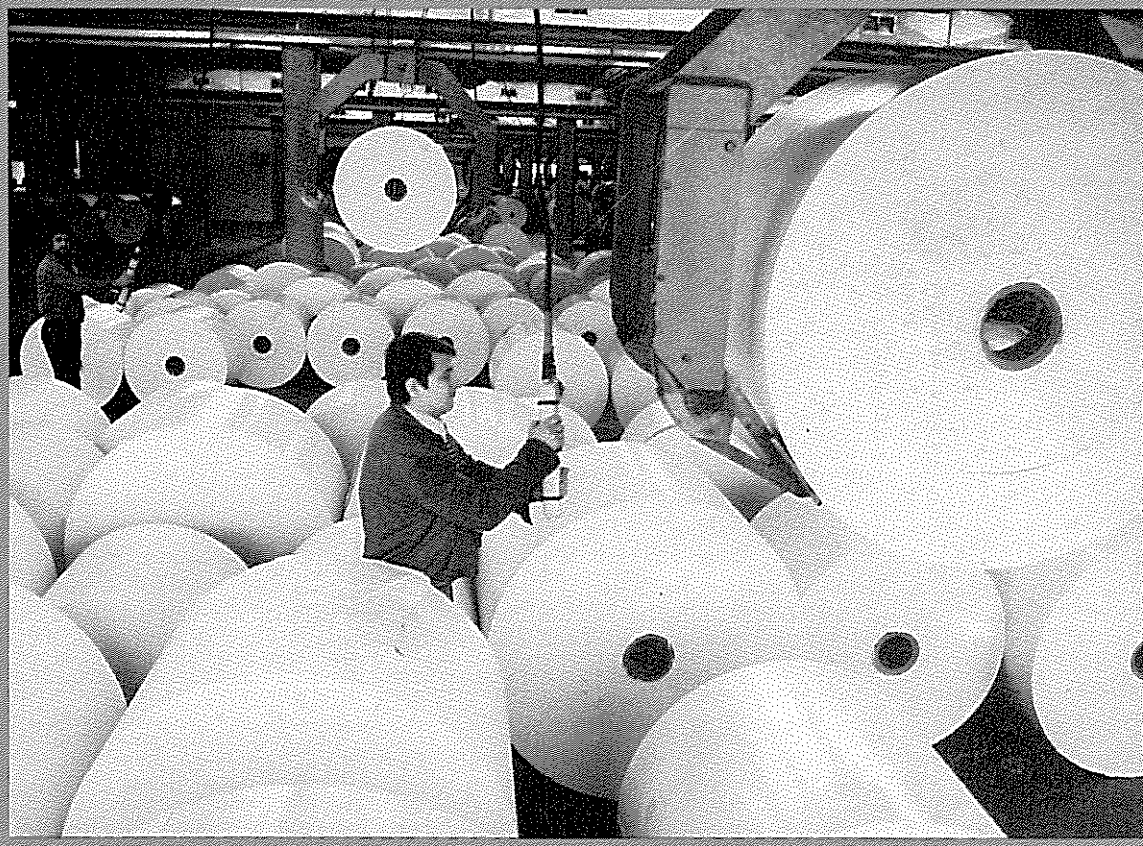
FAO FORESTRY PAPER 4/2

world pulp and paper demand, supply and trade - 2



FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS ROME

FAO FORESTRY PAPER 4/2

world pulp and paper demand, supply and trade

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FOREWORD

This volume contains FAO World Pulp and Paper Consumption Outlook:

Phase II - World Outlook for Regional Self-Sufficiency and Fibre Furnish and

Phase III - World Outlook for White Chemical Pulp

both of which were prepared by an Industry Working Party at the request of the FAO Advisory Committee on Pulp and Paper.

The first part of the study, "World Paper and Paperboard Consumption Outlook" is contained in FAO Forest Paper 4/1 "World Pulp and Paper Demand, Supply and Trade".

TABLE OF CONTENTS

FAO WORLD PULP AND PAPER CONSUMPTION OUTLOOK

PHASE II

WORLD PAPER AND PAPERBOARD OUTLOOK FOR REGIONAL SELF-SUFFICIENCY AND FIBRE FURNISH

Table of Contents

LIST OF TABLES AND CHARTS

*includes tables and charts

/...

*includes tables and charts

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*includes tables and charts

1.0 INTRODUCTION

1.1 SUMMARY

Phase II of the World Consumption Outlook for Paper and Paperboard contains an outlook for regional self-sufficiency in paper and paperboard plus a projection for the world's changing fiber furnish mix. It provides a series of tables and charts for the six regions analyzed showing historical data for the 1972/74 base period plus projections for 1980 and 1990. Supplemental tables are also provided for the 15 subregions analyzed to develop the regional outlooks presented in this report.

Self-sufficiency as analyzed in this report relates to a region's production relative to its consumption. Regions with less than 100% self-sufficiency have a negative trade balance i.e. they are net importers. In general, the report foresees no major change in the overall self-sufficiency of the world's six regions except for Latin America. The share of paper and paperboard consumed within Latin America is expected to rise from 74% in 1972/74 to 90% in 1990. Changes projected for the self-sufficiency of the other five regions are expected to be nominal.

The world's consumption of chemical pulp as a share of the world's furnish is expected to decline markedly during that same period. Compared with 50.4% of the 106.9% furnish input in 1972/74, Table 2.1 shows that chemical pulp's share is projected to decline to 44.6% of 1990's 106.4% furnish input. White chemical pulp is expected to experience the greatest impact of substitute fibers. Although total consumption is projected to rise from 44 to 67 million tons, its percent of furnish input should decline from 29.8% in 1972/74 to 26.2% in 1990. Waste fibers are expected to be the greatest substitution factor. Their percentage of furnish input for that period is projected to rise from 24.7% to 28.8%.

1.2 BACKGROUND

This report to the FAO Pulp and Paper Advisory Committee is the second part of a three phase study by industry for FAO. It covers expected changes in the inter-regional trade of paper and paperboard,and it includes an outlook for the fiber furnish which will be used in paper and paperboard production. The potential shifts in inter-regional trade and fiber furnish presented in this report are based on the consumption outlook developed for Phase I of the study. This outlook was reported to FAO in May, 1977 in the Phase I document, World Outlook for Paper and Paperboard. Readers are directed to that report for specific details associated with the study's product, regions, approach, methodology and review mechanism.

1.3 APPROACH

To effect Phase II of the study, the Working Party examined the forces affecting self-sufficiency and fiber furnish for each product and region. It then prepared a preliminary outlook for evaluation by the same Review Panel which responded to Phase I. Panel members were provided with preliminary charts and tables which are similar to those included in this report. The Review Panel returned approximately 400 "green sheets" which the Working Party used for developing its Phase II outlook.

1.4 HISTORICAL DATA BASE

The historical data base used for Phase II has been developed by the Working Party using its best judgment about regional conditions. The 1972/74 statistics for inter-regional trade should have a high level of accuracy. They are obtained from FAO's 1974 Yearbook of Forest Products.

The fiber furnish statistics, however, are not based on a comparable series of statistics. FAO does not currently produce reports of fiber furnish by product. For fillers and pigments, in fact, it makes no reports at all. Consequently, the Working Party has had to create its own estimate of historical fiber furnish relationships. It has reviewed the total furnish estimated to be consumed within a region and then assigned the total to each of the three product groups. The fiber furnish data for 1972/74, presented in this report, therefore, represent the Working Party's best judgment about relative furnish components by product and region, but there are no known global statistics available to validate the Working Party's estimates.

1.5 STATISTICAL TABLES AND CHARTS

The Working Party's conclusions are presented in a detailed series of tables and charts for the products and subregions analyzed. Each table is divided into two sections to show the regional self-sufficiency and fiber furnish. The top section of each table shows the self-sufficiency details which are discussed first in the text. The bottom section displays the fiber furnish statistics which are discussed after the net trade outlook is covered for all products.

The fiber furnish percentages on the tables are different from the related percentages on the accompanying charts. The percentages on the tables show the estimated total furnish input per air dry ton of product produced. Because of production losses, the furnish percents shown on the tables exceed 100% of the product produced. The furnish percents on the charts have a different relationship. They show the estimated percent of furnish in the product produced. Consequently, the furnish percents shown on the charts equal 100% (except for rounding or quantities too small to chart).

1.6 RESPONSIBILITY FOR OUTLOOK PRESENTED

This final report represents the Working Party's consensus about regional self-sufficiency and fiber furnish after evaluating the Review Panel's responses. In many cases, the Review Panel's views were sufficiently similar to the Working Party's preliminary outlook that no change was made from the original proposal. In some cases, however, there was substantial disagreement with the Working Party's preliminary outlook. Some of the dissenting replies were particularly thoughtful, providing strong documentation for their contrary views. In deciding on its final position, the Working Party gave particular weight to the responses providing such detailed analysis or from companies operating principally in the region in question.

Thus this final product of the Working Party's deliberations represents a synthesis of industry judgment about data and trends which are in many cases unavailable or uncertain. Although heavily influenced by the Review Panel's replies, it is the Working Party which is responsible for the final outlook presented in this report. The Working Party gratefully acknowledges the supplemental support of English China Clays, Finnboard and Papeteries de Condat in developing the Phase II outlook. Members of the Working Party participating in the preparation of Phase II are listed in Appendix I.

2.0 WORLD OUTLOOK

2.1 SELF-SUFFICIENCY

2.1.1 Total Paper and Paperboard

The world's regional self-sufficiency for total paper and paperboard is expected to show little change between 1972/74 and 1990. Except for Japan, the net exporting regions of 1972/74 are projected to maintain their net exporting posture. The net importing regions are expected to remain dependent on imports. Of the world's 146 million metric tons paper and paperboard consumed in 1972/74, only 4.5 million net tons were shipped from surplus to deficit regions. The comparable figures estimated for 1990 are 256 million and 7.9 million tons respectively. Thus the total self-sufficiency of the world regions which have a net deficit of total paper and paperboard is expected to change only minimally from 97.0% to 96.9% between 1972/74 and 1990.

2.1.2 Newsprint

The outlook for newsprint, however, shows that the pattern of self-sufficiency by major grade is expected to be quite different. Newsprint's net interregional trade is expected to decline from 7.2% of consumption in 1972/74 to 4.3% in 1990. Net imports are projected to fall from 1.6 million tons in 1972/74 to 1.4 million tons in 1990 despite a consumption rise from 22.4 to 32.9 million tons. In general, newsprint self-sufficiency is expected to improve for the developed market economies and the developing nations Japan and the Centrally Planned Economies, however, are expected to show a very nominal reduction in their newsprint self-sufficiency.

2.1.3 Printing and Writing Paper

Despite a nominal increase in the total net trade of printing and writing paper between the world's six regions, self-sufficiency for the deficit regions is expected to improve. Both Latin America and the Other Eastern Hemisphere regions are projected to increase their self-sufficiency markedly during the 1972/74-90 period. Latin America is expected to show a self-sufficiency gain from 81% to 89% and the Other Eastern Hemisphere is projected to increase from 70% to 74%. The other four regions are projected to remain self-sufficient in printing and writing paper through 1990, although except for North America, net exports are anticipated to become a small share of total production.

2.1.4 Other Paper and Paperboard

The self-sufficiency pattern anticipated for other paper and paperboard products is again somewhat different. Self-sufficiency is expected to improve for Latin America in 1972/74 to 1990 from 84% to 96% but to decline in the Other Eastern Hemisphere region from 70% to 65% This deterioration arises from an anticipated rapid growth in the

2.1.4 Other Paper and Paperboard (continued)

increase in supply. Japan is expected to swing slightly from being a net exporter to a net importer during that period. Western Europe and the Centrally Planned Economies are projected to remain self-sufficient through 1990 but with lower net export levels than prevalent in the 1972/74 period. North America is expected to take up the slack, increasing net exports from 107% to 109% of production between 1972/74 and 1990.

2.2 FIBER FURNISH

2.2.1 Total Paper and Paperboard

During the 1972/74-90 period, the world's fiber furnish is projected gradually to shift away from chemical pulp grades, primarily into waste fiber. Table 2.1 shows unbleached kraft pulp as projected to decline from 20.6% to 18.4% of the percent furnish input while chemical white pulps drop from 29.8% to 26.2%. During the same period, the waste fiber component of furnish input is expected to rise from 24.7% to 28.8%. Despite their increased importance in the furnish of grades other than newsprint, no increase is anticipated for the total share of mechanical/semi-chemical pulp grades. Non-wood fibers and fillers and pigments are expected to increase their participation as components of the world's furnish only marginally.

Chart 2.1 shows the expected change in furnish quantity and percent from 1972/74 to 1990. Readers are reminded that the percents shown on the chart add to 100% whereas the percents shown in the tables total to more than 100% (see section 1.5).

2.2.2 Newsprint

The world's newsprint producers are expected gradually to increase their utilization of waste and non-wood fibers and to decrease the consumption of white pulp. Table 2.2.2 shows that between 1972/74 and 1990 the utilization of waste and non-wood fibers is projected to rise from 3.9% to 7.7% and from 0.2% to 1.4% of furnish respectively. During that same period white pulp's share of the furnish input is expected to decline from 23.9% to 19.1%. There is no change anticipated in the share of mechanical/semi-chemical pulp despite the expected benefits of TMP. This surprising result arises because waste and non-wood fibers are effectively displacing groundwood as the low cost furnish in some regions. This information is depicted graphically in chart 2.2.2.

2.2.3 Printing and Writing Paper

Mechanical/semi-chemical pulps are, however, expected to gain share in the printing and writing paper category. Table 2.2.3 shows that white pulp in this product group is projected to decline from 61.9% to 57.4% of total furnish in the 1972/74-90 period. In addition to the increased input of mechanical/semi-chemical pulps from 19.7% to 21.5%, waste and non-wood fibers are both expected to have a higher participation in printing and writing paper furnish. Their shares increase from 4.7% to 6.0% and from 3.7% to 4.4% respectively. The Working Party's outlook for the world's printing and writing paper furnish is shown in chart 2.2.3.

2.2.4 Other Paper and Paperboard

Chemical pulp grades are anticipated to experience a significant loss of fiber furnish share between 1972/74 and 1990 in the other paper and paperboard category. This represents a decline from 52.7% of the 107% furnish input in 1972/74 to 45.2% of the 106% furnish input of 1990. All low cost substitute grades are expected to increase their participation as emerging technologies permit a higher level of lower quality grades in the fiber furnish. Some of the expected substitution will be effected by mechanical/semi-chemical pulp, non-wood fibers and fillers and pigments. The major substitute quality is expected, however, to be waste fiber which is projected to rise from 36.9% to 40.9% of total furnish input between 1972/74 and 1990. Comparable information showing the expected percent of total furnish projected for each component is displayed in chart 2.2.4.

Table 2.1

WORLD

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	146947	179755	255820
Net Trade [Import, (Export)]	(1054)	-	-
Apparent Consumption	145893	179755	255820
Self-Sufficiency Percent*	101%	100%	100%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	33023	39897	57676
Unbleached Kraft	30280	35582	47055
White Chemical Pulp**	43845	51473	67087
Waste Fiber	36359	48235	73583
Non-Wood Fibers	6921	8113	13299
Fillers/Pigments	6850	8794	13365
Total Furnish	157278	192094	272065
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	22.5	22.2	22.6
Unbleached Kraft	20.6	19.8	18.4
White Chemical Pulp	29.8	28.6	26.2
Waste Fiber	24.7	26.9	28.8
Non-Wood Fibers	4.7	4.5	5.2
Fillers/Pigments	4.7	4.9	5.2
Total Furnish Percent Input	107.0%	106.9%	106.4%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 2.1

