11. SUMMARY OF PRESENT NATRON AND THE PROPOSED DEVELOPMENT PROGRAM

11. SUMMARY OF THE PRESENT NATRON AND THE PROPOSED DEVELOPMENT PROGRAM

11.1 Outline of the Present NATRON

11.1.1 Name of Company: "NATRON" Maglaj d.d.

11.1.2 Address: Bosnia and Herzegovina, Maglaj City

11.1.3 Establishment: 1968

11.1.4 Business: Production of Pulp, Kraft Paper and Paper Packing

11.1.5 Number of Employees: 1,638 (February 1998; 4,491 at end of 1991)

11.1.6 Capital: DM160,371 thousand (Shareholders: Government 37.7%, Employees of NATRON 62.3% at the end of 1997. Share of Government is planned at 70%)

11.1.7 Production (in ton)

Products	1991	1997	1997/1991
Pulp	120,000	-	-
Paper	150,000	4,674	3.1%
(Corrugated board)	(32,000)	(2,274)	(7.1%)
(Sacks and bags)	(35,000)	(2,400)	(6.9%)
(Sack paper)	(83,000)	(0)	(0%)

11.1.8 Sales (in DM1,000)

Products	1991		1997		
(Domestic)	Quantity	Amount	Quantity	Amount	97/91
NATRON paper (ton)	31,145	82,358	317	336	0.4%
Tape, sheet (ton)	3,541	14,659	150	2,718	18.5%
NATRON sack (thou. Pieces)	142,780	148,707	9,193	4,419	3.0%
Paper bag (thou. Pieces)	18,324	5,584	2,326	417	7.5%
Corrugated board, and wrapping (ton)	30,079	114,975	2,605	4,504	3.9%
Sub total	-	366,283	-	12,394	3.4%
(Export)	Quantity	Amount	Quantity	Amount	
Paper (ton)	14,699	12,281	2,292	1,703	13.9%
Sack, box etc.	-	5,517	-	194	3.5%
Sub total	-	17,798	-	1,897	10.7%
Grand total	-	384,081	-	14,291	3.7%

Note: Sales for former Yugoslavia is included in (Domestic) in 1991, (Export) in 1997.

11.1.9 Machines in operation at the end of 1997 and their capacities

(1) Pulpers

Pulper	Capacity	Material	Attachment
Pulper using Waste Paper	150 ton/day	Waste Paper	Coarse Screen
Pulper using Purchased Pulp	150 ton/day	Purchased Pulp	Conveyer
Pulper using Broke	100 ton/day	Broke	Conveyer

(2) Paper Machines (PM)

PM	Capacity	Products	Specification	Material
PM-1 (65% of total yield in 1991)	50,000 ~60,000 ton/annual	Testliner	140~200g/m^2	Waste Paper Pulp
		Top Testliner	50g/m^2	Purchased Pulp
		Fluting	112~150g/m^2	Waste Paper Pulp
		Schrenz	127g/m^2	Waste Paper Pulp
		OPN Sack Paper	80~100g/m^2	Purchased Pulp 50%, Waste Paper Pulp 50%

(3) Corrugated Board Production Machines

Machines	No.	Width	Speed	Capacity	Raw Paper	Energy
Corrugator	1	1,600mm	100m/min	119,750 thousand m^2/a	71,850 t/a	depends on Paper Machines' operation (when PM stops, corrugators must stop)
Corrugator (will be completed in June '98)	1	2,100mm	300m/min			
Glue (set)	1	Warm Glue Method				

(4) Corrugated Box Production Machines

Machine	No	Width	Speed	Colors	Property	Capacity	Raw Paper
Printer,	1	3,600mm	90 r.p.m	2	Oily	11,405	6,843 t/a
Plotter	1	2,700mm	120 r.p.m	2	Water	12,773	7,664 t/a
Gluer	1	2,200mm	150 r.p.m	2	Water	19,958	11,975 t/a
total						44,136	26,482 t/a

Note: Capacity is in thousand m^2/a

(5) Sacks Production Machines

Machines		Speed	Capacity	Raw Paper	Material
Large sized Sacks	Overlay 5	100r.p.m	133,056 thousand pieces/a	36,590 t/a	Kraft paper (import from Hungary)
	Bottomlay 7				
	BottomSew 6				
Small sized	3	70r.p.m	55,883thou p/a	1,956 t/a	

11.1.10 Capacity of Paper Machines

PM	Products	Capacity	Present Operation
PM-1	Corrugated board, OPN Sack paper	50~60thou. ton/a	10days per 2 months
PM-3	MG Paper	10 thousand ton/a	Halt
PM-4	Kraft Paper(NATRON Paper) etc.	60 thousand ton/a	Halt

11.1.11 Financial Statements (1997, in DM1,000)

Balance Sheet

Assets		Debts & Owners' equity	
Current Assets	**16,097**	**Current Debts**	**3,312**
A/C Receivable	5,391	A/C Payable	2,376
Raw Materials	4,509	Others	936
Products	5,304	**Long-term Debts**	**46,115**
Others	893	Long-term Loan	41,132
Fixed Assets	**195,314**	Others	4,983
Fixed Assets	193,145	**Owners' Equity**	**161,984**
Land	30,584	Capital	160,371
Buildings	133,203	Retained Earnings	1,613
Machinery	29,358		
Intangible Assets	2,169		
Total	**211,411**	Total	**211,411**

Income Statement

Sales	17,164
Cost of Sales	31,781
(Depreciation)	(5,871)
Ordinary Income	-14,617
Other Income	1,400
Net Income	-13,217

11.2 Summary of the Proposed Development Program

11.2.1 Market

Products	Market
Sack paper	Clupak sack Kraft paper produced on PM4 is quality-wise competitive in export market. Italy, Middle East & North Africa might be the most promising markets.
MG(MachineGlazed) paper for bag	Can compete in quality & costs. Export mainly to Slovenia & Italy.
SC (Semi-chemical) Fluting	Can compete in quality & costs. Best quality for corrugating medium. Market should be in Italy & South Europe etc.
Corrugated board	Typical home-market product. The political, economical recovery in ex-Yugoslavia region is an essential condition. NATRON's high-quality SC fluting could improve cost-competitiveness of corrugated board.

Possibility to use transport systems (rail, harbor) is a prerequisite for this development program.

11.2.2 Production Principles

To get the highest benefit of existing facilities without excessive investments, the following 4 production principles are targeted;

(1) Simple, streamlined production lines

(2) Full capacity utilization

(3) Minimum grade changes

(4) Stable exportable quality

11.2.3 Production Policy

(1) Two Pulping Lines to be Started Simultaneously

Both pulping processes can be combined to common chemical recovery with only minor process modifications. Green liquor from the Kraft pulping is used as cooking liquor in hardwood pulping (cross-recovery).

(2) Advantage of SC Fluting

SC fluting has superior quality competitiveness in export markets, compared with waste paper based fluting.

(3) Attribute of Paper Machines (PM), and Advantage of Single Production

1) PM1 is suitable for fluting, corresponding to the output of SC hardwood pulp from the Kamyr pulping line.
2) PM3 can be used in production of special MG paper.
3) PM4 is suitable for sack paper production, using unbleached softwood Kraft pulp, because it is equipped with high consistency refining and Clupak unit.
4) These paper machines produce only one paper grade at full capacity, resulting in maximizing the efficiency and minimizing the costs.

(4) Converting plant to be developed so that product mix meets market requirements.

(5) Start-up of PM2 to produce schrenz from waste paper was considered, but the plan has not been found feasible for the following reasons :

1) Products produced by PM2 are low in quality, and make a deficit in gross margin level, so causing a decline in the IRR of NATRON.
2) Width of paper products produced by PM2 mismatches new corrugated machine installed in June 1998. On the other hand, PM1 matches the new machine.
3) Much investment is required for restarting PM2. Such investment can be in vain due to future suspension.
4) Pulp plant with recovery boiler and Kamyr digester is utilized for PM1, 3 and 4. PM2 does not contribute to pulp plant operation.

(6) No waste paper will be used after mid-2000 (Long-term program). Because :

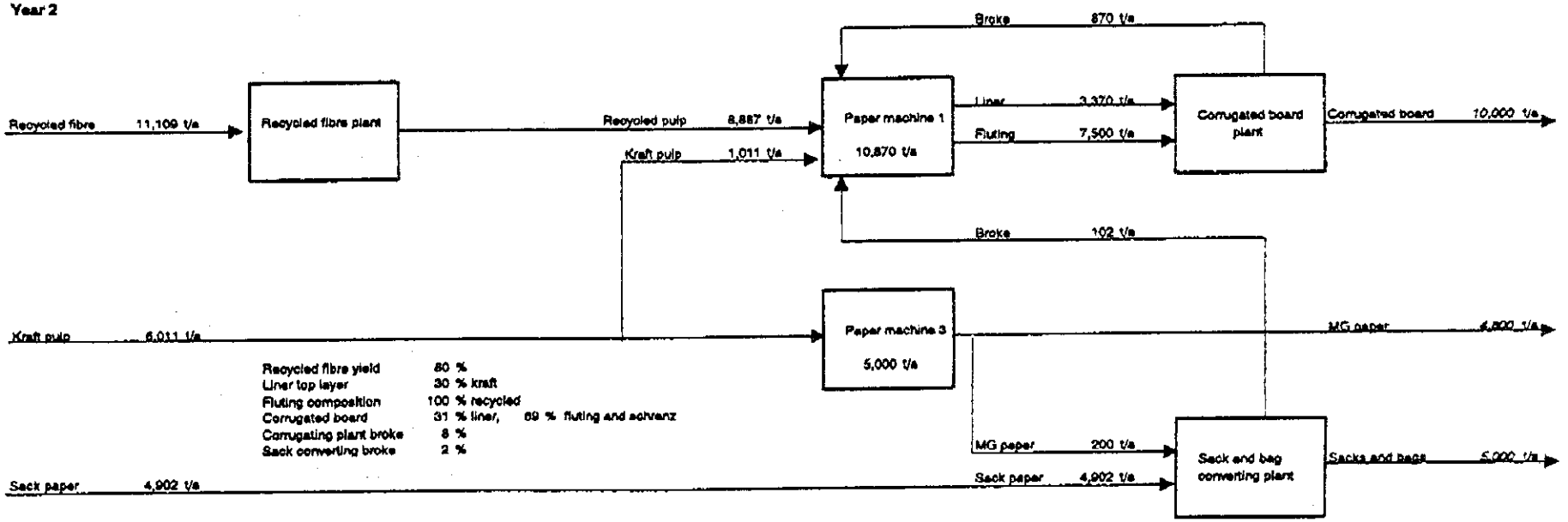
1) Efficient collection of domestic waste paper in the future is not necessarily possible.
2) After starting the pulp plant, recovery boiler and Kamyr digester need to be utilized to over
50% of capacity. After extension of the dryer section, capacity of PM1 will correspond with the minimum capacity of the recovery boiler and Kamyr digester.
If waste paper is used on PM1, the 50% capacity usage of the recovery boiler and Kamyr digester will not be achieved..

11.2.4 Development Program

Phase	Immediate Program (July~Dec.1998)	Short-term Program (Jan.1999~June2000)	Long-term Program (July2000~Dec.2009)
Target	1. Improve product quality & marketing. 2. Reduce production cost. 3. Rehabilitation & start-up of effluent treatment & ash dumping system before start-up of PM3	1. Increase production of PM1 & converting plant. 2. PM3 starts producing MG paper using market Kraft pulp. 3. Prepare long-term program.	1. Normal, continuous production with full capacity 2. Both pulping lines start at the same time.
Pulping Line (Batch)	-	-	Operates with maximum production of 66,000 ADt/a. Supply softwood Kraft pulp to PM3 & PM4
Pulping Line (Kamyr Continuous)	-	-	Has to be operated with minimum production of 60,000 ADt/a. Supply hardwood SC pulp to PM1.
Waste Paper Plant	Supply waste paper pulp to PM1	Supply waste paper pulp to PM1	Ceases operations but to be preserved for the future possible restart.
PM1	Fluting, Schrenz, Testliner, NATRON paper	Do. Production is increased.	Produces Fluting 73,000 t/a by hardwood SC pulp. The fluting property meets demands from export markets.
PM3	-	MG paper for paper bag mainly for export market	MG paper 9,000 t/a. Pulp supply changes from Market pulp to NATRON Kraft pulp, and costs are reduced.
PM4	-	-	Sack paper 57,000 t/a by NATRON Kraft pulp.
Converting Plant	Corrugated board & box, Sacks, Bags	Do. Production is increased.	Do. Testliner is to be purchased.
Remarks	1. Paper qualities are acceptable for domestic customers. 2. Production is intermittent because of limitations in raw material & market.	1. Production is still intermittent. 2. Comprehensive training program for all employees to raise technical knowledge has to be realized.	1. Concentration on only one grade improves the paper properties & paper machine efficiency. 2. Operation with full capacity reduces costs, and increases competitiveness. 3. PM4 needs thorough repair before restart.

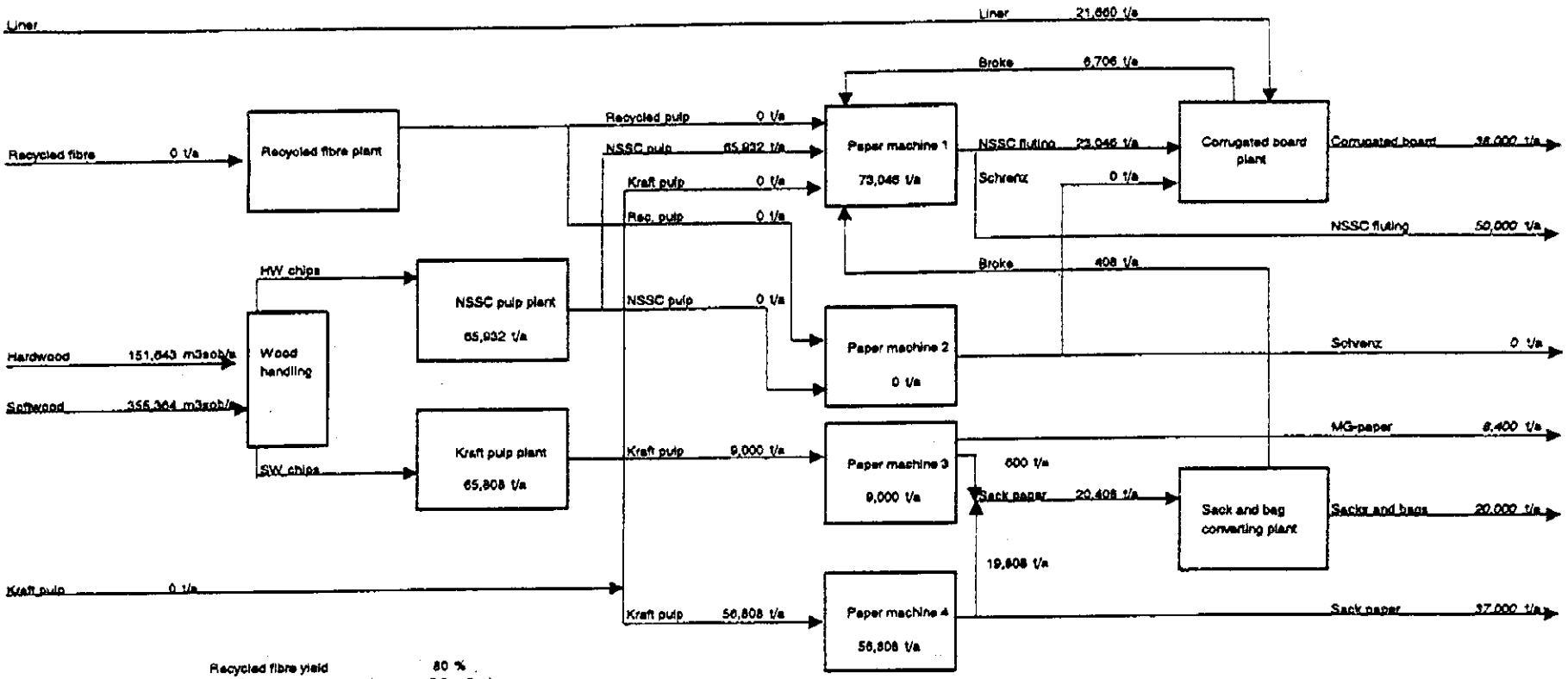
Appendix 7-I

Fibre balance, Short Term Programme
Purchased kraft pulp, own MG paper production
Year 2



Appendix 7-I

Fibre balance, Long Term Programme, excl. PM2
Own kraft pulp and NSSC pulp production
Year 8 and onwards



Recycled fibre yield	80 %			
NSSC pulp wod consumption	2,3 m3sob			
Kraft pulp wood consumption	5,4 m3sob			
Fluting composition PM1	100 % NSSC	0 % recycled		
Schrenz composition PM2	0 % NSSC	100 % recycled		
Corrugated board	57 % liner,	43 % fluting	0 % schrenz	
Corrugating plant broke	15 %			
Sack converting broke	2 %			

11.2.5 Start-up Costs for Development Program

Phase	Technical Target	Start-up and Investment Costs	Market	Raw Material
Immediate Program (July~Dec.1998)	1. Grade-up quality, marketing, and reduce costs. 2. Improve current PM1 production (10 days per 2 months) for corrugated board & box, sacks & bags. 3. PM1 for Fluting, Schrenz, Testliner & NATRON paper by using waste paper & market pulp. 4. Immediate environment protection : Waste water, Shift coal ashes from into river to dump. 5. Compact oil boiler to improve energy efficiency and increase corrugated board & box plant. 6. Prepare to start Short-term program.	DM3 million	1. Domestic market mainly. 2. Annual GDP growth rate is expected 21% from 1996 to 2000.	1. Domestic waste paper. 2. Sack paper imported from Hungary. 3. Market pulp imported from Russia, Swaziland, Sweden.
Short-term Program (Jan.1999~June2000)	1. Improve paper properties of PM1. 2. Start PM3 for MG paper of 5,000 t/a for Paper bags & Carrier bags by using market pulp. 3. Prepare to start Long-term program.	DM41 million	(MG paper) Domestic1,000, Slovenia & Italy3,000, Others 1,000, Total 5,000 tons/year.	Market pulp imported from Russia, Swaziland, Sweden.
Long-term Program (July2000~Dec. 2009)	1. Start full production of softwood Kraft pulp & hardwood SC pulp. Wood handling equipment to debark and make chip. 2. PM3 for MG paper by using NATRON's kraft pulp. 3. Start PM4 for sack paper using NATRON's kraft pulp. 20 thousand tons for NATRON's own sack plant, 37 thousand tons for export. 4. PM1 for Fluting by using NATRON's SC pulp. 5. Waste water treatment for European standard.	DM95 million	Domestic market & Export (ex Yugoslavian countries, Southern & Central Europe, Middle East, Southeast Asia, North Africa etc.) Total 153,000 tons/year.	1. Domestic pulp wood: Softwood for Kraft pulp & Hardwood for SC pulp. 2. 22 thousand tons of Testliner is to be purchased.
	Start-up costs Investment costs Grand Total	DM55 million DM84 DM139 million		

11.2.6 Alternative Plan (Survival Plan)

Plant & Machinery	Pulp Plant	PM 1	PM 3	PM 4	Converting Plant
Basic Plan	○	○	○	○	○
Alternative Plan	×	○	○	×	○

(1) If no investor shows up, the immediate program should be continued as a survival plan.

(2) Pulp mills will not operate. All paper material should be purchased from outside.

(3) Sales and profit will be smaller.

(4) Only small number of employees are needed.

(5) Development Program for Alternative Plan (Survival Plan)

Phase	Immediate Program (July~Dec.1998)	Survival Program (Jan.1999~)
Target	1. Improve product quality & marketing. 2. Reduce production cost. 3. Rehabilitation & start-up of effluent treatment & ash dumping system before start-up of PM3	1. Increase production of PM1 & converting plant. 2. PM3 starts producing MG paper using market kraft pulp. 3. Prepare long-term program.
Waste Paper Plant	Supply waste paper pulp to PM1	Supply waste paper pulp to PM1
PM1	Fluting, Schrenz, Testliner, NATRON paper	Do. Production is increased.
PM3	-	MG paper for paper bag mainly for export market
Converting Plant	Corrugated board & box, Sacks, Bags	Do. Production is increased.
Remarks	1. Paper qualities are acceptable for domestic customers. 2. Production is intermittent because of limitations in raw material & market.	1. Production is still intermittent. 2. Comprehensive training program for all employees to raise technical knowledge has to be realized.

(6) Start-up Costs for Alternative Plan (Survival Plan)

Phase	Technical Target	Start-up Costs	Market	Raw Material
Immediate Program (July~Dec.1998)	1. Grade-up quality, marketing, & reduce costs. 2. Improve current PM1 production (10 days per 2 months) for corrugated boxboard, sacks & bags. 3. PM1 for Fluting, Schrenz, Testliner & NATRON paper by using waste paper & market pulp. 4. Immediate environment protection : Waste water, Shift coal ashes from into river to dump. 5. Compact oil boiler to improve energy efficiency 6. Prepare to start Short-term program.	DM3.2 million	1. Domestic market mainly. 2. GDP growth rate is expected 21% from 1996 to 2000.	1. Domestic & imported waste paper. 2. Sack paper imported from Hungary. 3. Market pulp imported from Russia, Swaziland, Sweden.
Survival Program (Jan.1999~)	1. Improve PM1 2. Electrical maintenance, Fiber & Heat recovery 3. Start PM3 for MG paper of 5,000 t/a for Paper bags & Carrier bags by using market pulp. 4. Improve Converting Plant: (1) Corrugated board & box Maintenance, Die cutter line (2) Sacks: Maintenance, Automation	DM9.8 million	(MG paper) Domestic 1,000 Slovenia & Italy 3,000 Others 1,000 5,000 tons	Market pulp imported from Russia, Swaziland, Sweden.
	Grand total for start up costs (4.8million DM for Die cutter should be invested after the first 3 years)	DM13 million		

11.2.7 Financial Feasibility of the Program

(1) Internal Rate of Return (IRR)

Types of IRR	Basic Plan		Survival Plan	
	IRR	Cost of Capital	IRR	Cost of Capital
IRROI before tax	27.1%	13.9%	36.8%	14.5%
IRROI after tax	22.9%	13.8%	33.6%	14.5%
IRROE after tax	39.8%	15%	44.3%	15%

IRROI before tax of 27.1% greatly exceeds the cost of capital (WACC) of 13.9%.
IRROI after tax of 22.9% is closer to the WACC after tax of 13.8%, but it still is significantly over 13.8%. It also shows the importance of government's supporting policy for taxation.
IRROE after tax of 39.8% also exceeds much the investors' expected return of 15%.

