of responsibility according to performance. In this way, executives and other staff can be made to take a more intense interest in the success of production and sales.

- Direct costing allows a lower price limit to be fixed for each grade of paper, since it is possible to make a better comparison of the influence of each kind of paper on the profit situation.

- Direct costing allows a more accurate valuation of stocks of semi-finished and finished products to be carried out.

3.14 Analysis of Profitability

For the moment it is not possible to carry out accurate cost comparisons for the state-owned paper mills.

In order to asses a cost analysis a number of corrections, previously agreed to with the Indonesian counterparts, to the records submitted by the paper mills were made. Nevertheless, a number of statements which could not be satisfactorily cleared up in the available time

3. Management Techniques

still remain open. The cost comparisons elaborated by Mr. Dittner (see Annexes 20 - 24) presented allow enough, for the time being, to be said about the improvements in the total profits to be expected from the proposed specialization measures. They demonstrate the significance of direct costing as an important instrument in production planning, variable to keep with the market chances. In addition they also allow a control of the hitherto level of performance of the individual Indonesian paper mills and provide information which is essential for optimising production. (See also Annex 25, Table 36).

The specialization programmes proposed in this sheets for the individual paper mills, are generally based on the existing production plants taking into consideration the future expansions. Marketing is, however, a matter of thinking in alternatives, and so the specialization proposals drawn up here are only meant to be understood as alternatives, capable of modification.

The elaboration of Mr. Dittner are thought as impulse and example and should be continued according to the actual conditions (Production programme, price, etc.).

3.15 Distribution Costs:

At present, the mills' own storage facilities are only possible at the place of production, and the transport costs, especially for more distant mills, are considerably. The burdens can be better distributed by a mixed calculation and supplying from one delivery store or from the two of Jakarta or Surabaya. The more distant firms do not suffer any disadvantage and costs will be distributed onto all customers. Annex 26, table 37 summarizes the transportation costs per kg of paper in 1972 for the different consumer areas and paper mills.

3. Management Techniques

3.2 Management Organization

For the proposed merger of the state-owned Indonesian paper mills the organization scheme, shown in table 38, is recommended.

The main positions of the Organization Scheme are generally known and need no explanation. All paper mills should have one joint board of directors. Only the Mill Manager and the Mill Controller should remain in the individual mills. All other functions should be centralized.

It should be pointed out that the Financial Manager has to take over the Controlling and the Supply and this function should have priority over all other functions, except of the function of the General Manager.

The total sale is supervised by the Sales Manager and is then divided into the various types for which a Product Manager, specialized to one group of products, is responsible. The Product Managers are the Sales Managers of the groups of products and they have direct controls to customers or groups of customers and to the Production Managers of the different mills.

The Central Market Research and Planning Staff must also be mentioned. This department combines all tasks which serve the planned preparation (except technical research and development and purely technical planning and preparation) of all enterprise activities. This department also acts as staff department for the Marketing Manager (as Market Research Department in cooperation with the Product Managers and for compilation of all distribution plans) and also for the Financial Manager and Controller with the planning of the total concern. It has to take care that the distribution plan and all other plans of the mills are coordinated, adapted and controlled.

A stricter fixing of the details is only possible after creation of the juridical and financial structure. After the respective basic decisions of the Indonesian government it is necessary to take the following steps, to work out a long-term organization programme, possibly under assistance of a Management Consultant:

- development of an organizational and functional diagram
- fixing of the individual departments and their locations
- preparations of areas of responsibility and job descriptions
- preparation of a listing of the tasks and time schedule for the implementation

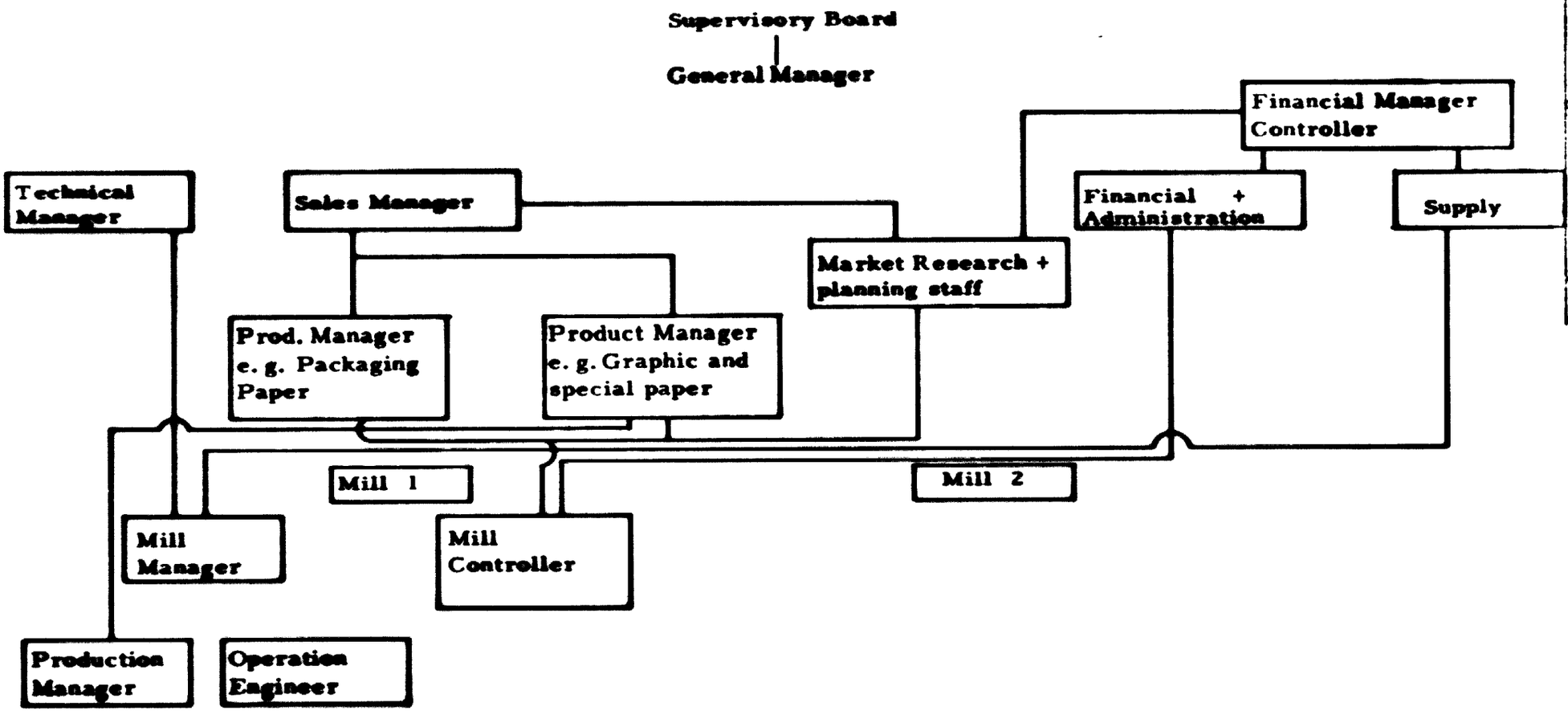
3. Management Techniques

Main individual partial plans are:

- sales plan
- production plan
- investment plan
- procurement plan
- staffing plan
- research and development plan
- cost and profit plan
- finance and liquidity plan

During his consulting activities in Indonesia Mr. Dittner especially pointed out and discussed the possibility and advantages of a joint venture partnership with foreign companies in the pulp and paper industry.

Organization scheme of the concern



4. SUMMARY OF ACTIVITIES, CONCLUSIONS AND RECOMMENDATIONS

4.1 Activities of Mr. Dittner

During the 5 months of his consulting activities in Indonesia Mr. Dittner has thoroughly inspected and advised the state-owned paper mills (except of Martapura paper mill at Kalimatan and the closed paper mill Pemantang Siantar at Sumatra), as well as the Cellulose Institute at Bandung.