WORLD

Total Paper and Paperboard

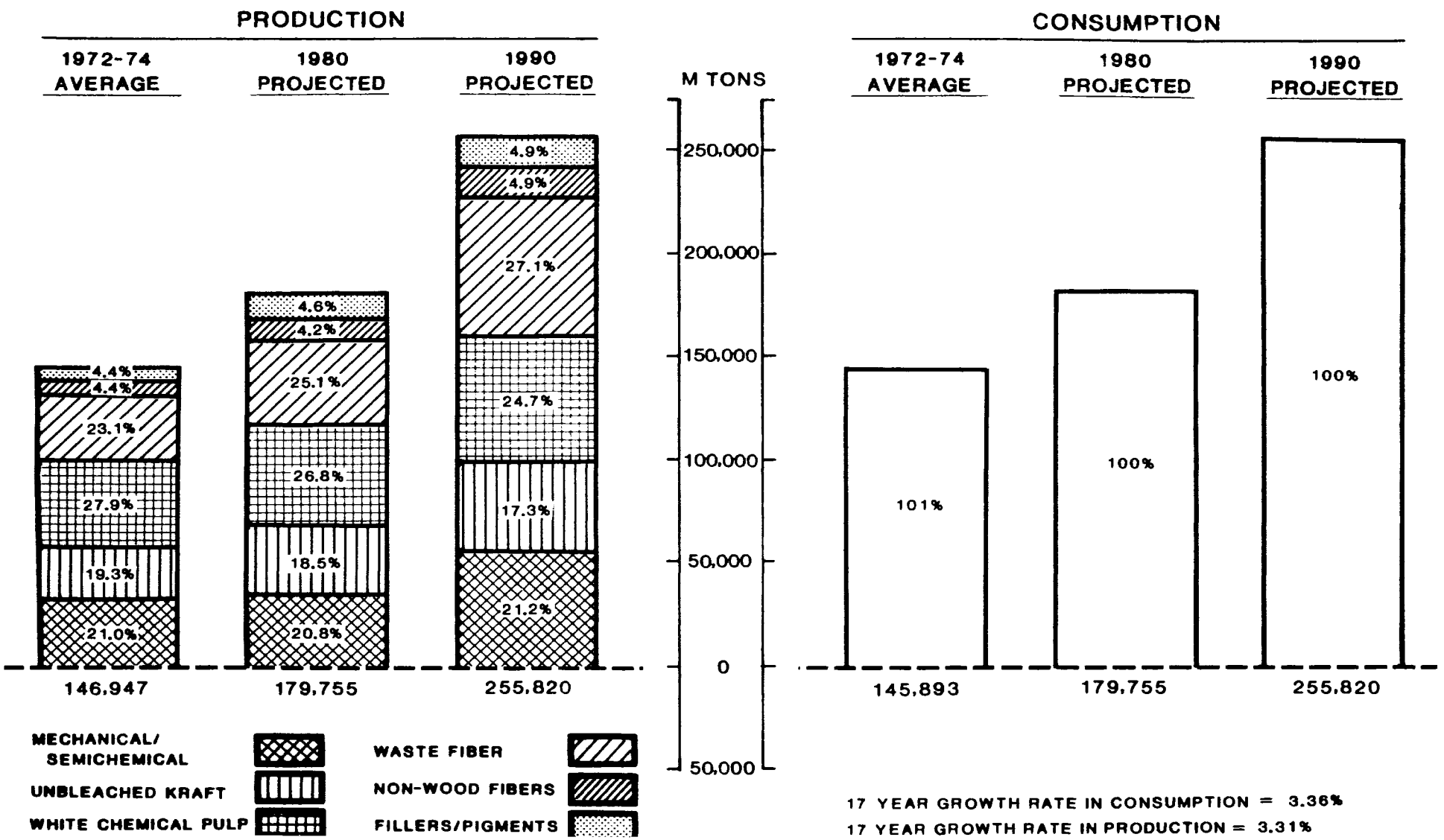


Table 2.2.2

WORLD

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	22448	25848	32927
Net Trade [Import, (Export)]	351	-	-
Apparent Consumption	22799	25848	32927
Self-Sufficiency Percent*	99%	100%	100%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	16950	19476	24906
Unbleached Kraft	29	9	15
White Chemical Pulp**	5366	5520	6291
Waste Fiber	869	1638	2529
Non-Wood Fibers	45	158	459
Fillers/Pigments	116	129	183
Total Furnish	23375	26930	34383
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	75.5	75.4	75.6
Unbleached Kraft	0.1		
White Chemical Pulp	23.9	21.4	19.1
Waste Fiber	3.9	6.3	7.7
Non-Wood Fibers	0.2	0.6	1.4
Fillers/Pigments	0.5	0.5	0.6
Total Furnish Percent Input	104.1%	104.2%	104.4%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 2.2.2

WORLD

Newsprint

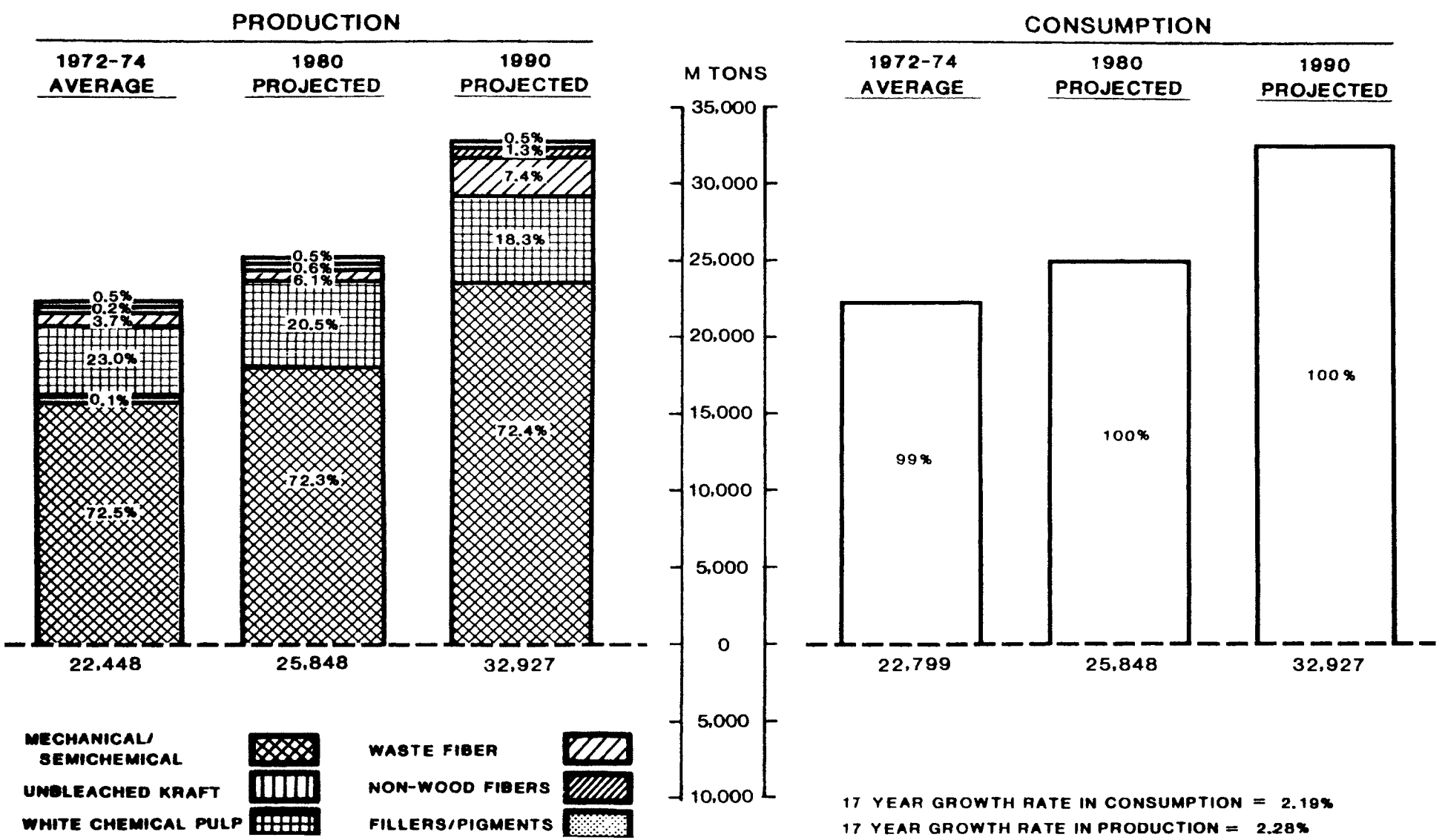


Table 2.2.3

WORLD

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	32438	40747	57777
Net Trade [Import, (Export)]	(753)	-	-
Apparent Consumption	31685	40747	57777
Self-Sufficiency Percent*	99%	100%	100%

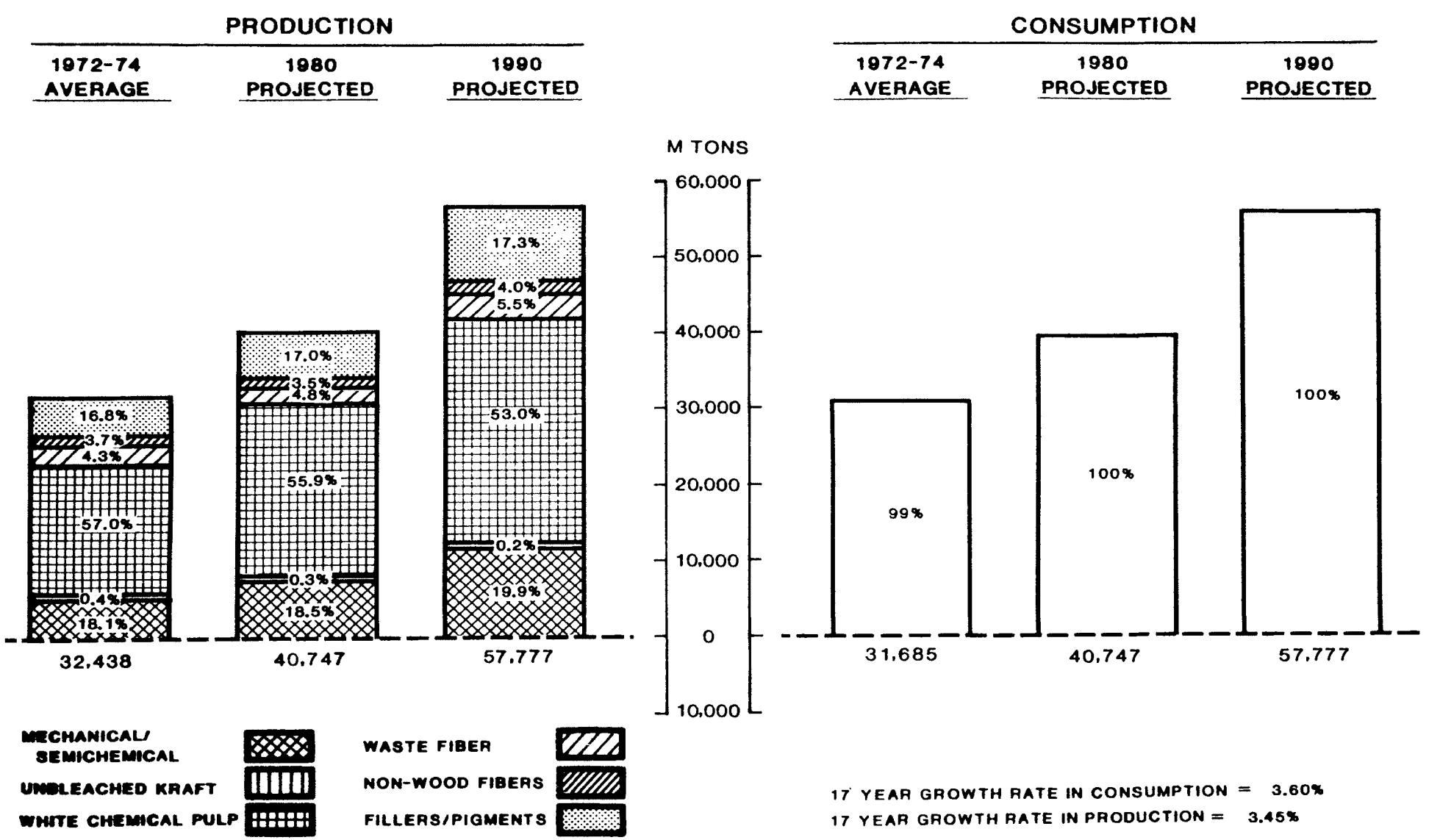
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	6374	8153	12401
Unbleached Kraft	132	140	150
White Chemical Pulp**	20080	24626	33076
Waste Fiber	1519	2123	3450
Non-Wood Fibers	1208	1540	2519
Fillers/Pigments	5888	7508	10824
Total Furnish	35201	44090	62420
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	19.7	20.0	21.5
Unbleached Kraft	0.4	0.3	0.3
White Chemical Pulp	61.9	60.4	57.4
Waste Fiber	4.7	5.2	6.0
Non-Wood Fibers	3.7	3.8	4.4
Fillers/Pigments	18.2	18.4	18.8
Total Furnish Percent Input	108.5%	108.2%	108.2%

* Production ÷ Consumption
** Includes Unbleached Sulfite

CHART 2.2.3

WORLD

Printing and Writing Paper



17 YEAR GROWTH RATE IN CONSUMPTION = 3.60%

17 YEAR GROWTH RATE IN PRODUCTION = 3.45%

Table 2.2.4

WORLD

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	92061	113160	165116
Net Trade [Import, (Export)]	(652)	-	-
Apparent Consumption	91409	113160	165116
Self-Sufficiency Percent*	101%	100%	100%

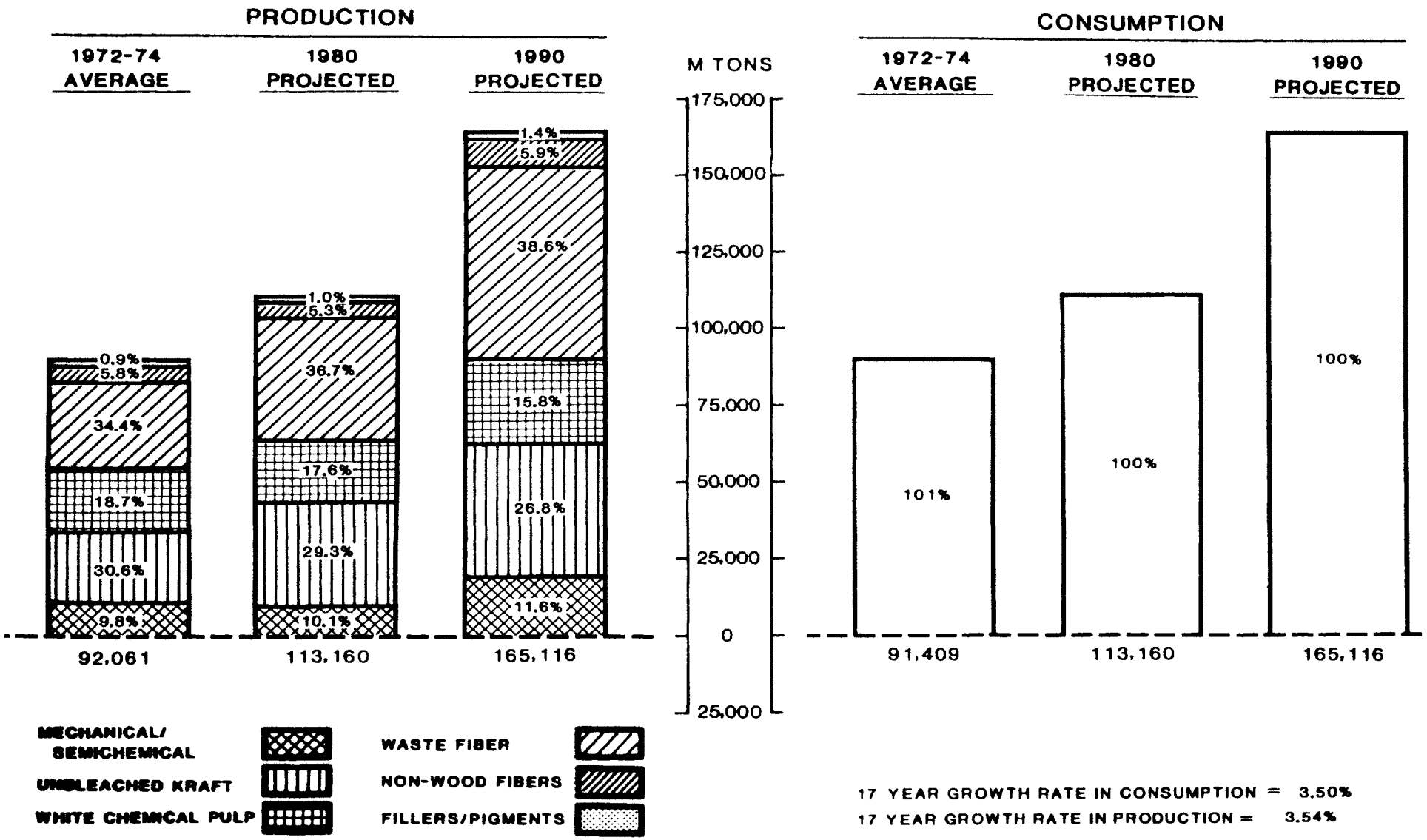
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	9699	12268	20369
Unbleached Kraft	30119	35433	46890
White Chemical Pulp**	18399	21327	27720
Waste Fiber	33971	44474	67604
Non-Wood Fibers	5668	6415	10321
Fillers/Pigments	846	1157	2358
Total Furnish	98702	121074	175262
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	10.5	10.8	12.3
Unbleached Kraft	32.7	31.3	28.4
White Chemical Pulp	20.0	18.8	16.8
Waste Fiber	36.9	39.3	40.9
Non-Wood Fibers	6.2	5.7	6.3
Fillers/Pigments	0.9	1.0	1.4
Total Furnish Percent Input	107.2%	107.0%	106.1%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 2.2.4

WORLD

Other Paper and Paperboard



17 YEAR GROWTH RATE IN CONSUMPTION = 3.50%

17 YEAR GROWTH RATE IN PRODUCTION = 3.54%

3.0 NORTH AMERICA

3.1 SELF-SUFFICIENCY

3.1.1 Total Paper and Paperboard

Production of total paper and paperboard during the 1972/74-90 period is projected to grow at an annual rate of 2.6%. This is only 0.1% higher than the expected consumption growth rate of 2.5%. Nonetheless, exports are expected to almost double, rising from 4.1 to 7.8 million tons between 1972/74 and 1990. Self-sufficiency is projected to increase from 107% to 108% during that 17-year period.

3.1.2 Newsprint

Exports of newsprint from North America are expected to rise from 1.1 to 1.4 million tons between 1972/74 and 1990. This growth in exports roughly parallels total production which is expected to rise from 11.4 to 14.0 million tons. Thus the region's self-sufficiency is expected to remain unchanged at 111% of consumption between 1972/74 and 1990. (see Table 3.2.2)

The pattern of trade, between Canada and the United States, however, is expected to change. United States self-sufficiency is estimated to rise from 32% in 1972/74 to 42% in 1990. USA imports from Canada are expected to rise by only 200,000 tons while consumption is forecast to increase two million tons. Thus Canada's projected export growth of 500,000 tons will need to be disproportionately weighted toward offshore markets.

The Working Party modified its preliminary outlook in response to the Review Panel's views. The final outlook selected for the 1980-90 period projects modestly higher production levels for both Canada and the United States. Several panelists felt that Canada could continue to grow in overseas markets while United States producers added new mills in the U.S. South and West.