Therefore, the program can be appraised as satisfactorily feasible.

IRR of the survival plan is higher than the basic plan, but it achieves only a reduced equilibrium. Therefore it has less social significance.

(2) Reasons for the Program's Good Results
1) Small investment required
2) Export-oriented marketing policy
3) Productivity improvement
4) Plentiful labor force

(3) Essential Points to the Program

1) Financing first three years (1998 ~ 2000)
In order to compensate shortage of funds for first three years of DM59.1 million, and to cover total investments of DM139.1 million etc., the program needs to raise DM83 million (long-term loan DM68 million and equity DM15 million), of which DM72 million (87%) should be raised in the first three years.

2) Tie-up with strategic investors (international pulp and paper companies)

12. RECOMMENDATIONS

12. RECOMMENDATIONS

12.1 Self-help By NATRON

To cope with the post-war difficult situation, NATRON has taken some measures below:

(1) Reduction of Number of Employees and Payroll Cost

Years	1991	1997	1997/1991
a. Number of employees	4,500 persons	1,600 persons	1/3
b. Average net monthly salary	DM1,000	DM110	1/9
Annual payroll cost (a*b*12)	DM54 million	DM2 million	1/27

(2) Sales of Surplus Assets

NATRON plans to sell its surplus assets (farm, football stadium, hotel, restaurant, swimming pool etc.) with a book value of DM8 million, during the course of a small privatization this summer.

(3) Related Businesses

NATRON gained around DM1 million in 1997 by undertaking external jobs such as maintenance & construction works (cf. 6.5.14).

(4) Reduction of Administrative Costs and Adopting Conservative Accounting Methods

NATRON saves many cost items such as insurance, maintenance costs, and adopts conservative accounting methods like write-down of DM50 million forest in RS region and resort hotel etc. (cf. 6.5.11).

(5) Recommendation for Further Self-help

At first NATRON should improve product quality and promote sales marketing by raising employees' morale. Current low profitability structure derives from the intermittent production which results in heavy burden of fixed costs. NATRON should raise operating rate of mill immediately in order to clear the hurdle of its financial break-even point.

12.2 Recommendations to the Bosnian Government

Bosnian business should transit to market economy as soon as possible. So Bosnian government should protect and support Bosnian industries with a postwar special reconstruction policy-mix.

It is recommended that key industries in Bosnia such as pulp and paper company should be given priority for government aid.

(1) Promoting Inter-state owned enterprises (SOE) Transactions

Bosnian government has a majority of shares in SOEs. So it is a good opportunity to reorganize domestic industries, and create an inter-SOE mutual aid system. For instance, government should instruct cement, sugar, flour companies and post offices to purchase NATRON's sack paper and corrugated board, and similarly instruct NATRON to purchase those companies' goods in exchange.

(2) Reconstruction of Domestic Banking System

The government should assist the recovery in the domestic banking system. For instance, by means of establishing public financial institution for key industries, promoting postal savings, and borrowing hard currency from foreign banks under government guaranty.

Concerning the public financial institution, a postwar 'Reconstruction Medium/Long-term Fund' is recommended. The fund should be independent from Bosnian government, and funded by European countries and EBRD etc. The fund can be managed by well-informed loan appraisers from advanced countries. Its existing period should be limited to about 10 years.

(3) Aid to Get Rid of Barter Transactions

Paying fines for insolvency is a severe burden on companies and it increases barter transactions. The repeal of such fines should be considered to recover sound cash settlement transactions among companies in order to gain business credit from superior foreign bankers (cf. 6.5.3).

The establishment of a 'Short-term Money Settlement Institution' contributed by Bosnian central bank and donor countries should be considered. The member of the institution is limited to Bosnian priority companies including NATRON, and trustworthy foreign banks and companies. The institution has computerized central settlement system, and funds for short-term loans and relief. Members' transactions are registered to the institution, and those are settled among members' accounts by netting balance clearing method. This system can reduce cash volume for settlement, credit risk, and troublesome barter transactions. As a result it will accelerate revival of key industries and Bosnian financial system.

(4) Exemption of Taxes or Deferment of Taxation

The government should exempt or defer corporate and other taxes (import duties etc.) for at least 5 years to rebuild SOEs quickly.

(5) Transfer of NATRON's Long-term Debt to Government

NATRON owes DM39 million debt from Paris and London Club under government guaranty. The debt is too much for NATRON to repay. It is recommended that it should be shouldered by government to lighten NATRON's burden and to facilitate foreign bankers/investors interest in NATRON (cf. 10.3.1 (6)).

(6) Reduction of Additional Burden on Payroll

Companies bear social insurance and income tax which amount to 86% on net salary. For instance, half of social insurance should be shouldered by employees and/or government.

(7) Increasing NATRON's Portion of Surplus Assets Sales

It is recommended that NATRON's portion of sales amount of surplus assets is increased to more than 50% in order to help its current financial difficulties (cf. 6.5.11).

(8) Transfer of Surplus Employees to the Government

SOEs keep many surplus employees. Central and local governments should transfer them to vocational training facilities, pay them some salary, and help them get jobs.

(9) Export Promotion

The government should arrange export promotion measures such as export bounty, export L/C (letter of credit), export financing, export insurance, and export promotion tax systems.

(10) Reduction of Domestic Pulp Wood Prices

Bosnian pulp wood prices are higher than European market prices. It weakens the international competitive power of domestic paper companies. The government should control pulp wood prices to promote forest and paper industries.

(11) Improvement in Waste Paper Recycle System

Waste paper recycle system is less than satisfactory in Bosnia. It makes it difficult for paper companies to utilize waste paper and weakens their competitiveness. The government should arrange appropriate recycle system also to conserve forests and improve urban environment.

12.3 Recommendations of Production Control

(1) Quality Improvement

The paper grades manufactured by NATRON following the restart of the mill will benefit from improved paper properties.

These improvements of paper quality in the long-term program will be achieved due to the following reasons, as recommended:

1) Each paper machine focusing on one paper grade only
2) Changing to semi-chemical hardwood pulp for fluting, instead of waste paper
3) Investments for improved product quality by installation of new equipment

(2) Cost Reduction

Cost reduction will primarily be done through reduction of the number employed, while keeping the production approximately at the same level as in 1991. The production of the mill will, with the proposed PROGRAM, be concentrated on three paper machines and one of the two chemical recovery section only. This will reduce the cost of operation substantially.

The operation will also be adjusted to available wood-resources within the Federation of Bosnia and Herzegovina. This will exclude the high transportation costs of imported raw material. Additionally there exists a great potential to reduce the cost of domestic pulp-wood.

In the short term the costs will be reduced when increasing the production, following market demand, and reducing shut-down time. This will reduce the variable and fixed costs per ton of sales product.

We recommend the cost control system be developed and to make the personnel aware of their ability to affect costs by their operation practices.

(3) Adjustment of the Number of Employees

The proposed future number of employees for NATRON has been proposed based on the experience from similar mills throughout the world. Compared with the present situation, the number of working people will increase by 50%, in reaching normal operation. The efficiency and motivation of the employees has to be raised drastically to reach these objectives and to compete on the world market.

Most of the machinery and equipment originates from the sixties and there does not exist any modern systems for production and maintenance planning. The technical level of the NATRON mill has been taken into consideration in the proposed manning.

(4) In-house Training and Educational Investment

The NATRON Mill is facing the new environment of a market economy after decades within the planned economy system. This together with the proposed new technology to be introduced will require substantial training of all staff of the mill.

The objective of the top management training is to develop the understanding on how an efficient organization works within the market economy with decentralized authority.

Middle management training will focus on developing the managerial skills as leaders of a team to continuously improve the performance of the department within their responsibility. The

modernization of the NATRON mill will result in new technologies as well as new methods on how the mill and equipment should be operated. The training PROGRAM of the middle management and operators will develop those skills.
The total cost of foreign experts of this PROGRAM is estimated to be DM800 thousand.

12.4 Recommendations on Managerial Control

(1) Raising a Sense of Market Economy
NATRON's pre-war prosperity depended on a closed socialist planned economy. After the war, NATRON should prepare plans for a competitive market, improve product quality, seek new markets, and raise funds all by itself. At first not only top management but also every staff must understand this. On the other hand, management team members should withdraw from labor union to manage NATRON autonomously and lead NATRON toward privatization.

(2) Business and Capital Tie-ups with Multinational Pulp and Paper Companies
It should be useful for NATRON to make tie-ups with some international pulp & paper companies which have excellent technical and management skills, seek a new products mix with synergy, and be interested in obtaining a foothold for the southeastern Europe and Middle East markets. NATRON can take those investments and skills, and give its products with hopeful return on investment (ROI). This cooperation should also facilitate to introduce some international financial institutions to NATRON.

(3) Participation in Management
Business plan should be drawn up with the participation of every employee. At least in summary form it should be not only circulated among department directors but also notified to every employee. It should contribute to rousing employees' sense of participation in management.

(4) Divisional Organization
It is recommended before starting pulp production, to reorganize NATRON into seven divisions which are profit centers. Each division makes its business plan and improves its operation on its own initiative. On the other hand, each division is responsible for its operations result. Such divisional (decentralized) organization is expected to make the organization more efficient and profitable, make each division's decision-making quick, and rouse employees' morale. The seven divisions are for example, pulp, PM1, PM3, PM4, converting plant, maintenance, and administrative (head quarter) divisions.

(5) How to Evaluate Each Division

In order to evaluate each division's financial performance, residual income (RI) should be used rather than division's ROI. RI is defined as follows:

RI = Divisional Income - K * Invested Capital in Division

Note: K is division's cost of capital or division's minimum ROI required

The reason why RI is preferred to ROI is that, if ROI is used, divisional managers tend to be reluctant to implement new investments which are lower than their current ROI even if it is higher than their K. The increase of an absolute amount of income is desirable for entire NATRON.

(6) Supervisory Board

Main function of the supervisory board is to control operational decisions made by management team, so at least one board member should join management meeting for pre-audit. At least one of board members should be a full-timer to make its function more effective (cf. 6.5.15).

(7) Number of Employees

Long-term schedule to adjust number of employees should be drawn up in conformity with the long-term business plan.

(8) Getting out of Barter Transactions

One of problems of barter transactions is that, the amounts of sales and purchases booked have less credibility. In addition to government's aid mentioned above (cf. 12.2 (3)), it is necessary as an accounting measure that NATRON properly arranges evidence and documents which can verify the amounts' fairness at any time (cf. 6.5.4).

(9) Accounting and Financial Issues

1) Format of financial statements

a. It is better to be stated in comparative style of two years (this year and the last year).

b. On income statement, cost of sales is listed first, and sales is listed next. The order should be reversed.

c. Selling, general and administrative expenses are included in cost of sales. Such accounting method will lead inventories and net income to be overstated. So those expenses should be separated from cost of sales, and charged on the year accrued as a period cost, not a product

cost (cf. 6.5.8).

2) Valuation

a. Slow-moving and obsolete inventories should be properly measured, and valued by net realizable value at each year end. It is recommended that around 30% of the balance of 1997 is devaluated (cf. 10.3.1 (5)).

b. Fixed assets should be defined as equipment utilized with capital cost of over e.g. DM1,500 to make accounting procedure conservative and efficient. Idle capacity should be accounted for by utilization value, and the adjustment amount should be charged as a period cost instead of deferred normal depreciation (cf. 6.5.6, 10.3.1 (5)).

3) Standard costing and break-even analysis

NATRON should adopt standard costing in the near future, to make a proper business plan and implement cost control systems. At the same time, break-even analysis should be utilized to grasp profitability by products, and prepare effective production and sales-mix strategies (cf. 6.5.8).

APPENDICES

Appendix 6-I

Main data of present plant and machinery of pulp plant

1. The purpose of our study and what we have done.

We have investigated the status, specifications, etc. for following facilities in order to check which machinery and equipment can be used for restarting plan or not.

1) Wood preparation
2) Batch Cooking Plant
3) Continuous Cooking Plant
4) Screening and washing for batch cooking plant
5) Screening and washing for continuous cooking plant
6) Recausticizing Plant for batch cooking plant
7) Lime reburning plant for batch cooking plant
8) Recausticizing Plant for continuous cooking plant
9) Lime reburning plant for continuous cooking plant
10) No.1 Black liquor evaporator for continuous cooking plant
11) No.2 Black liquor evaporator
12) No.3 Black liquor evaporator for batch cooking plant
13) Chemical recovery boiler for batch cooking plant
14) Chemical recovery boiler for continuous cooking plant
15) Waste Water Treatment
16) Water Intake(1966)
17) Water Intake(1955)
18) Boiler feedwater treatment

2. The result of the site visit and investigation

Parts of facilities are damaged by war and timeworn. Some parts must be replaced. However generally the status of machinery and equipment are better than we expected. Most of the machinery and equipment can be restarted by overhaul and maintenance.

Refer to the attached summery of main machinery and equipment.

3. Impression of the investigation

Basically the mill has a very small market and no plan to obtain raw material at this stage. Now the mill is operating at less than 10% of capacity using waste paper as the raw material. But the product is of low quality.

We think that at first what the mill must do is to import the law material for liner and to improve quality. The market will be grow. After that, the pulp mill shall be restarted.

Anyway the assistance of the government will be required to restart up the mill.

The summery of main machinery and equipment

1) Wood Preparation (expansion in 1983)

Capacity	Wood Storage capacity	100,000m3 as wood
		250,000m3 as chip
	Chip Storage capacity	80,000 m3
Constructed by, and in		1983

Item	Manufac-turer	Type	Size	Capacity	Drive Power	Damage	Wear of roller	Wear of type
Drum barker	Warkaus	Wet type		30m3/h		Rust, to be overhauled	No.	No.
Ring barker	Valon-Kone	Ring type for long log		80m3/h		Rust, to be overhauled		
Chipper	Black clawson	116"HC12 knives	700 mm dia	156m3/h (100m3/h)	1200kW	Rust, to be overhauled		
Chipper				60m3/h (30m3/h)	420kW	Rust, to be overhauled		
Chip Screen				200m3/h as chip		to be overhauled		
Conveyors						Burned, to be replaced		

2) Batch Cooking Plant

Capacity	Design (t/d)	150 ADt/d	
	Actual operation (t/d)	150 - 172 Adt/d	
Cooking cycle	Design	Actual operation	
Chip & liquor supply	30 min.		
Steaming(heating)	130 min.		
Cooking	60 min.		
Relieving	25 min.		
Blowing	25 min.		
Total	270 min	Almost same as design base	
Operating Condition	Cooking yield		
	Kappa No.		
	Chemical charge	409.63kg/ADt pulp as A.A.	
	Steam consumption	2.25t/ADt pulp	
	Electric power consumption	44kWh/ADt pulp	

Item	Manufac-turer	Nos.	Type	Size	Capacity	Damage	Rebuild
Digesters	Hitachi Zosen	5	Vertical	3,350mm dia x 12,760mm H, 25mm t	80 m3	No.1,.2,.3,.4. No.5 ; under repairing and 2 pieces of top hell will be renewed	
Heater	Hitachi Zosen	5	Shell and tube	110 m2 each			No.1-5; All tubes are changed to new stainless steel tubes

3) Continuous Cooking Plant (1983)

Capacity	Design (t/d)	200 ADt/d
Operating Condition	Cooking yield	48%
	Kappa No.	40 - 50
	Chemical charge	364.48kg/ADt pulp as A.A.
	Steam consumption	0.757t/ADt pulp
	Electric power consumption (including Screening, not including washing)	212kWh/ADt pulp

Item	Manufac-turer	Nos.	Type	Size	Damage
Digester	Kamyr	1	Vertical stationary continuous digester	3,8000/2,400mmdia x 37,000mm H	to be overhauled

4) Screening and washing for batch cooking plant

Capacity	Design (t/d)	150ADt/h
	Actual operation (t/d)	150 - 172 ADt/d
	Electric power consumption	94kWh/ADt pulp(only for screening)

Item	Manu-facture r	Nos.	Type	Size	Capacity	Drive power	Damage
Washers	Hitachi Zosen	3 drums	Vacuum foster	Drum ϕ3000x 4000W	160ADt/d	11kW each	Rust, to be overhauled
Primary Screen	Hitachi Zosen	2	Cowan screen	plate perforate ϕ2.2 - 2.0	80ADt/d each	85kW	Rust, to be overhauled
Secondary Screen	Hitachi Zosen	1	Cowan screen	plate perforate ϕ2.0	40ADt/d	37kW	Rust, to be overhauled
Cleaners		65	Centri-cleaner				to be overhauled
No.1		12	ditto				ditto
No.2		4	ditto				ditto
No.3		1	ditto				ditto
No.4							

5) Screening and washing for continuous cooking plant (1983)

Capacity Design (t/d) 200

Item	Manufac-turer	Nos.	Type	Size	Capacity	Drive power	Damage
Vacuum filter	Dorr Oliver		Vacuum filter		2 x 100 AD/d		
Primary Screen	Bird	1		plate perforate ϕ1.6 - 1.8		90kW x 1500rpm	to be overhauled
Secondary Screen	Ahlstom	2		slit 0.45		90kW x 1500rpm	to be overhauled
Reject Screen	Bird	1		plate perforate ϕ2.0		45kW x 1500rpm	to be overhauled
Washers (1988)	Rauma Repora	1	Pressure filter(PFW 3040)			45kW	to be overhauled
Washers (1954)	Dorr Oliver	2 drums	Pressure filter & Balometric				to be overhauled
Reject refiner	Sprout-Waldron		Single Disc	36"			
Cleaners for reject							
Nos. of Primary		10					
Nos. of Secondary		2					
No.s of Tretiary		1					
		Total installed power for Screening plant				1305.1kW	

6) Recausticizing Plant for batch cooking plant

Capacity

Green liquor feed rate	Design	30m3/h
Required white liquor	Design	22.9m3/h

Equipment specifications

Item	Manufac-turer	Nos.	Type	Size	Capacity	Damage
Green liquor clarifier	Hitachi Zosen		Rake & Clarify	7300mmϕ.x 3700mmH		Rust, to be overhauled
Dregs washer	Hitachi Zosen		Rake & Clarify	4300mmϕ.x 2500mmH		Rust, to be overhauled
Lime slaking	Hitachi Zosen		Rake	30m3/h		Heavy rust, to be overhauld
Causticizers	Hitachi Zosen	3			12m3	Rust, to be overhauled
White liquor clarification	Hitachi Zosen		4 component sedimentation	6700mmϕ x 7300mmH		Rust, to be overhauled
Lime mud filter			Vacuum drum filter		110t/d, 60%solid	Rust, to be overhauled

In this area, a lot of corrosion problems are observed in machinery, tanks, pipes, etc.

7) Lime reburning plant for batch cooking plant

Capacity

Production rate	Design(t/d)	50t/d as CaO
Moisture content in lime mud	Design(%)	40%

Equipment specifications

Item	Manufac-turer	Type	Size	Kind of fuel	Speed (rpm)	Driving power	Damage
Lime kiln	Hitachi Zosen	Long kiln	45mL x ϕ2.12m	Heavy oil	0.4-1.2rpm	22kW	Rust, to be overhauled. Tire and Roller are eroded.

8) Recausticizing Plant for continuous cooking plant

Capacity

Green liquor feed rate	Design	35m3/h
Required white liquor	Design	

Equipment specifications

Item	Manufac-turer	Nos.	Type	Size	Capacity	Damage
Green liquor clarifier	Dorr-Oliver		Rake & Clarify		249m3	
Dregs washer	Dorr-Oliver		Rake & Clarify		43.2m3	
Lime slaking	Dorr-Oliver		Rake		1-40m3/h, 1-30m3/h	
Causticizers	Dorr-Oliver	3+1			12m3	
White liquor clarification	Dorr-Oliver		2 component sedimentation		226m3 each	
Lime mud filter	ENSO				100t/d, 65%solid	

The piping and auxiliary equipment around causticizers are destroyed by bomb.