His activities primarily referred to the problems of the market, the specialization, concentration and expansion of the Indonesian paper industry. Besides an intensive market research the cost structure of the individual paper mills has been investigated and the system of direct costing has been explained, which makes obvious the margin of each type of paper on the profits. With this system and on the basis of the specialization and the production increase, proposed for the paper mills Padalarang, Letjes, Blabak and Banjuwangi, a production programme was set up and calculated. Contrary to the actual situation, this calculation shows that compared with the former situations, profits can be expected. Further themes of the direct local advisory services to the management of the individual paper mills have been the paper standardization, quality improvement and -controls and the production raise, as well as questions concerning marketing, storage and distribution of the products.

4.2 Conclusions and Recommendations out of the Market Research

Owing to the high protective duties (65%), the former small market share (14% in 1971) and the high growth rates of consumption (per capita consumption of paper at present 1.5kg, yearly growth rate approx. 11%) the almost exclusively state-owned Indonesian paper industry has favourable preconditions for an expanding development. Disadvantageous are the small capacities (1800-7800 tons p.a.) of the working state-owned paper mills, their similar production programme and the therefrom resulting internal competition as well as the inferior quality resp. the bad image of the domestic types of paper, caused by the usage of the domestic raw materials rice straw and bamboo.

The labour market (lack of fully trained engineers, foremen and machine operators), the high capital costs (up to 30% interest p.a.) and the necessity to obtain all machines, spare parts, wires and felts and the major part of chemicals from foreign countries against foreign currency are also some other unfavourable factors for the domestic paper industry.

For the better market transparency the introduction of a correspondent paper classification for production and import/export statistics is recommended. Furthermore the continuation of the paper market research and a closer cooperation with the individual branches, e.g. paper processing industry, printing industry, etc. is proposed.

4. Summary of Activities, Conclusions and Recommendations

The best market chances for the domestic industry has the strongly growing (approx. 12.5% p.a.) sector of printing, writing and related paper (80,000 tons p.a. = approx. 45% share of the paper market, therefrom approx. 25% actual Indonesian production).

For the newsprint production (35,000 tons p.a. = approx. 20% market share-till now no domestic production) an agreement with the neighbouring South-east Asian states is recommended.

The sector packaging paper also has favourable pre-conditions for domestic production (44,000 tons p.a. = approx. 25% market share; nearly no own production until now, approx. yearly growth rate is 20%).

Household and sanitary paper and paper products are not yet produced in Indonesia and due to the low consumption (5,500 tons p.a.) at present it is not economical to start such special production.

4.3 Recommended Single Measures

Out of the market research and the investigation of the paper mills the following main targets for the state-owned Indonesian paper mills are resulting, more detailed described in the report:

- concentration
- specialization
- expansion

with the following short-term single measures which are also more detailed described in the report and of which only the most important ones are stated hereafter:

- Merging of the six working paper mills to a company with central management sectors[+)] and an own system of distribution. (Stop of the ruinos price competition, creation of an uniform price basis.)
- Improvement of the paper qualities and development of new products in cooperation with the Cellulose Research Institute of Bandung, expanded to the field of paper research.

- Specialization of the existing paper mills as follows:

Padalarang:	Office paper, thin paper grades
Letjes:	**Common and medium type writing paper, base stock**

+) Hereto a proposal was elaborated.

4. Summary of Activities, Conclusions and Recommendations

Blabak:	**Cover and heavy weight paper, carboards 2nd and 3rd grade quality**
Banjuwangi:	**Writing paper and kraft paper**
Gowa:	**Printing and writing paper**
Martapure:	**Used as test plant p. ex. for the Cellulose Research Institute of Bandung**

- **Introduction of an automatic control of the moisture content and the area weight of the paper web (possibility of increase of the marketed production, by approx. 7%).**

- **More concised control of downtimes and broke by means of the introduction of uniform reporting.**

- **Increase in production of the available paper machines, mostly obtained through specialization and an increase of the production time in:**

Padalarang	**from**	**3,250 tons p. a. (1971) up to 5,000 tons p. a.**
Letjes	**from**	**7,580 tons p. a. (1971) up to 9,800 tons p. a.**
Blabak	**from**	**3,350 tons p. a. (1971) up to 5,000 tons p. a.**
Banjuwangi	**from**	**7,050 tons p. a. (1971) up to 9,300 tons p. a.**
Gowa	**from**	**7,200 tons p. a. (1972) up to 9,000 tons p. a.**

- **Introduction of the direct costing system, which is showing clearly the respective profit expected from the individual types of paper, in all paper mills.**

For national-economic reasons and when taking into consideration the production techniques at present priority is given to the rehabilitation and development of the existing mills before the establishment of new large plants. The following short- and medium-term investment measures are recommended:

- **Technical improvement, leading to the production increase of PM I and PM II at Padalarang. Hereto a feasibility study is necessary.**

- **Increase of the paper machine speed of PM II at Letjes, production raise of to about 30 tons per day or (possibly only after the 2nd stage) to approx. 60 tons per day. Hereto a feasibility study is under work.**

4. Summary of Activities, Conclusions and Recommendations

- Establishment of a coating plant in the Letjes paper mill (feasibility study needed).

- Development of the paper machine in Blabak to 35 - 40 tons per day (feasibility study needed).

Other ivestment plans (e. g. for newsprint, cigarette paper, etc.) and the respective recommendations are not mentioned in this summary (see chapter 2. 4).

4. 4 Recommended Follow Up

A continuation of the advice on management of the state-owned Indonesian paper industry should be taken into account when the basic political decisions concerning the merging of the paper mills have been made and the organizational pre-conditions are created. Hereby we are thinking of planning and execution of clearly defined single tasks with respective support by the central management in the individual paper mills, in the fields of technical development and organization.

Beside of the introduction of a uniform reporting and costing system for all mills, design and specifications of equipment for an increase of the productivity and paper quality is necessary. (E. g. istallation of checking devices for moisture content and area weight of the paper web in all mills planning of the extension of the Cellulose Research Institute to a Paper Research Institute, etc.).

Under figure 4. 3 we already pointed out that it would be very important to work out feasibility studies, necessary for rehabilitation and development of the existing paper machines for the purpose of raising the production, (especially needed for Padalarang and Blabak paper mills), and a first coating plant, favourably at Letjes paper mill.

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ANNEXES

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ANNEXES - LIST OF THE TABLES AND GRAPHS