3.1.3 Printing and Writing Paper

Exports of printing and writing paper from North America in 1990 are expected to show little change from the 336,000 tons average level of the 1972/74 period. Table 3.2.3 shows that self-sufficiency within the region is only expected to grow from 103% to 104%. Both Canada and the United States should increase their level of net exports by 1990.

The Working Party changed its view of North America's export potential markedly as a result of the Review Panel's responses. Compared with a preliminary estimate of 1.2 million tons net exports, the Working Party's final outlook shows only 850,000 tons. This reduction arose to compensate for a higher projected level of exports from Western Europe.

3.1.3 Printing and Writing Paper (continued)

Some members of the Working Party doubt that Western Europe can continue as a net exporter of printing and writing paper throughout the decade of the 1980's. They foresee that commodity grades from the U.S. South will become a significant factor in the European scene by 1990. Nonetheless, the Working Party decided to adopt as its official position, a continuing net export position for European printing and writing papers in world markets throughout 1990.

3.1.4 Other Paper and Paperboard

North America is expected to maintain its position as the world's leading supply region for other paper and paperboard products. Table 3.2.4 shows that exports of these products are projected to more than double in the 1972/74-90 period, rising from 2.6 to 5.5 million tons. Regional self-sufficiency is expected to rise during that period from 107% to 109%. This results in an export growth of 4.4% per year.

The Working Party's view of North American exports is unchanged from the preliminary outlook. There is, however, a modest shift in the expected location of new facilities. The Review Panel cited facility shutdowns, resource scarity and changes in tariff barriers in suggesting that Canada's export potential was overstated. Thus the United States is now expected to grow somewhat faster than the Working Party proposed in its preliminary outlook while Canada is projected to grow at a slower pace.

3.2 FIBER FURNISH

3.2.1 Total Paper and Paperboard

North America's fiber furnish is expected to shift away from chemical pulp grades. Unbleached kraft is expected to decline from 27.7% of the region's furnish in 1972/74 to 24.2% in 1990. White chemical pulp is expected to decline from 31.8% to 26.2% during the same period. Offsetting this 9% reduction are projected increases in other furnish components primarily mechanical pulp and waste fiber. Table 3.1 shows the changes in furnish mix anticipated for the 1972/74-90 period.

The fiber furnish trends presented in this report are the expected natural result of economical and technological developments of the past decade. They do not anticipate the impact of an unexpected economic force or technological breakthrough. Specifically, they exclude the potential impact of a federally - sponsored tax incentive scheme for fostering increased waste fiber utilization. Should such a program be adopted, significantly higher levels of domestic waste fiber utilization would be anticipated.

3.2.2 Newsprint

The Working Party's forecast for increased use of mechanical pulp and waste fiber is shown in Table 3.2.2. White pulp consumption per ton of product produced is expected to decline from 24.9% in 1973 to 19.2% in 1990.

The greatest percentage white pulp decline within the region is in the United States. The USA's 1972/74 level of 23.2% is expected to drop to 17.0% by 1990. Waste fiber is expected to pick up the slack. In Canada a decline in white pulp's share from 25.5% to 20.4% is expected. Most of the substitution, however, is projected to be via thermomechanical pulp. Despite an increase in Canadian newsprint production of 750,000 tons between 1980 and 1990, annual consumption of white chemical pulp in newsprint is projected to hold even at the 1.9 million level throughout the 1980's.

The Working Party retained its preliminary fiber furnish view after receiving the Review Panel's input. Most panelists supported the Working Party's 1990 furnish estimates for both countries. A few panelists, however, foresaw an even greater substitution of TMP for white pulp and suggested dropping white pulp's share by an additional 2 - 3%.

3.2.3 Printing and Writing Paper

North America's fiber furnish mix for printing and writing paper is projected to shift significantly away from white pulp into mechanical pulp grades. Table 3.2.3 shows white pulp's projected decline from 73.7% of total furnish in 1972/74 to 66.4% in 1990. Very little of the substitution implied by this shift is expected to occur in either waste fiber (6.8% to 7.1%) or fillers and pigments (14.3% to 15.5%).

The projected shift toward a groundwood furnish is most marked in Canada. Groundwood's share is estimated to increase from 23.8% in the 1972/74 period to 38.2% in 1990. By comparison the USA shift in groundwood furnish is expected to be more modest, rising from 12.8% to 18.5% in the same period. In general, the Review Panel supported the Working Party's furnish estimates which were not modified from the preliminary submission.

3.2.4 Other Paper and Paperboard

Chemical pulp grades in other paper and paperboard are projected to decline from 64.6% of total furnish in 1972/74 to 51.8% in 1990. Table 3.2.4 shows that the major substitution foreseen is in the area of unbleached kraft pulp which is projected to decline from 20.7% to 15.1% during the same period. Both Canada and the United States are expected to experience similar patterns of development, with thermomechanical pulp comprising the major substitute furnish in paperboard grades.

Table 3.1

NORTH AMERICA

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	64454	73599	99523
Net Trade [Import, (Export)]	(4096)	(3860)	(7778)
Apparent Consumption	60358	69739	91745
Self-Sufficiency Percent*	107%	106%	108%

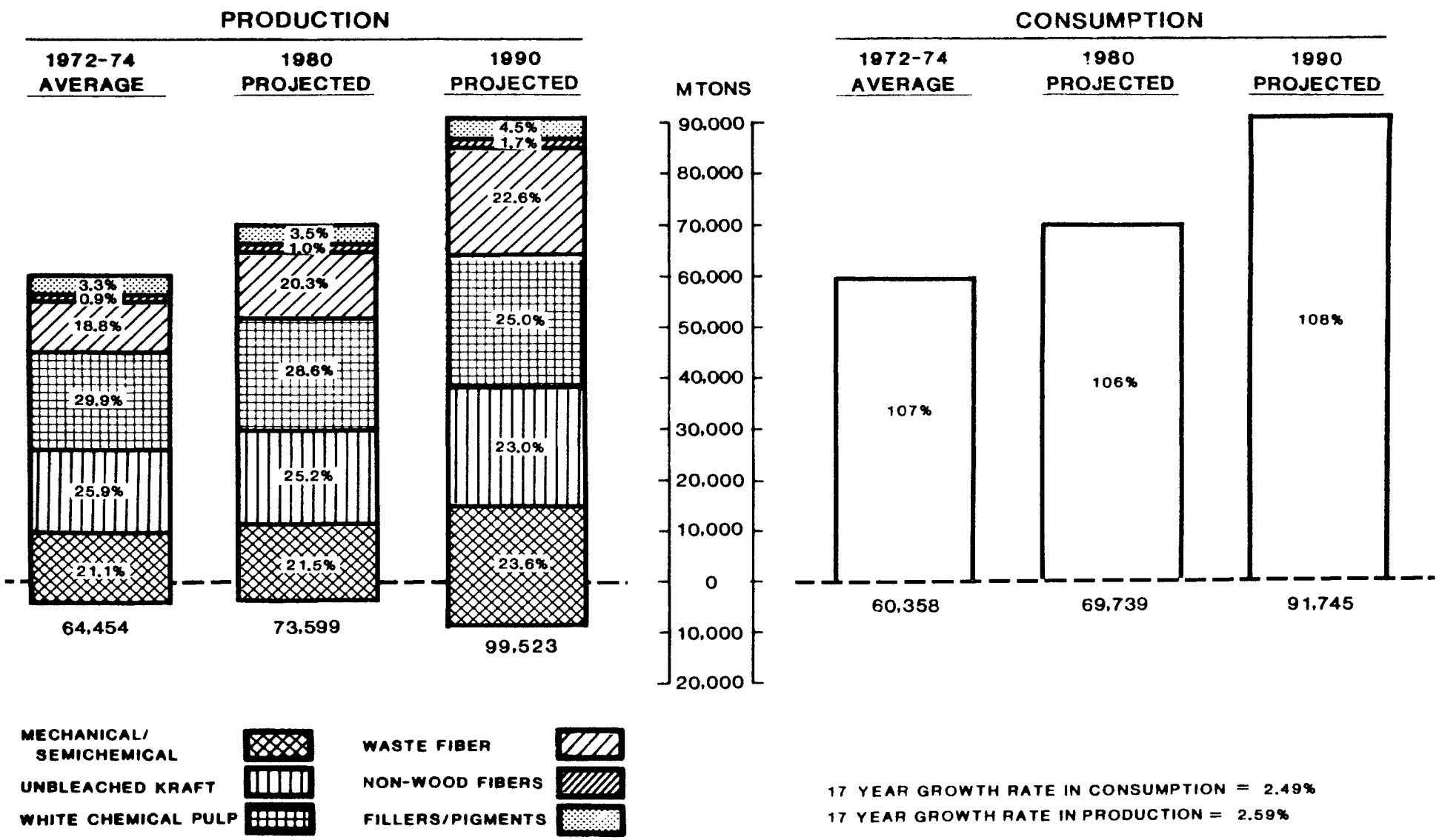
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	14448	16754	24667
Unbleached Kraft	17833	19626	24038
White Chemical Pulp**	20515	22306	26099
Waste Fiber	12918	15844	23687
Non-Wood Fibers	637	737	1646
Fillers/Pigments	2255	2724	4477
Total Furnish	68606	77991	I04614
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	22.4	22.8	24.8
Unbleached Kraft	27.7	26.7	24.2
White Chemical Pulp	31.8	30.3	26.2
Waste Fiber	20.0	21.5	23.8
Non-Wood Fibers	1.0	1.0	1.7
Fillers/Pigments	3.5	3.7	4.5
Total Furnish Percent Input	106.4%	106.0%	105.1%

* Production ÷ Consumption
** Includes Unbleached Sulfite

CHART 3.1

TOTAL NORTH AMERICA

Total Paper and Paperboard



17 YEAR GROWTH RATE IN CONSUMPTION = 2.49%

17 YEAR GROWTH RATE IN PRODUCTION = 2.59%

Table 3.1.1

CANADA

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	12569	13415	15589
Net Trade [Import, (Export)]	(8417)	(8802)	(9559)
Apparent Consumption	4152	4613	6030
Self-Sufficiency Percent*	303%	291%	259%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	7191	7653	8893
Unbleached Kraft	1476	1640	1955
White Chemical Pulp**	3417	3369	3507
Waste Fiber	808	1062	1490
Non-Wood Fibers	40	54	107
Fillers/Pigments	111	146	263
Total Furnish	13043	13924	16215
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	57.2	57.1	57.1
Unbleached Kraft	11.7	12.2	12.5
White Chemical Pulp	27.2	25.1	22.5
Waste Fiber	6.4	7.9	9.6
Non-Wood Fibers	0.3	0.4	0.7
Fillers/Pigments	0.9	1.1	1.7
Total Furnish Percent Input	103.7%	103.8%	104.1%

* Production + Consumption
** Includes Unbleached Sulfite

Table 3.1.2

U.S.A.

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	51885	60184	83934
Net Trade [Import, (Export)]	4321	4942	1781
Apparent Consumption	56206	65126	85715
Self-Sufficiency Percent*	92%	92%	98%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	7257	9101	15774
Unbleached Kraft	16357	17986	22083
White Chemical Pulp**	17098	18937	22592
Waste Fiber	12110	14782	22197
Non-Wood Fibers	597	683	1539
Fillers/Pigments	2144	2578	4214
Total Furnish	55563	64067	88399
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	14.0	15.1	18.8
Unbleached Kraft	31.5	29.9	26.3
White Chemical Pulp	32.9	31.5	26.9
Waste Fiber	23.3	24.6	26.5
Non-Wood Fibers	1.2	1.1	1.8
Fillers/Pigments	4.1	4.3	5.0
Total Furnish Percent Input	107.0%	106.5%	105.3%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 3.2.2

NORTH AMERICA

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	11430	12060	14039
Net Trade [Import, (Export)]	(1126)	(952)	(1412)
Apparent Consumption	10304	11108	12627
Self-Sufficiency Percent*	111%	109%	111%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	8566	9133	10629
Unbleached Kraft White Chemical Pulp**	2845	2645	2697
Waste Fiber	393	664	1182
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish	11804	12442	14508
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	74.9	75.7	75.7
Unbleached Kraft White Chemical Pulp	24.9	21.9	19.2
Waste Fiber	3.4	5.5	8.4
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish Percent Input	103.2%	103.1%	103.3%

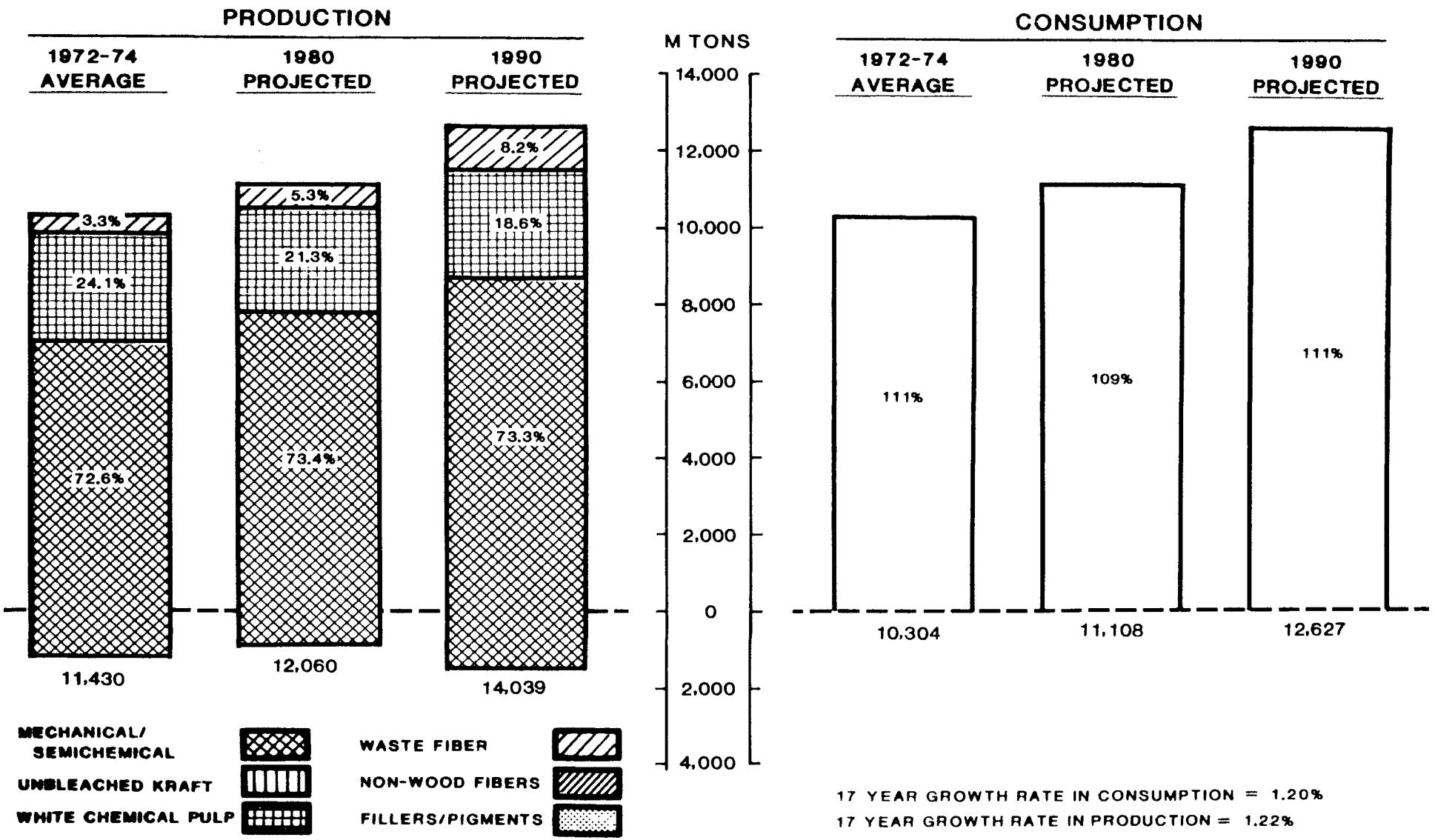
* Production + Consumption

** Includes Unbleached Sulfite

CHART 3.2.2

NORTH AMERICA

Newsprint



17 YEAR GROWTH RATE IN CONSUMPTION = 1.20%

17 YEAR GROWTH RATE IN PRODUCTION = 1.22%

Table 3.2.2.1

CANADA

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	8380	8396	9139
Net Trade [Import, (Export)]	(7616)	(7528)	(8109)
Apparent Consumption	764	868	1030
Self-Sufficiency Percent*	1097%	966%	892%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	6495	6667	7366
Unbleached Kraft White Chemical Pulp**	2137	1887	1864
Waste Fiber		84	182
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish	8632	8638	9412
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	77.5	79.5	80.6
Unbleached Kraft White Chemical Pulp	25.5	22.5	20.4
Waste Fiber		1.0	2.0
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish Percent Input	103.0%	103.0%	103.0%

* Production + Consumption
** Includes Unbleached Sulfite

Table 3.2.2.2

USA

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	3050	3664	4900
Net Trade [Import, (Export)]	6490	6576	6697
Apparent Consumption	9540	10240	11597
Self-Sufficiency Percent*	32%	36%	42%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	2071	2466	3263
Unbleached Kraft			
White Chemical Pulp**	708	758	833
Waste Fiber	393	586	1000
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish	3172	3810	5096
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	67.9	67.3	66.6
Unbleached Kraft			
White Chemical Pulp	23.2	20.7	17.0
Waste Fiber	12.9	16.0	20.4
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish Percent Input	104.0%	104.0%	104.0%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 3.2.3

NORTH AMERICA

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	12658	14950	20477
Net Trade [Import, (Export)]	(336)	(230)	(850)
Apparent Consumption	12322	14720	19627
Self-Sufficiency Percent*	103%	102%	104%