9) Lime reburning plant for continuous cooking plant

Capacity

Production rate	Design(t/d)	65t/d as CaO
Moisture content in lime mud	Design(%)	35%

Equipment specifications

Item	Manufac-turer	Nos.	Type	Kind of fuel	Size	Speed (rpm)	Capacity	Damage
Lime mud feeder			Screw				100t/d, 65%solid	
Lime kiln	F.L.Smith		Long kiln with satelitecooler	Heavy oil	50.85mL x ϕ2.4m	1.09rpm		Rust, to be overhauld

10) No.1 Black liquor evaporator for continuous cooking plant(1980)

Manufacturer	Hitachi Zosen			
Capacity				
Feed black liquor				
Feed rate(t/h)	Design	63.2,	14.1,	20.0
Solid(%)	Design	15.0,	50.0,	45.0
Temperature(°C)	Design	75.0	100.0,	100.0
Product black liquor				
Product rate(t/h)	Design		39.28,	
Solid(%)	Design		65.0	
	Actual		60	
Temperature(°C)	Design		108.0	
Evaporation (t/h)	Design		58.02	

Specification

Item	Type	Heating surface (m2)	Damage
No.1 effect	Vertical forced Circulation	440	
No.2 effect	Vertical long tube	640	
No.3 effect	Vertical long tube	720	Shot by gun
No.4 effect	Vertical long tube	720	Small hole, shot by gun
High density concentrator	Vertical forced circ	100	
Surface condenser	Shell and tube vertical	635	Rust
Cooling tower	Cross flow	2000	Parts of fillings are lost

11) No.2 Black liquor evaporator(1955)

Manufacturer		Roca+Rosenblad
Capacity		
Feed black liquor		
Feed rate(t/h)	Design	
Solid(%)	Design	
Temperature(°C)	Design	

Product black liquor

Product rate(t/h)	Design
Solid(%)	Design
Temperature(℃)	Design
Evaporation (t/h)	Design

Specification

Item	Type	Heating surface (m2)	Damage
No.1A/B effect	Vertical long tube	272+272	
No.2A/B effect	Vertical long tube	282+282	
No.3 effect	Vertical long tube	500	
No.4 effect	Vertical long tube	600	

The machinery and equipment in this area are decrepit.

12) No.3 Black liquor evaporator for batch cooking plant(1964)

Manufacturer	Hitachi Zosen	
Capacity		
Feed black liquor		
Feed rate(t/h)	Design	58.95t/h
Solid(%)	Design	18.0%
Temperature(℃)	Design	
Product black liquor		
Product rate(t/h)	Design	18.95t/h
Solid(%)	Design	58 .0%
Temperature(℃)	Design	
Evaporation (t/h)	Design	40.0

Specification

Item	Type	Heating surface (m2)	Damage
No.1 effect	Vertical forced Circulation	430	
No.2 effect	Vertical long tube	485	
No.3 effect	Vertical long tube	485	
No.4 effect	Vertical long tube	525	
No.5 effect	Vertical long tube	525	
Surface condenser	Shell and tube vertical	2-120	

The auxiliary equipment such as pumps are rusted. To be overhauled.

13) Chemical recovery boiler for batch cooking plant(1964)

Manufacturer	Kisha Seizo Kaisha	
Capacity		
Black liquor solid	225t/d	
Black liquor concentration	56%(cascade inlet)	
Black liquor temperature		
Feed water temperature	105℃	
Steam temperature	430℃	
Steam pressure	42atg	
Steam generation	32.4t/h	
Boiler outlet gas temp.	395℃	
Economizer outlet gas temp.	245℃	
Cascade outlet gas temp.	130℃	
Specifications		
Heating surface	Boiler proper	1041m2
	Water wall	614m2
	Secondary superheater	211m2
	Primary superheater	529m2
	Primary screensuperheater	150m2
	Economizer	906m2
	Damage	

14) Chemical recovery boiler for continuous cooking plant(1983)

Manufacturer	Gotaverken	
Capacity		
Black liquor solid	600t/d	
Black liquor concentration	60%	
Black liquor temperature	95℃	
Feed water temperature	130℃	
Steam temperature	460℃	
Steam pressure	61atg	
Steam generation	86.4t/h	
Boiler outlet gas temp.	405℃	
Economizer outlet gas temp.	130℃	
Specifications		
Heating surface	Furnace excluding bottom	592m2
	Superheater enclosure	156m2
	Secondary superheater	660m2
	Primary superheater	740m2
	Primary screensuperheater	150m2
	Screen before boiler bank	90m2
	Boiler bank	1750m2

	Economizer	5150m2
	Damage	Outside surface of tubes are rusted and scaled.

15) Waste Water Treatment

Manufacturer	Ebara		
Capacity	Design	White water 3000m3/h	
		Black water 1500m3/h	
	Inlet effluent quality		
	Outlet quality		
Required discharge water quality		SS	80mg/l
		TDS	1500mg/l
		Dissolved oxygen	4mg/l
		BOD_5	7mg/l
		pH	6-9
		Color & Smell	None

Item	Manufac-turer	Type	Size	Driving power	Damage
No.1 Settling basin		Rake clarification	50mϕx 3mD	2-1.5kW	
No.2 Settling basin		Rake clarification	38mϕx 3mD	1.5kW	

The rake and driver should be replaced.

16) Water Intake(1966)

Manufacturer	Ebara
Capacity	3200m3/h

17) Water Intake(1955)

Manufacturer	Wabag-Njemacka
Capacity	4000m3/h
Note	Working

18) Boiler feedwater(1986)

Manufacturer	VKA-Njemacka
Capacity	2-150m3/h
Note	Working

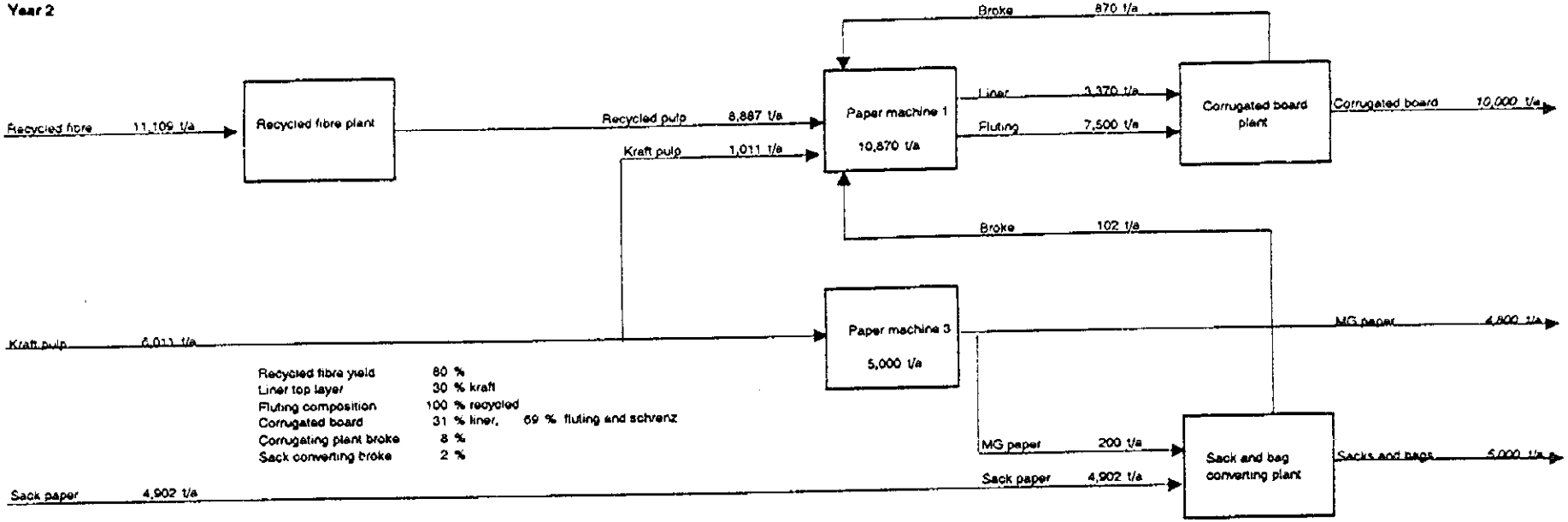
Appendix 7-1

Raw materials and production scenario, ecxl. PM2

		Year 1	2	3	4	5	6	7	8	9	10	11	12
Raw materials													
Recycled fibre			11,109	5,914	0	0	0	0	0	0	0	0	0
Hardwood	m3sob			68,611	141,211	140,104	145,897	148,770	151,643	151,643	151,643	151,643	151,643
Softwood	m3sob			152,451	246,802	266,033	300,923	333,544	355,364	355,364	355,364	355,364	355,364
Testliner	t			4,275	11,400	14,820	18,240	19,950	21,660	21,660	21,660	21,660	21,660
Sack paper	t		4,902	3,932									
Kraft pulp	t		6,011	6,000									
Department production													
NSSC pulping	ADt			29,831	61,396	60,915	63,433	64,683	65,932	65,932	65,932	65,932	65,932
Kraft pulping	ADt			28,232	45,704	49,265	55,727	61,767	65,808	65,808	65,808	65,808	65,808
PM1	t		10,870	36,392	65,129	65,768	69,407	71,226	73,046	73,046	73,046	73,046	73,046
PM2	t												
PM3	t		5,000	7,300	7,800	8,300	8,800	8,900	9,000	9,000	9,000	9,000	9,000
PM4	t			26,932	37,904	40,965	46,927	52,867	56,808	56,808	56,808	56,808	56,808
Sales production													
Corrugated board	t		10,000	15,000	20,000	26,000	32,000	35,000	38,000	38,000	38,000	38,000	38,000
NSSC fluting	t			24,000	53,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Schrenz	t												
MG paper	t		4,800	7,000	7,500	8,000	8,400	8,400	8,400	8,400	8,400	8,400	8,400
Sacks and bags	t		5,000	8,000	10,000	13,000	16,000	18,000	20,000	20,000	20,000	20,000	20,000
Sack paper	t			23,000	28,000	28,000	31,000	35,000	37,000	37,000	37,000	37,000	37,000
Total sales			19,800	77,000	118,500	125,000	137,400	146,400	153,400	153,400	153,400	153,400	153,400

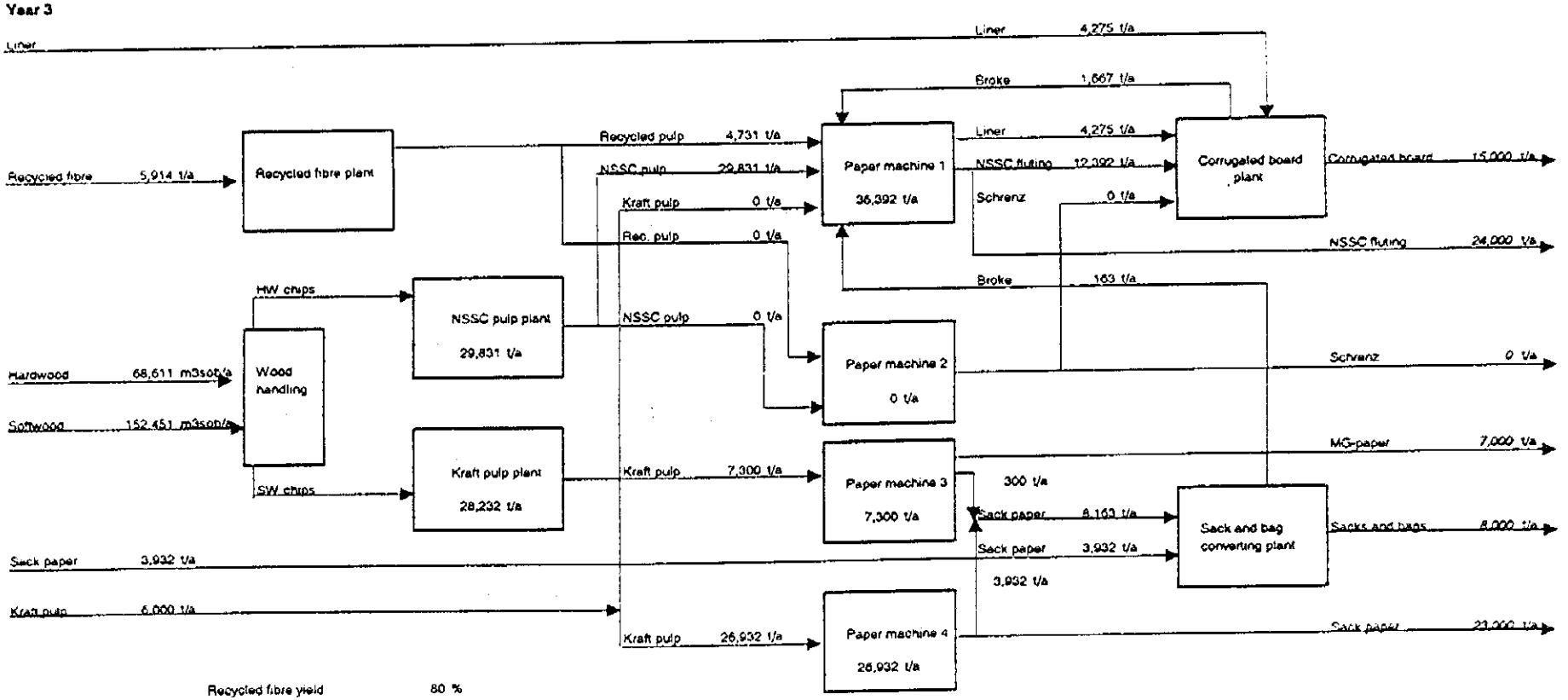
Appendix 7-I

Fibre balance, Short Term Programme
Purchased kraft pulp, own MG paper production
Year 2



Appendix 7-I

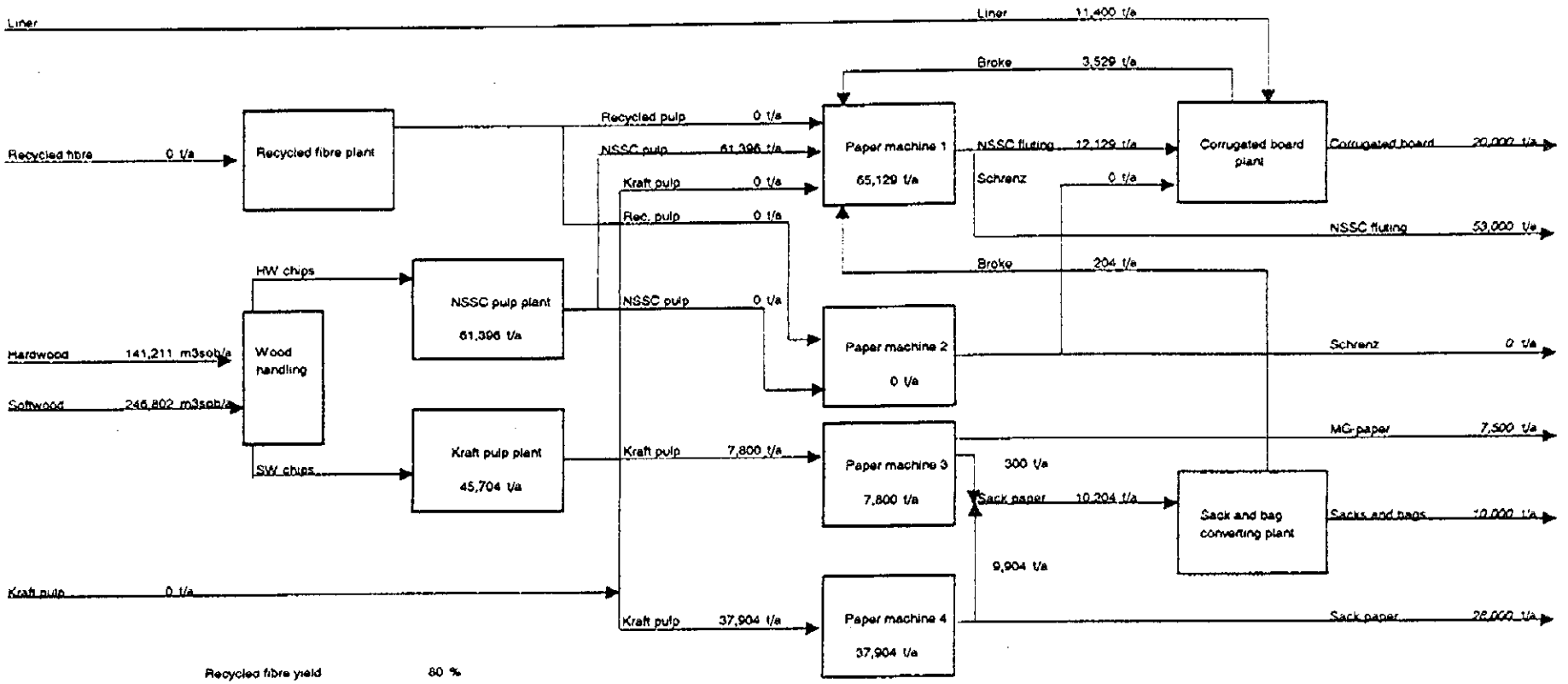
Fibre balance, Long Term Programme, excl. PM2
Purchased kraft pulp, own MG paper production1st half year
Own kraft pulp and NSSC pulp production 2nd half of year
Year 3



Recycled fibre yield	80 %			
NSSC pulp wod consumption	2.3 m3sob			
Kraft pulp wood consumption	5.4 m3sob			
Fluting composition PM1	87 % NSSC	13 % recycled		
Schrenz composition PM2	0 % NSSC	100 % recycled		
Corrugated board	57 % liner,	29 % fluting	14 % schrenz	
Corrugating plant broke	10 %			
Sack converting broke	2 %			

Appendix 7-I

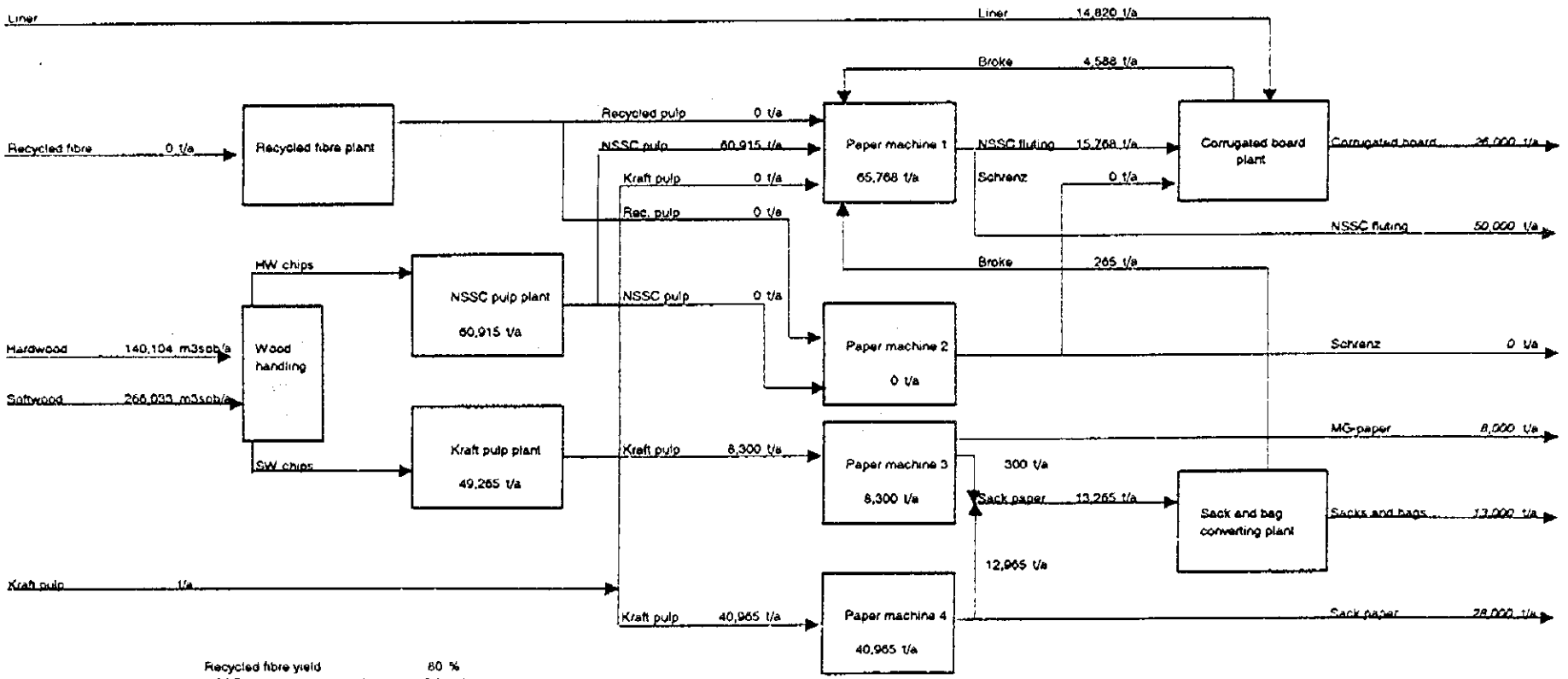
Fibre balance, Long Term Programme, excl. PM2
Own kraft pulp and NSSC pulp production
Year 4



Recycled fibre yield	80 %		
NSSC pulp wod consumption	2.3 m3sob		
Kraft pulp wood consumption	5.4 m3sob		
Fluting composition PM1	100 % NSSC	0 % recycled	
Schrenz composition PM2	0 % NSSC	100 % recycled	
Corrugated board	57 % liner,	43 % fluting	0 % schrenz
Corrugating plant broke	15 %		
Sack converting broke	2 %		