MAP 3	MAP OF INDONESIA	ANNEX : 1

LOCATION OF THE SEVEN STATE-OWNED PAPERMILLS

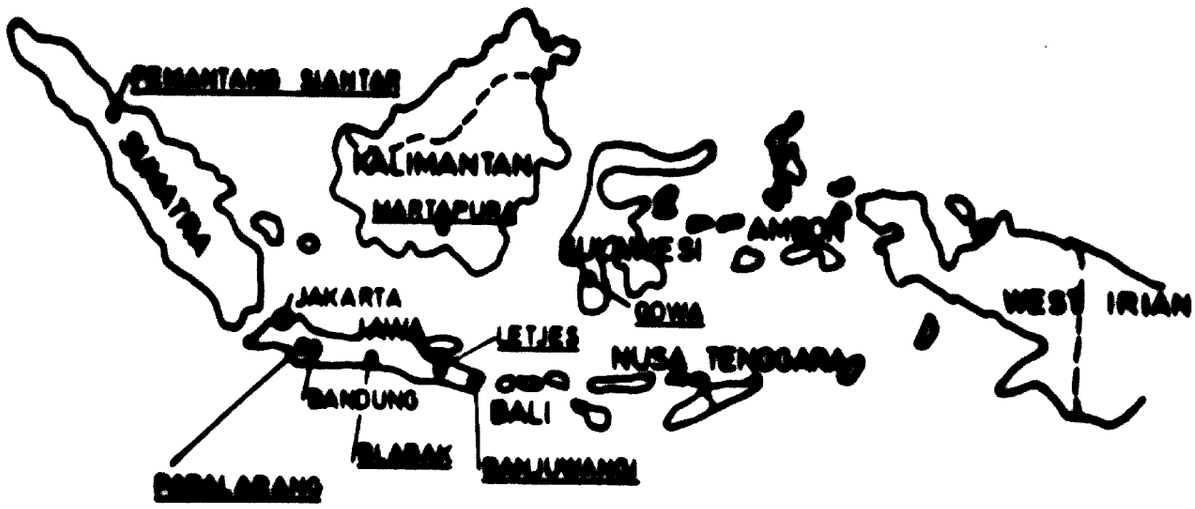
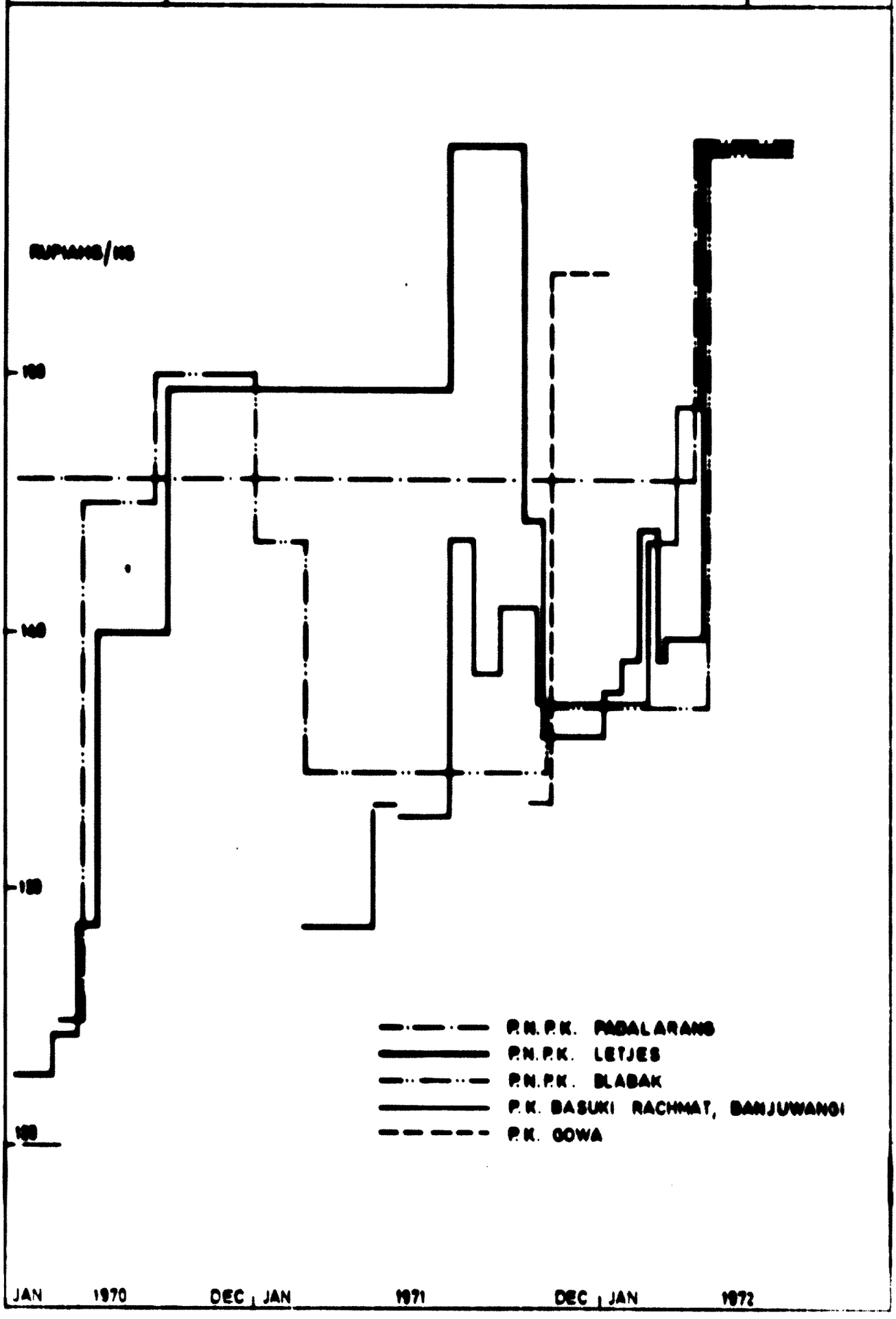


TABLE : 10	PRICES OF INDONESIAN HVS / HVO 80 g/m² 1970 - 1972	ANNEX : 2



ANNEX 3

Table 11

Dealers and Consumers of the State-Owned Paper Mills in 1000 tons, 1971												
Customers	P.N.P.K. Padalarang		P.N.P.K. Letjes		P.N.P.K. Blabak		P.K. Basuki Rachmat Banjuwangi		P.K. Gowa		All State-Owned Paper Mills	
	1000 t	%	1000 t	%	1000 t	%	1000 t	%	1000t	%	1000 t	%
Dealers:					3,0	90	6,75	95	0,6	100	19,25	91
Wholesalers	2,3	71	5,0	69								
Retailer	0,4	12	1,2	17								
Direct Consumers:												
Industry and Government	0,55	17	1,0	14	0,3	10	0,35	5	---	---	2,2	9
Total	3,25	100	7,2	100	3,3	100	7,1	100	0,6	100	21,45	100

Sources: The Paper Mills

ANNEX 4

Table 12

Regional Distribution of the Domestic Paper Production 1971							
AREA [1]	P.N.P.K. Padalarang	P.N.P.K. Letjes	P.N.P.K. Blabak	P.K. Basuki Rachmat Banjuwangi	P.K. Gowa	Total state-owned Paper Mills	
	%	%	%	%	%	1000 t	%
JAWA [3]							
Jakarta	78	--	--	--	74	--	--
West-Jawa	18	36	35	28	--	9,3	43,5
Middle-Jawa	4	22	25	24 [2]	--	4,3	20
East-Jawa	--	42	40	48 [2]	--	7,7	36
CELEBES	--	--	--	--	26	0,15	0,5
Total	100	100	100	100	100	21,45	100

Source: The Paper Mills

1) See explanations in the report

2) and other islands

3) Population in Jawa (1971):

DCI Jakarta Raya	4,5 Mio
West Jawa	22,0 "
Central Jawa/DI Jogjakarta	23,5 "
East Jawa	27,0 "
Jawa	77,0 Mio

ANNEX 5

Table 13

Sales of the state-owned paper mills, the imported paper and the Total Demand of Paper in 1971

Kinds of Paper	Sales of State-Owned Paper Mills 1000 t	Imported Paper [1] 1000 t	Total Paper Demand 1000 t	%
Newsprint	---	34.5	34.5	19.3
Printing and Writing Paper	20.5	59.7	80.2	44.8
Thin and normal paper	17.5	40.6 [2]	58.1	(32.5)
Heavy weight paper	3.0	19.1	22.1	(12.3)
Cigarette paper	0.2	4.7	4.9	2.7
Packaging paper and board, kraft and others	0.8 [3]	40.9	43.6 [4]	24.3
Household paper and paper products		5.4	5.4	3.0
Construction paper and board (also other board)		10.5	10.5	5.9
Total	21.5	155.7	179.1	100.0 %