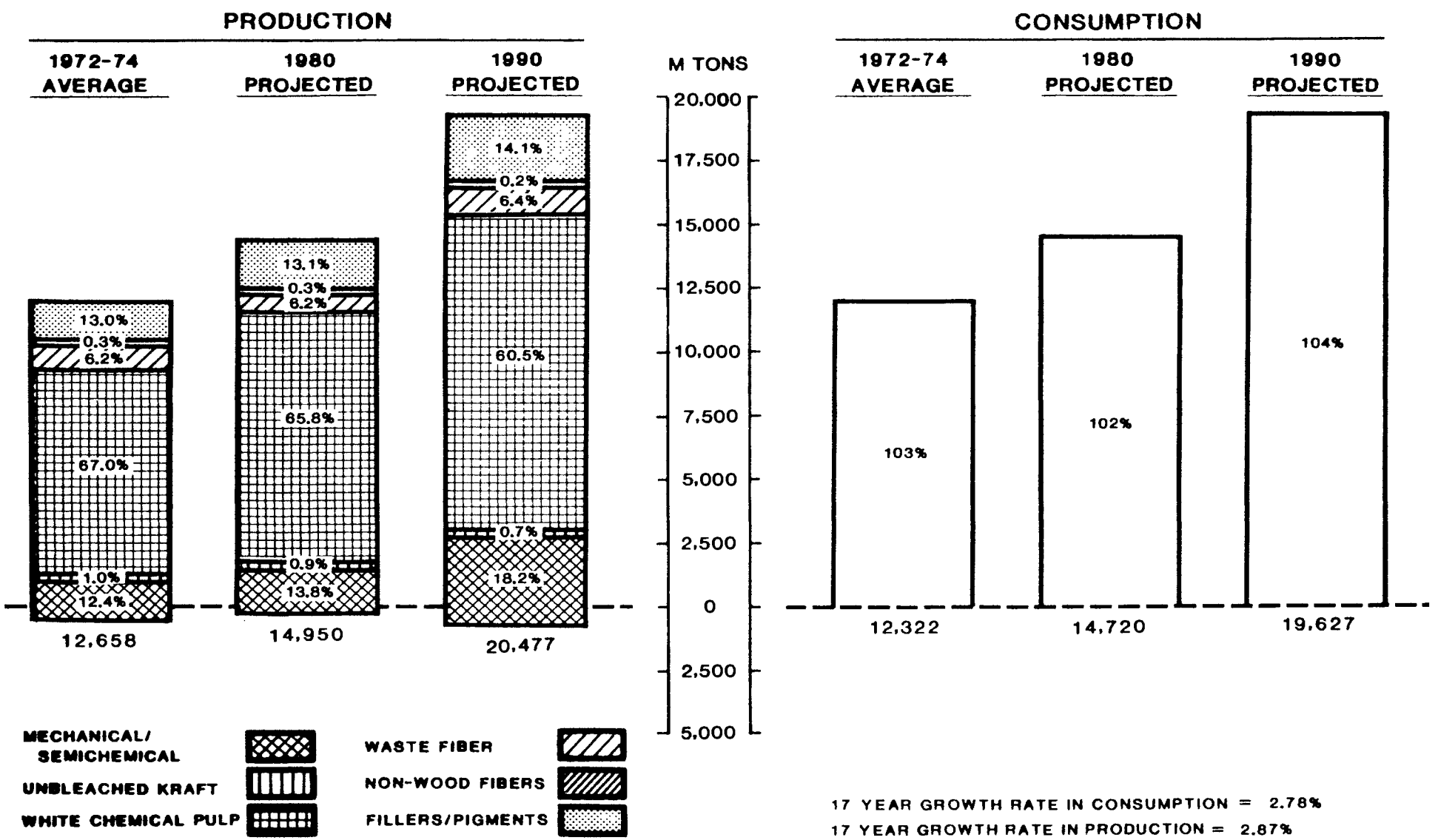
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	1728	2264	4091
Unbleached Kraft	132	140	150
White Chemical Pulp**	9327	10809	13602
Waste Fiber	866	1022	1444
Non-Wood Fibers	46	42	36
Fillers/Pigments	1815	2157	3176
Total Furnish	13914	16434	22499
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	13.6	15.1	20.0
Unbleached Kraft	1.0	0.9	0.7
White Chemical Pulp	73.7	72.3	66.4
Waste Fiber	6.8	6.8	7.1
Non-Wood Fibers	0.4	0.3	0.2
Fillers/Pigments	14.3	14.4	15.5
Total Furnish Percent Input	109.8%	109.8%	109.9%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 3.2.3

NORTH AMERICA

Printing and Writing Paper



17 YEAR GROWTH RATE IN CONSUMPTION = 2.78%

17 YEAR GROWTH RATE IN PRODUCTION = 2.87%

Table 3.2.3.1

CANADA

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	956	1150	1568
Net Trade [Import, (Export)]	(288)	(374)	(500)
Apparent Consumption	668	776	1068
Self-Sufficiency Percent*	143%	148%	147%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	228	328	599
Unbleached Kraft	15	11	12
White Chemical Pulp**	645	747	862
Waste Fiber	65	69	88
Non-Wood Fibers	6		
Fillers/Pigments	71	92	165
Total Furnish	1030	1247	1726
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	23.8	28.5	38.2
Unbleached Kraft	1.6	1.0	0.8
White Chemical Pulp	67.5	65.0	55.0
Waste Fiber	6.8	6.0	5.6
Non-Wood Fibers	0.6		
Fillers/Pigments	7.5	8.0	10.5
Total Furnish Percent Input	107.8%	108.5%	110.1%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 3.2.3.2

USA

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	11702	13800	18909
Net Trade [Import, (Export)]	(48)	144	(350)
Apparent Consumption	11654	13944	18559
Self-Sufficiency Percent*	100%	99%	102%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	1500	1936	3492
Unbleached Kraft	117	129	138
White Chemical Pulp**	8682	10062	12740
Waste Fiber	801	953	1356
Non-Wood Fibers	40	42	36
Fillers/Pigments	1744	2065	3011
Total Furnish	12884	15187	20773
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	12.8	14.0	18.5
Unbleached Kraft	1.0	0.9	0.7
White Chemical Pulp	74.2	72.9	67.4
Waste Fiber	6.8	6.9	7.2
Non-Wood Fibers	0.3	0.3	0.2
Fillers/Pigments	14.9	15.0	15.9
Total Furnish Percent Input	110.1%	110.1%	110.0%

* Production + Consumption
** Includes Unbleached Sulfite

Table 3.2.4

NORTH AMERICA

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	40366	46589	65007
Net Trade [Import, (Export)]	(2634)	(2678)	(5516)
Apparent Consumption	37732	43911	59491
Self-Sufficiency Percent*	107%	106%	109%

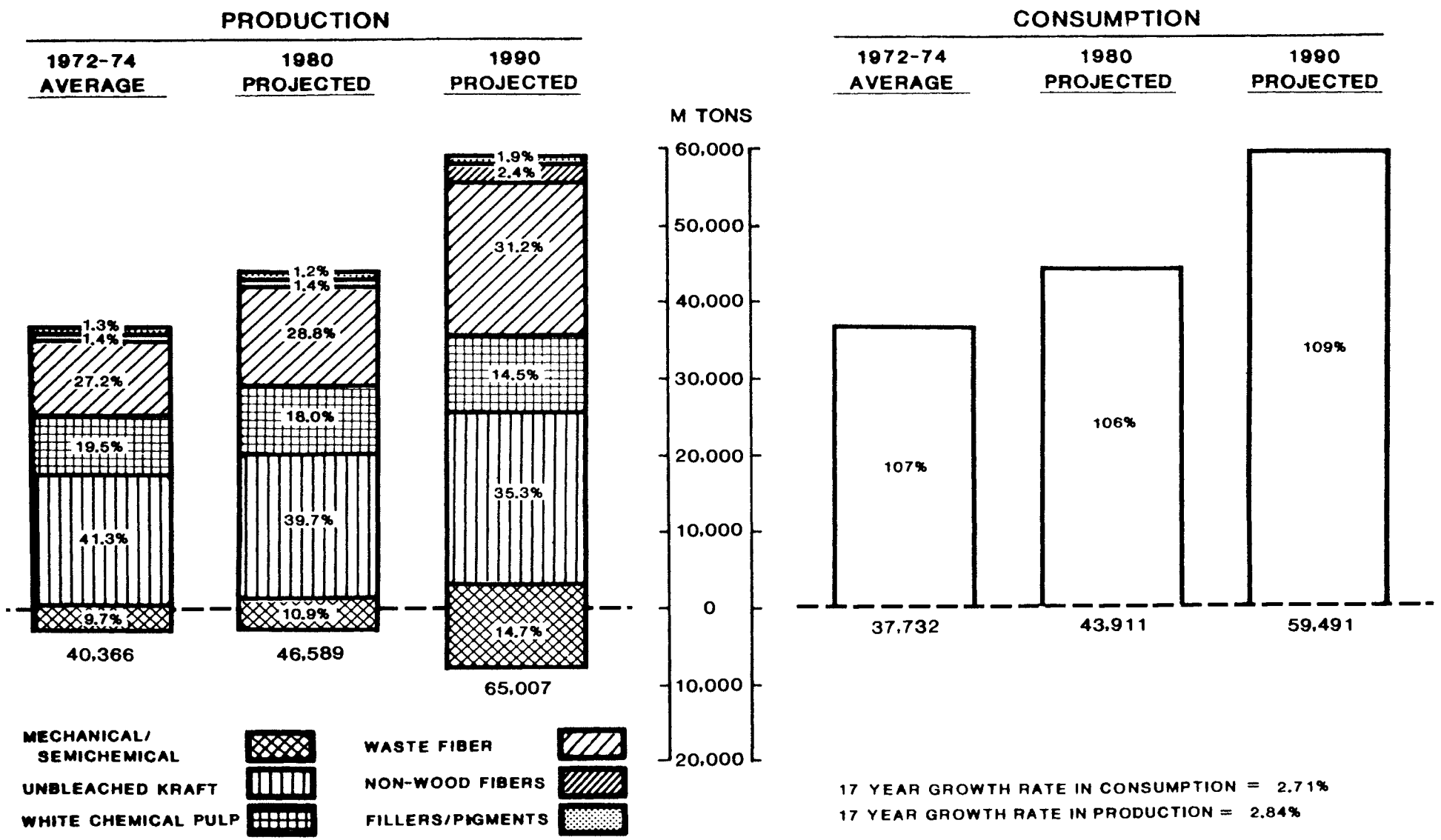
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	4154	5357	9947
Unbleached Kraft	17701	19486	23888
White Chemical Pulp**	8343	8852	9800
Waste Fiber	11659	14158	21061
Non-Wood Fibers	591	695	1610
Fillers/Pigments	440	567	1301
Total Furnish	42888	49115	67607
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	10.3	11.5	15.3
Unbleached Kraft	43.9	41.8	36.7
White Chemical Pulp	20.7	19.0	15.1
Waste Fiber	28.9	30.4	32.4
Non-Wood Fibers	1.5	1.5	2.5
Fillers/Pigments	1.1	1.2	2.0
Total Furnish Percent Input	106.2%	105.4%	104.0%

* Production ÷ Consumption
** Includes Unbleached Sulfite

CHART 3.2.4

NORTH AMERICA

Other Paper and Paperboard



17 YEAR GROWTH RATE IN CONSUMPTION = 2.71%

17 YEAR GROWTH RATE IN PRODUCTION = 2.84%

Table 3.2.4.1

CANADA

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	3233	3869	4882
Net Trade [Import, (Export)]	(513)	(900)	(950)
Apparent Consumption	2720	2969	3932
Self-Sufficiency Percent*	119%	130%	124%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	468	658	928
Unbleached Kraft	1461	1629	1943
White Chemical Pulp**	635	735	781
Waste Fiber	743	909	1220
Non-Wood Fibers	34	54	107
Fillers/Pigments	40	54	98
Total Furnish	3381	4039	5077
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	14.5	17.0	19.0
Unbleached Kraft	45.2	42.1	39.8
White Chemical Pulp	19.6	19.0	16.0
Waste Fiber	22.9	23.5	25.0
Non-Wood Fibers	1.1	1.4	2.2
Fillers/Pigments	1.2	1.4	2.0
Total Furnish Percent Input	104.6%	104.4%	104.0%

* Production + Consumption
** Includes Unbleached Sulfite

Table 3.2.4.2

UNITED STATES

OTHER PAPER AND PAPERBOARD

	Thousands of Air Dry Metric Tons		
	1972-74	1980	1990
Production	37133	42720	60125
Net Trade [Import, (Export)]	(2121)	(1778)	(4566)
Apparent Consumption	35012	40942	55559
Self-Sufficiency Percent*	106%	104%	108%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	3686	4699	9019
Unbleached Kraft	16240	17857	21945
White Chemical Pulp**	7708	8117	9019
Waste Fiber	10916	13243	19841
Non-Wood Fibers	557	641	1503
Fillers/Pigments	400	513	1203
Total Furnish	39507	45070	62530
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	9.9	11.0	15.0
Unbleached Kraft	43.7	41.8	36.5
White Chemical Pulp	20.8	19.0	15.0
Waste Fiber	29.4	31.0	33.0
Non-Wood Fibers	1.5	1.5	2.5
Fillers/Pigments	1.1	1.2	2.0
Total Furnish Percent Input	106.4%	105.5%	104.0%

* Production ÷ Consumption
** Includes Unbleached Sulfite

4.0 WESTERN EUROPE

4.1 SELF-SUFFICIENCY

4.1.1 Total Paper and Paperboard

Production of paper and paperboard in Western Europe is expected to grow at an average yearly growth rate of 2.7% between 1972/74 and 1990. Because consumption is growing at about the same pace, self-sufficiency of total paper and paperboard is projected to stay nearly the same within that time period. Net exports are expected to change from 622,000 tons in 1972/74 to an estimated 147,000 tons in 1990.

4.1.2 Newsprint

Western Europe's self-sufficiency in newsprint is forecast to increase from 97% in 1972/74 to 100% in 1990. Table 4.2.2 shows that the production of newsprint is expected to grow by approximately 1.7 million tons. This is an annual rate of 1.7%. By comparison, consumption is estimated to increase by 1.5%. The region's net trade position is projected to switch from net imports of about 200,000 tons in 1972/74 to a balanced situation by 1990. Tables 4.2.2.1-6 show the self-sufficiency trends projected for the subregion's between 1972/74 and 1990. Newsprint self-sufficiency is expected to increase in France, West Germany and Other Western Europe while declining in the United Kingdom and Other EEC Countries. In the Nordic Countries tonnage available for export is expected to increase from approximately 2.5 to 3.2 million tons.

The Working Party made only minor changes to the region's self-sufficiency as a result of the Review Panel's input. Several Scandanavian producers suggested that the Nordic Countries newsprint potential was understated for 1990 and that the projected EEC production appeared too optimistic. In preparing its final outlook, the Working Party increased Scandinavia newsprint production by 140,000 tons and decreased production elsewhere in Western Europe.

4.1.3 Printing and Writing Paper

Western Europe's self-sufficiency in printing and writing papers is forecast to decline gradually from 111% in 1972/74 to 105% in 1990. Tables 4.2.3.1-6 show that all regions with the exception of the Nordic Countries contribute to that development. The United Kingdom is expected to have the steepest decline while West Germany nearly keeps its degree of self-sufficiency. At the same time, self-sufficiency in the Nordic Countries is expected to improve 300% in 1972/74 to more than 400% in 1990.

4.1.3 Printing and Writing Paper (continued)

While Western Europe's production of printing and writing paper is espected to grow at an average yearly rate of 2.5% until 1990, consumption is expected to grow even faster. Thus the Western European net exports to other world regions should decline slightly from nearly 1.1 million tons per year in 1972/74 to about 800,000 tons in 1990.

The Review Panel had a marked input on the Working Party's printing and writing paper outlook for the 1980-90 period. Panelists suggested that the Working Party understated the region's self-sufficiency. As a result, 1990 production was increased approximately 400,000 tons in the Nordic Countries, 200,000 tons in West Germany and 100,000 tons in other EEC Countries.

Some Working Party members have strong reservations about the resulting outlook. They anticipate a strong North American drive to sell commodity white paper grades in Western Europe. Should such a drive materalize by 1990, European imports of North American commodities could readily offset the exports of European specialities which are foreseen in the final outlook.

4.1.4 Other Paper and Paperboard

Production of other paper and paperboard in Western Europe is expected to grow annually at a 2.9% rate. Chart 4.2.4 shows that this expected growth roughly parallels the anticipated increase in consumption. As a result, the region's self-sufficiency in 1990 is expected to show little change from the 1972/74 period.

Within the European region, however, Tables 4.2.4.1-6 show that shifts in self-sufficiency are expected to occur. Only France is projected to sustain the same level in 1990 as it had in 1972/74. West Germany is believed capable to shift into a net export position because of an expected stagnant consumption growth. The United Kingdom is expected to improve its net trade markedly by relying heavily on domestically produced waste fiber grades. Other EEC Countries, however, are expected to become increasingly dependent on imports with self-sufficiency declining from 77% in 1972/74 to 65% in 1990. The Nordic Countries are perceived capable of expanding their production another 2.5 million tons, thus increasing self-sufficiency to more than 400% by 1990. In Other Western Europe, however, an increasing demand for imports of other paper and paperboard is projected, driving self-sufficiency down below 75% by 1990.

The Review Panel's comments caused the Working Party to adjust its preliminary outlook for all subregions in Western Europe. The major added production increments for 1990 were 540,000 tons in the United Kingdom and 700,000 tons in the Nordic Countries. The major reductions in 1990 were 400,000 tons in West Germany and 800,000 tons in Other EEC countries. In total, the regional self-sufficiency matched the Working Party's preliminary view, but within the region there were several major changes.