Appendix 7-I

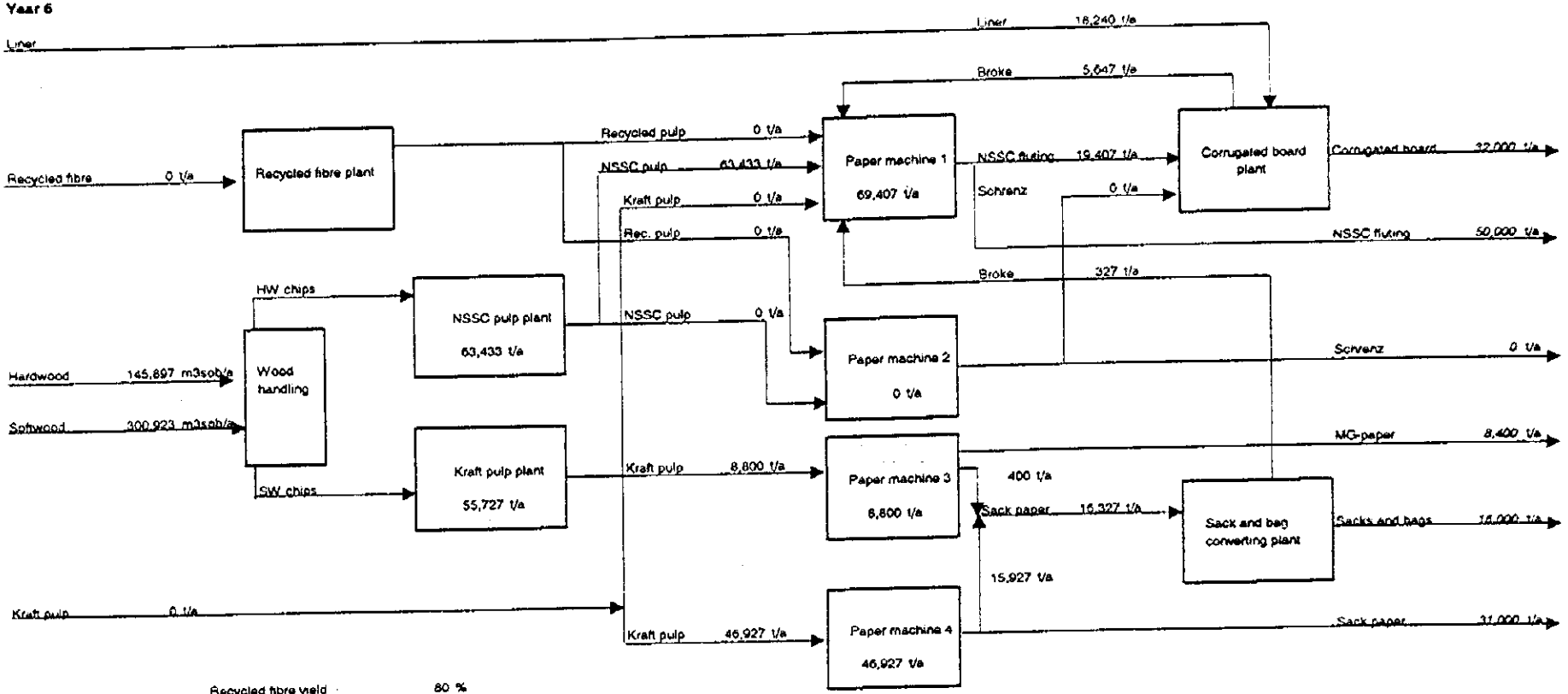
Fibre balance, Long Term Programme, excl. PM2
Own kraft pulp and NSSC pulp production
Year 5



Recycled fibre yield	80 %		
NSSC pulp wod consumption	2.3 m3sob		
Kraft pulp wood consumption	5,4 m3sob		
Fluting composition PM1	100 % NSSC	0 % recycled	
Schrenz composition PM2	0 % NSSC	100 % recycled	
Corrugated board	57 % liner,	43 % fluting	0 % schrenz
Corrugating plant broke	15 %		
Sack converting broke	2 %		

Appendix 7-I

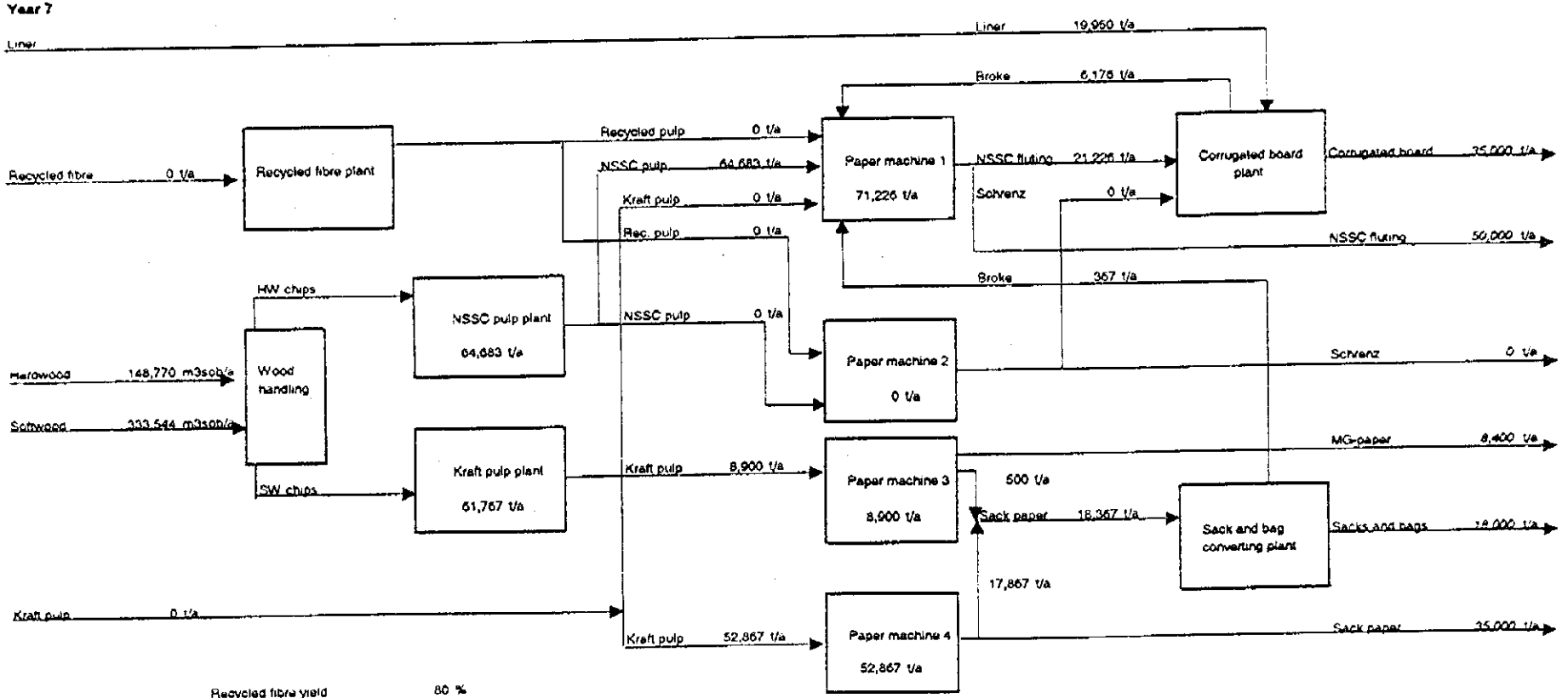
Fibre balance, Long Term Programme, excl. PM2
Own kraft pulp and NSSC pulp production
Year 6



Recycled fibre yield	80 %			
NSSC pulp wod consumption	2.3 m3sob			
Kraft pulp wood consumption	5.4 m3sob			
Fluting composition PM1	100 % NSSC	0 % recycled		
Schrenz composition PM2	0 % NSSC	100 % recycled		
Corrugated board	57 % liner,	43 % fluting	0 % schrenz	
Corrugating plant broke	15 %			
Sack converting broke	2 %			

Appendix 7-1

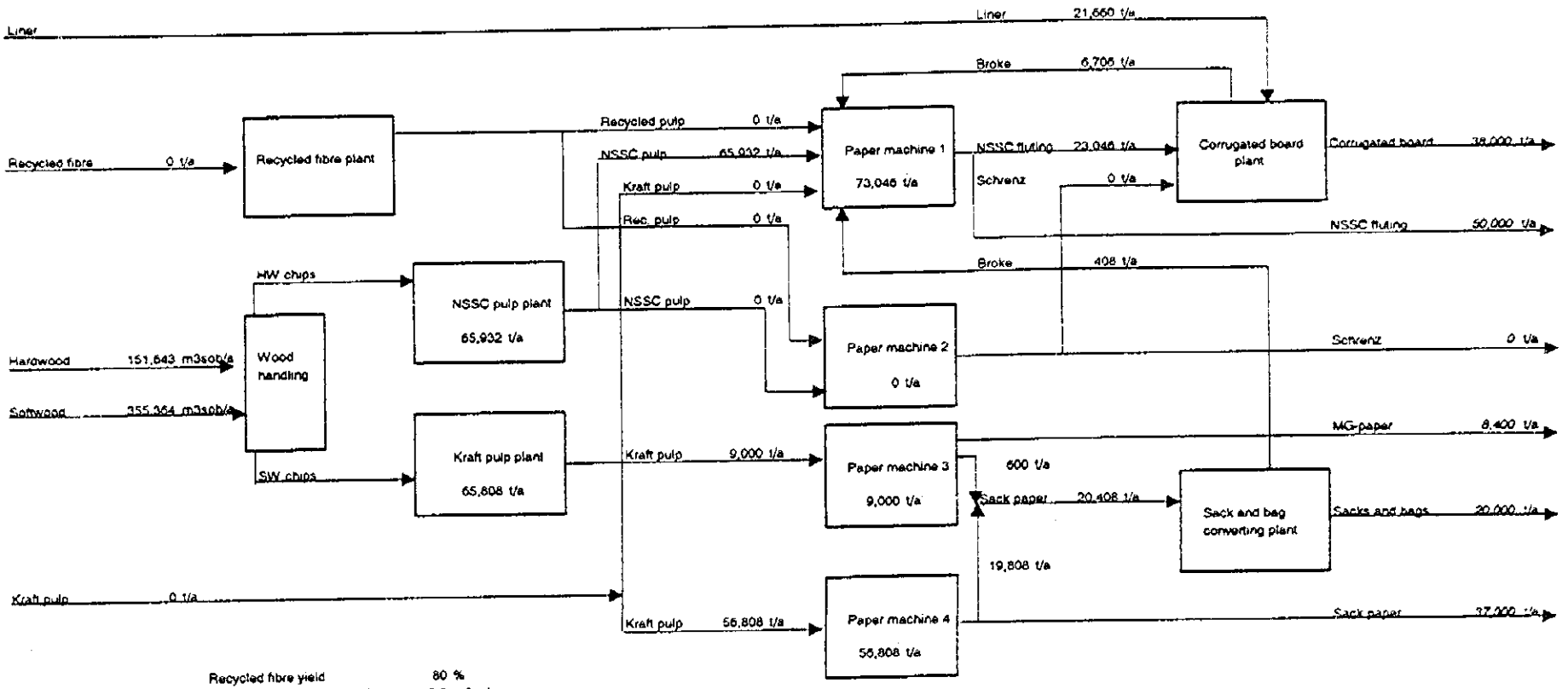
Fibre balance, Long Term Programme, excl. PM2
Own kraft pulp and NSSC pulp production
Year 7



Recycled fibre yield	80 %			
NSSC pulp wod consumption	2.3 m3sob			
Kraft pulp wood consumption	5.4 m3sob			
Fluting composition PM1	100 % NSSC	0 % recycled		
Schrenz composition PM2	0 % NSSC	100 % recycled		
Corrugated board	57 % liner,	43 % fluting	0 % schrenz	
Corrugating plant broke	15 %			
Sack converting broke	2 %			

Appendix 7-I

Fibre balance, Long Term Programme, excl. PM2
Own kraft pulp and NSSC pulp production
Year 8 and onwards



Recycled fibre yield	80 %			
NSSC pulp wod consumption	2.3 m3sob			
Kraft pulp wood consumption	5.4 m3sob			
Fluting composition PM1	100 % NSSC	0 % recycled		
Schrenz composition PM2	0 % NSSC	100 % recycled		
Corrugated board	57 % liner,	43 % fluting	0 % schrenz	
Corrugating plant broke	15 %			
Sack converting broke	2 %			

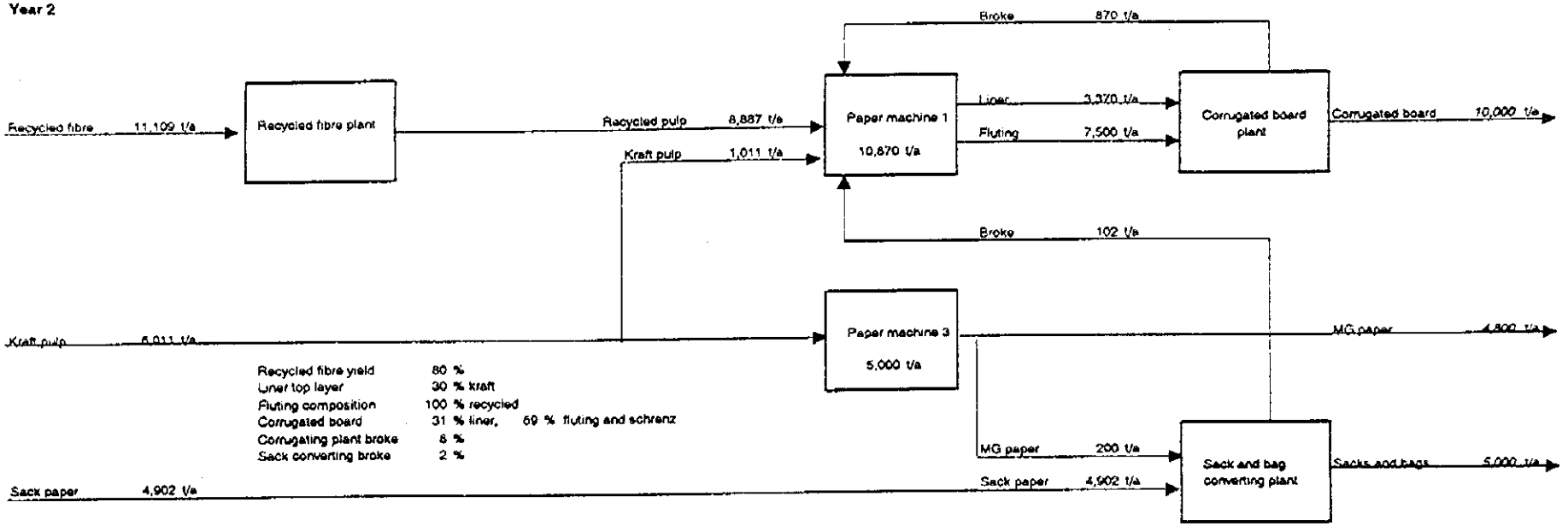
Appendix 7-I

Raw materials and production scenario incl. PM2

		Year 1	2	3	4	5	6	7	8	9	10	11	12
Raw materials													
Recycled fibre			11,109	10,914	13,250	16,600	22,450	26,000	27,050	27,050	27,050	27,050	27,050
Hardwood	m3sob			68,611	140,291	138,908	144,425	147,160	149,895	149,895	149,895	149,895	149,895
Softwood	m3sob			152,451	246,802	266,033	300,923	333,544	355,364	355,364	355,364	355,364	355,364
Testliner	t			4,275	6,200	8,060	9,920	10,850	11,780	11,780	11,780	11,780	11,780
Sack paper	t		4,902	3,932									
Kraft pulp	t		6,011	6,000	0	0	0	0	0	0	0	0	0
Department production													
NSSC pulping	ADt			29,831	60,996	60,395	62,793	63,983	65,172	65,172	65,172	65,172	65,172
Kraft pulping	ADt			28,232	45,704	49,265	55,727	61,767	65,808	65,808	65,808	65,808	65,808
PM1	t		10,870	36,392	64,729	65,248	68,767	70,526	72,286	72,286	72,286	72,286	72,286
PM2	t			4,000	10,600	13,280	17,960	20,800	21,640	21,640	21,640	21,640	21,640
PM3	t		5,000	7,300	7,800	8,300	8,800	8,900	9,000	9,000	9,000	9,000	9,000
PM4	t			26,932	37,904	40,965	46,927	52,867	56,808	56,808	56,808	56,808	56,808
Sales production													
Corrugated board	t		10,000	15,000	20,000	26,000	32,000	35,000	38,000	38,000	38,000	38,000	38,000
NSSC fluting	t			24,000	53,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Schrenz	t			4,000	5,000	6,000	9,000	11,000	11,000	11,000	11,000	11,000	11,000
MG paper	t		4,800	7,000	7,500	8,000	8,400	8,400	8,400	8,400	8,400	8,400	8,400
Sacs and bags	t		5,000	8,000	10,000	13,000	16,000	18,000	20,000	20,000	20,000	20,000	20,000
Sack paper	t			23,000	28,000	28,000	31,000	35,000	37,000	37,000	37,000	37,000	37,000
Total sales	t		19,800	81,000	123,500	131,000	146,400	157,400	164,400	164,400	164,400	164,400	164,400

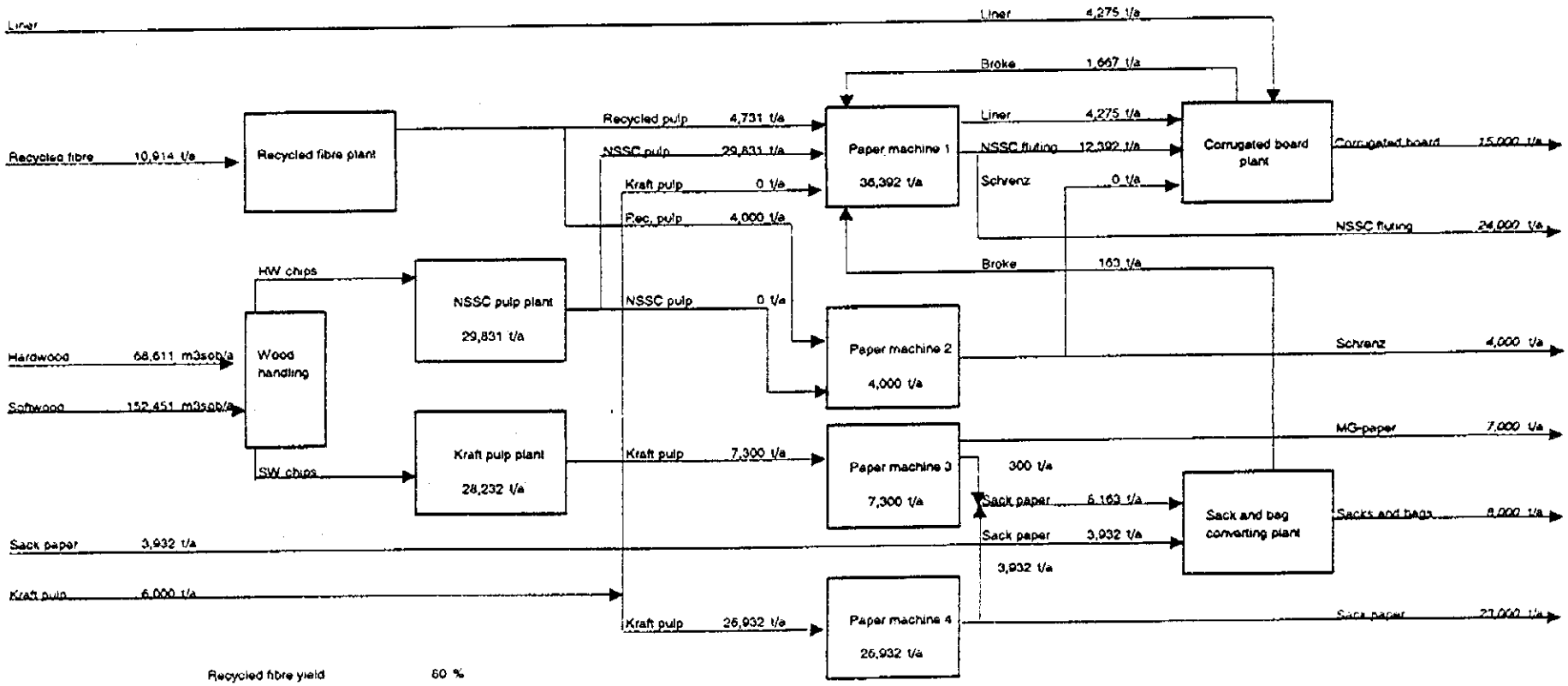
Appendix 7-I

Fibre balance, Short Term Programme
Purchased kraft pulp, own MG paper production
Year 2