Sources: Paper Mills and own research and PUSAT STATISTICS

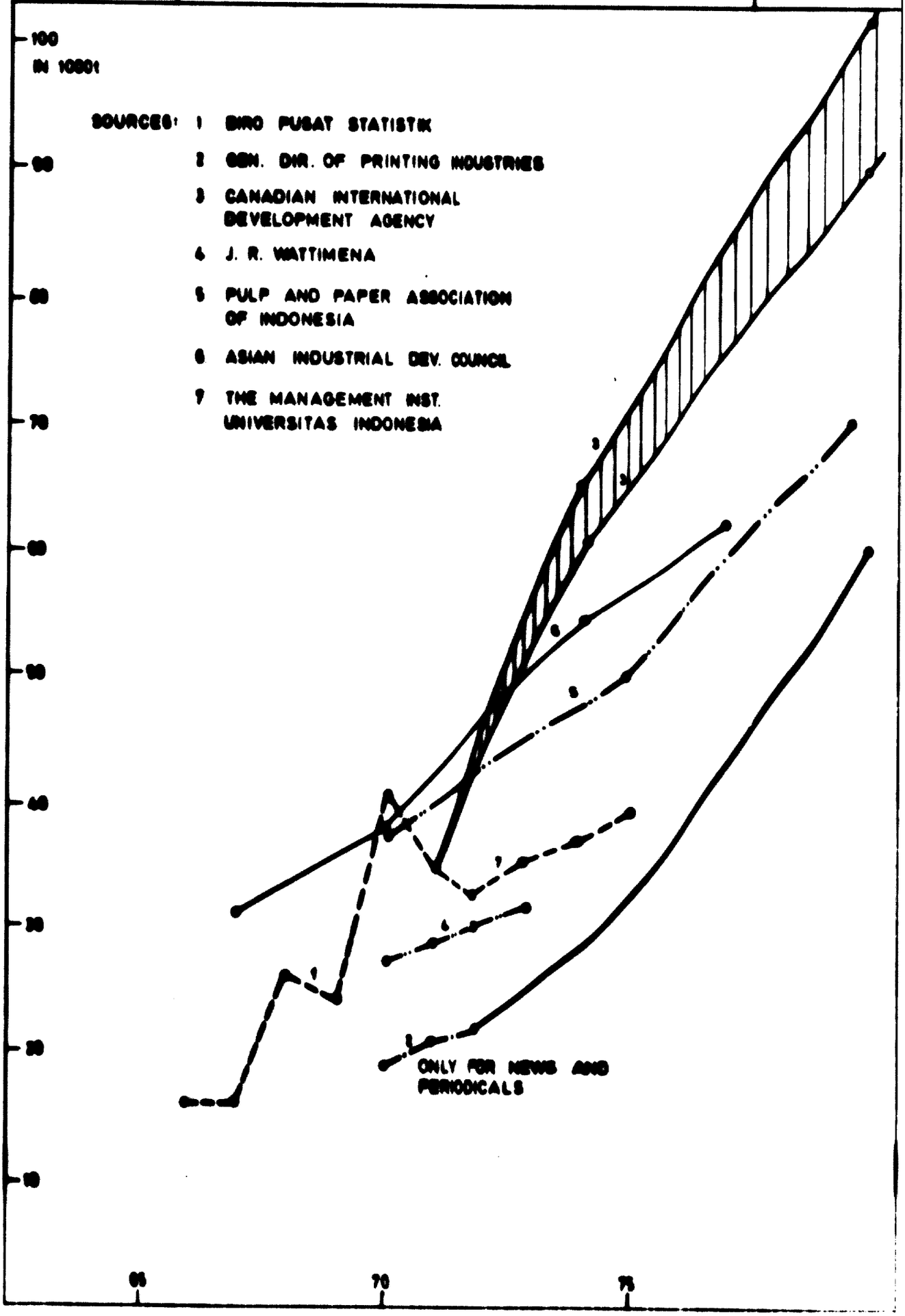
1) summarized figures of PUSAT STATISTICS

2) including about 5000 t of thin paper

3) not included are privately produced domestic paper and imported converted products

4) bases on figures of PUSAT STATISTICS, the figures of the PULP AND PAPER ASSOCIATION for this kind of paper are 12 % lower.

TABLE: 14	NEWSPRINT CONSUMPTION AND COMPARISON OF DIFFERENT ESTIMATIONS	ANNEX: 6



ANNEX 7

Table 16

Prognosis of the Possible Demand for Newsprint in S. E. A. Countries 1970 - 1985

Country	1970			1975			1977	1980		1985	
	1) ASIAN	2) FAO	3) CAN	ASIAN	FAO	CAN	ASIAN	FAO	CAN	FAO	CAN
Indonesia	38	37	39.9	54	50	60/65	62	70	90/105	100	130/165
Singapore	15.5	17	--	23	25	--	26.5	35	--	50	--
Malaysia	17	25	--	25	40	--	30	60	--	90	--
Thailand	45	45	--	70	70	--	84	105	--	160	--
Philippines	71	70	--	102	95	--	118	130	--	180	--
Total for S. E. A. Countries	186.5	194	--	274	280	--	320.5	400	--	500	--

1) ASIAN INDUSTRIAL DEVELOPMENT COUNCIL, 2-12-1967

2) FAO / JAAKKO PÖYRY REPORT 1971

3) CANADIAN TEAM, SANDWELL REPORT 1972

ANNEX 8

Table 17

Survey of main and special printing and writing paper, regarding their characteristics of conversion and market

I. Main and special printing and publication paper for office printing, book printing and publishing. Quality may rank between common, medium and high types.

a)	Letterpress-printing	in reels and sheets, also calendered as for printed matter, business forms (also HVO), book printing, poster printing, thin and volume printing, cover paper and cardboard
b)	Offset-printing	in reels and sheets, also machine-sized as offset-printing (HVO), litho-printing, photographic printing, chromo-, label-paper and cardboard
c)	Gravure-printing	publication grades (HHI, in Indonesia not yet available, only for packaging printing)
d)	Special-printing	in sheets as cyclostyle, gummed paper, etc.

In the printing shop, there are also other types of paper for special technical use in the printing process.

II. Main and special paper used for writing, drawing, typing and printing and other related paper. Quality ranges between common, medium and high types, also with regard to the kinds of wood content, woodfree and rag content.

a) normal paper in reels or sheets, also coloured:

common type	writing and typing paper, exercise bookpaper, stationery, weeding, converting and envelope paper, tablet paper, business form paper, text paper, xerox paper.
medium type	bond, ledger, watermark paper, hard and bank paper, drawing paper, technical and construction, opaque, circular, cover and bookbinding
high type	fine paper, security paper for cheques, stamps, mony, etc., optical reading paper

b) thin paper in reels and sheets of different grades, also coloured:

manifold, onion skin and airmail, carbonizing, industrial and wrapping thin paper

c) Bristol mostly in sheets of different grades, using also waste, groundwood and pulp and also coloured:

Index and carthoteek printing postcard, greeting and visiting card. Cover and files, also cardboard for converting industrial and food packaging

d) special paper not classified before:

Gelatine and spirit, direct line and diazostock, reproduction stock, copy stock, basestock for other coating

other technical paper

ANNEX 9

Table 18

Consumption of Cultural and Communication Paper (newsprint, printing, writing and related paper and cardboard) in 1000 t/year 1966 - 1970					
Kinds of paper	1966	1967	1968	1969	1970
Imports					
Newsprint	16,2	16,1	26,1	24,0	40,6
Publication paper	0,1	0,2	0,2	0,2	0,3
Printing and writing paper	9,6	25,1	27,0	33,8	42,4
Bristol and Cover	0,1	2,6	3,6	5,3	15,8 2)
Domestic Production					
Printing and writing paper 1) (including bristol and cover)	9,0	6,9	9,2	13,0	15,7
Total cultural and communication paper	35,0	50,9	66,1	76,3	114,8

Sources: PUSAT STATISTIC, INDONESIAN PULP AND PAPER ASSOCIATION

1) evaluated figures until 1970

2) this step seems to come from the new entrance of cardboards in the statistics of PUSAT STATISTIC

ANNEX 10

Table 19

The Demand of the Market Sections for Newsprint Printing, Writing and Related Paper in 1000 t/year 1970 until 1975						
Market Sections	1970	1971	1972	1973	1974	1975
1. Office sector	47.5	52.1	57.3	63.0	69.3	76.2
2. Industrial sector	1.0	1.2	1.4	1.6	1.8	2.0
3. School sector	30.0	32.0	35.5	39.0	44.0	5 .0
4. Communication and information						
a) brochures, magazines comics	10.0	11.0	12.0	13.0	14.0	15.0
b) newsprint, weeklies, monthlies	19.1	20.9	21.9	25.0	28.0	32.0
5. Advertising	1.0	1.1	1.2	1.3	1.4	1.5
6. Private consumers	5.0	5.5	6.0	6.5	7.0	7.5
7. Art printing	1.0	1.0	1.0	1.0	1.0	1.0
Total	114.6	124.8	136.3	150.4	166.5	185.2
Sources: Estimation based on information of the Administration						

Table 20

Estimated Demand of Exercise Books in Indonesia 1970

Kind of School	Pupils	Demand of Exercise Books		Demand of Paper approx. in tons			
		per capita year[1]	total in Mio pieces	total	writing paper	cover	kg/capita
Primary School	13,395						
S.D. Jawa	8,146	35	285	11,400	9,975	1,425	1,4
S.D. other islands	5,240	20	105	4,200	3,675	525	0,6
Secondary School S.L.P.	1,292	40	52	2,080	1,820	260	1,6
High School S.L.A.	629	80	50	2,000	1,750	250	3,2
Universities	133	150	20	800	700	1,001	6,0
Courses	456	10	5	200	175	25	0,4
Total	15,905	335	517	20,680	18,095	2,586	1,3

Source: PROJEK PENILAIAN NASIONAL PENDIDIKAN-DEPARTMEN P.and K.and own enquires

1) The average of the enquired informations was for primary schools in Jawa about 40, in the islands about 20 in average; but in more desolated areas no enquiries were made, there is a discount of about 10 %.
The future trend is the consumption of 40 until 50 exercise books in average for total Indonesia.