4.2 FIBER FURNISH

4.2.1 Total Paper and Paperboard

The fiber furnish for Western Europe's paper and paperboard is expected to show a small shift toward waste fiber from chemical pulp in the 1972/74-90 period. Table 4.1 shows that the input of waste fiber per ton of product produced is expected to rise from 28.4% in 1972/74 to 32.7% by 1990. Offsetting this increase is an expected decline in unbleached kraft from 12.8% to 11.1% and in white chemical pulp from 31.7% to 29.6%.

4.2.2 Newsprint

Newsprint's fiber furnish is expected to show a similar decline in white pulp consumption to that anticipated for North America. Table 4.2.2 shows the expected white pulp decline from 20.1% in 1972/74 to 15.8% in 1990. Waste fiber consumption is expected to grow from 4.2% to 10.7% during that period. Some of waste fiber's increased participation is expected to come at the expense of mechanical pulp which is forecast to decline.

Tables 4.2.2.1-6 show that most subregions in Western Europe are expected to follow the general newsprint furnish pattern for the region. There are, however, two exceptions: West Germany and the United Kingdom. West Germany's furnish is expected to shift toward more mechanical fiber and less waste. The United Kingdom's fiber mix is projected to increase from 10% waste in 1972/74 to 35% waste in 1990.

The Review Panel basically supported the Working Party's views on newsprint furnish. The changes for all subregions were nominal except for France where a modest shift to waste fiber was introduced commencing in 1980.

4.2.3 Printing and Writing Paper

Western Europe's printing and writing paper furnish is projected to show a trend towards a higher percentage of mechanical pulp and waste paper at the expense of white chemical pulp. This trend is expected for all subregions within Western Europe except for West Germany where the share of mechanical pulp is already much above the European average. The share of fillers and pigments is also expected to rise due to a higher percentage of coated papers. In a few countries, however, the share of fillers declines because of the saving effect of closing water circulation systems.

Despite substantial changes in the shares of the various fibers, Table 4.2.3 shows that Western Europe will need considerably more of each type of fiber in 1990 than it used in the average of 1972/74. In general, it is expected that the differences in fiber furnish within Western Europe's subregions will level out to more similar fiber inputs. For those regions

4.2.3 Printing and Writing Paper (continued)

where the Review Panel proposed changes, its modifications were modest. The Working Party increased the region's 1990 waste utilization mix from 2.0% to 2.9% and raised mechanical/semi-chemical pulp from 26.5% to 27.9%. These changes were effected by changing the furnish mix in France and the Nordic Countries where several panelists felt that waste fiber's potential was under-rated in the preliminary outlook.

4.2.4 Other Paper and Paperboard

Western Europe's fiber furnish for other paper and paperboard is expected to shift significantly away from unbleached kraft pulp to waste fiber in the 1972/74 -90 period. Table 4.2.4 shows that waste fiber's percent of total furnish input is expected to rise from 47.4% in 1972/74 to 50.9% in 1990. Although the degree of waste fiber recollection is already very high in some West European countries, the potential for some further increase exists. National governments are expected to support increased recollection as one method of improving their trade balances.

Tables 4.2.4.1-6 however, show that this expected pattern of increased waste utilization is not uniform throughout Europe. At 58% of furnish input, France is expected to show little change. West Germany and the United Kingdom are currently operating at such high waste rates that their percent of waste in total furnish is projected to decline. The major subregions believed likely to increase their waste utilization are the Other EEC and Other Western Europe regions.

The Review Panel generally agreed with the Working Party's preliminary outlook for fiber furnish. Several panelists suggested, however, that the Working Party should reduce its estimates for waste utilization in France, Other EEC Countries and the Nordic Countries. Accordingly, the furnish in these subregions was modified to reduce waste fiber's penetration of the total furnish.

Table 4.1

TOTAL WESTERN EUROPE

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	39351	47252	61456
Net Trade [Import, (Export)]	(622)	(1126)	(147)
Apparent Consumption	38729	46126	61309
Self-Sufficiency Percent*	102%	103%	100%

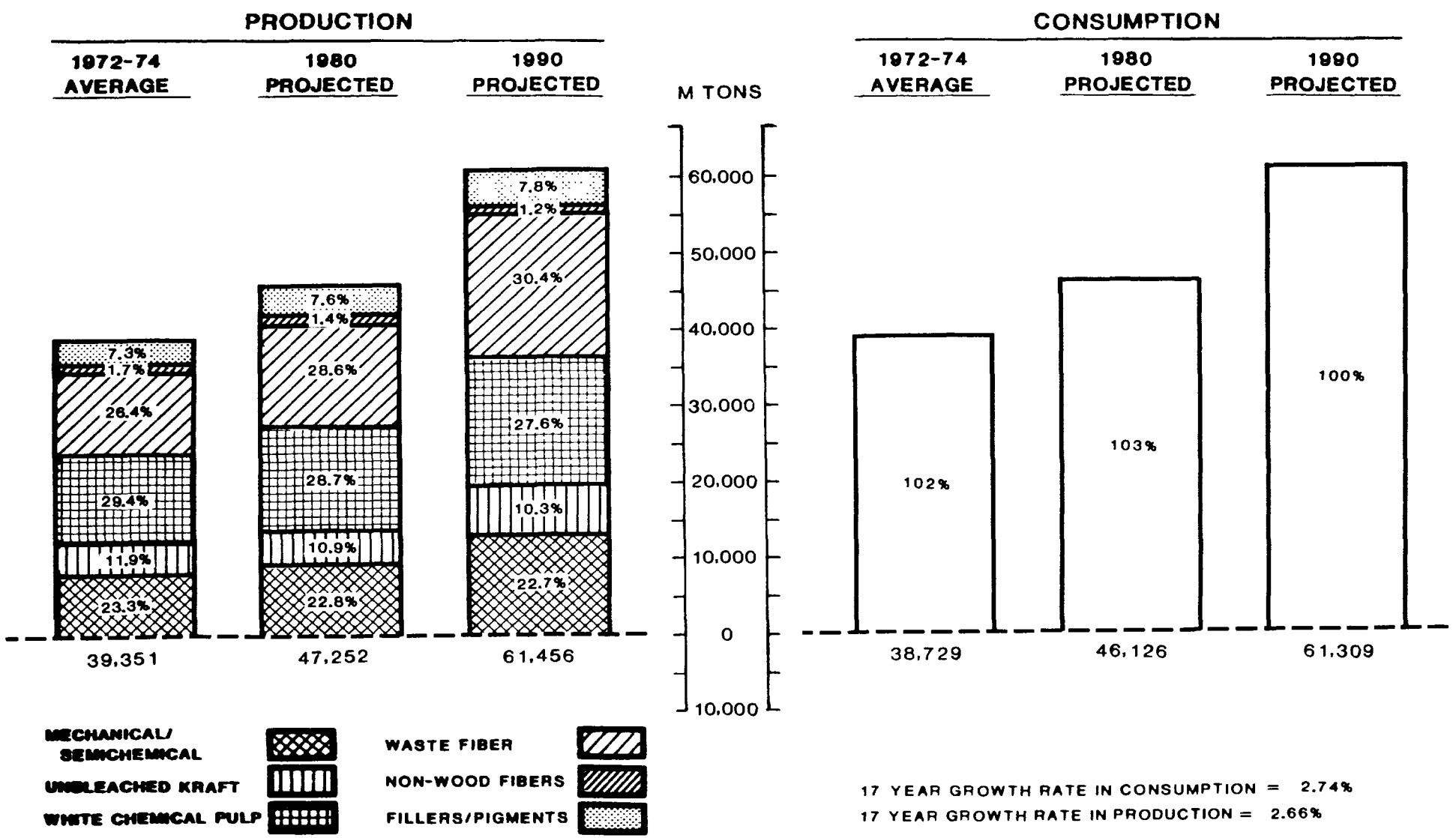
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	9871	11633	14972
Unbleached Kraft	5053	5529	6805
White Chemical Pulp**	12476	14633	18218
Waste Fiber	11168	14567	20082
Non-Wood Fibers	701	714	805
Fillers/Pigments	3103	3870	5114
Total Furnish	42372	50946	65996
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	25.1	24.6	24.4
Unbleached Kraft	12.8	11.7	11.1
White Chemical Pulp	31.7	31.0	29.6
Waste Fiber	28.4	30.8	32.7
Non-Wood Fibers	1.8	1.5	1.3
Fillers/Pigments	7.9	8.2	8.3
Total Furnish Percent Input	107.7%	107.8%	107.4%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 4.1

TOTAL WESTERN EUROPE

Total Paper and Paperboard



17 YEAR GROWTH RATE IN CONSUMPTION = 2.74%

17 YEAR GROWTH RATE IN PRODUCTION = 2.66%

Table 4.1.1

FRANCE

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	4791	6055	7461
Net Trade [Import, (Export)]	1026	1003	1821
Apparent Consumption	5817	7058	9282
Self-Sufficiency Percent*	82%	86%	80%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	805	990	1308
Unbleached Kraft	604	760	880
White Chemical Pulp**	1577	1909	2206
Waste Fiber	1718	2312	2897
Non-Wood Fibers	95	100	101
Fillers/Pigments	525	592	712
Total Furnish	5324	6663	8104
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	16.8	16.4	17.5
Unbleached Kraft	12.6	12.6	11.8
White Chemical Pulp	32.9	31.5	29.6
Waste Fiber	35.9	38.2	38.8
Non-Wood Fibers	2.0	1.7	1.4
Fillers/Pigments	11.0	9.8	9.5
Total Furnish Percent Input	111.2%	110.2%	108.6%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 4.1.2

WEST GERMANY

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	6242	7775	9574
Net Trade [Import, (Export)]	1961	1558	523
Apparent Consumption	8203	9333	10097
Self-Sufficiency Percent*	76%	83%	95%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	1197	1469	1831
Unbleached Kraft	145	170	290
White Chemical Pulp**	1941	2459	3134
Waste Fiber	2801	3437	4021
Non-Wood Fibers	15	13	16
Fillers/Pigments	657	859	1037
Total Furnish	6756	8407	10329
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	19.2	18.9	19.1
Unbleached Kraft	2.3	2.2	3.0
White Chemical Pulp	31.1	31.6	32.7
Waste Fiber	44.9	44.2	42.0
Non-Wood Fibers	0.2	0.2	0.2
Fillers/Pigments	10.5	11.0	10.8
Total Furnish Percent Input	108.4%	108.1%	107.9%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.1.3

UNITED KINGDOM

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	4498	5120	5914
Net Trade [Import, (Export)]	2872	2110	2643
Apparent Consumption	7370	7230	8557
Self-Sufficiency Percent*	61%	71%	69%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	648	623	779
Unbleached Kraft	161	200	240
White Chemical Pulp**	1698	1842	1994
Waste Fiber	1953	2471	2917
Non-Wood Fibers	60	56	58
Fillers/Pigments	342	338	379
Total Furnish	4862	5530	6367
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	14.4	12.2	13.2
Unbleached Kraft	3.6	3.9	4.1
White Chemical Pulp	37.8	36.0	33.7
Waste Fiber	43.4	48.3	49.3
Non-Wood Fibers	1.3	1.1	1.0
Fillers/Pigments	7.6	6.6	6.4
Total Furnish Percent Input	108.1%	108.0%	107.7%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.1.4

OTHER EEC

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	6908	8135	11541
Net Trade [Import, (Export)]	1710	3429	5686
Apparent Consumption	8618	11564	17227
Self-Sufficiency Percent*	80%	70%	67%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	1394	1551	1927
Unbleached Kraft	359	400	520
White Chemical Pulp**	2115	2393	3265
Waste Fiber	2645	3331	5313
Non-Wood Fibers	310	335	371
Fillers/Pigments	663	808	1052
Total Furnish	7486	8818	12448
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	20.2	19.1	16.7
Unbleached Kraft	5.2	4.9	4.5
White Chemical Pulp	30.6	29.4	28.3
Waste Fiber	38.3	40.9	46.0
Non-Wood Fibers	4.5	4.1	3.2
Fillers/Pigments	9.6	9.9	9.1
Total Furnish Percent Input	108.4%	108.4%	107.9%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 4.1.5

NORDIC COUNTRIES

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	11688	13518	17139
Net Trade [Import, (Export)]	(8556)	(10227)	(13021)
Apparent Consumption	3132	3291	3938
Self-Sufficiency Percent*	373%	411%	435%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	4947	5736	7370
Unbleached Kraft	3078	3167	3665
White Chemical Pulp**	3150	3574	4362
Waste Fiber	613	1010	1483
Non-Wood Fibers	-	-	-
Fillers/Pigments	546	806	1245
Total Furnish	12334	14293	18125
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	42.3	42.4	43.0
Unbleached Kraft	26.3	23.4	21.4
White Chemical Pulp	27.0	26.4	25.5
Waste Fiber	5.2	7.5	8.7
Non-Wood Fibers	-	-	-
Fillers/Pigments	4.7	6.0	7.3
Total Furnish Percent Input	105.5%	105.7%	105.8%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 4.1.6

OTHER WESTERN EUROPE

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons		
	1972-74	1980	1990
Production	5224	6649	9827
Net Trade [Import, (Export)]	365	1001	2381
Apparent Consumption	5589	7650	12208
Self-Sufficiency Percent*	93%	87%	80%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	880	1264	1757
Unbleached Kraft	706	832	1210
White Chemical Pulp**	1995	2456	3257
Waste Fiber	1438	2006	3451
Non-Wood Fibers	221	210	259
Fillers/Pigments	370	467	689
Total Furnish	5610	7235	10623
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	16.8	19.0	17.9
Unbleached Kraft	13.5	12.5	12.3
White Chemical Pulp	38.2	36.9	33.1
Waste Fiber	27.5	30.2	35.1
Non-Wood Fibers	4.2	3.2	2.6
Fillers/Pigments	7.1	7.1	7.1
Total Furnish Percent Input	107.4%	108.8%	108.1%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 4.2.2

TOTAL WESTERN EUROPE

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	5311	6000	7045
Net Trade [Import, (Export)]	185	(197)	(13)
Apparent Consumption	5496	5803	7032
Self-Sufficiency Percent*	97%	103%	100%

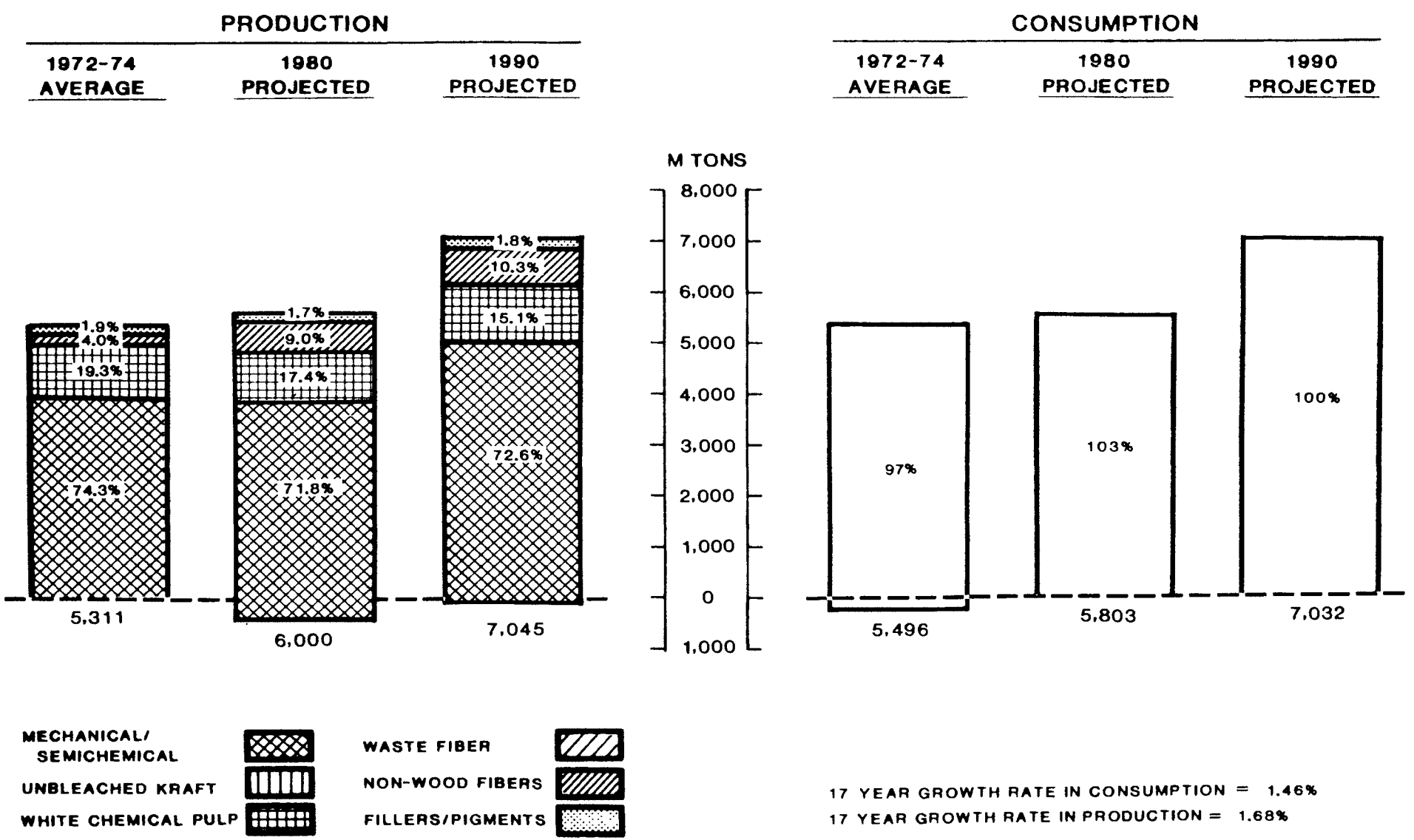
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	4104	4484	5334
Unbleached Kraft	29	9	15
White Chemical Pulp**	1066	1085	1111
Waste Fiber	222	559	755
Non-Wood Fibers			
Fillers/Pigments	103	107	134
Total Furnish	5524	6244	7349
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	77.3	74.7	75.7
Unbleached Kraft	0.6	0.2	0.2
White Chemical Pulp	20.1	18.1	15.8
Waste Fiber	4.2	9.3	10.7
Non-Wood Fibers			
Fillers/Pigments	1.9	1.7	1.9
Total Furnish Percent Input	104.1%	104.0%	104.3%