Appendix 7-I

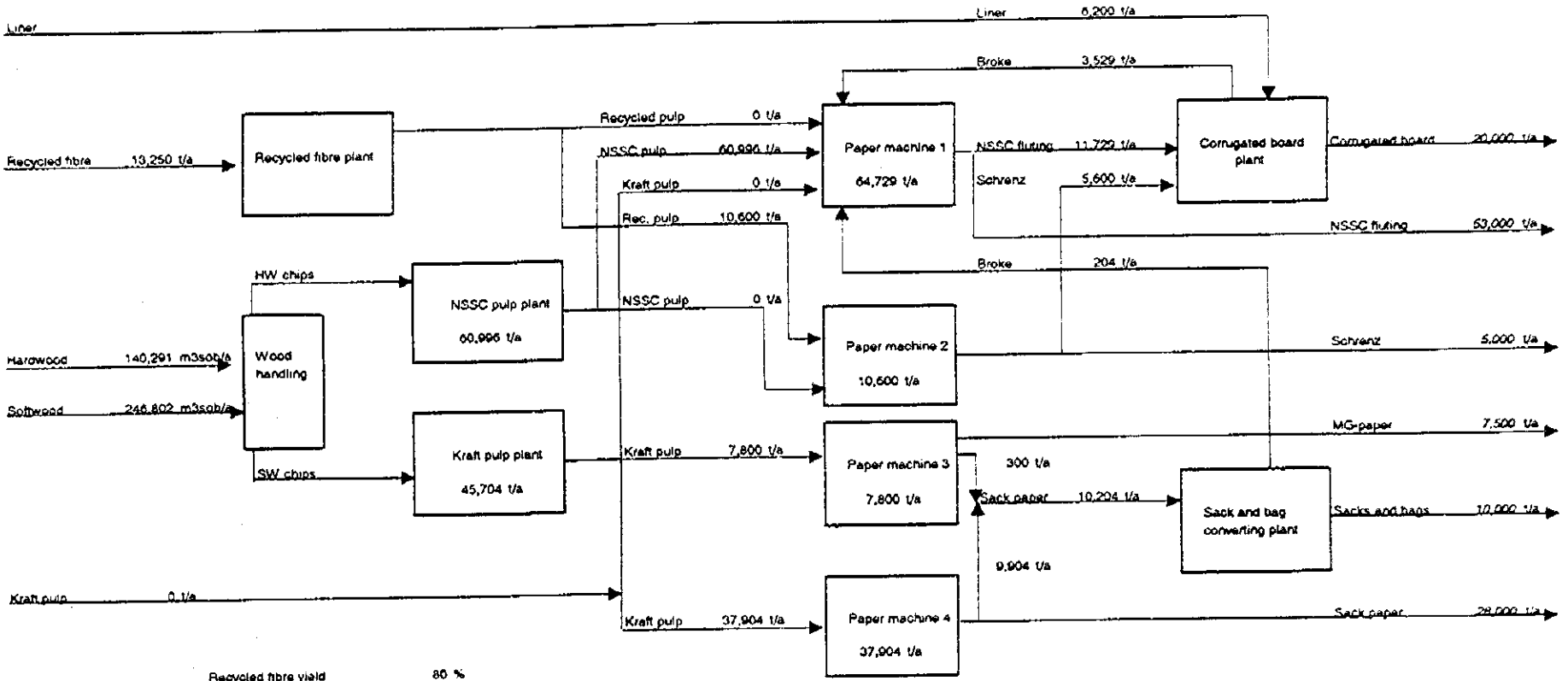
Fibre balance, Long Term Programme, incl. PM2
Purchased kraft pulp, own MG paper production1st half year
Own kraft pulp and NSSC pulp production 2nd half of year
Year 3



Recycled fibre yield	60 %			
NSSC pulp wod consumption	2.3 m3sob			
Kraft pulp wood consumption	5,4 m3sob			
Fluting composition PM1	87 % NSSC	13 % recycled		
Schrenz composition PM2	0 % NSSC	100 % recycled		
Corrugated board	57 % liner,	29 % fluting	14 % schrenz	
Corrugating plant broke	10 %			
Sack converting broke	2 %			

Appendix 7-I

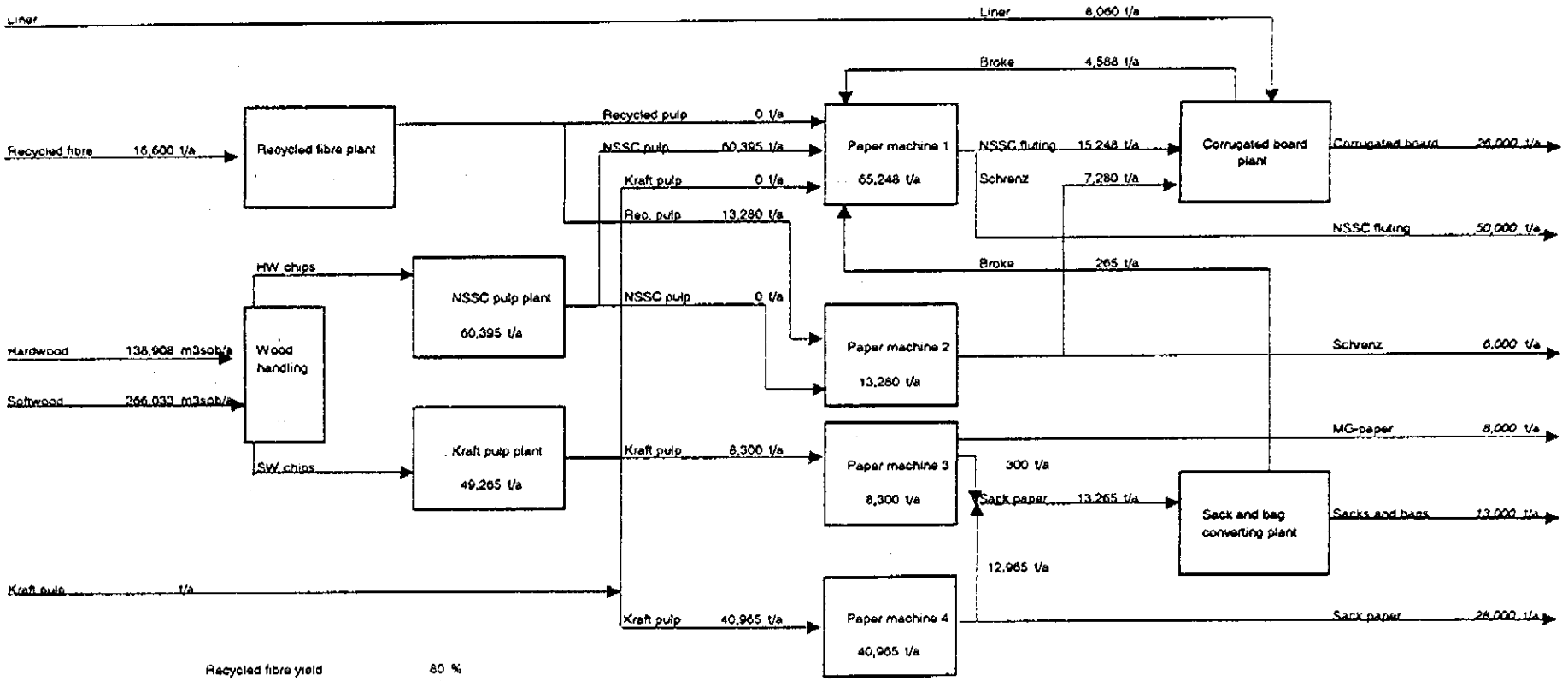
Fibre balance, Long Term Programme, incl. PM2
Own kraft pulp and NSSC pulp production
Year 4



Recycled fibre yield	80 %		
NSSC pulp wod consumption	2.3 m3sob		
Kraft pulp wood consumption	5.4 m3sob		
Fluting composition PM1	100 % NSSC	0 % recycled	
Schrenz composition PM2	0 % NSSC	100 % recycled	
Corrugated board	31 % liner,	41 % fluting	28 % schrenz
Corrugating plant broke	15 %		
Sack converting broke	2 %		

Appendix 7-1

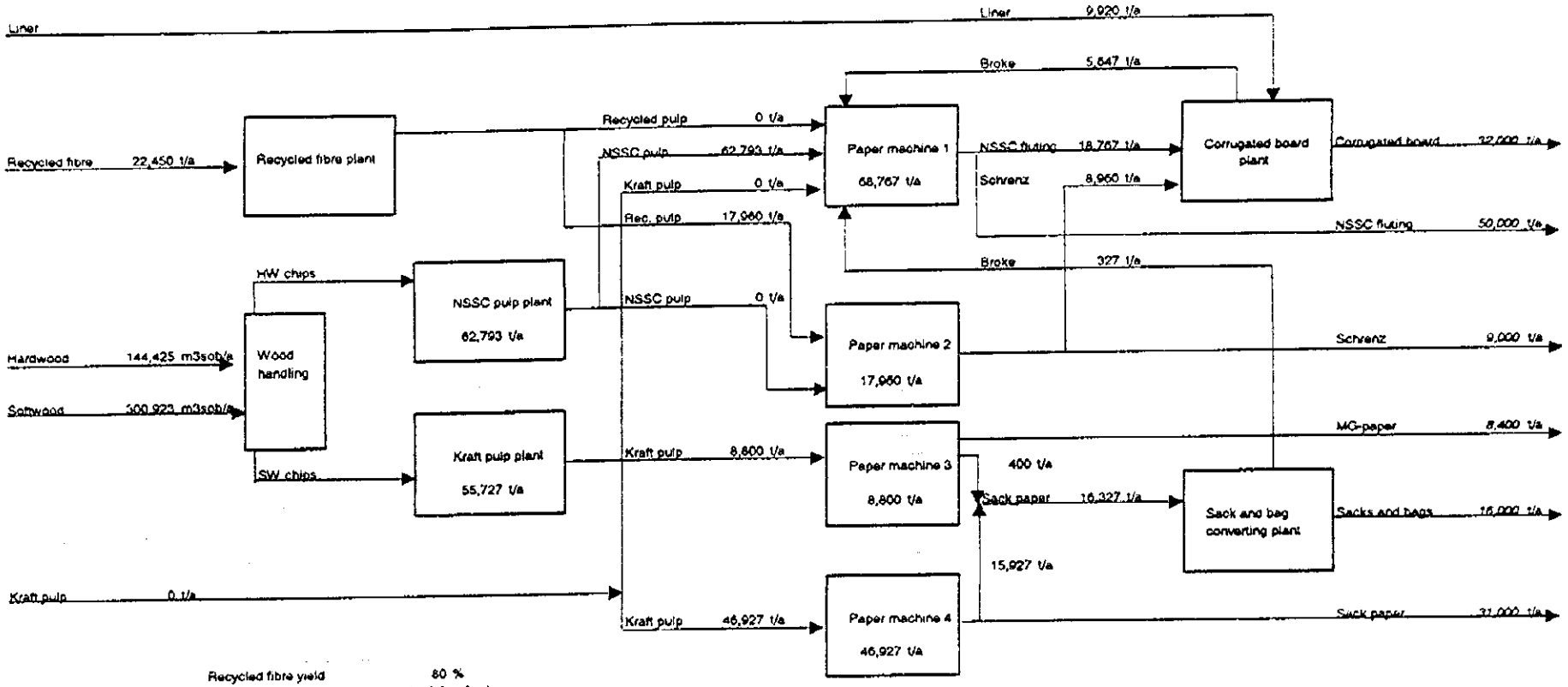
Fibre balance, Long Term Programme, incl. PM2
Own kraft pulp and NSSC pulp production
Year 5



Recycled fibre yield	80 %		
NSSC pulp wod consumption	2.3 m3sob		
Kraft pulp wood consumption	5.4 m3sob		
Fluting composition PM1	100 % NSSC	0 % recycled	
Schrenz composition PM2	0 % NSSC	100 % recycled	
Corrugated board	31 % liner,	41 % fluting	28 % schrenz
Corrugating plant broke	15 %		
Sack converting broke	2 %		

Appendix 7-I

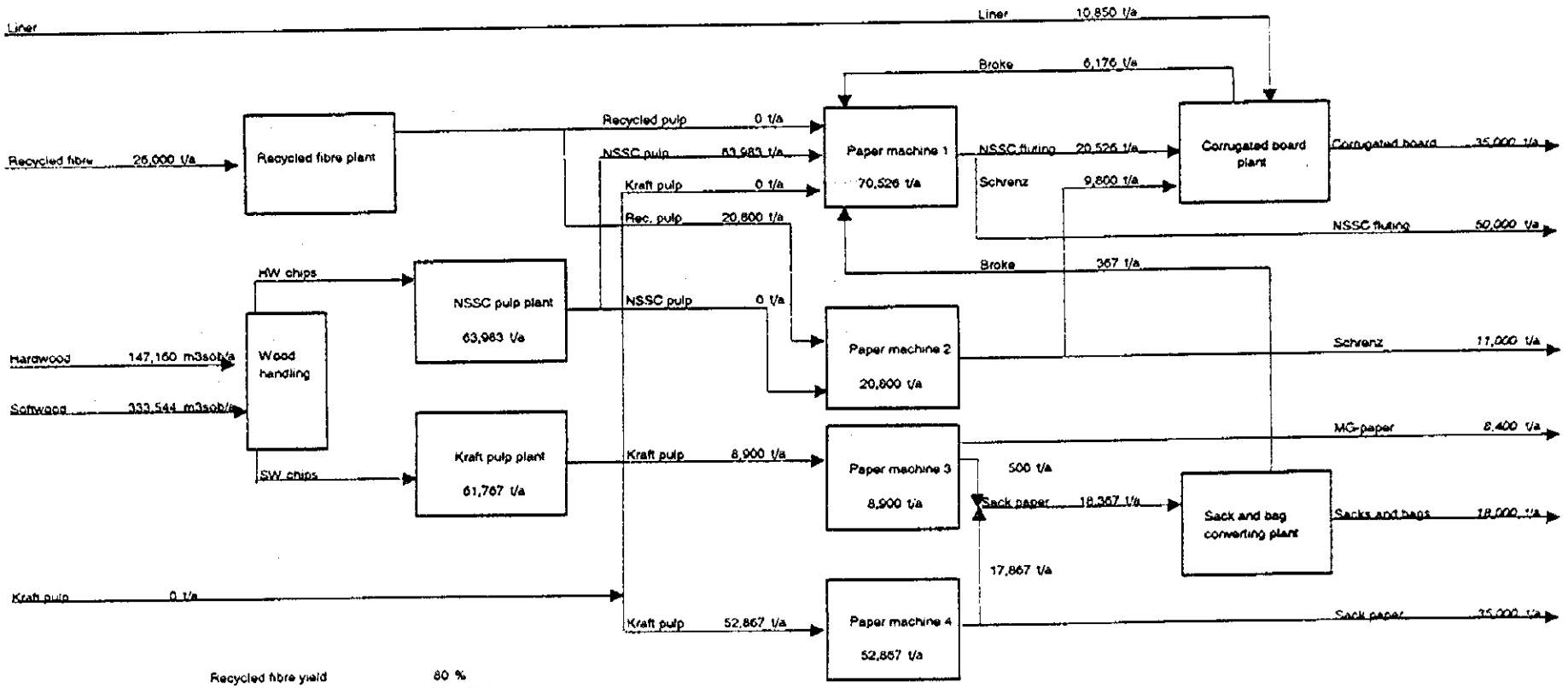
Fibre balance, Long Term Programme, incl. PM2
Own kraft pulp and NSSC pulp production
Year 6



Recycled fibre yield	80 %			
NSSC pulp wod consumption	2.3 m3sob			
Kraft pulp wood consumption	5.4 m3sob			
Fluting composition PM1	100 % NSSC	0 % recycled		
Schrenz composition PM2	0 % NSSC	100 % recycled		
Corrugated board	31 % liner,	41 % fluting	28 % schrenz	
Corrugating plant broke	15 %			
Sack converting broke	2 %			

Appendix 7-1

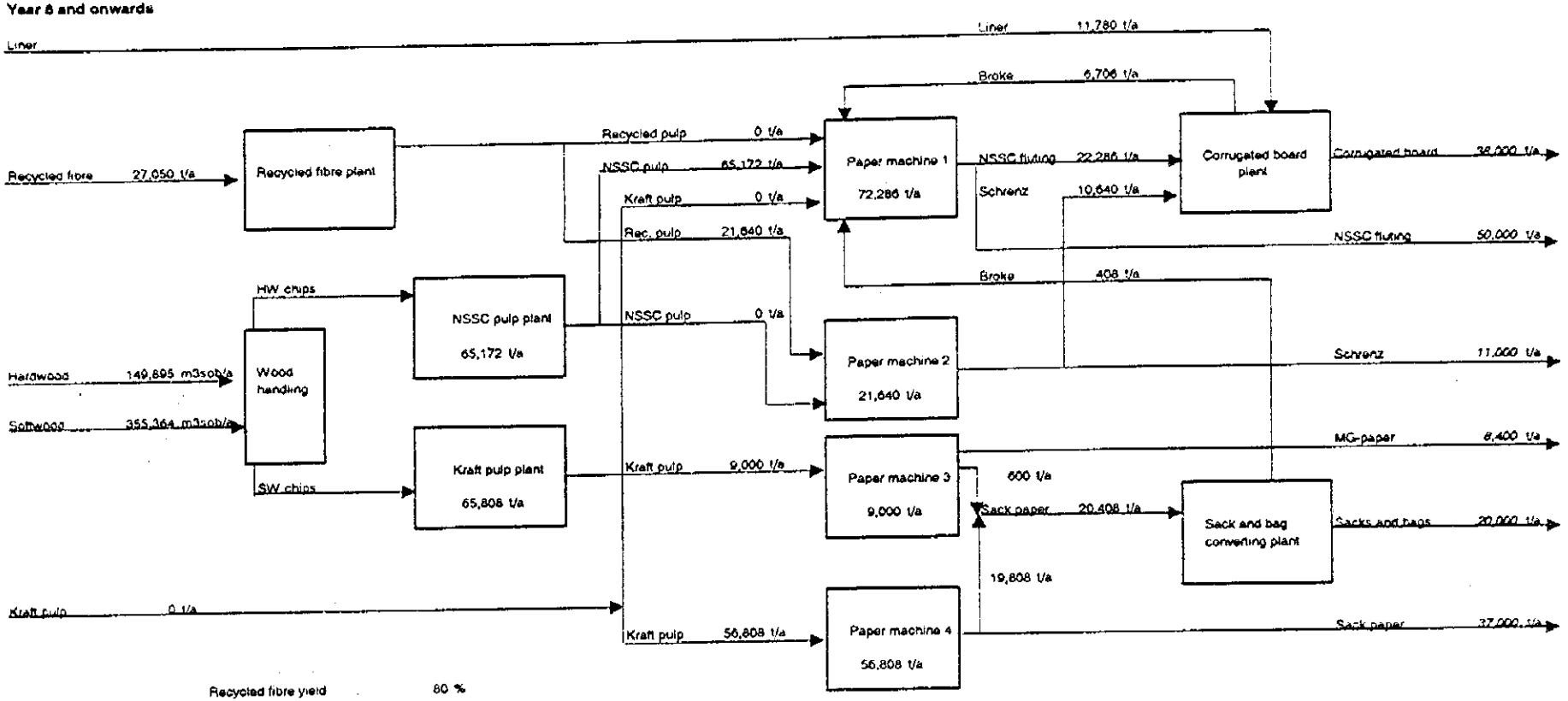
Fibre balance, Long Term Programme, incl. PM2
Own kraft pulp and NSSC pulp production
Year 7



Recycled fibre yield	80 %		
NSSC pulp wod consumption	2.3 m3sob		
Kraft pulp wood consumption	5.4 m3sob		
Fluting composition PM1	100 % NSSC	0 % recycled	
Schrenz composition PM2	0 % NSSC	100 % recycled	
Corrugated board	31 % liner,	41 % fluting	28 % schrenz
Corrugating plant broke	15 %		
Sack converting broke	2 %		

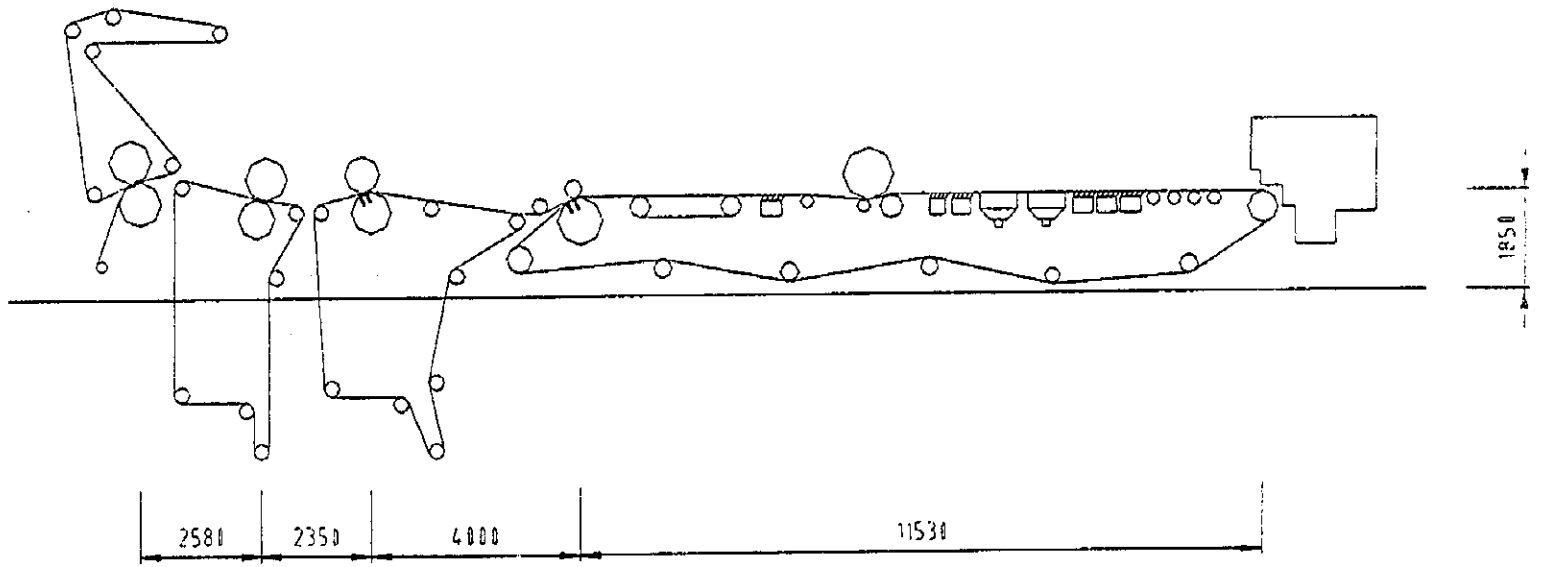
Appendix 7-I

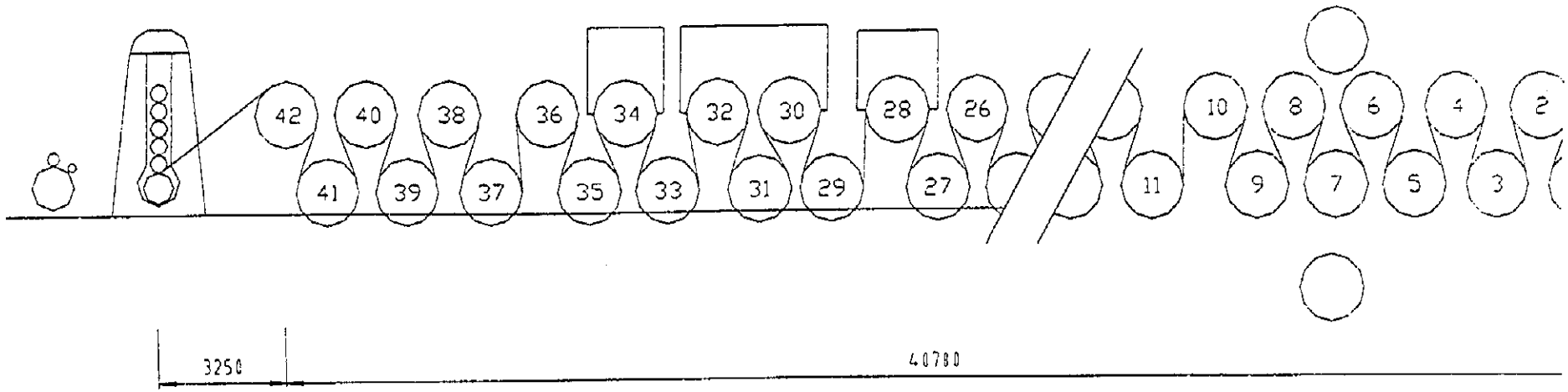
Fibre balance, Long Term Programme, incl. PM2
Own kraft pulp and NSSC pulp production
Year 8 and onwards