2) One exercise book has 35 g fine paper and 5 g cover, in total 40 g. The future trend is to lower the paper weights.

Table 21

Employees in the state-owned paper mills of Indonesia in 1972

Paper Mill	Employees			Planned Gross-production in tons
	Administration	Techn. Section	Total [1]	
P.N.P.K. Padalarang	123	509	632	3,310
P.N.P.K. Letjes	50	652	702	8,250
P.N.P.K. Blabak	215	522	737	3,400
P.K. Basuki Rachmat Banjuwangi	120	700	820	7,100
P.K. Gowa	145	618	763	7,200
P.K. Martapura	n.a.	n.a.	n.a.	973
Total Indonesian Paper Mills				
Employees	653	3,001	3,654	30,233
Shares	17,8 %	82,2 %	100 %	

Source: Paper Mills

1) Including the number of daily workers at Padalarang (75), Letjes (162), Blabak (202), Banjuwangi (123), Gowa (n.a.).

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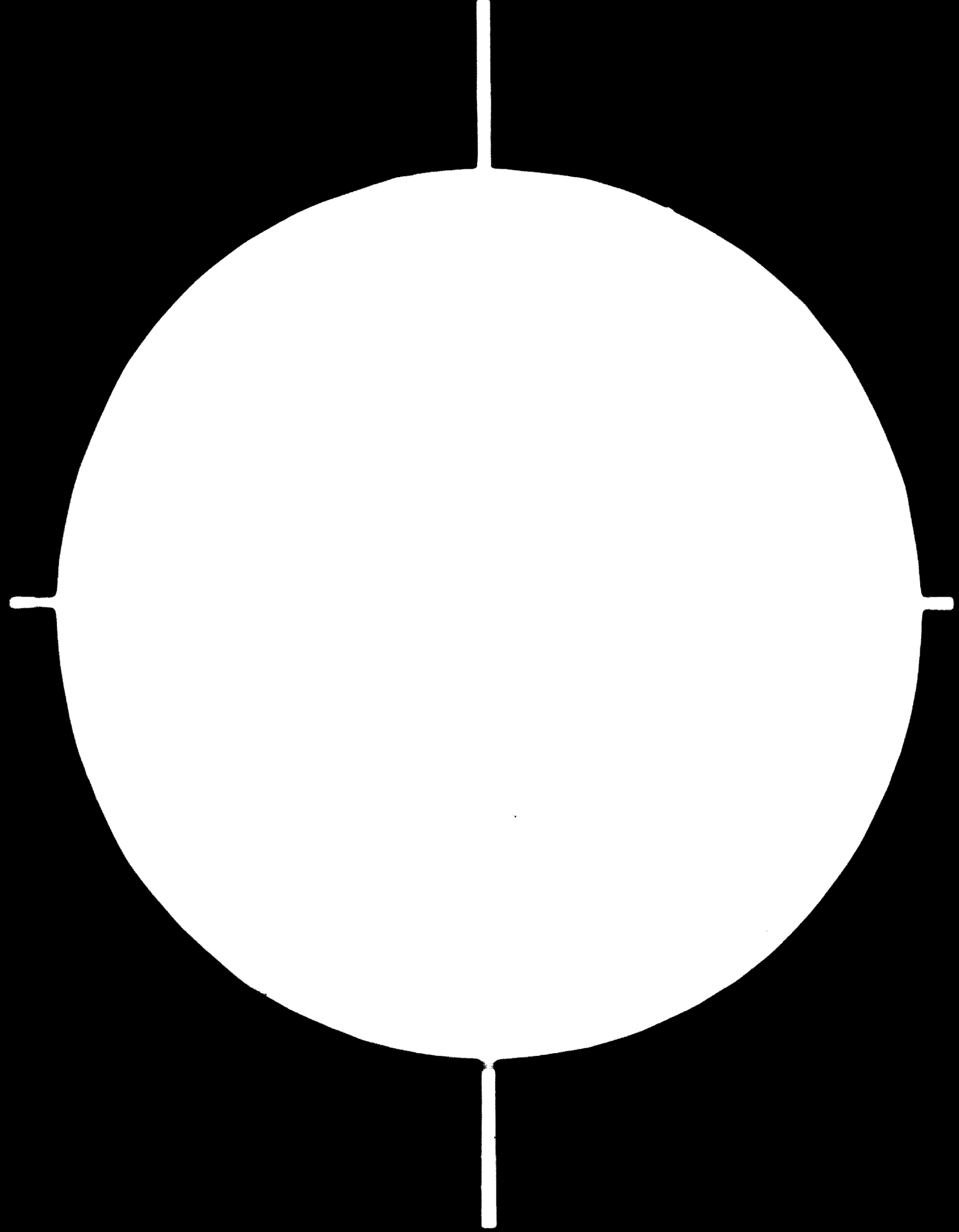

ANNEX 13

Table 25 **Comparison of Production Hours**

Paper Mill	Total Hours per Year	Breakdown 1971				Effective Production Hours 1971	Calculated Production Hours for 1971	Set-up Total Product. Hours 300 day
		technical	technological	maintenance	total			
Padalarang PM I	8,760	1,291	378	.	1,669	6,945	4,650	7,200
PM II	8,760	868	293	.	1,166	7,439	5,215	7,200
Letjes PM I	8,760	400	600	.	1,000	7,760	5,730	7,200
PM II	8,760	67	593	.	660	8,100	6,975	7,200
Blabak	8,760	263	304	621	1,188	7,570	5,332	7,200
Banjuwangi	8,760	-1,610-		528	2,138	6,094	6,649	7,200
Gowa	8,760	.	.	.	2,190 [1]	6,570 [1]	-	7,200
Martapura	8,760	.	.	.	.	n.a.	-	7,200

Sources: The Paper Mills

Remarks: 1) upgraded on the three months of 1972 for comparison purposes

ANNEX 14

Table 26

Production Programme 1971 P.N.P.K. Padalarang				
Kind of Paper	**Gross production t**	**Net production[1] t**	**share %**	**share %**
1. Light-weight paper			8.4	
(PM II)				
cigarette	260	178		5.5
manifold				
bank post	140	93		2,9
areogramme				
2. Normal-weight paper			57.1	
(PM I)				
writing and printing	105	51		1.6
exercise	20	36		1.1
(PM I and II)				
duplicator	1.871	1.427		44.0
special paper[2]	425	339		10.4
3. Heavy-weight paper			34.5	
bristol and index	441	288		8.9
cover[3]	1.215	837		25.6
4. Packaging paper			----	
(PM I)	---	---		---
couverture	---	---		---
wrapping	---	---		---
Total production	4.477	3.249	100	100

Source: P.N.P.K. Padalarang

Remarks:
1) These figures deviate in total by about 20 % from other given figures
2) reform - taxband - certificate - light sensitive - diazo
3) also: postcard, drawing, manila

ANNEX 15

Table 27

Production Programme 1971 - P.N.P.K. Letjes					
Kind of paper	Net Production in tons			share	
	PM I	PM II	PM I + II	%	%
1. light weight paper					
manifold 30 g/m²	34	--	34	0.5	0.5
2. normal weight paper				93.0	
exercise books	295	577	872		11.5
writing 50 - 80 g/m²	595	3,223	3,818		50.3
printing 70-80 g/m²	22	49	71		0.9
duplicator 69 g/m²	199	1,007	1,206		15,9
cover 70 - 100 g/m²	1067	11	1,078		14,2
3. heavy weight paper				6.5	
drawing 120 g/m²	--	129	129		1.7
bristol (london) 120-230 g/m²	234	--	234		3.1
index (manila) 200 g/m²	141	--	141		1.9
Total production (without packaging papers)	2587	4,996	7,583	100	100