* Production ÷ Consumption
** Includes Unbleached Sulfite

CHART 4.2.2

TOTAL WESTERN EUROPE

Newsprint



17 YEAR GROWTH RATE IN CONSUMPTION = 1.46%

17 YEAR GROWTH RATE IN PRODUCTION = 1.68%

Table 4.2.2.1

FRANCE

Newsprint

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	304	335	450
Net Trade [Import, (Export)]	285	260	233
Apparent Consumption	589	595	683
Self-Sufficiency Percent*	52%	56%	66%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	233	245	333
Unbleached Kraft White Chemical Pulp**	58	67	84
Waste Fiber		15	29
Non-Wood Fibers			
Fillers/Pigments	25	23	27
Total Furnish	316	350	473
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	76.6	73.1	74.0
Unbleached Kraft White Chemical Pulp	19.0	20.0	18.7
Waste Fiber		4.5	6.4
Non-Wood Fibers			
Fillers/Pigments	8.1	6.9	6.0
Total Furnish Percent Input	103.7%	104.5%	105.1%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 4.2.2.2

WEST GERMANY

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	514	600	850
Net Trade [Import, (Export)]	653	691	584
Apparent Consumption	1167	1291	1434
Self-Sufficiency Percent*	44%	46%	59%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	267	350	515
Unbleached Kraft White Chemical Pulp**	91	95	116
Waste Fiber	150	148	210
Non-Wood Fibers Fillers/Pigments	27	30	43
Total Furnish	535	623	884
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	52.0	58.3	60.6
Unbleached Kraft White Chemical Pulp	17.7	15.8	13.7
Waste Fiber	29.1	24.7	24.7
Non-Wood Fibers Fillers/Pigments	5.2	5.0	5.1
Total Furnish Percent Input	104.0%	103.8%	104.1%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.2.3

UNITED KINGDOM

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	431	335	335
Net Trade [Import, (Export)]	1019	1005	1228
Apparent Consumption	1450	1340	1563
Self-Sufficiency Percent*	30%	25%	21%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	310	177	169
Unbleached Kraft White Chemical Pulp**	73	54	48
Waste Fiber	43	103	117
Non-Wood Fibers Fillers/Pigments	22	16	16
Total Furnish	448	350	350
Percent	**Percent of Product Produced**		
Mechanical/Semi-Chemical	71.9	52.8	50.5
Unbleached Kraft White Chemical Pulp	16.9	16.1	14.3
Waste Fiber	10.0	30.8	34.9
Non-Wood Fibers Fillers/Pigments	5.1	4.8	4.8
Total Furnish Percent Input	103.9%	104.5%	104.5%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.2.4

OTHER E.E.C.

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	523	560	560
Net Trade [Import, (Export)]	523	543	880
Apparent Consumption	1046	1103	1440
Self-Sufficiency Percent*	50%	51%	39%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	426	450	438
Unbleached Kraft White Chemical Pulp**	110	104	96
Waste Fiber	5	26	45
Non-Wood Fibers Fillers/Pigments	3	3	3
Total Furnish	544	583	582
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	81.5	80.4	78.2
Unbleached Kraft White Chemical Pulp	21.0	18.6	17.1
Waste Fiber	1.0	4.6	8.0
Non-Wood Fibers Fillers/Pigments	0.5	0.5	0.5
Total Furnish Percent Input	104.0%	104.1%	103.8%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.2.5

NORDIC COUNTRIES

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2942	3340	3850
Net Trade [Import, (Export)]	(2451)	(2775)	(3173)
Apparent Consumption	491	565	677
Self-Sufficiency Percent*	599%	591%	569%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	2412	2635	3122
Unbleached Kraft	29	7	15
White Chemical Pulp**	594	588	581
Waste Fiber		214	262
Non-Wood Fibers			
Fillers/Pigments	26	30	39
Total Furnish	3061	3474	4019
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	82.0	78.9	81.1
Unbleached Kraft	1.0	0.2	0.4
White Chemical Pulp	20.2	17.6	15.1
Waste Fiber		6.4	6.8
Non-Wood Fibers			
Fillers/Pigments	0.9	0.9	1.0
Total Furnish Percent Input	104.1%	104.0%	104.4%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.2.6

OTHER WESTERN EUROPE

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	597	830	1000
Net Trade [Import, (Export)]	156	79	235
Apparent Consumption	753	909	1235
Self-Sufficiency Percent*	79%	91%	81%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	456	627	757
Unbleached Kraft		2	
White Chemical Pulp**	140	177	186
Waste Fiber	24	53	92
Non-Wood Fibers			
Fillers/Pigments		5	6
Total Furnish	620	864	1041
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	76.4	75.5	75.7
Unbleached Kraft		0.2	
White Chemical Pulp	23.5	21.3	18.6
Waste Fiber	4.0	6.4	9.2
Non-Wood Fibers			
Fillers/Pigments		0.6	0.6
Total Furnish Percent Input	103.9%	104.0%	104.1%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.3

TOTAL WESTERN EUROPE

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	11422	13784	17392
Net Trade [Import, (Export)]	(1120)	(970)	(789)
Apparent Consumption	10302	12814	16603
Self-Sufficiency Percent*	111%	108%	105%

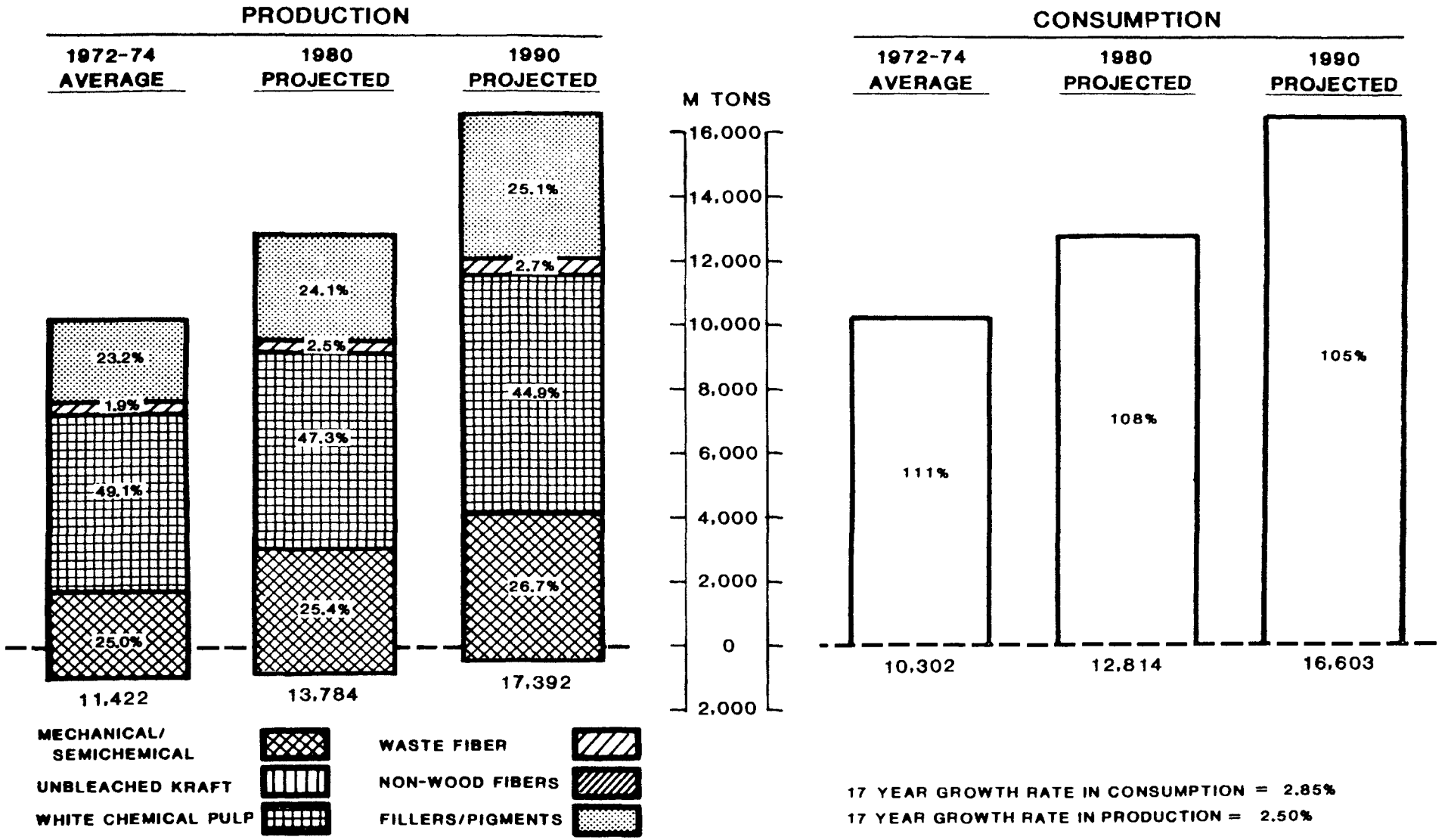
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	3025	3684	4848
Unbleached Kraft White Chemical Pulp**	5945	6858	8157
Waste Fiber	225	368	497
Non-Wood Fibers	95	104	125
Fillers/Pigments	2810	3493	4560
Total Furnish	12100	14507	18187
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	26.5	26.7	27.9
Unbleached Kraft White Chemical Pulp	52.1	49.8	46.9
Waste Fiber	2.0	2.7	2.9
Non-Wood Fibers	0.8	0.8	0.7
Fillers/Pigments	24.6	25.3	26.2
Total Furnish Percent Input	106.0%	105.3%	104.6%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 4.2.3

TOTAL WESTERN EUROPE

Printing and Writing Paper



17 YEAR GROWTH RATE IN CONSUMPTION = 2.85%

17 YEAR GROWTH RATE IN PRODUCTION = 2.50%

Table 4.2.3.1

FRANCE

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	1682	1970	2361
Net Trade [Import, (Export)]	97	273	595
Apparent Consumption	1779	2243	2956
Self-Sufficiency Percent*	95%	88%	80%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	320	390	515
Unbleached Kraft White Chemical Pulp**	945	1062	1192
Waste Fiber	85	97	118
Non-Wood Fibers	30	30	31
Fillers/Pigments	470	529	625
Total Furnish	1850	2108	2481
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	19.0	19.8	21.8
Unbleached Kraft White Chemical Pulp	56.2	53.9	50.5
Waste Fiber	5.1	4.9	5.0
Non-Wood Fibers	1.8	1.5	1.3
Fillers/Pigments	27.9	26.9	26.5
Total Furnish Percent Input	110.0%	107.0%	105.1%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.3.2

WEST GERMANY

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2144	2655	3114
Net Trade [Import, (Export)]	214	192	356
Apparent Consumption	2358	2847	3470
Self-Sufficiency Percent*	91%	93%	90%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	710	799	906
Unbleached Kraft White Chemical Pulp**	895	1174	1408
Waste Fiber	20	29	31
Non-Wood Fibers	15	13	16
Fillers/Pigments	590	749	874
Total Furnish	2230	2764	3235
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	33.1	30.1	29.1
Unbleached Kraft White Chemical Pulp	41.7	44.2	45.2
Waste Fiber	0.9	1.1	1.0
Non-Wood Fibers	0.7	0.5	0.5
Fillers/Pigments	27.5	28.2	28.1
Total Furnish Percent Input	103.9%	104.1%	103.9%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.3.3

UNITED KINGDOM

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	1236	1265	1369
Net Trade [Import, (Export)]	391	670	990
Apparent Consumption	1627	1935	2359
Self-Sufficiency Percent*	76%	65%	58%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	150	156	200
Unbleached Kraft White Chemical Pulp**	790	798	806
Waste Fiber	40	68	90
Non-Wood Fibers	20	16	18
Fillers/Pigments	300	292	323
Total Furnish	1300	1330	1437
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	12.1	12.3	14.6
Unbleached Kraft White Chemical Pulp	63.9	63.1	58.9
Waste Fiber	3.2	5.4	6.6
Non-Wood Fibers	1.6	1.3	1.3
Fillers/Pigments	24.3	23.1	23.6
Total Furnish Percent Input	105.1%	105.2%	105.0%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.3.4

OTHER E.E.C.

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2380	2735	3491
Net Trade [Import, (Export)]	5	434	810
Apparent Consumption	2385	3169	4301
Self-Sufficiency Percent*	100%	86%	83%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	585	681	869
Unbleached Kraft White Chemical Pulp**	1215	1329	1679
Waste Fiber	60	85	108
Non-Wood Fibers	20	25	31
Fillers/Pigments	630	765	979
Total Furnish	2510	2885	3666
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	24.6	24.9	24.9
Unbleached Kraft White Chemical Pulp	51.1	48.6	48.1
Waste Fiber	2.5	3.1	3.1
Non-Wood Fibers	0.8	0.9	0.9
Fillers/Pigments	26.5	28.0	28.0
Total Furnish Percent Input	105.5%	105.5%	105.0%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 4.2.3.5

NORDIC COUNTRIES

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2571	3300	4600
Net Trade [Import, (Export)]	(1719)	(2452)	(3487)
Apparent Consumption	852	848	1113
Self-Sufficiency Percent*	302%	389%	413%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	980	1271	1808
Unbleached Kraft White Chemical Pulp**	1210	1376	1711
Waste Fiber		46	101
Non-Wood Fibers			
Fillers/Pigments	490	736	1146
Total Furnish	2680	3429	4766
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	38.1	38.5	39.3
Unbleached Kraft White Chemical Pulp	47.1	41.7	37.2
Waste Fiber		1.4	2.2
Non-Wood Fibers			
Fillers/Pigments	19.1	22.3	24.9
Total Furnish Percent Input	104.3%	103.9%	103.6%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.3.6

OTHER WESTERN EUROPE

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	1409	1859	2457
Net Trade [Import, (Export)]	(108)	(87)	(53)
Apparent Consumption	1301	1772	2404
Self-Sufficiency Percent*	108%	105%	102%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	280	387	550
Unbleached Kraft White Chemical Pulp**	890	1119	1361
Waste Fiber	20	43	49
Non-Wood Fibers	10	20	29
Fillers/Pigments	330	422	613
Total Furnish	1530	1991	
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	19.9	20.8	22.4
Unbleached Kraft White Chemical Pulp	63.2	60.2	55.4
Waste Fiber	1.4	2.3	2.0
Non-Wood Fibers	0.7	1.1	1.2
Fillers/Pigments	23.4	22.7	25.0
Total Furnish Percent Input	108.6%	107.1%	106.0%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 4.2.4

TOTAL WESTERN EUROPE

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	22618	27468	37019
Net Trade [Import, (Export)]	313	41	655
Apparent Consumption	22931	27509	37674
Self-Sufficiency Percent*	99%	100%	98%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	2742	3465	4790
Unbleached Kraft	5024	5520	6790
White Chemical Pulp**	5465	6690	8950
Waste Fiber	10721	13640	18830
Non-Wood Fibers	606	610	680
Fillers/Pigments	190	270	420
Total Furnish	24748	30195	40460
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	12.1	12.6	12.9
Unbleached Kraft	22.2	20.1	18.3
White Chemical Pulp	24.2	24.4	24.2
Waste Fiber	47.4	49.7	50.9
Non-Wood Fibers	2.7	2.2	1.8
Fillers/Pigments	.8	1.0	1.1
Total Furnish Percent Input	109.4%	110.0%	109.2%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 4.2.4