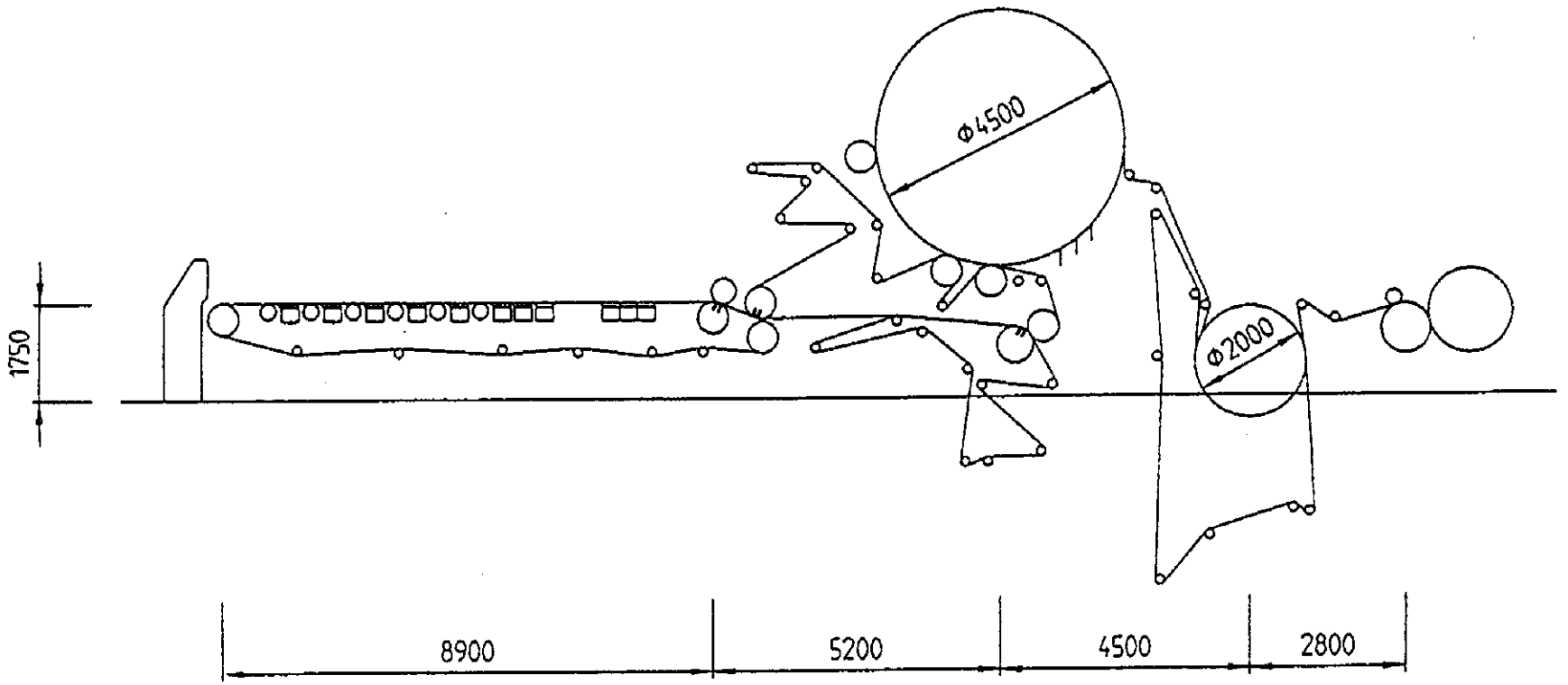
Recycled fibre yield	80 %			
NSSC pulp wod consumption	2.3 m3sob			
Kraft pulp wood consumption	5.4 m3sob			
Fluting composition PM1	100 % NSSC	0 % recycled		
Schrenz composition PM2	0 % NSSC	100 % recycled		
Corrugated board	31 % liner,	41 % fluting	28 % schrenz	
Corrugating plant broke	15 %			
Sack converting broke	2 %			

Paper Machine 1
Trim Max 4250 mm
Speed Max 350 m/min

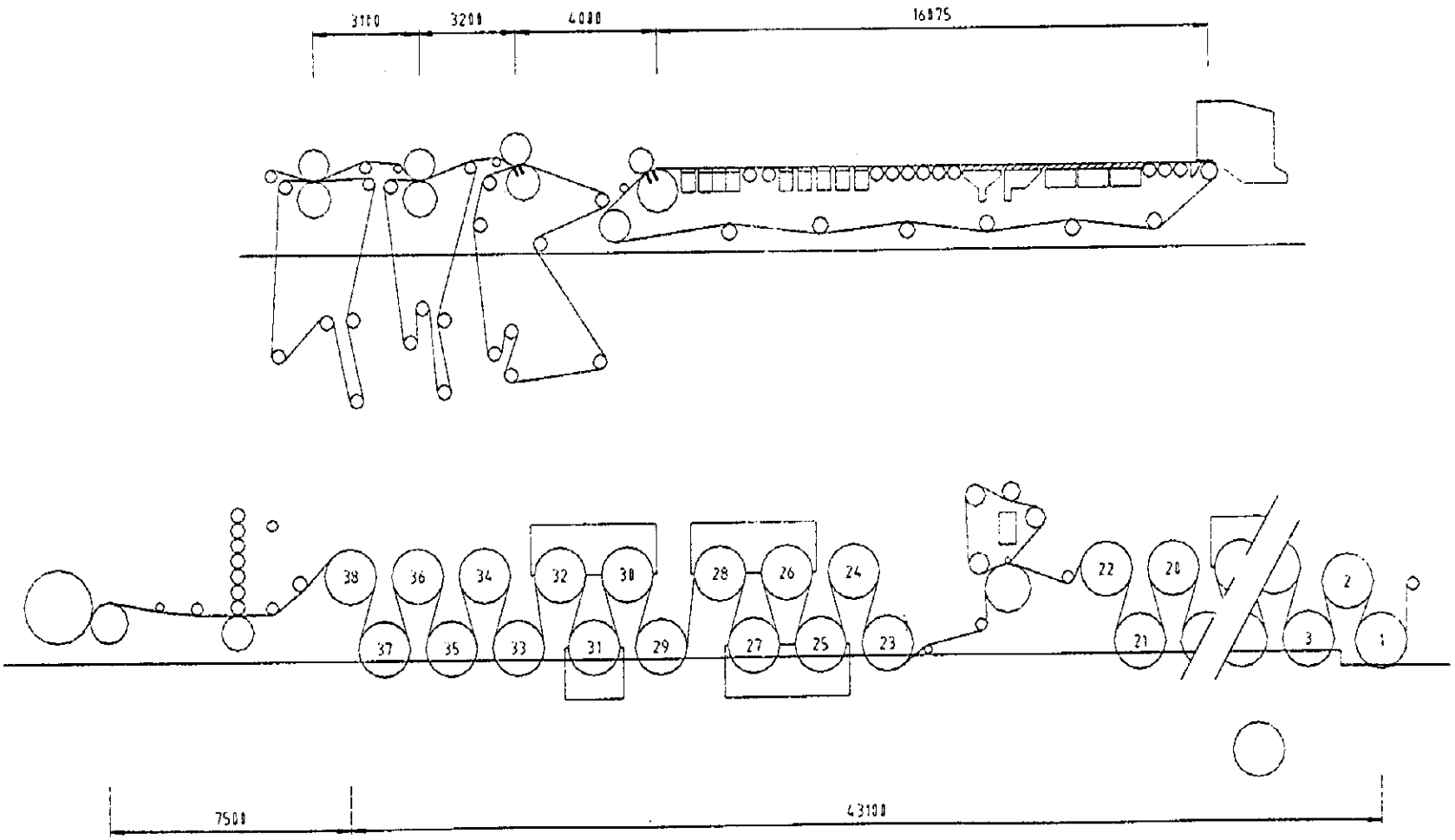




Paper Machine 3
Trim Max 2860 mm
Speed Max 250 m/min



Paper Machine 4
Trim Max 5450 mm
Speed Max 400 m/min



NATRON Maglaj
Paper Mill — Design Criteria

				PM1 Pluting SCP	PM2 Schrenz	PM3 MG	PM4 Sack kraft
1 PAPER PRODUCTION							
Basis weights:							
paper at reeler			g/m2	120	140	60	90
Dry contents:							
paper at reeler			%	94	94	94	93
after predrying group			%	94	94	88	93
PM Speeds:							
construction speed			m/min	350	350	250	400
drive speed			m/min	350	350	250	400
production speed	on the reel	max	m/min	335	120	175	290
	on the reel	avg	m/min	330	115	170	285
	on the wire	avg	m/min				
	creping	avg	%				
Widths:							
wire			mm	4 500	3 800	3 150	6 000
web on wire			mm				
web to press			mm	4 380	3 360		5 770
web at PM reeler			mm	4 250	3 250	2 860	5 450
web after winder, max			mm				
web after winder, average			mm	4 100	3 050	2 700	5 200
trim after sheeting, average			mm				
Available time			d/a	350	350	350	350
Time efficiency							
PM shut downs							
operational	of available time		%	3.0	3.0	3.0	3.0
maintenance, planned	of available time		%	1.0	1.0	2.0	2.0
maintenance, unplanned	of available time		%	1.0	1.0	1.0	1.0
PM web breaks	of running time		%	3.0	4.0	3.0	3.0
Other time losses	of running time		%	2.0	2.0	1.0	1.0
Total time efficiency			%	90.0	89.3	90.2	90.2
Material efficiency in roll production							
Trim loss on winder	of max. width after winder		%	3.5	6.4	5.6	4.6
Other loss PM-shipping rolls	of paper on PM reel		%	1.0	3.0	4.0	3.0
Total material efficiency in roll production			%	95.5	90.8	90.6	92.6
Total efficiency in roll production			%	86.2	81.0	81.8	83.5
Total efficiency			%	86.2	81.0	81.8	83.5
Paper machine and winder production							
Design production, on reeler with max. operating speed			t/d	246	79	43	205
Momentary production on reeler with average speed			t/d	242	76	42	201
Avg. production on reeler			t/d	219	67	38	182
Avg. production of rolls after winder			t/d	209	61	34	168
Sales production, average							
rolls			t/d	209	61	34	168
sheets			t/d	0	0	0	0
total			t/d	209	61	34	168
Sales production, mid packing, Annual							
rolls			t/a	73 113	21 438	12 024	58 843
sheets			t/a	0	0	0	0
total			t/a	73 113	21 438	12 024	58 843

NATRON Maglaj
Paper Mill

Design Criteria

			PM1 Pluteg SCP	PM2 Schrenz	PM3 MG	PM4 Sack kraft
2 DRYING CAPACITY AND ENERGY CONSUMPTION FOR DRYING						
Dry contents:						
at reeler		%	94	94	94	93
before afterdrying		%	94	94	88	93
paper after press part		%	37	37	36.5	37
Water evaporation						
predryer section		g/m2	185	216	90.4	136.2
afterdryer section (from surface size or coating colour)		g/m2	0.0	0.0	4.1	
Water evaporation, max. operating speed						
predryer section		kg/h	15 792	5 062	2 715	12 917
afterdryer section or coater		kg/h	0	0	120	
Spec. drying rate :						
predryer cylinders		kgH2O/m2/h	16	15	20	14
after dryer or coater cylinders		kgH2O/m2/h			3	
Steam pressure for drying max.		bar(e)	3.0	3.0	4.0	12.0
Enthalphy difference (steam-kond.)		GJ/t	2.36	2.36	2.36	2.40
Energy requirement in drying						
cylinders		GJ/tH2O	3.3	3.3	3.5	4.5
Dryer cylinders						
diameter, predryers		m	1.5	1.5	4.5	1.5
diameter, afterdryers		m			2.0	
required number	predryers	pcs	49	22	1.0	36
	afterdryers	pcs			0.9	
actual number	predryers	pcs	41	23	1.0	37
	afterdryers	pcs			1.0	
Steam demand, max. operating speed						
predrying cylinders		t/h	22	7	4	24
afterdrying cylinders		t/h			0	0
other steam consumption in paper mill		t/h	6	2	1	3
total continuous, max. operating speed		t/h	28	9	5	27
Peak demand	(on top of avg. 25 %)	t/h	35	11	7	33
Steam demand, average operating speed		t/h	28	9	5	26
Spec. steam consumption per net ton of saleable paper		t/t paper net	3.2	3.4	3.8	3.8
Spec. heat consumption per net ton of saleable paper		GJ/t paper net	7.5	8.0	9.0	9.0

7.2.3

Natron Maglaj dd

Compairson Clupak paper properties
Natron perwar quality level.

			Natron			Dunapac		Scan.standard	
Grammage	Gr/m2		70	80	90	80	90	80	90
Tensile Index	Nm/g	MD	59	57	56	48	48	70	70
Tensile Index	Nm/g	CD	35	32	26	33	33	50	50
Stretch at break	%	MD	6	6	6			5.5	5.5
Stretch at break	%	CD	6	6	6	6.5	6.5	8	7.5
Tensile Energy Abs.	J/m2	MD	150	170	180	168	190	200	225
Tensile Energy Abs.	J/m2	CD	120	130	130	147	160	240	250
Air resistance	Sek.		30	30	30	28	28	20	20

Appendix 7-III

Laboratory report
Paper properties

			PM1	PM3	PM4
Grammage		gr/m2	*	*	*
Tensile MD		kN/m	*	*	*
Tensile CD		kn./m	*	*	*
Ratio MD/CD		%	*	*	*
Stretch MD		%		*	*
Stretch MD		%		*	*
TEA MD		J/m2			*
TEA CD		J/m2			*
Tear index	MD	Nm/kg			*
Tear index	CD	Nm/kg			*
Gurley		s	*	*	*
Cobb 60		gr/m2	*	*	*
Wet strength		%			*
RCT index	MD		*		
RCT index	CD		*		
CCT index	CD				
Burst index		MN/kg	*		
CMT		N	*		
Moisture		%	*	*	*

Each Paper machine need to have a separate Paper properties form.

Appendix 7-III

Paper machine targets and reports.

		PM1	PM 3	PM4
Paper grade		*	*	*
Kraft pulp	%		*	*
Semi chemical pulp	%	*		
Broke	%	*	*	*
HC Refining	KWh/t			*
Conc.	%			*
LC Refining	KWh/t	*	*	*
Conc.	%	*	*	*
Beating degree	SR	*	*	*
Size	kg/t		*	*
Starch	kg/t		*	*
Alum	kg/t		*	*
Wet strength	kg/t		*	*
Stuff box conc.	%	*	*	*
Stuff box	SR	*	*	*
Stuff box	pH	*	*	*
Grammage valve	%	*	*	*
Head box conc.	%	*	*	*
Head box slice	mm	*	*	*
Total head	mm	*	*	*
Jet/wire ratio	%	*	*	*
White water	pH	*	*	*
White water conc.	%	*	*	*
Speed wire	m/min	*	*	*
Speed reeler	m/min	*	*	*
Press 1	kN/m	*	*	*
Press 2	kN/m	*	*	*
Press 3	kN/m	*	*	*
Clupak steam pressure	kPa			*
Beam pressurek	N/m			*
Clupak speed difference	%			*
Dry content Clupak	%			*
Yankee steam kPa		*		
Hood steam	kPa		*	
Recirk. Hood			*	

Appendix 7-III

Paper machine production report

Date Shift Year month day Shift No.

Paper grade _____

Grammage _____ gr/m^2

Production rate Actual _____ t/h

Production rate Target _____ t/h

Speed reeler _____ m/min

Lost production time / breaks

Grade change	_____ min	Cause
Wire	_____ min	Cause
Press	_____ min	Cause
Dryer	_____ min	Cause
Clupak	_____ min	Cause
Reeler	_____ min	Cause

Lost production / sub quality

Paper Machine	_____ ton	Cause
Winder	_____ ton	Cause
Lab control	_____ ton	Cause

7-IV Preliminary manning list

The manning list in the next few pages follows the new overall organsation structure proposed by Natron management. Because the purpose this list is only to estimate the total number of personnel needed for operating the mill, some common functions Production and Technical Division have been combined under same headings, and some other simplifications have been made.

All the existing facilities excluding PM2, and PM5 are expected to be in normal contir operation including wood handling, two pulping lines, chemicals recovery, four paper machines and the converting plants.

Proposed organisation structure

General Manager ans secretary	7
Production and Technical Division	
Common	81
Pulp and Paper Sector	
Wood handling and Pulp Mill	239
Paper Mill	172
Sack and Bag Production Sector	133
Corrugated Board Sector	117
Maintenance Sector	362
Independent Expertise Division	8
Common Administrative Division	
Common	12
Marketing Sector	15
Development Sector	18
Economy Sector	12
Personnel Administration Sector	28
All total	1,204

Preliminary manning list

	Working shedule shifts/da	ays/wee	Manning in shift	Manning total
General Manager				1
Secretary and Administration				6
Total				7
Production and Technical Division				
Common				
Assistant for General Manager	1	5		1
Sector Manager	1	5		4
Quality control	1	5		30
Quality control	3	7	4	16
Marketing and sales	1	5		10
Accounting	1	5		8
Personnel	1	5		6
Secretary	1	5		3
Office	1	5		3
Total common				81
1 **Pulp and Paper Production Sector**				
Wood handling and pulp mill				
Superintendent	1	5		1
Foremen	1	5		3
Foremen	3	7	3	12
Office	1	5		3
Labour				
Wood yard	3	7	15	60
Digesting plant	3	7	6	24
Evaporator	3	7	3	12
Recovery boiler	3	7	5	20
Recaustisising	3	7	4	16
Lime kiln	3	7	4	16
Crude oil production	3	7	2	8
Coal boiler plant	3	7	5	20
Turbine hall	3	7	2	8
Fresh water treatment	3	7	2	8
Effluent treatment	3	7	1	4
Cleaners	1	5		4
Reserve and dayworkers	1	5		20
Total woodhandling and pulp mill				239

Preliminary manning list

	Working shedule shifts/da	ays/wee	Manning in shift	Manning total
Paper mill				
PM1				
Superintendent (PM1, PM3)	1	5		1
Foremen	3	7	1	4
Office	1	5		2
Labour				
Broke handling	3	7	2	8
Stock preparation	3	7	1	4
Paper machine	3	7	3	12
Winder	3	7	3	12
Packing	3	7	2	8
Paper storing	3	7	1	4
Dispatching	2	5	2	4
Cleaners	1	5		1
Reserve and dayworkers	1	5		4
Total PM1				64
Core manufacturing				14
PM3				
Superintendent	1	5		1
Foremen	1	5		1
Labour				
Stock preparation	3	7	1	4
Paper machine	3	7	1	4
Winder and packing	3	7	3	12
Paper storing	3	7	1	4
Dispatching	2	5		1
Cleaners	1	5		1
Reserve and dayworkers	1	5		3
Total PM3				31

Preliminary manning list

	Working shedule shifts/day	days/wee	Manning in shift	Manning total
PM4				
Superintendent	1	5		1
Foremen	3	7	1	4
Office	1	5		2
Labour				
Stock preparation	3	7	1	4
Paper machine	3	7	4	16
Winder	3	7	3	12
Packing	3	7	3	12
Paper storing	3	7	1	4
Dispatching	2	5		2
Cleaners	1	5		1
Reserve and dayworkers	1	5		5
Total PM4				63
Total paper mill				172

2 Sack and Bag Production Sector

Sector Leader				
Superintendent	1	5		1
Foremen	2	5	1	2
Office	1	5		2
Labour				
Operators	2	5	41	82
Material handling	2	5	2	4
Packaging	2	5	3	6
Sorting	2	5	8	16
Cleaners	2	5	2	4
Storing and dispatch	1	5		6
Dayworkers and reserve	1	5		10
Total sack and bag production plant				133

3 Corrugated Board Production Sector

Sector Leader	1	5		1
Superintendent	1	5		1
Sales and customer service	1	5		10
Production planning	1	5		3
Accounting	1	5		2
Foremen	3	5	2	6
Office	1	5		2
Labour				
Corrugators	3	5	10	30
Box making	3	5	12	36
Materials handling	3	5	4	12
Cleaners	1	5		2
Dayworkers and reserve			10	12
Total corrugated box plant				117

Preliminary manning list

	Working shedule shifts/da	days/wee	Manning in shift	Manning total
4 Maintenance Sector				
Sector Leader	1	5		1
Secretary	1	5		1
Procurement	1	5		1
Sales	1	5		2
Engineers	1	5		4
Foremen	1	5		10
Work planning	1	5		4
Accounting	1	5		4
Office	1	5		4
Labour				
Mechanical maintenance	1	5		170
Mechanical maintenance	3	7	8	32
Electrical maintenance	1	5	8	40
Electrical maintenance	3	7	2	8
Instrument maintenance	1	5		30
Instrument maintenance	3	7	2	8
Civil works	1	5		30
Civil works	3	7	2	8
Road, garden maintenance	1	5		5
Total maintenance sector				362
Independent Expertise Division				
Common				
Assistant for General Manager	1	5		1
Secretary	1	5		1
Office	1	5		6
Total common				8

Preliminary manning list

	Working shedule shifts/da	ays/wee	Manning in shift	Manning total
Common Administrative Division				
Common				
Assistant for General Manager	1	5		1
Secretary	1	5		5
Office	1	5		6
Total common				12
1 Marketing Sector				
Sector Leader	1	5		1
Export marketing	1	5		6
Domestic marketing	1	5		4
Transport	1	5		4
Total marketing sector				15
2 Development Sector				
Sector Leader	1	5		1
Product Development	1	5		4
Investment planning	1	5		4
Engineering	1	5		6
Information System Development	1	5		3
Total development sector				18
3 Economy Sector				
Sector Leader	1	5		4
Finance	1	5		2
Accounting	1	5		4
Budgeting	1	5		2
Toal economy sector				12
4 Personnel Administration Sector				
Sector Leader				1
Lawyer				1
Public relations				1
Human resource development, training				3
Fire fighting	1	5		1
Fire fighting	3	7	2	8
Security	1	5		1
Security	3	7	2	8
Safety	1	5		2
Recruiting				2
Total personnel administration sector				28
Total Common Administrative Division				85
All total				1,204

Appendix 7-V IN-HOUSE TRAINING AND EDUCATIONAL INVESTMENT

The Natron Mill is facing the new environment of the market economy after decades within the planned economy system. This together with the proposed new technology to be introduced will require substantial training of all staff of the mill, top management included. The presentation below describes in general terms the areas to be covered by such a training programme. The training programme will have to be implemented with a top to bottom approach, meaning firstly engage the General Manager and the top management to fully accept and support the new management principles of the company.