Source: P.N.P.K. Letjes

Betrifft **ANNEX 16**

Table 28

Production Programme 1971 - P.N.P.K. Blabak			
Kind of Paper	**Net-Production** **t**	**Share** **%**	
1. Light-weight paper	--	--	--
2. Normal paper		58.7	
writing 50-60 g/m^2	783		22.7
mandat 55-70 g/m^2	540		15.6
banderolle 60 g/m^2	384		11.1
duplicator 60-69 g/m^2	94		2.7
cover paper 90 g/m^2	226		6.6
3. Heavy-weight paper		38.3	
cardboard			
white 120 g/m^2	345		10.0
coloured 190 g/m^2	4 6		14.0
postcard			
white 190 g/m^2	70		2.0
coloured 190 g/m^2	425		12.3
4. Packaging 110 g/m^2	103	3.0	3.0
Total production	3,456 tons	100 %	100 %

Source: P.N.P.K. Blabak, slight deviate from PPA-Statistic

ANNEX 17

Table 29

Production Programme 1971 - P.K. Basuki Rachmat Banjuwangi			
Kind of Paper	Net Production tons	Share %	%
1. Light-weight paper	----	--	---
2. Normal paper		93.3	
Writing 50 - 60 g/m^2	6,292		89.6
Printing 80 g/m^2	109		1.6
Cover 80 g/m^2	148		2.1
3. Heavy-weight paper	----	--	---
4. Packaging grades		6.7	
Kraft 50 - 90 g/m^2	473		6.7
Total production	7,022	100	100

Source: P.K. Basuki Rachmat Banjuwangi.
Another source from Banjuwangi declares for 1971:

writing + printing	6,436 t
cover	464 t
kraft	148 t
	7,048 t

ANNEX 18

Table 30

Planned Production Programme 1972 - P.K. Gowa		
Kind of paper	Planned Net production tons	share %
1. Light weight paper manifold [1]	for local use	n.a.
2. Normal paper writing 55[1] - 80 g/m^2 printing 80 g/m^2 duplicator [1]	4,320 for local use	60 n.a.
3. Heavy-weight paper	---	---
4. Packaging paper kraft 50 - 90 g/m^2	2,880	40
Total Production	7,200 tons	100 %

Source: P.K. Gowa and Pulp and Paper Association

Remarks: 1) used in Sulawesi island

ANNEX 19

TABLE 31

PRICE/COST COMPARISON OF IMPORTED AND DOMESTIC FIBROUS RAW MATERIALS IN RP / 1 KG (air dry)

raw material			approx. import price	PRODUCTION COST					
				Padalarang	Letjes	Blabak	Banjuwangi	Gowa	Martapura
softwood	kraftpulp	bleached	100	101.50	103.05	100.00			
"	"	semi-bleached	96.50 - 97.00						
"	sulfitpulp	bleached	96.00 - 98.00						
hardwood	kraftpulp	"	88.50 - 93.00						
softwood	sulfitpulp	unbleached	85.50 - 89.00						
"	kraftpulp	"	81.50 - 88.50						
ricestraw	sodapulp	1st bleached			74.78				
"	"	bleached				70.00			
"	"	"		88.43					
"	"	"							67.73
hardwood	kraftpulp	"							
softwood	groundwood	bleached	67.50 - 70.00						
ricestraw	sodapulp	2nd bleached			65.00				
softwood	groundwood	unbleached	63.00 - 65.50						
bamboo	kraftpulp	bleached					62.64		
wastepaper	envelope shavings		61.50 - 65.00						
ricestraw	sodapulp	unbleached			56.50				
bamboo	kraftpulp	bleached						54.99	
rubberwood	"	"							56.18
wastepaper	Kd. white shaving		54.00 - 56.00						
bamboo	kraftpulp	unbleached						44.27	
"	"	"					42.78		
hardwood	"	"							37.65
wastepaper	white ledger		33.00 - 35.00						
rejects (calculated)					25.00				
hardwood	groundwood								12.60
wastepaper (calculated)				10.00					

ANNEX 20

COST COMPARISON OF THE PRODUCTION PROGRAMME OF THE PAPER MILLS

(Additional explanations to Tables 26, 32, 33, 34)

Taking the 1971 production programme of the Padalarang paper mills as an example, Table 26 shows what proportion of the total profits were made by the individual kinds of paper in 1971 and what profits are to be expected in 1973 form the proposed production programme.

Explanations: informations is given in columns

a and b on the kinds of paper for both paper machines broken down into normal and heavy weight writing and printing paper and packaging paper and by weight classes (g/m^2);

c and d on the production outputs as given by the paper mills per hour in kg and the annual production;

e and ee on the paper losses. The data from Padalarang were corrected by more realistic estimates according to the conditions prevailing;

f on the total production hours calculated for the year from the results reported in columns c and d. These calculated production hours reproduce an optimum conditions, which, however, as Table 31 explains, was never achieved nor in full capacity;

g on the contributions made by on ton of finished paper towads covering the costs, given in 1.000 rupiahs. This sum ist the amount which remains, after the deduction of materials and packaging costs (pulp costs were recorded at their cost price), costs of special finishing and of special distribution, to cover the costs incurred in maintaining production. This, as well as a loss or profit, results from the difference compared with the sales price obtained without taxes.

The contribution towards covering costs can be improved by lowering the costs of materials, by raising productivity or the selling price;

h on the contribution towards covering costs made by one paper machine-production hour;

i on the scale of the paper grades. The grade higher up in the scale produces a higher contribution towards covering the day-to-day operational costs and, thus, a higher contribution towards making a profit;

j on the total contribution of one grade of paper towards covering the year's requirements. The amount necessary for the PM I in Padalarang is 53,400,000 RP (calculated). The turnover was 80 billion rupiahs, the difference of 33.4 billion rupiahs is the profit of the PM I. The PM II did produce a loss of 15.5 billion RP. The difference of 11.1 billion rupiahs is the total profit and is contrasted with the turnovers in Table 36.

Datum ANNEX 20

The Tables 33 to 35 show the evaluations for the paper mills in Letjes, Blabak and Banjuwangi. Gowa and Martapura were not fully operational in 1971.

In the second part of the comparative tables of the individual paper mills, the proposed production programmes are examined with regard to their future expectations of profits. Profits, which can be termed normal, are to be expected for the mills in Padalarang, Letjes and Blabak. At present, no profits or very low ones are expected in these mills. For the concerns in Banjuwangi and Gowa, there is a possibility of getting out of the loss situation and breaking even for the time being.

TABLE 32 ANNEX 21

COMPARISON DIRECT COSTING OF THE PRODUCTION PROGRAMME 1971 AND THE RECOMMENDED PRODUCTION PROGRAMME OF P.N.P.K. PADALARANG

Kind of paper	g/m²	Net production 1971 per hour kg/h	Net production 1971 per years t	Losses %		Total calculat. hours per year	Contribution for readiness of production and profit per t in 1000 R.P.	Contribution for readiness of production and profit per h in 1000 R.P.	pos.	per year in mio. R.P.
a	b	c	d	e	ee	f	g	h	i	j
PM I										
1. Light weight paper:										
2. Normal paper:										
Couverture	60	365	--	1,0	-	-	-	-	-	-
Writing (HVS)	60	339	87	0,1	15	247	16,8	5,7	7	1,4
	80	364		0,1	15		14,6	5,3	8	
Ducplicator	69	400	260	0,1	10	625	31,1	12,5	5	7,8
3. Heavy weight paper:										
Reform	120	313	339	0,9	10	1050	33,2	11,3	6	11,9
Bristol (London) white	190	426	288	0,8	5	678	48,8	20,8	3	14,3
colored	190	426		0,5	5		50,8	,6	2	
Cover Natural	100	416	837	1,0	15	2050	55,0	20,3	4	44,6
colored	225	400		1,0	15		58,0	23,2	1	
4. Packaging paper:										
Wrapping										
REMARKS:	PM I		1811			4650 = 64,5 % (300)	-	-	EARNINGS 80,0 DEMAND 53,4	
PM II										
1. Light weight paper:										
Cigarette white	26	125	178	1,0	25	1425	65,9	8	4	11,7
colored	26	125		1,4	25		67,0	8,4	3	
Manifold	29,5	163	93	1,0	30	570	57,5	9,4	2	5,4
2. Normal paper:										
Duplicator	69	364	1167	0,1	10	3220	31,1	11,4	1	36,7
REMARKS	PMII		1438			5215 =72,5%			Earnings: 53,8 Demand: 69,3	
PM I + PM II			3249				Total		Earnings: 133,8	
							Total		Demand: 122,7	
							Total		Surplus 11,1	