TOTAL WESTERN EUROPE

Other Paper and Paperboard

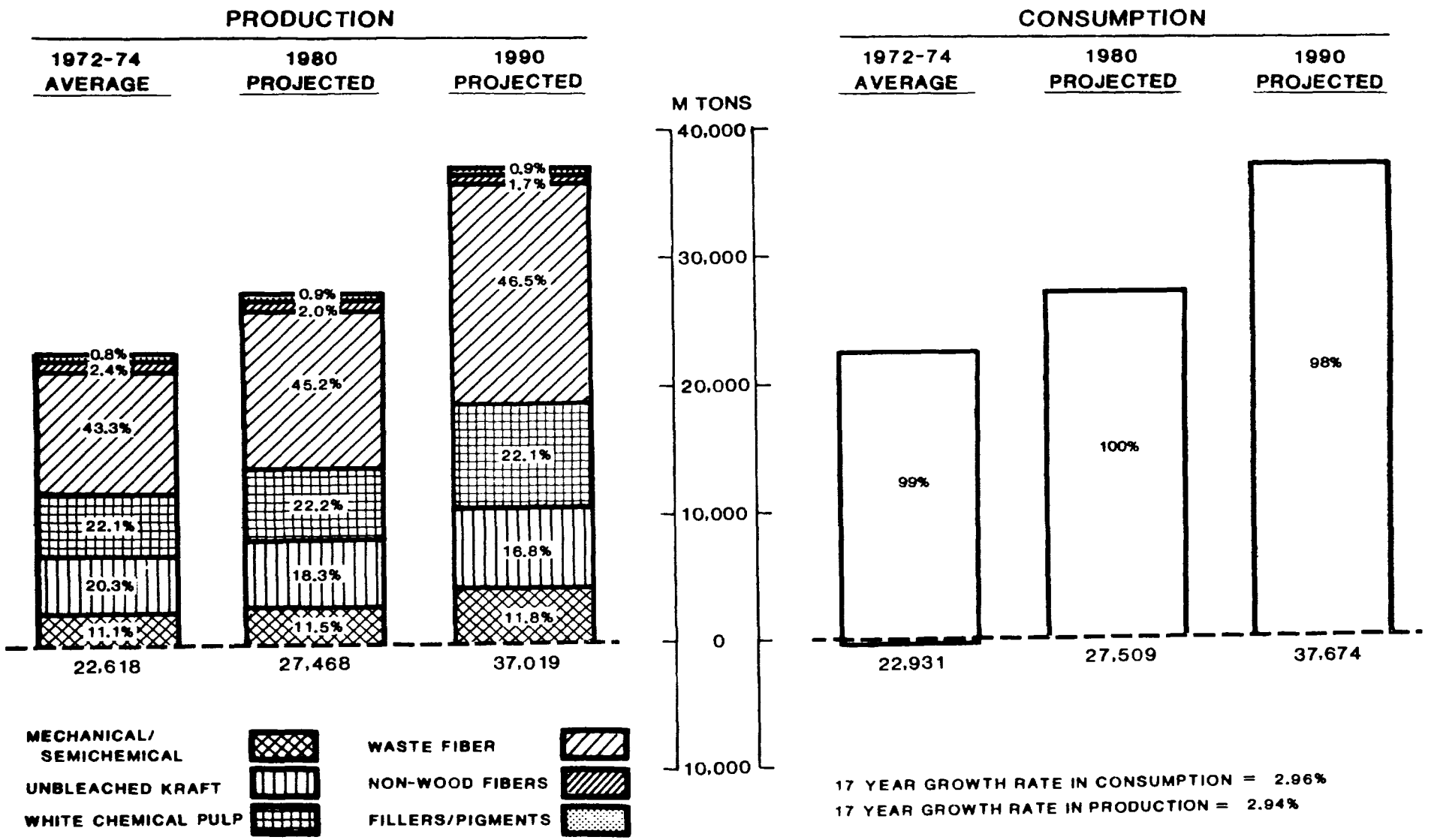


Table 4.2.4.1

FRANCE

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2805	3750	4650
Net Trade [Import, (Export)]	644	470	993
Apparent Consumption	3449	4220	5643
Self-Sufficiency Percent*	81%	89%	82%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	252	355	460
Unbleached Kraft	604	760	880
White Chemical Pulp**	574	780	930
Waste Fiber	1633	2200	2750
Non-Wood Fibers	65	70	70
Fillers/Pigments	30	40	60
Total Furnish	3158	4205	5150
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	9.0	9.5	9.9
Unbleached Kraft	21.5	20.3	18.9
White Chemical Pulp	20.5	20.8	20.0
Waste Fiber	58.2	58.7	59.1
Non-Wood Fibers	2.3	1.9	1.5
Fillers/Pigments	1.1	1.1	1.3
Total Furnish Percent Input	112.6%	112.3%	110.7%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 4.2.4.2

WEST GERMANY

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	3584	4520	5610
Net Trade [Import, (Export)]	1094	675	(417)
Apparent Consumption	4678	5195	5193
Self-Sufficiency Percent*	77%	87%	108%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	220	320	410
Unbleached Kraft	145	170	290
White Chemical Pulp**	955	1190	1610
Waste Fiber	2631	3260	3780
Non-Wood Fibers			
Fillers/Pigments	40	80	120
Total Furnish	3991	5020	6210
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	6.1	7.1	7.3
Unbleached Kraft	4.1	3.8	5.2
White Chemical Pulp	26.7	26.3	28.7
Waste Fiber	73.4	72.1	67.4
Non-Wood Fibers			
Fillers/Pigments	1.1	1.8	2.1
Total Furnish Percent Input	111.4%	111.1%	110.7%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.4.3

UNITED KINGDOM

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2831	3520	4210
Net Trade [Import, (Export)]	1462	435	425
Apparent Consumption	4293	3955	4635
Self-Sufficiency Percent*	66%	89%	91%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	188	290	410
Unbleached Kraft	161	200	240
White Chemical Pulp**	835	990	1140
Waste Fiber	1870	2300	2710
Non-Wood Fibers	40	40	40
Fillers/Pigments	20	30	40
Total Furnish	3114	3850	4580
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	6.6	8.2	9.7
Unbleached Kraft	5.7	5.7	5.7
White Chemical Pulp	29.5	28.1	27.1
Waste Fiber	66.1	65.3	64.4
Non-Wood Fibers	1.4	1.1	1.0
Fillers/Pigments	0.7	0.9	1.0
Total Furnish Percent Input	110.0%	109.3%	108.9%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 4.2.4.4

OTHER EEC

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	4005	4840	7490
Net Trade [Import, (Export)]	1182	2452	3996
Apparent Consumption	5187	7292	11486
Self-Sufficiency Percent*	77%	66%	65%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	383	420	620
Unbleached Kraft	359	400	520
White Chemical Pulp**	790	960	1490
Waste Fiber	2580	3220	5160
Non-Wood Fibers	290	310	340
Fillers/Pigments	30	40	70
Total Furnish	4432	5350	8200
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	9.6	8.7	8.3
Unbleached Kraft	9.0	8.3	6.9
White Chemical Pulp	19.7	19.8	19.9
Waste Fiber	64.4	66.5	68.9
Non-Wood Fibers	7.2	6.4	4.5
Fillers/Pigments	0.8	0.8	0.9
Total Furnish Percent Input	110.7%	110.5%	109.4%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.4.5

NORDIC COUNTRIES

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	6175	6878	8689
Net Trade [Import, (Export)]	(4386)	(5000)	(6541)
Apparent Consumption	1789	1878	2148
Self-Sufficiency Percent*	345%	366%	403%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	1555	1830	2440
Unbleached Kraft	3049	3160	3650
White Chemical Pulp**	1346	1610	2070
Waste Fiber	613	750	1120
Non-Wood Fibers			
Fillers/Pigments	30	40	60
Total Furnish	6593	7390	9340
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	25.2	26.6	28.1
Unbleached Kraft	49.4	45.9	42.0
White Chemical Pulp	21.8	23.4	23.8
Waste Fiber	9.9	10.9	12.9
Non-Wood Fibers			
Fillers/Pigments	____	0.6	0.7
Total Furnish Percent Input	106.3%	107.4%	107.5%

* Production + Consumption
** Includes Unbleached Sulfite

Table 4.2.4.6

OTHER WESTERN EUROPE

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	3218	3960	6370
Net Trade [Import, (Export)]	317	1009	2199
Apparent Consumption	3535	4969	8569
Self-Sufficiency Percent*	91%	80%	74%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	144	250	450
Unbleached Kraft	706	830	1210
White Chemical Pulp**	965	1160	1710
Waste Fiber	1394	1910	3310
Non-Wood Fibers	211	190	230
Fillers/Pigments	40	40	70
Total Furnish	3460	4380	6980
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	4.5	6.3	7.1
Unbleached Kraft	21.9	21.0	19.0
White Chemical Pulp	30.0	29.3	26.8
Waste Fiber	43.3	48.2	52.0
Non-Wood Fibers	6.6	4.8	3.6
Fillers/Pigments	1.2	1.0	1.1
Total Furnish Percent Input	107.5%	110.6%	109.6%

* Production ÷ Consumption
** Includes Unbleached Sulfite

5.0 JAPAN

5.1 SELF-SUFFICIENCY

5.1.1 Total Paper and Paperboard

Production of total paper and paperboard in Japan during the 1972/74-90 period is projected to grow at an annual rate of 4.1%. This is only slightly below the consumption growth rate of 4.3%. The result is a slight shift in export trade. Table 5.1 shows that Japanese self-sufficiency is expected to begin changing in the 1980's, declining from 102% in 1980 to 99% in 1990.

5.1.2 Newsprint

One of the key reasons for this expected decline in self-sufficiency is newsprint. Although Japan has the potential for exporting newsprint in 1980, it is projected to be a net importer of 125,000 tons in 1990. Members of the Review Panel suggested self-sufficiency levels ranging from a small net export balance to net imports of 500,000 tons. The Working Party decided that its original submission represented a reasonable consensus of the Review Panel's views and thus did not change its preliminary outlook for the final report.

5.1.3 Printing and Writing Paper

Japanese net exports of printing and writing paper are projected to continue in the 50,000 ton range throughout the 1980's. Table 5.2.3 shows that self-sufficiency is expected to change from 102% in 1972/74 to 101% in 1990. The Review Panel agreed with the Working Party's view that Japan would remain a net exporter. One panelist, however, pointed out that Japan would probably follow the international trend toward greater use of wood-containing grades which would tend (as in newsprint) to open up the market to foreign suppliers.

5.1.4 Other Paper and Paperboard

Japanese production of other paper and paperboard products is expected to grow at a 3.9% rate compared with a consumption growth rate of 4.1%. Table 5.2.1 shows that Japan by 1990 is expected to have shifted from an export surplus position to a slight deficit.

Most panelists agreed with the Working Party's preliminary submission. One panelist and some members of the Working Party, however, expressed strong concern about the modest level of the projected 1990 deficit. They suggested that a net import level of half a million to one million tons would be more realistic.

5.2 FIBER FURNISH

5.2.1 Total Paper and Paperboard

Japan's fiber furnish is projected to shift away from both chemical and mechanical pulp grades toward an increased utilization of waste fiber. Table 5.1 shows that waste fiber's percent in total furnish is expected to rise from 38.4% in 1972/74 to 44.1% by 1990. Consumption of fillers and pigments will also increase but only modestly.

5.2.2 Newsprint

White pulp's share of total newsprint furnish is expected to decline markedly in the 1972/74-90 period (27% to 22%). Table 5.2.2 shows that the primary substitute for white pulp is expected to be groundwood although some increased utilization of waste fiber is alao anticipated. The Review Panel generally agreed with the Working Party's preliminary view. One panelist, however, suggested that white pulp's share might fall even further to 18%, offset by both increased groundwood and waste fiber.

5.2.3 Printing and Writing Paper

Table 5.2.3 shows that there is no basic change anticipated in Japan's fiber furnish mix for printing and writing paper grades. The Review Panel concurred with the Working Party's preliminary fiber furnish outlook.

5.2.4 Other Paper and Paperboard

Waste paper constituted almost 53% of the furnish consumed in Japan's 1972/74 production of other paper and paperboard. By 1990 this share of waste paper is projected to climb even further, reaching close to 63%. The implicit decline of virgin fiber pulp is concentrated in white chemical pulp and mechanical/semi-chemical grades. Unbleached kraft pulp is expected to maintain a fundamentally unchanged share of the furnish.

The Review Panel agreed with the Working Party's preliminary furnish outlook except for one member who felt that the decline in mechanical/semi-chemical pulp was too large. In preparing its final furnish outlook, the Working Party weighted the high growth potential for TMP against the region's expected priority to use imported wood chips for higher value-added chemical pulp. The end result was a decision to maintain the downward trend in the share of mechanical/semi-chemical pulp proposed in the preliminary outlook but to raise the 1990 share from 8.7% to 10.0%.

Table 5.1

JAPAN

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	15089	19442	29921
Net Trade [Import, (Export)]	(272)	(376)	164
Apparent Consumption	14817	19066	30085
Self-Sufficiency Percent*	102%	102%	99%

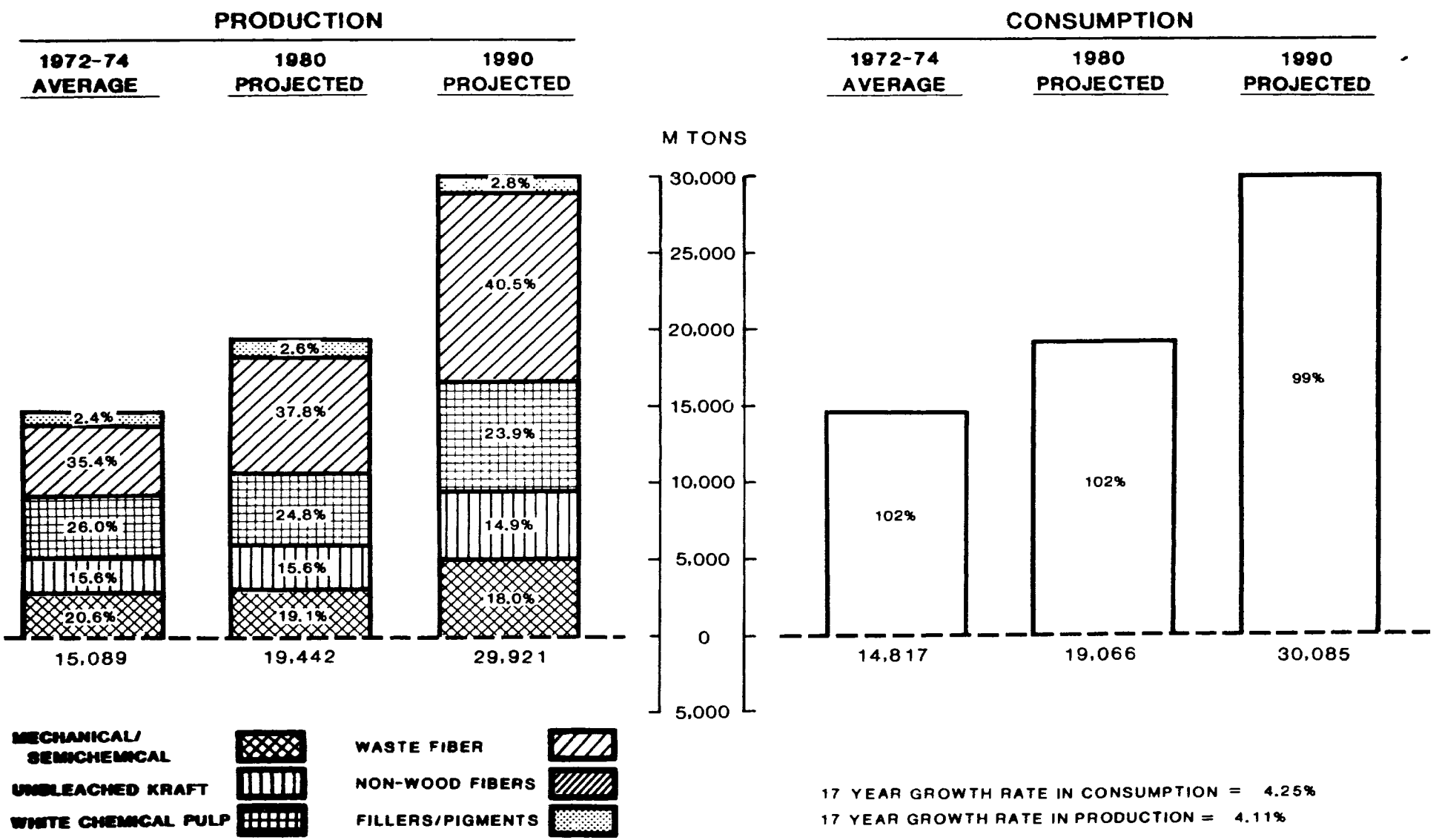
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	3379	4045	5883
Unbleached Kraft	2553	3306	4852
White Chemical Pulp**	4262	5255	7794
Waste Fiber	5794	8011	13207
Non-Wood Fibers			
Fillers/Pigments	384	552	904
Total Furnish	16372	21169	32640
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	22.4	20.8	19.7
Unbleached Kraft	16.9	17.0	16.2
White Chemical Pulp	28.3	27.0	26.1
Waste Fiber	38.4	41.2	44.1
Non-Wood Fibers			
Fillers/Pigments	2.5	2.8	3.0
Total Furnish Percent Input	108.5%	108.8%	109.1%

* Production ÷ Consumption
** Includes Unbleached Sulfite

CHART 5.1

TOTAL JAPAN

Total Paper and Paperboard



17 YEAR GROWTH RATE IN CONSUMPTION = 4.25%

17 YEAR GROWTH RATE IN PRODUCTION = 4.11%

Table 5.2.2

JAPAN

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2133	2712	4087
Net Trade [Import, (Export)]	18	(50)	125
Apparent Consumption	2151	2662	4212
Self-Sufficiency Percent*	99%	102%	97%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	1581	2061	3200
Unbleached Kraft White Chemical Pulp**	576	665	903
Waste Fiber	147	203	311
Non-Wood Fibers			
Fillers/Pigments	13	16	29
Total Furnish	2317	2945	4443
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	74.1	76.0	78.3
Unbleached Kraft White Chemical Pulp	27.0	24.5	22.1
Waste Fiber	6.9	7.5	7.6
Non-Wood Fibers			
Fillers/Pigments	0.6	0.6	0.7
Total Furnish Percent Input	108.6%	108.6%	108.7%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 5.2.2