Top Management Training

The objective of the top management training is to develop the understanding on how an efficient organisation works within a market economy with distributed authority. Areas to be covered within this programme are:

Modern organisation systems such as profit centre organisation where full authority is delegated profit centre managers.

- The role and function of the marketing and sales organisation of the different profit centres. Presentation on how the company representative out in the field works.

- Present modern financial accounting systems to be able to monitor the financial performance of each individual profit centre.

- Develop the principles of product costing systems to evaluate the profitability of each individual paper grade at each basis weight as well as the profitability of each individual corrugated box, paper sack, customer and sales representative.

Middle Management Organisation Training

The objective of middle management training is to both develop their managerial skills as leaders of team to continuously improve the performance of the department within their responsibility. These managers will also have to be developed to achieve the understanding on how to operate an organisation with distributed authority and how to work towards financial goals. Areas to be covered are:

- Principles and objectives of a decentralised profit centre organisation.

- Cost accounting principles with product costing as above.

- Training on how to motivate subordinates to support the process of change within the organisation.
- Computer training to work with modern word processors and spread-sheet programmes.
- Training for modern computerised order administration and production planning programmes.
- Training for modern computerised maintenance planning programme.

Middle Management and Operators Technical Training

The modernisation of the Natron mill will result in new technologies as well as new methodology and principles on how the mill should be operated. This will primarily cover areas where "new" technology will be introduced:

- Kamyr Digester pulp line for the production of Semi-Chemical pulp.
- Training in the principles of operating a super concentrator.
- Training programme of modern papermaking applicable to the new production concept.
- Paper testing and quality control with reference to new paper qualities to be produced
- Training of corrugated board production in a modern market economy, particularly with respect to customer service and flexibility in operation.
- General operators training to be introduced to the new production concept.

Management programme should be planned and executed by professionals with a background from market economies and with experience from similar programmes in eastern Europe. Technical training programme will be related to the new technology to be introduced. The total cost of this programme is estimated to DEM 800,000.

Appendix 8-I Investment and maintenance costs divided per area.

The wood yard restoration program will require DM 2,7 million before start up. This is primarily to execute maintenance work. Late on in year 7-9 additional investments in primarily a new wood handling system with a new bark drum will be required with a total cost of DM 40 million.

To prepare the Kamyr line for semi-chemical pulp production an total investment of DM 3.2 million will be required. And DM 3.7 million for the Kamyr recovery section plus DM 6.2 million for Gotaverken recovery boiler. The batch digester line will be refurbished and expanded at a total cost of DM 2.1 million. And in year 6 - 7, a cold blow system is to be built.

The power plant needs maintenance work and overhaul of one generator at a cost of DM 3.9 million. The water treatment needs overhauling at a cost of DM 0.4 million.

Paper machine No.1 will have to be extended with an addition eight cylinders to increase capacity. The heat recovery and wire section will be refurbished. A new scanner will be installed. Including overall maintenance the total cost is estimated to DM 7.4 million

Paper machine No. 3 will only require minor maintenance and grinding of the Yankee cylinder at a total cost of DM 0.5 million.

Paper machine No. 4 will require a new winder to produce rolls of acceptable quality. The HC refining will have to be taken into operation. Together with overall maintenance to total cost for PM 4 will be DM 12.8 million.

The ware house of the corrugated box plant was destroyed during the war and have to be rebuild. The converting operation will be increased with new case-maker and die-cutter. Total cost DM 6.3 million.

The sack mill needs some maintenance and needs to improve the automation to a total cost of 1.6 mDM.

There is also a big need to restore the fleet of trucks and vehicles. This will be going on for year 2 - 5 to a total estimated cost of 5.0 mDM.

The common system in the mill are in a bad shape and they will need a big part of overhaul for a number of years to a total cost of 10.7 mDM.

The new wood yard line will introduce a need for a bark boiler in year 7 - 9 to a total cost of 20 mDM.

Restart of NATRON

Woodyard Restoration

	Year 2												Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						Maintenance (1)						Repair of Conveyers (2)																	
														Replacement of Chipper disk (3)															
Investment Schedule												2.7 mDM												New Woodyard system 40.0 mDM year 7,8,9,10 →					

(1) (2) Average working staff for 9 months is 48;

Mech	16
Elect	6
Civil	26
Total	48

(1)	Maintenance cost	1.50 mDM
(2)	Replacement of current conveyers	1.00 mDM
(3)	New Chipper disk	0.20 mDM
	Total	2.70 mDM

Additional investment of 40 mDM comes in year 7,8,9
when a new wood handling becomes necessary to raise the quality.

Restart of NATRON

Kamyr Pulp Line

Year 2												Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
												Maintenance (1)																	
															(2), (3), (4), (5), (6)														
Investment schedulke												2.2 mDM						1.0 mDM						Investment schedule					

Average working staff for (1)

Mech	38
Elec	12
Instr	9
Civil	18
Total	77

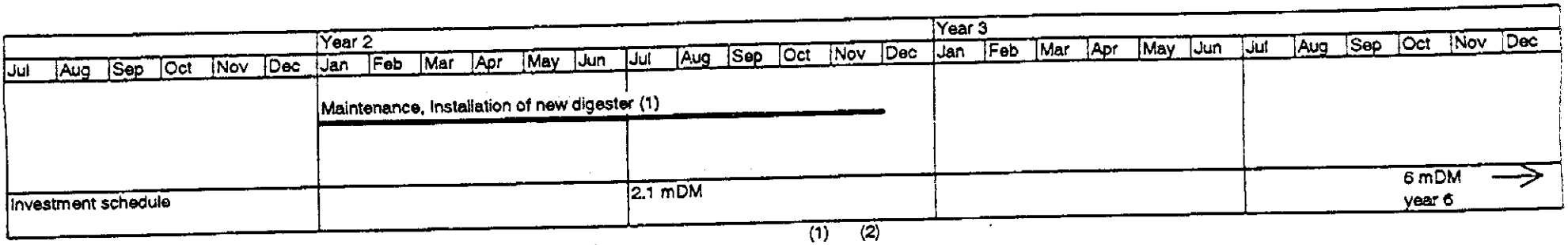
Average working staff for (2)

Mech	20
Electr	2
Civil	8
Total	30

(1)	Maintenance cost 1.4 mDM	1.40 mDM
(2)	2-new refiner motors each 1.2 MW	0.60 mDM
(3)	6-new level indicators	0.30 mDM
(4)	Heat exchanger, Black liquor to bottom	0.20 mDM
(5)	Pump and piping for black liquor to flash tank	0.20 mDM
(6)	Order spare top screens	0.50 mDM
	Total	3.20 mDM

Kamyr line screens will not be used in future.
They can be used for old batch line instead.

Restart of NATRON
Batch line Restoration



		(1)	(2)
Average working staff	Mech	28	10
	Electr	10	
	Instr	7	
	Civil	12	5
	Total	57	15

(1) Maintenance cost	1.1	mDM
(2) Cost for installation of new digesters	1	mDM
Total	2.1	mDM

Additional investment in cold blow system year 6 of 6 mDM

Appendix 8-I

Restart of NATRON

Restoration Recovery Island
Kamyr Line

	Year 2												Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						Maintenance (1)																							
						Badly damaged building and instrumentation from War (2). (3)																							
Investment schedule												3.7 mDM																

		(1)	(2)
Average working staff	Mech	34	3
	Electr	11	
	Instr	5	8
	Civil	12	7
	Total	62	18

(1) Maintenance cost	2.9	mDM
(2) Cost for war damage repair	0.5	mDM
(3) Liquor storage tanks	0.3	mDM
Total	3.7	mDM

Restart of NATRON
Recovery Boiler Gotaverken

	Year 2												Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
												Maintenance (1) (3) (4)																	
															Erection Super-concentrator (2)														
Investment schedule												2.3 mDM						3.9 mDM											

		(1),(3),(4)	(2)
(1) (3) (4) Average working staff	Mech	38	18
	Electr	16	2
	Instr	19	2
	Civil	25	8
	Total	98	30

(1) Maintenance cost	3.7	mDM
(2) Superconcentrator	2	mDM
(3) Extra cost building construction	0.2	mDM
(4) Extra cost material Electro-static precipitat	0.3	mDM
Total	6.2	mDM

(2) The superconcentrator must be ordered in Jan. year-2 so thast it is complete before mill start up.

Appendix 8-I

Restart of NATRON

Environment, Air and Water

	Year 2												Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		Maintenance (1) (2)																Maintenance (3) (4)											
		Maintenance (6)																											
Investment Schedule		1.3 mDM										0.5 mDM						2.5 mDM											

		(1)(2)	(6)	(3)(4)
(1) (2) Average working staff	Mech			19
(3) (4) Average working staff	Electr			3
	Instr			4
	Civil			6
	Total	23	18	32

(1) Restoration of effluent treatment	0.5	mDM
(2) Restoration of ash system for ash dumping	0.2	mDM
(3) Restotation of treatment of gases	0.5	mDM
(4) Restoration of stripping column	0.5	mDM
(5) Expansion of effluent treatment to fit EU standard	2.0	mDM
(6) Dumping of industrial waste	0.5	mDM
	4.2	mDM

Restart of NATRON

Power Plant

	Year 2												Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
												Maintenance (1)																	
														Generator overhaul (2)															
Investment Schedule												2.5 mDM						1.4 mDM										

		(1)	(2)
Average working staff	Mech	39	11
	Electr	7	6
	Instr	5	
	Civil	9	5
	Total	60	22

(1) Miantenance	2.9	mDM
(2) Generator	1.0	mDM
Total	3.9	mDM

Appendix 8-i

Restart of NATRON
Water Treatment

	Year 2												Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maintenance (1)																													
Investment Schedule						0.4 mDM																							

Average working staff

Mech	11
Electr	3
Instr	4
Civil	6
Total	24

Maintenance cost 0.4 mDM

Restart of NATRON

Paper Machine No.1

Year 2																		Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
																		Maintenance (1)											
																		Move reel and erect 8 cylinders (2)											
																		Fibresaver (3)											
																		Heat Recovery (4)											
																		Dewatering wire section + Level control inlet box (5), (6)											
Investment Schedule												3.4 mDM						4.2 mDM											

		(1)(2)(4)(5)	(3)
Average working staff	Mech	38	3
	Elect	9	
	Instr	10	
	Civil	20	2
	Total	77	5

(1) Maintenance	0.5 mDM
(2) Pope reel + Cylinders	4.5 mDM
(3) Fibresaver for PM2 (no restart of PM2)	0.2 mDM
(4) Heat Recovery	0.7 mDM
(5) Wire section & inlet box	0.3 mDM
(6) Scanning frame Basis weight/Moisture control	1.4 mDM
	7.6 mDM

(Dewatering elements must be ordered Jan. year 2)

Break down of item (2)

Dryer part extention, incl. mechanical drive, guide rolls, and hood	3.6 mDM
Relocation of reel and winder	0.4 mDM
Electrical drive	0.5 mDM
Total	4.5 mDM

Appendix 8-I

Restart of NATRON

Paper Machine No.3

	Year 2												Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
						Maintenance + Grinding of Yankee-cylinder (1)																								
Investment Schedule												0.5 mDM																	

Average working staff

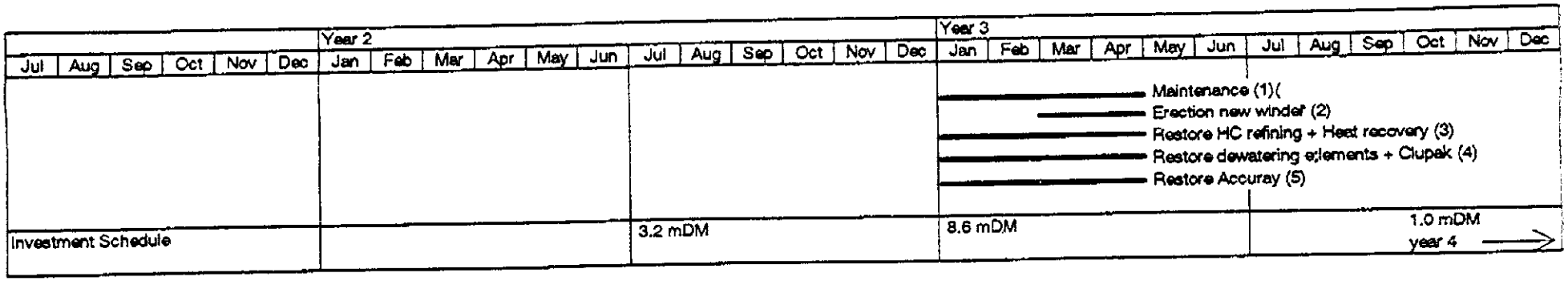
Mech	6
Electr	1
Instr	1
Civil	4
Total	12

Costs of Miantenance + Grinding 0.5 mDM

Grinding of Yankee cylinder order Jan. year 2

Restart of NATRON

Paper Machine No.4



Average working staff		(1)(4)	(2)(5)	(3)
	Mech	24	9	15
	Electr	14	3	4
	Instr	7	7	3
	Civil	12	6	6
	Total	57	25	28

(1) Maintenance	1.6	mDM
(2) New winder (has to be ordered Jan. year 2)	6.9	mDM
(3) HC refining - Heat recovery	2.5	mDM
(4) Dewatering elements ordered year 2	0.4	mDM
(5) Scanning frame Basis weight/Moisture control	1.4	mDM
Total	12.8	mDM

Restart of NATRON

Corrugated Board Box Plant

	Year 2																Year 3											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
																						Maintenance (1)							
Investment Schedule																												4.8 mDM year 4 →	

Average working staff

Mech	5
Civil	25
Total	30

(1) Building and warehouse 1.5 mDM
New Die cutter and additional investment 4.8 mDM

Appendix 9-I

Unit prices

	unit	used DEM/unit	coefficient	basic DEM/unit
Purchased raw materals			1	
OCC, domestic	t	135		135
OCC, imported	t	120		120
mixed wasre	t			
unbleached kraft pulp	ADt	750		750
roundwood, SW	m3smob	75		75
sawmill chips, SW	m3s			
roundwood, HW	m3smob	50		50
sawmill chips, HW	m3s			
testliner	t	720		720
sack paper	t	1400		1400
Chemicals			1	
CaCO3	kg	0.10		0.1
NaOH	kg 100%	0.60		0.60
NA2SO4	kg 100%	0.73		0.73
H2SO4	kg 100%	0.44		0.44
HCL	kg	0.30		0.30
rosin size	kg 100%	9.00		9.00
neutral size	kg	10.00		10.00
alum	kg	0.34		0.34
starch for paper machine	kg	1.80		1.8
wet strength agent	kg	6.00		6.00
colour for testliner	kg	9.00		9.00
silicon	kg	5.00		5.00
starch for corrugated board	kg	1.03		1.03
glue for corrugated board, bo>	kg	3.79		3.79
printing colour for boxes	kg	10.00		10.00
Energy			1	
coal, 10.5 GJ/t	t	43		43
oil, light	t	650		650
oil, heavy	t	370		370
heat in process steam (coal)	GJ	5.0		5.0
electricity	kWh	0.10		0.10
Water and effluent			1	
fresh water	m3	0.038		0.038
effluent and sludge dumping	m3	0.19		0.19
Personnel			1	
production	manyear	21600		21600
maintenance	manyear	21600		21600
administration	manyear	43200		43200

Sales product prices, mill net

	unit	used DM/unit	coefficient	basic DM/unit
			1	
schrenz	t	352		352
corrugated products, rec. fibre	t	1320		1320
corrugated prod., NSSC+schr	t	1505		1505
corrugated products, NSSC	t	1620		1620
sacks	t	1720		1720
bags	t	3390		3390
MG paper	t	1150		1150
sack paper	t	1090		1090
NSSC fluting	t	672		672

Sales prices, delivered and mill net

	Mill net price DM/t	Transport, commission DM/t	Delivered price DM/t
schrenz	352	88	440
corrugated products, rec. fibre	1320	60	1380
corrugated prod., NSSC+schrenz	1505	60	1565
corrugated products, NSSC	1620	60	1680
sacks	1720	60	1780
MG paper	1150	100	1250
sack paper	1090	146	1236
NSSC fluting	672	117	789

Variable Production Costs

Recycled fibre processing plant

	Unit	Unit price DM/unit	Unit consumpt. units/ADt	Unit cost DM/ADt
Raw materials total	t		1.25	169
OCC, domestic	t	135	1.25	169
OCC, imported	t	120	0.00	0
Mixed waste	t	0		0
Chemicals total				
Heat total	GJ			
steam to process	GJ			
steam to bp power	GJ			
Electric power total	kWh			26
purchased or condensing pow	kWh	0.10	260	26
bp power generation	kWh			
Other costs total				27
fresh water	m3	0.038	100	4
effluent treatment	m3	0.19	100	19
operation materials				4
Variable costs total, recycled pulp				222

Variable Production Costs

Unbleached kraft pulp

	Unit	Unit price DM/unit	Unit consumpt. units/ADt	Unit cost DM/ADt
Raw materials total				403
roundwood, SW	m3smob	75	5.4	403
sawmill chips, SW	m3s	0		0
Chemicals total				44
CaCO3	kg 100%	0.10	27.0	3
NaOH	kg 100%	0.60	8.0	5
NA2SO4	kg 100%	0.73	45.0	33
H2SO4	kg 100%	0.44	4.2	2
other chemicals				2
Heat total	GJ		-2.7	3
steam to process	GJ	5.0	10.0	50
steam to bp power	GJ	5.0	1.7	8
fuel oil for lime kiln	GJ	15.5	1.6	25
steam from bark	GJ	5.0	-3.0	-15
steam from liquour	GJ	5.0	-13.0	-65
Electric power total	kWh		750	33
purchased or condensing pow	kWh	0.10	333	33
bp power generation	kWh		417	0
Other costs total				21
fresh water	m3	0.038	70	3
effluent treatment	m3	0.19	70	13
operation materials				5
Variable costs total, unbleached kraft pulp				504

Variable Production Costs

Semichemical pulp, before installing debarking

	Unit	Unit price DM/unit	Unit consumpt. units/ADt	Unit cost DM/ADt
Raw materials total				115
roundwood, HW	m3smob	50	2.3	115
sawmill chips, HW	m3s	0		0
Chemicals total				31
CaCO3	kg 100%	0.10		0
NaOH	kg 100%	0.60	5.5	3
NA2SO4	kg 100%	0.73	33.0	24
H2SO4	kg 100%	0.44	2.8	1
other chemicals				2
Heat total	GJ		2.3	11
steam to process	GJ	5.0	4.5	22
steam to bp power	GJ	5.0	0.8	4
fuel for lime kiln	GJ			0
steam from bark	GJ	5.0		0
steam from liquour	GJ	5.0	-3.0	-15
Electric power total	kWh		550	36
purchased or condensing pow	kWh	0.10	363	36
bp power generation	kWh		188	0
Other costs total				16
fresh water	m3	0.038	50	2
effluent treatment	m3	0.19	50	10
operation materials				5
Variable costs total, semichem. pulp without debarking				209