Recommended Production Programme 1973						
Kind of paper	t/year	kg/hour	calcul. hours/ year	Contribution for readiness of production and profit per 1 hour in 1000 R.P.	Pos.	per year in mio. R.P.
k	l	m	n	o	p	qu
1st and 2nd quality writing with watermarks (60-80 g/m²)	500	400	1250	10-15	2	15,6
Reform	400	365	1100	12	3	13,2
Bristol and cover	2250	500	4500	21	1	94,5
Manifold	500	190	2630	10-15	2	33,0
Bond (45-80 g/m²)	1350	320	4220	15-20	1	74,0
	1850 (+28,5%)	Increased of round 15 %	6850 =95% (300)			Earnings:107,0 Demand: 85,0
	5000			Total Total Total		Earnings:230,3 Demand:165,0 Surplus: 65,3

REMARKS: Both the papermachines are combined in the used accounting system, therefore, the figures have no exact real value of comparison. The same fault is the concentration of Similar kinds of paper in papergrounds in this accounting system, so there is also no exact real separation.

COMPARISON (Direct Costing) OF THE PRODUCTION-PROGRAMME 1971 AND THE RECOMMENDED PRODUCTION-PROGRAMME OF F.N.P.K. LETJES

KIND OF PAPER	g/m²	size	PRODUCTION per hour kg/m²	PRODUCTION per year t	LOSSES %		TOTAL calcul. hours per year/H	COVERINGS per t in 1000 R.P.	COVERINGS per 1 h. in 1000 R.P.	COVERINGS pos.	COVERINGS per year in mio.R.P.	RECOMMENDED PRODUCTION PROGRAMME 1973 Kind of paper	t/year	kg/hour	calculated hours per year	Contribution for readiness of production plus profit per 1 hour in 1000 R.P.	Pos.	Per year in Mio R.P.
a	b	bb	c	d	e	ee	f	g	h	i	j	k	l	m	n	o	p	qq
PM I:																		
1. Light weight paper																		
Manifold	30	-	n.a.	34	./.	8	e 136		e 10,0		e 1.4							
2. Normal paper																		
Exercise book paper		-	n.a.	295	8	8	s 1135	47.5	19.8	3	s 42.3	2nd Quality Writing Paper	3300	500	6600	23.7	1	156.0
Writing (HVS)	60	65x100	417	595								Later use Stock Paper + 60 g/m²						
Printing (HVO)	70	65x100	500	22	./.	8	44	22.3	11.2	10	0.5							
Duplicator	69	65x100	n.a.	199		8	e 398		e 17.7	5	e 7.1							
Cover Violet	90	65x100	542		./.	8		30.2	16.4	7								
Blue	90	65x100	542	s674	./.	8	s1245	32.8	17.8	4	s 20.5							
Green	90	65x100	542		./.	8		31.9	17.3	6								
Casing[1]	90	65x100	542		./.	8		26.5	14.4	9								
3. Heavy weight paper																		
Bristol (London)	190	61x 86	667	234	./.	8	350	40.3	26.9	2	9.4							
Index (Manila	220	72x118	713	141			197	68.6	49.0	1	9.7							
4. Packaging paper																		
Wrapping[2]	100	65x100	542	393	./.	8	725	29.6	16.1	8	11.7	Wrapping paper	150	600	250	17.8	2	4.5
				2587			5730				102.6		3450	Increase	6850 =			160.5
							80%				92.4		+ 33%	of	95% (300)			112.0
							(300)				10.2 = 11%							48.5 - 43 % Profit
PM II:																		
1. Light weight paper	no																	
2. Normal paper																		
Exercise book paper		-	n.a.	577	./.	10	805		e 12.3	5	9.9	Exercise Book Paper Writing	6250	925	6720	21.4	2	144.0
Writing (HVS)[3]	50	65x100	667	2438	./.	10	3650	28.1	15.4	3	56.3							
	60	65x100	713	503	10	10	e 705	17.3	12.3	5	8.7							
	70/80	65x100	n.a.	282	./.	10	e 375		e 15.4	4	5.8							
Printing (HVO)	70/80	65x100	n.a.	49	./.	10	e 65		e 15.4	4	1.0							
Duplicator	60	65x100	833	1007	./.	10	1205	16.1	13.4		16.2							
Cover	70.100	65x100	n.a.	11	./.	10	15		e 15.6	2	0.3							
3. Heavy weight paper																		
Drawing	120	55x 75	833	129	./.	10	155	22.7	18.8	1	4.3	Drawing	125	950	130	21.6	1	2.8
				4996			6975				102.5		6375		6850			146.8
							=97 %				112.4		+ 28 %		95 % (300)			134.0
							(300)				9.9-8,8 % Deficit							12.8 -9, 5% Profit
								Total Earnings			205.1		9825			Total Earnings		307.3
								Total Demand			204.8					Total Demand		246.0
								Total Surplus			0.3					Total Surplus		61.7

REMARKS: 1) This calculation is to check (some errors in Letjes calculation)
2) Only for own use, market price here: 80 RP/kg

TABLE 34 ANNEX 23

COMPARISON (Direct Costing) OF THE PRODUCTION PROGRAMME 1971 AND THE RECOMMENDED PRODUCTION PROGRAMME OF P.N.P.K. BLABAK

KIND OF PAPER		g/m²	NET PRODUCTION 1971 per hour kg/h	NET PRODUCTION 1971 per year t	LOSSES %	Total calculated hours per year h	COVERINGS per t in 1000 R.P.	COVERINGS per h in 1000 R.P.	COVERINGS Pos.	COVERINGS per year in mio R.P.	RECOMMENDED PRODUCTION PROGRAMME 1973 Kind of paper	t/year	kg/hour	Calcul. hours/ year	CONTRIBUTION per 1 hour in 1000 R.P	CONTRIBUTION Pos.	CONTRIBUTION per year in 1 mio. R.P
a		b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
1. Light weight paper		no															
2. Normal paper																	
Writing		50	523	685	16	1310	14,7	7,7	12	10.1							
		60	761	98	8	131	31,2	23,7	7	3.1							
Mandat		55/70	598	540	11	903	39,1	23,4	8	21,1							
Banderole		60	508	384	7	758	28,2	14,3	10	10,8							
Duplicator		60/69	643	94	9	146	13,3	8,5	11	1,2							
Cover	colored	90	573	226	9	394	57,8	33,0	3	13,4	Cover paper	1000	av 600	1665	35,0	1	58,4
	colored	90	573		10		61,0	35,0	2								
3. Heavy weight paper																	
Cardboard	white	120	761	345	8	452	35,6	27,1	5	12,2	Heavy weight paper, cardboards of 2nd and 3rd quality	4000	av 900	4450	35,0	1	155,5
	colored	190	876	486	14	555	32,4	28,4	4	15,7							
Postcard	white	190	980	70	12	72	42,2	41,2	1	3,0							
	colored	190	817	425	8	520	33,1	27,0	6	14,0							
4. Packaging paper																	
Wrapping		110	850	103	9	121	26,0	22,0	9	2,7							
				3356		5332 = 74 % (300)		Total Earnings		107,3		5000 = 49 %		6115 = 85 % (300)	Total Earnings		213,9
								Total Demand		95,0					Total Demand		155,0
								Total Surplus		12,3					Total Surplus		58,9

REMARKS:

The price for rice straw pulp was used with 35.00 R.P./kg after reconstruction of the calculation it was corrected up to 70.00 R.P. kg

TABLE 35 ANNEX 24

COMPARISON OF THE PRODUCTION PROGRAMME 1971 AND THE RECOMMENDED PRODUCTION PROGRAMME FOR P.K. BASUKI RACHMAT, BANJUWANGI

KIND OF PAPER	g/m²	PRODUCTION 1971 per hour kg/h	PRODUCTION 1971 per year t	Losses %	Total calcul. hours per year /h	COVERINGS per t in 1000 R.P.	COVERINGS per 1 h	COVERINGS Pos.	COVERINGS per year in mio R.P.	RECOMMENDED PRODUCTION PROGRAMME 1973: Kind of paper	t/year	kg/hour	calculated hours/years	Contribution for readiness of Production plus profit per 1 hour in 1000 RP.	Pos.	per year in 1 mio R.P.
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	qu
1. Light weight paper																
2. Normal paper																
Writing (HVS)	50	1067	548	8	515	28.1	26.4	2	13.6							
	30	1268	5778	8	4550	28.0	22.1	4	100.5	Writing paper	8500	1360	6260	av. 22.5	1	141.0
Printing (HVO)	a 80	1299	110	8	85	e28.0	21.5	6	1.8							
Blue Cover	90	1288	148	8	115	e28.0	21.8	5	2.5							
3. Heavy weight paper																
4. Packaging paper																
Kraft	a 50	1045	136	8	130	e28.0	26.8	1	3.5							
	a 60	1179	68	8	58	e28.0	23.8	3	1.4							
	a 80	1312	6	8	5	e28.0	21.4	7	0.1	Kraft-paper	800	1360	590	av. 22.5	1	13,3
	90	1333	254	8	191	e28.0	21.0	8	4.0							
			7048		5649 = 78,5 % (300)		Total Earnings 127.4			Alternative A	9300 and more		6850 = 95 % (300)	Total Earnings 154.3 Total Demand 150.0 Total Surplus 4.3		
							Total Demand e=140-150			Alternative B	8500	1540	6850	av. 25.5 Total Earnings 175.0 Total Demand 155.0 Total Surplus 20.0		
							Total Deficit e=12.6-22.6									

REMARKS:

The accounting system of Banjuwangi works (also this of Gowa Pampermill) with too roughly evaluated and not statistically controlled values.

Table 36 **Calculated Profit Margin for 1971 and the Recommended Production Programme**

Paper Mill	Production Programme 1971 turnover in million RP	calculated profit/deficit in million RP	share %	Recommended Production Programme calculated turnover in million RP	calculated profit in million RP	share %
Padalarang	459,9	+ 11.1	+ 2.4	700	65.0	9.3
Letjes	1.001,9	+ 0.3	± 0	2,000	61.7	3.1
Blabak	444.1	+ 12.3	+ 2.5	650	58.9	9.1
Banjuwangi	855.0	- 17,5	- 2	a) 1,130 b) 1,280	4.3 20.0	0.4 1.6
Gowa	54.0[1]	--	--	ca. 1,200	balance	± 0
Martapura	.	--	--	n.n.	balance	negative
all paper mills	2,814.9	6.2[2]	0.2	4.7 - 4.8 billion RP	approx. 200 million RP	4.2

Sources: PULP AND PAPER ASSOCIATION and own calculation

Remarks: 1) only for a short period in 1971

2) only for the four mills in Jawa

Table 37 **Transportation Costs per kg of Paper in 1972**

Paper Mill Area	Padalarang	Letjes	Blabak (about)	Banjuwangi	Gowa	Martapura
Jakarta	2,00	5,50	4,00	7,00	11,50	10,00
Surabaja	--	0,90	2,00	1,95	10,00	9,00
Bandung	0,60	5,50	--	7,00	--	--
Semarang	--	2,31	1,50	3,90	--	--
Surakarta	--	2,12	1,00	3,41	--	--
Jogjakarta	--	2,39	0,50	3,90	--	--
Medan	--	--	--	--	12,00 - 14,00	--
Palembang	--	--	--	--		--
Ujung Pandang	--	--	--	--	low	--
Banjermasin	--	--	--	--	--	1,25
Denpasar	--	--	--	2,75	--	--

Sources: Information from the Paper Mills

Betrifft **ANNEX 27**

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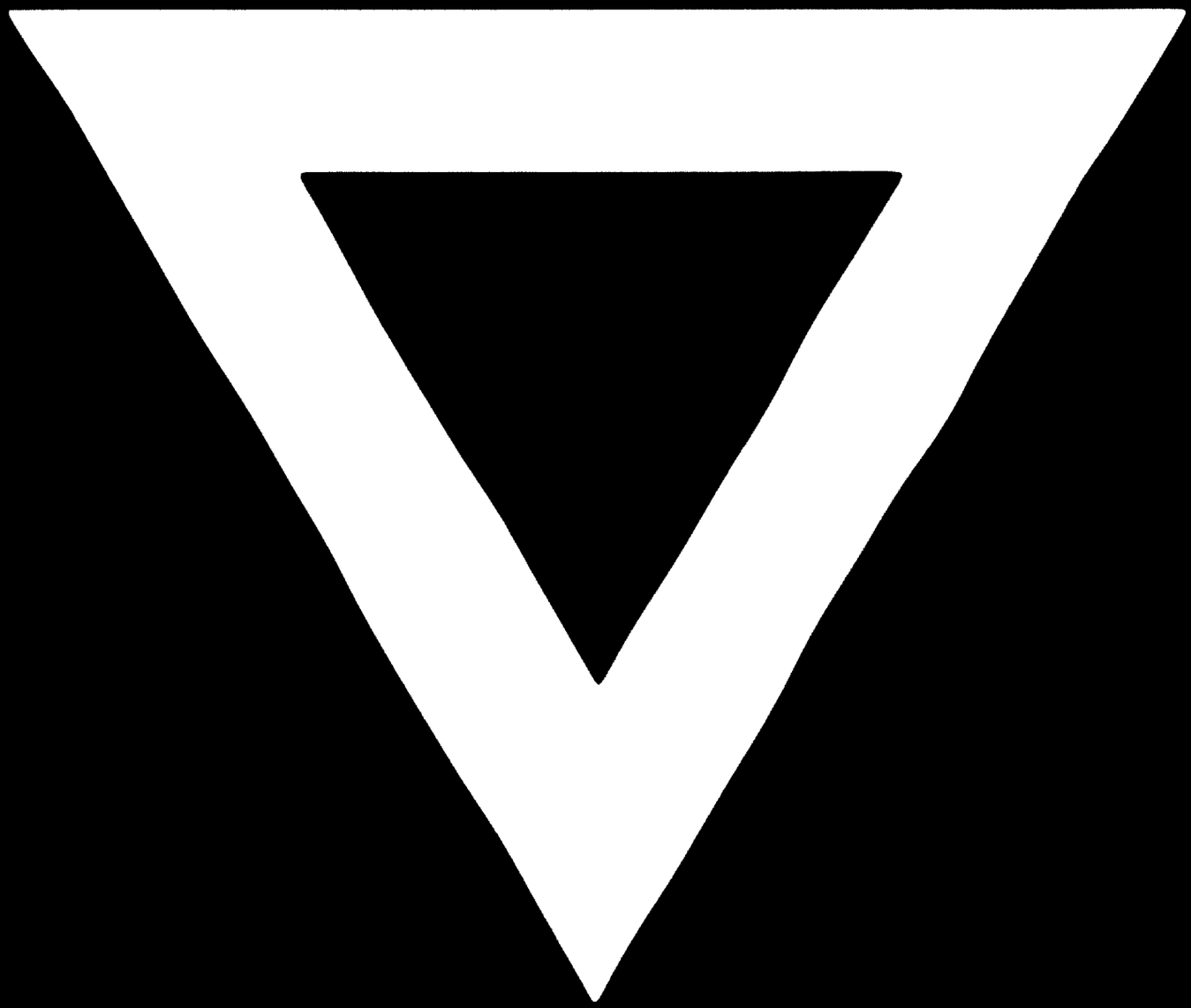

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