Variable Production Costs

Semichemical pulp, after installing debarking

	Unit	Unit price DM/unit	Unit consumpt. units/ADt	Unit cost DM/ADt
Raw materials total				115
roundwood, HW	m3smob	50	2.3	115
sawmill chips, HW	m3s	0		0
Chemicals total				28
CaCO3	kg 100%	0.1		0
NaOH	kg 100%	0.60	5.0	3
NA2SO4	kg 100%	0.73	30.0	22
H2SO4	kg 100%	0.44	2.5	1
other chemicals				2
Heat total	GJ		0.8	4
steam to process	GJ	5.0	4.5	22
steam to bp power	GJ	5.0	0.8	4
fuel for lime kiln	GJ			0
steam from bark	GJ	5.0	-1.7	-8
steam from liquour	GJ	5.0	-2.8	-14
Electric power total	kWh		550	36
purchased or condensing pow	kWh	0.10	363	36
bp power generation	kWh		188	0
Other costs total				16
fresh water	m3	0.038	50	2
effluent treatment	m3	0.19	50	10
operation materials				5
Variable costs total, semichem. pulp with debarking				199

Appendix 9-I

Variable Production Costs

Testliner

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Raw materials total	ADt		1.065	405
purchased unbleached pulp	ADt	750	0.320	240
own unbleached pulp	ADt	504		
processed recycled fibre	ADt	222	0.746	165
Chemicals total				87
rosin size	kg	9.00	5.0	45
neutral size	kg	10.00		0
alum	kg	0.34	15.0	5
starch	kg	1.80	5.0	9
colour	kg	9.00	3.0	27
other chemicals				1
Heat total	GJ			50
steam to process	GJ	5.0	8.5	42
steam to bp power	GJ	5.0	1.4	7
Electric power total	kWh		850	50
purchased or condensing pow	kWh	0.10	496	50
bp power generation	kWh		354	
Other costs total				28
fresh water	m3	0.038	50	2
effluent treatment	m3	0.19	50	10
operation materials				10
packaging materials				7
Variable costs total, testliner from purchased kraft pulp				619

Variable Production Costs

Fluting of recycled fibre

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Raw materials total	ADt		1.060	235
processed recycled fibre	ADt	222	1.060	235
Chemicals total				19
starch	kg	1.8	10	18
other				1
Heat total	GJ		9.3	47
steam to process	GJ	5.0	8.0	40
steam to bp power	GJ	5.0	1.3	7
Electric power total	kWh		800	47
purchased or condensing pow	kWh	0.10	467	47
bp power generation	kWh		333	
Other costs total				28
fresh water	m3	0.038	50	2
effluent treatment	m3	0.19	50	10
operation materials				10
packaging materials				7
Variable costs total, fluting from recycled fibre				375

Variable Production Costs and Sales Margin

Schrenz

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Raw materials total	ADt		1.065	236
processed recycled fibre	ADt	222	1.065	236
Chemicals total				40
rosin size	kg	9.00	4.0	36
neutral size	kg	10.00		0
alum	kg	0.34	10.0	3
starch	kg	1.80		0
other	kg			1
Heat total	GJ		9.3	47
steam to process	GJ	5.0	8.0	40
steam to bp power	GJ	5.0	1.3	7
Electric power total	kWh		800	47
purchased or condensing pow	kWh	0.10	467	47
bp power generation	kWh		333	
Other costs total				28
fresh water	m3	0.038	50	1.9
effluent treatment	m3	0.19	50	9.5
operation materials				10
packaging materials				7
Variable costs total, schrenz				398
Sales price, mill net				352
Sales margin				-46

Variable Production Costs and Sales Margin

Semichemical fluting

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Raw materials total	ADt		1.065	212
Semichemical pulp excl.debar	ADt	209		
Semichemical pulp incl.debari	ADt	199	1.065	212
processed recycled fibre	ADt	222	0.000	0
Chemicals total				5
starch	kg			
other				5
Heat total	GJ		8.8	44
steam to process	GJ	5.0	7.5	37
steam to bp power	GJ	5.0	1.3	6
Electric power total	kWh		750	44
purchased or condensing pow	kWh	0.10	438	44
bp power generation	kWh		313	
Other costs total				28
fresh water	m3	0.038	50	2
effluent treatment	m3	0.19	50	10
operation materials				10
packaging materials				7
Variable costs total, semichem. fluting excl. debarking				121
Variable costs total, semichem. fluting incl. debarking				333
Sales price, mill net				672
Sales margin, excl. debarking				551
Sales margin, incl. debarking				339

Variable Production Costs and Sales Margin

Sack paper

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Raw materials total	ADt		1.060	535
Own unbleached pulp	ADt	504	1.060	535
Chemicals total				66
rosin size	kg	9.00	4.0	36
neutral size	kg	10.00		0
alum	kg	0.34	15.0	5
starch	kg	1.80	4.0	7
silicon	kg	5.00	0.4	2
wet strength agent	kg	6.00	2.5	15
other				1
Heat total	GJ		10.5	52
steam to process	GJ	5.0	9.0	45
steam to bp power	GJ	5.0	1.5	7
Electric power total	kWh		1200	83
purchased or condensing pow	kWh	0.10	825	83
bp power generation	kWh		375	
Other costs total				36
fresh water	m3	0.038	50	2
effluent treatment	m3	0.19	50	10
operation materials				10
packaging materials				15
Variable costs total, sack paper, own kraft pulp				772
Sales price, mill net				1090
Sales margin, sack paper				318

Variable Production Costs and Sales Margin

MG paper

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Raw materials total	ADt		1 060	795
purchased kraft pulp	ADt	750	1 060	795
own kraft pulp	ADt	504		
Chemicals total				49
rosin size	kg	9.00	4.0	36
neutral size	kg	10.00		0
alum	kg	0.34	15	5
starch	kg	1.80	4.0	7
other				1
Heat total	GJ		10.5	52
steam to process	GJ	5.0	9.0	45
steam to bp power	GJ	5.0	1.5	7
Electric power total	kWh		900	53
purchased or condensing pow	kWh	0.10	525	53
bp power generation	kWh		375	
Other costs total				41
fresh water	m3	0.038	50	2
effluent treatment	m3	0.19	50	10
operation materials				10
packaging materials				20
Variable costs total, MG paper, purchased kraft pulp				991
Variable costs total, MG paper, own kraft pulp				730
Sales price, mill net				1150
Sales margin, MG paper, purchased kraft pulp				159
Sales margin, MG paper, own kraft pulp				420

Variable Production Costs and Sales Margin

Corrugated board and boxes, recycled fibre, scrhenz, purch.testliner
Year 2

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Raw materials total	t		1.060	478
testliner from purch. kraft pulp	t	619	0.329	203
fluting from recycled fibre	t	375	0.366	137
schrenz	t	398	0.366	145
testliner, purchased	t	720		0
semichem. fluting	t	333		0
credit for broke	t	135	-0.060	-8
Chemicals total				59
starch	kg	1.03	30	31
glue	kg	3.79	0.64	2
printing colour	kg	10	1.9	19
other chemicals				7
Heat, as steam, 11 bar	GJ	5.0	1.5	7
Electric power	kWh	0.10	182	18
Other costs total				40
operating materials				20
other				20
Variable costs of board and boxes, rec. fibre and purchased kraft pulp total				603
Sales price				1320
Sales margin of corr. board and boxes, rec. fibre and purchased kraft pulp				717

Variable Production Costs and Sales Margin

Corrugated board and boxes, semich fluting, purchased testliner, schrenz from PM2

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Raw materials total	t		1.176	428
testliner, purchased	t	720	0.365	262
schrenz	t	398	0.329	131
semichem. fluting, excl debark	t	121	0.482	58
semichem. fluting, incl debark	t	333		0
credit for broke	t	135	-0.176	-24
Chemicals total				59
starch	kg	1.03	30.0	31
glue	kg	3.79	0.64	2
printing colour	kg	10.00	1.9	19
other chemicals				7
Heat, as steam, 11 bar	GJ	5.0	1.3	6
Electric power	kWh	0.10	96	10
Other costs total				40
operating materials				20
other				20
Variable costs of board and boxes, semich.fluting excl. debarking, testliner and schrenz				543
Variable costs of board and boxes, semich.fluting incl. debarking, testliner and schrenz				646
Sales price incl. schrenz from PM2				1505
Sales margin of board and boxes, semich.fluting excl. debarking, testliner and schrenz				962
Sales margin of board and boxes, semich.fluting incl. debarking, testliner and schrenz				859

Variable Production Costs and Sales Margin

Corrugated board and boxes, semichem. fluting and purchased testliner

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Raw materials total	t		1.176	520
testliner, purchased	t	720	0.670	483
schrenz	t	398		0
semichem. fluting, excl debark	t	121	0.506	61
semichem. fluting, incl debark	t	333		0
credit for broke	t	135	-0.176	-24
Chemicals total				59
starch	kg	1.03	30	31
glue	kg	3.79	0.64	2
printing colour	kg	10.00	1.9	19
other chemicals				7
Heat, as steam, 11 bar	GJ	5.0	1.3	6
Electric power	kWh	0.10	96	10
Other costs total				40
operating materials				20
other				20
Variable costs of board and boxes, semich. fluting excl. debarking, testliner excl. schrenz				635
Variable costs of board and boxes, semich. fluting incl. debarking, testliner excl. schrenz				743
Sales price ex. schrenz				1620
Sales margin of board and boxes, semich.fluting excl. debarking, testliner excl. schrenz				985
Sales margin of board and boxes, semich.fluting incl. debarking, testliner excl. schrenz				877

Variable Production Costs and Sales Margin

Sacks

	Unit	Unit price DM/unit	Unit consumpt. units/t	Unit cost DM/t
Paper	t		1.020	1398
purchased paper	t	1400	1.000	1400
own pulp, own paper	t	772		
credit for broke	t	120	-0.020	-2
Chemicals				34
glue	kg	1.03	27.5	28
printing colour	kg	10.00	0.52	5
other chemicals				
Heat	GJ	5.0	0.5	2
Electric power	kWh	0.10	104	10
Other costs				10
operating materials				10
other				
Variable costs, purchased paper total				1454
Variable costs, own pulp, own paper total				826
Sales price, mill net				1720
Sales margin, sacks of purchased paper				266
Sales margin, sacks of own pulp, own paper				894

TABLE 8-1
Variable costs of pulp

	Recycled fibre	Unbleached kraft pulp	Semi-chemical pulp, excl. debarking	Semi-chemical pulp, incl. debarking
	DM/ADt	DM/ADt	DM/ADt	DM/ADt
Raw materials	169	403	115	115
Chemicals	0	44	31	28
Purchased fuels	0	3	11	4
Purchased power	26	33	36	36
Other variable costs	27	21	16	16
	222	504	209	199

TABLE 8-2
Variable costs of corrugated board materials

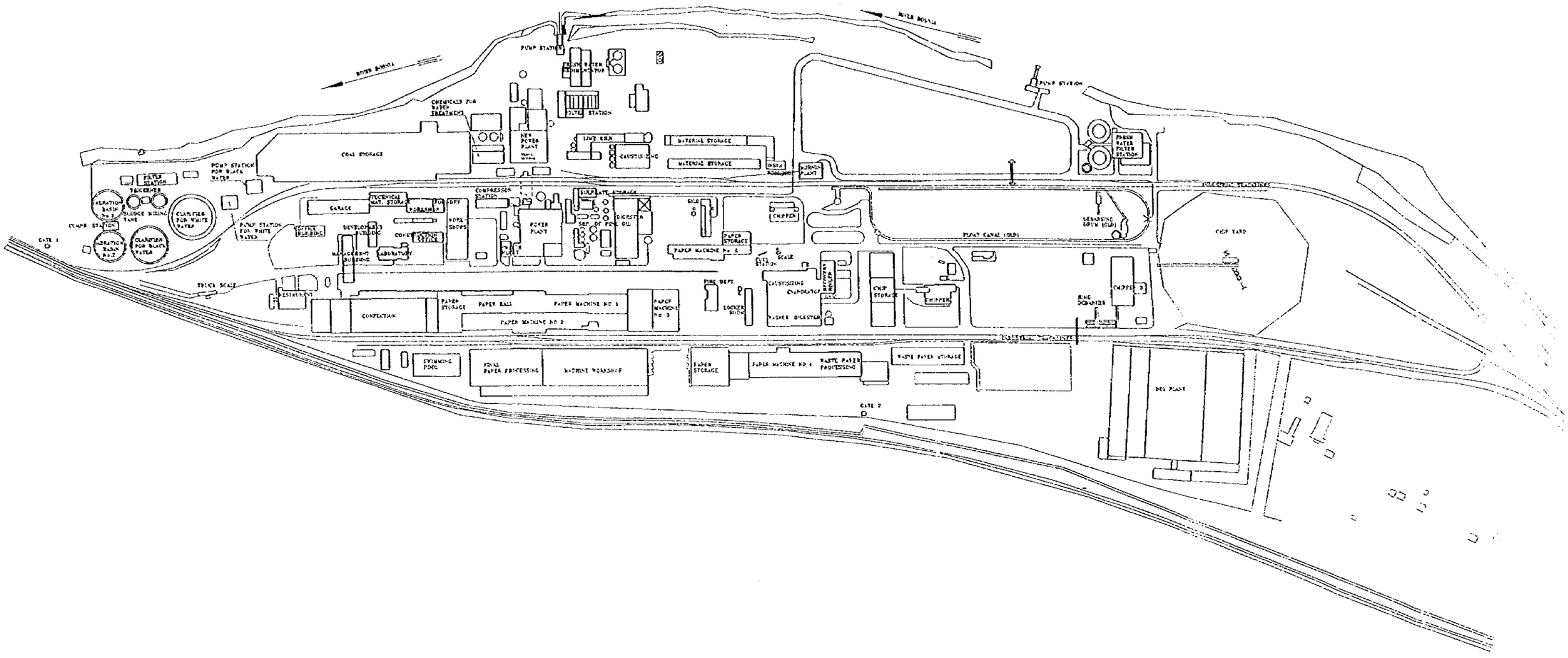
	Testliner	Fluting of recycled fibre	Schrenz	Semichem. fluting, excl. debarking	Semichem. fluting, incl. debarking
	DM/t	DM/t	DM/t	DM/t	DM/t
Pulp (variable costs)	405	235	236	0	212
Chemicals	87	19	40	5	5
Purchased fuels	50	47	47	44	44
Purchased power	50	47	47	44	44
Other variable costs	28	28	26	28	28
Total	619	375	398	121	333

TABLE 8-3
Variable costs of sack paper and MG paper

	Sack paper	MG paper, purch. pulp	MG paper, own. pulp
	DM/t	DM/t	DM/t
Pulp (variable costs)	535	795	535
Chemicals	66	49	49
Purchased fuels	52	52	52
Purchased power	83	53	53
Other variable costs	36	41	41
Total	772	991	730

TABLE 8-4
Variable costs of converted products

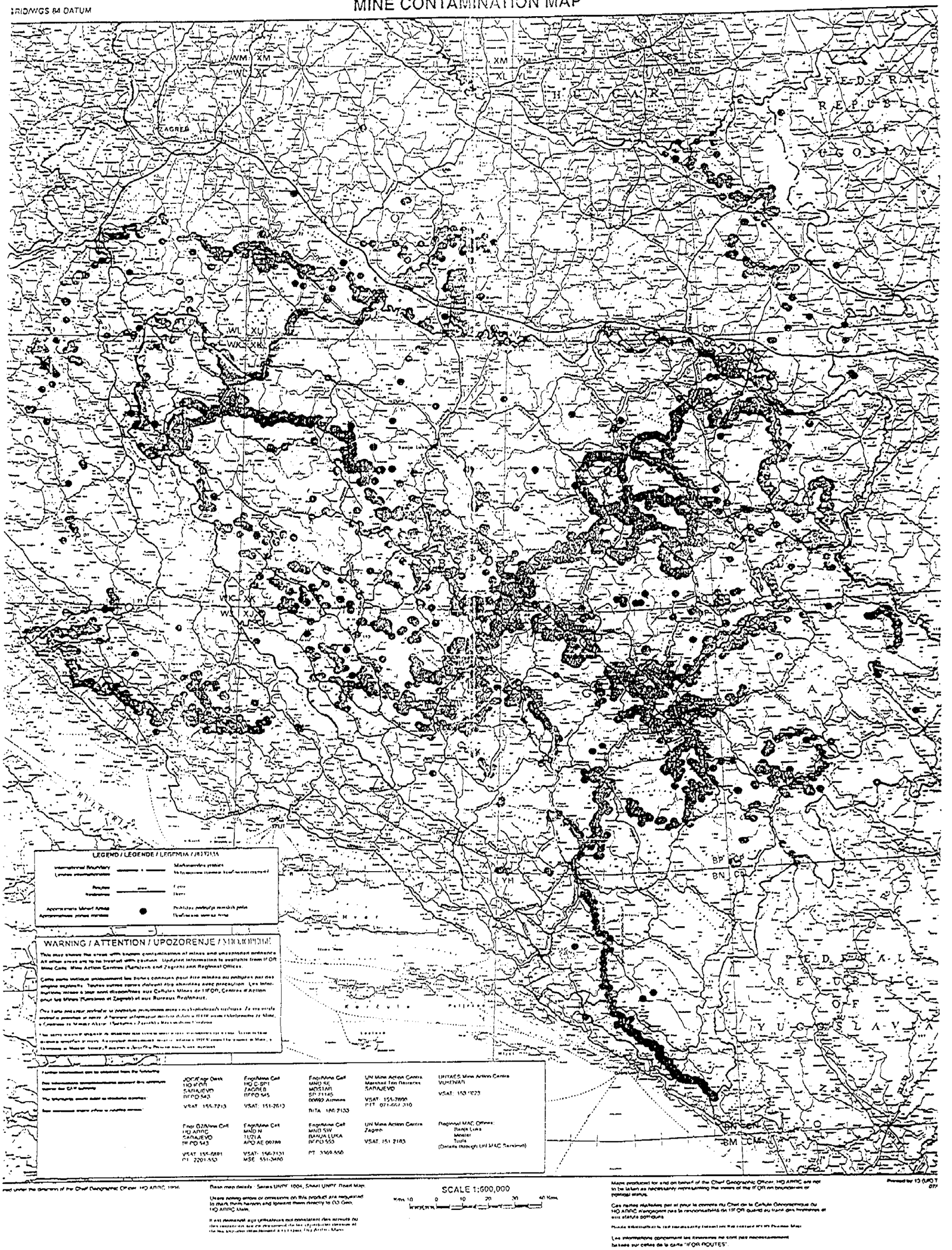
	Corr. board recovered fibre	Corr. board virgin fibre	Corr. board schrenz + virgin fibre	Sacks, purch. paper	Sacks, own paper
	DM/t	DM/t	DM/t	DM/t	DM/t
Paper (variable costs)	478	520	428	1398	770
Chemicals	59	59	59	34	34
Purchased fuels	7	6	6	2	2
Purchased power	18	10	10	10	10
Other variable costs	40	40	40	10	10
Total	603	635	543	1454	826


RIVER ANGSA
PUMP STATION
RIVER ANGSA
CHEMICALS FOR WATER TREATMENT
FILTER STATION
PUMP STATION
COAL STORAGE
NEW POWER PLANT
LIME KILN
CAUSTICIZING
MATERIAL STORAGE
MATERIAL STORAGE
OIL STORAGE
TURBINE PLANT
FRESH WATER FILTER STATION
PUMP STATION FOR BLACK WATER
PUMP STATION FOR WHITE WATER
THICKENER
AERATION BASIN No 2
SLUDGE SETTLING TANK
CLARIFIER FOR WHITE WATER
AERATION BASIN No 1
CLARIFIER FOR BLACK WATER
OFFICE BUILDING
GARAGE
TECHNICAL MAT. STORAGE
FOREMAN
DEPOT
WORK SHOPS
DEVELOPMENT BUILDING
CONFERENCE ROOM
MANAGEMENT BUILDING
LABORATORY
COMPRESSOR STATION
POWER PLANT
SULPHATE STORAGE
DEP OF FUEL OIL
DIGESTER
SILO
CHIPPER
PAPER STORAGE
PAPER MACHINE No 6
EVAPORATION STATION
PLANT CANAL (OLD)
DEBARKING DRUM (OLD)
CHIP YARD
GATE 1
TRUCK SCALE
RESTAURANT
COMPETATION
PAPER STORAGE
PAPER BALE
PAPER MACHINE NO 3
PAPER MACHINE No 5
PAPER MACHINE NO 2
FIRE DEPT.
LOCKER ROOM
CAUSTICIZING EVAPORATOR
RECOVERY BOILER
WASHER DIGESTER
CHIP STORAGE
CHIPPER
RING DEBARKER
CHIPPER 3
SWIMMING POOL
FINAL PAPER PROCESSING
MACHINE WORKSHOP
PAPER STORAGE
PAPER MACHINE NO 4
WASTE PAPER PROCESSING
WASTE PAPER STORAGE
BOX PLANT
GATE 2

GRID/WGS 84 DATUM

MINE CONTAMINATION MAP

AS AT: 25 JUNE



MAGENTA SHADING REPRESENTS APPROXIMATE MINED AREAS
TO DATE ONLY 50% OF MINED AREAS HAVE BEEN IDENTIFIED

LES ZONES DE COULEUR MAGENTA REPRÉSENTENT APPROXIMATIVEMENT LES ZONES MINÉES
A CE JOUR, SEULEMENT 50% DES ZONES MINÉES ONT ÉTÉ IDENTIFIÉES

RUZICASTO OSJENJENE POVRSINE PRIBLIZNO PREDSTAVLJAJU MINSKA PODRUCJA
SAMO 50% MINSKIH PODRUCJA JE IDENTIFIKOVANO DO DANAS

РУЖИЧАСТО ОСЕЊЕНЕ ПОВРШИНЕ ПРИБЛИЗНО ПРЕДСТАВЉАЈУ МИНСКА ПОДРУЧЈА
САМО 50% МИНСКИХ ПОДРУЧЈА ЈЕ ИДЕНТИФИКОВАНО ДО ДАНАС