JAPAN

Newsprint

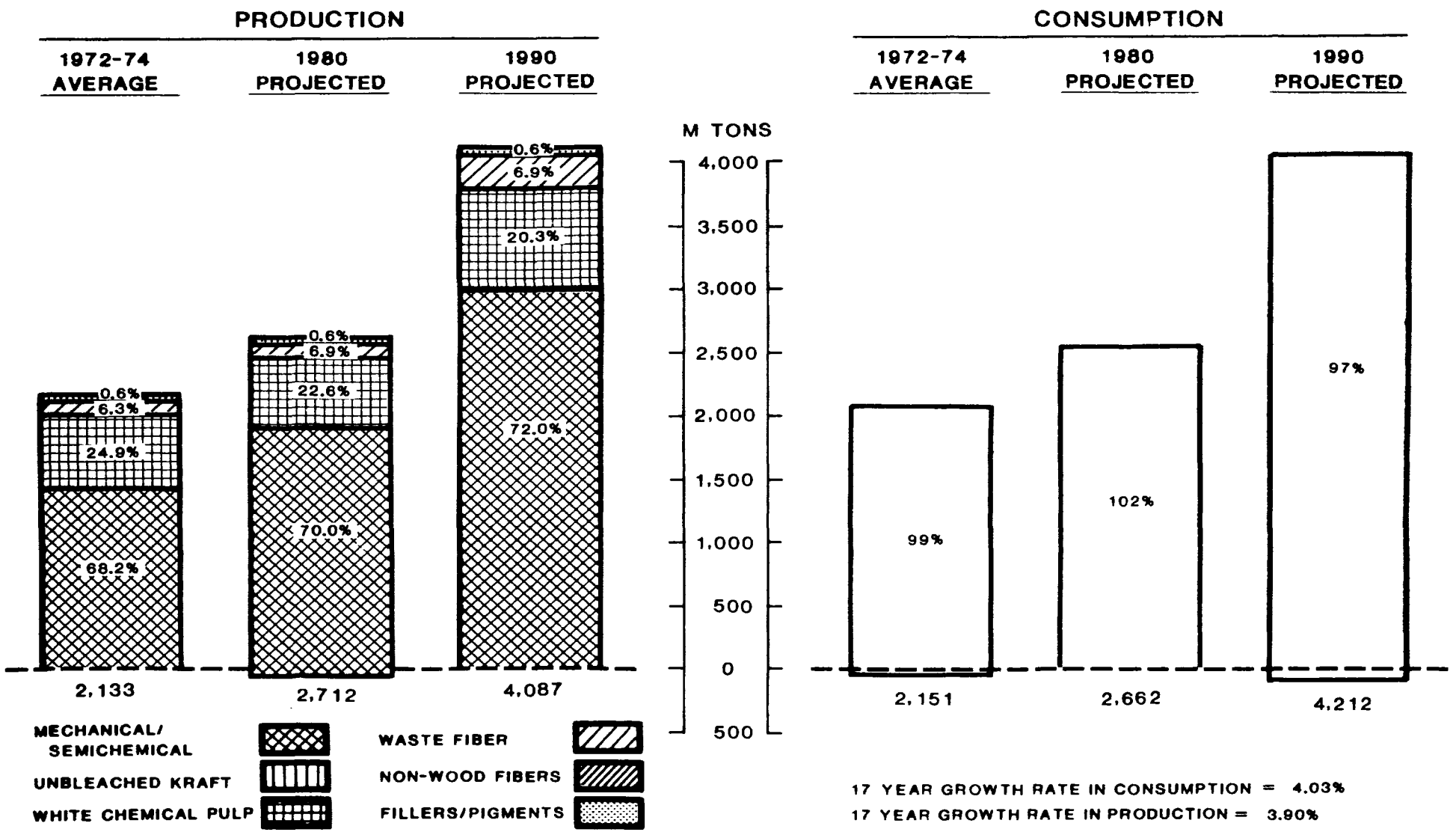


Table 5.2.3

JAPAN

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2735	3933	6192
Net Trade [Import, (Export)]	(51)	(48)	(55)
Apparent Consumption	2684	3885	6137
Self-Sufficiency Percent*	102%	101%	101%

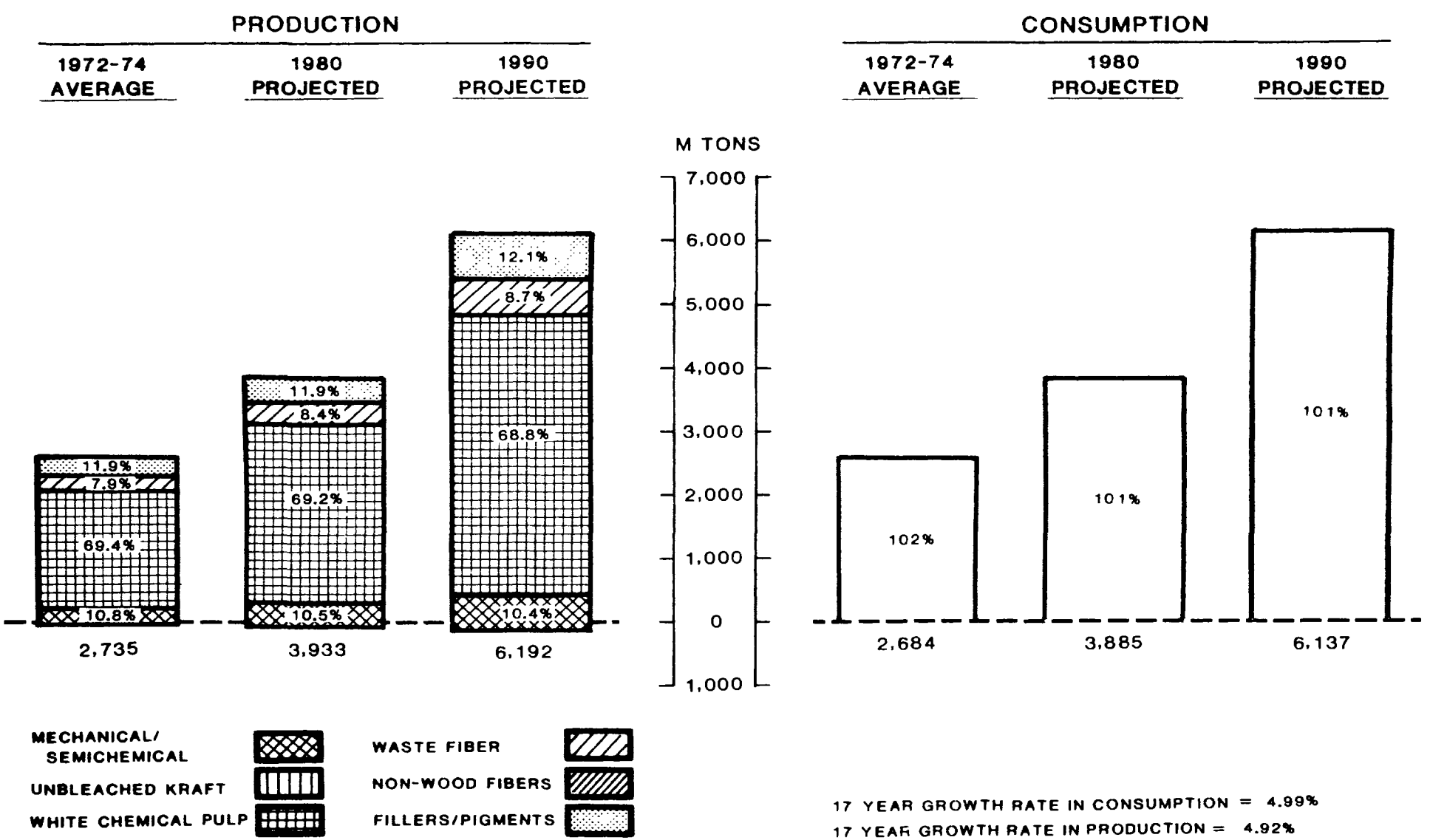
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	328	460	719
Unbleached Kraft White Chemical Pulp**	2112	3028	4750
Waste Fiber	241	366	600
Non-Wood Fibers Fillers/Pigments	361	523	836
Total Furnish	3042	4377	6905
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	12.0	11.7	11.6
Unbleached Kraft White Chemical Pulp	77.2	77.0	76.7
Waste Fiber	8.8	9.3	9.7
Non-Wood Fibers Fillers/Pigments	13.2	13.3	13.5
Total Furnish Percent Input	111.2%	111.3%	111.5%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 5.2.3

JAPAN

Printing and Writing Paper



17 YEAR GROWTH RATE IN CONSUMPTION = 4.99%

17 YEAR GROWTH RATE IN PRODUCTION = 4.92%

Table 5.2.4

JAPAN

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	10221	12797	19642
Net Trade [Import, (Export)]	(239)	(278)	94
Apparent Consumption	9982	12519	19736
Self-Sufficiency Percent*	102%	102%	100%

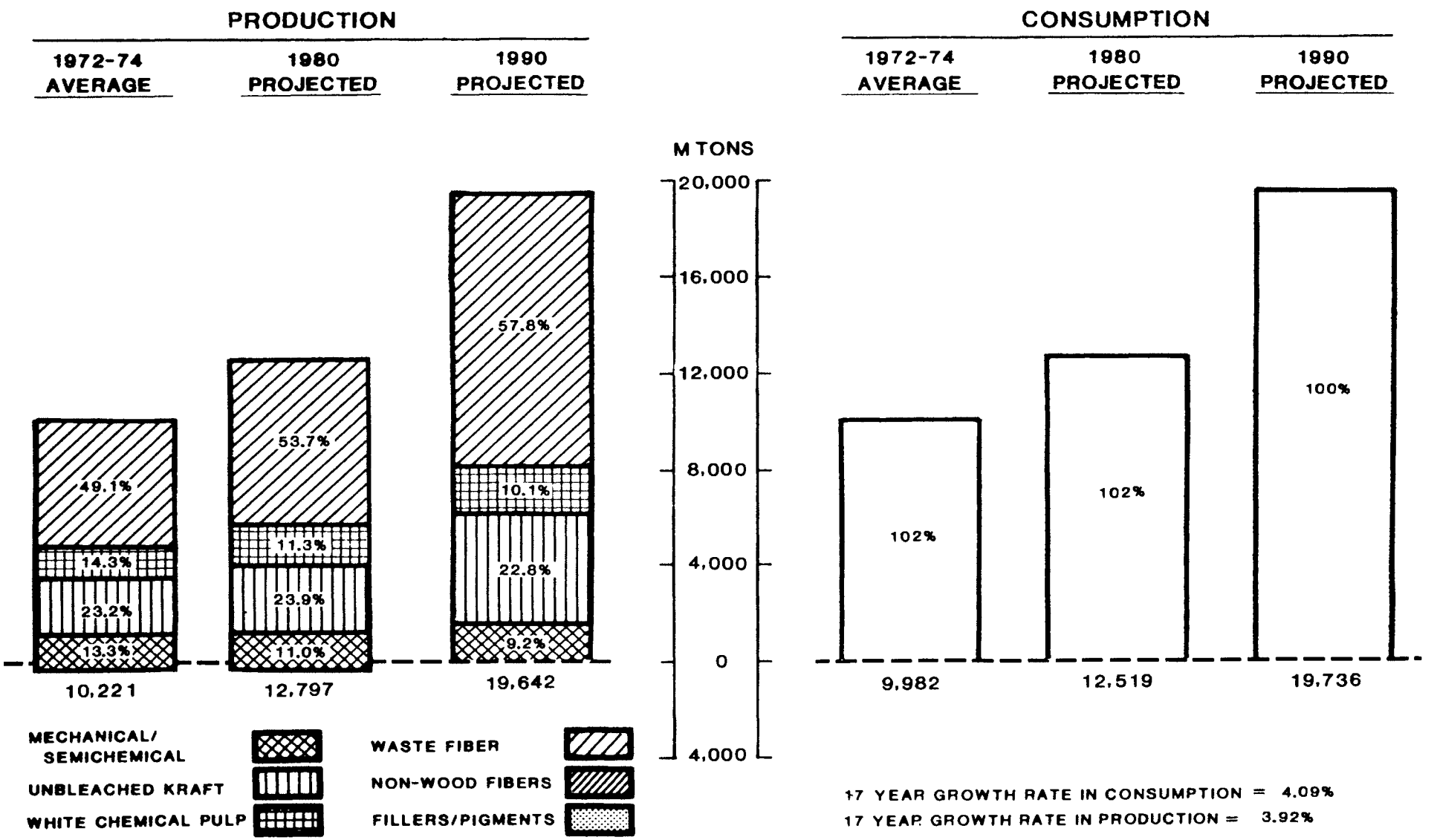
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	1470	1524	1964
Unbleached Kraft	2553	3306	4852
White Chemical Pulp**	1574	1562	2141
Waste Fiber	5406	7442	12296
Non-Wood Fibers			
Fillers/Pigments	10	13	39
Total Furnish	11013	13847	21292
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	14.4	11.9	10.0
Unbleached Kraft	25.0	25.8	24.7
White Chemical Pulp	15.4	12.2	10.9
Waste Fiber	52.9	58.2	62.6
Non-Wood Fibers			
Fillers/Pigments	0.1	0.1	0.2
Total Furnish Percent Input	107.8%	108.2%	108.4%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 5.2.4

JAPAN

Other Paper and Paperboard



6.0 LATIN AMERICA

6.1 SELF-SUFFICIENCY

6.1.1 Total Paper and Paperboard

Latin America's production of paper and paperboard is expected to grow at an annual rate of 6.5% in the 1972/74-90 period. Consumption is expected to grow at a 5.3% rate. Table 6.1 shows how Latin America's self-sufficiency is expected to rise from 74% to 90% during that period although net imports are expected to stay in the 1.4 - 1.6 million ton range.

6.1.2 Newsprint

Latin America's self-sufficiency in newsprint is expected to rise from 27% in 1973 to 57% in 1990. Despite this increase in self-sufficiency, Table 6.2.2 shows that net imports are still projected to remain in the 700,000 ton range. Many Review Panel members disagreed with the Working Party's estimate of 68% self-sufficiency for 1990. Particular factors noted by panelists included a shortage of capital, environmental considerations and short-comings of non-wood fibers. As a consequence of the Review Panel's suggestions, net imports in 1990 were raised from 550,000 to 750,000 tons.

6.1.3 Printing and Writing Paper

Printing and writing paper self-sufficiency in Latin America is projected to rise from 81% to 89% during the 1972/74-90 period. Despite this increase, Table 6.2.3 shows that net imports are expected roughly to double from 214,000 to 393,000 tons. The Review Panel agreed with the Working Party's preliminary estimates for regional self-sufficiency.

6.1.4 Other Paper and Paperboard

Latin America's self-sufficiency of other paper and paperboard is forecasted to increase from 84% to 96%. Production is expected to grow at an annual rate of 6% and reach 9.7 million tons in 1990.

The area's wood resources can support an even higher production level which could result in a net export level by 1990. The orientation of these resources towards hardwood, however, makes it probable that the production of other paper and paperboard will be primarily for markets within the region and that exports out of Latin America will consist mainly of bleached pulp. The Review Panel agreed with the Working Party's forecasts.

6.2 FIBER FURNISH

6.2.1 Total Paper and Paperboard

Latin America's fiber furnish mix is expected to show only a small change during the 1972/74-90 period. Table 6.1 shows that chemical pulp is projected to decline from 39.7% to 36.1% of total furnish. Unbleached kraft pulp is projected to decline from 14.5% to 13.0% while white pulp is expected to fall from 25.2% to 23.1%. These declines will be partially offset by increased utilization of mechanical pulp and partially by improved machine efficiencies.

6.2.2 Newsprint

The major shift in newsprint furnish during the 1972/74-90 period is expected to be in the area of waste and non-wood fibers. All Latin American newsprint production in the 1972/74 period was based on groundwood plus chemical pulp. By 1990 the Working Party estimates that this furnish combination will represent only 64.3% of the 104% newsprint furnish input. Table 6.2.2 shows that the inputs of waste and non-wood fibers per ton of newsprint produced in 1990 are estimated to be 11.0% and 27.0% respectively.

The Review Panel disagreed with the Working Party's preliminary assumption about the 1990 share of non-wood fibers in total furnish. It also suggested that waste fiber consumption was probably understated. Consequently, the Working Party reduced the 1990 share of non-wood fibers in furnish input from 29.7% to 27.0% and assigned most of that reduction to waste fiber.

6.2.3 Printing and Writing Paper

The major change in Latin America furnish anticipated for printing and writing papers is a decline in the proportion of non-wood fibers. Table 6.2.3 shows that despite a 64% increase in their use between 1972/74 and 1990, they are projected to fall from 21.2% to 10.0% of the furnish input. The major furnish components to increase are expected to be white pulp and waste fiber. They are projected to increase from 54.9% to 58.4% and 13.8% to 18.7% respectively. In general, the Review Panel agreed with the Working Party's preliminary outlook which was not changed although one panelist suggested 1990 percents for white pulp and non-wood fibers of 55.9% and 12.5%.

6.2.4 Other Paper and Paperboard

Consumption of white chemical pulp in other paper and paperboard is projected to decline from 17.8% in 1972/74 to 12.0% in 1990. As in most other areas, TMP is expected to grow rapidly. The share of mechanical/semi-chemical pulp in the fiber furnish is forecasted to increase from 9.9% in 1972/74 to 14.0% in 1990. The shares of unbleached kraft pulp (19%), waste fiber (49%) and non-wood fibers (12%) are expected to remain essentially unchanged through 1990. The Review Panel agreed with the Working Party's forecasts.

Table 6.1

TOTAL LATIN AMERICA

PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	4738	7572	13848
Net Trade [Import, (Export)]	1630	1359	1548
Apparent Consumption	6368	8931	15396
Self-Sufficiency Percent*	74%	85%	90%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	638	974	2092
Unbleached Kraft	687	1068	1809
White Chemical Pulp**	1192	1785	3198
Waste Fiber	1885	3148	5323
Non-Wood Fibers	611	949	1748
Fillers/Pigments	145	259	611
Total Furnish	5158	8183	14781
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	13.5	12.8	15.1
Unbleached Kraft	14.5	14.1	13.0
White Chemical Pulp	25.2	23.5	23.1
Waste Fiber	39.7	41.5	38.4
Non-Wood Fibers	12.8	12.5	12.6
Fillers/Pigments	3.1	3.4	4.4
Total Furnish Percent Input	108.8%	100.7%	106.7%

* Production ÷ Consumption
** Includes Unbleached Sulfite

CHART 6.1

TOTAL LATIN AMERICA

Total Paper and Paperboard

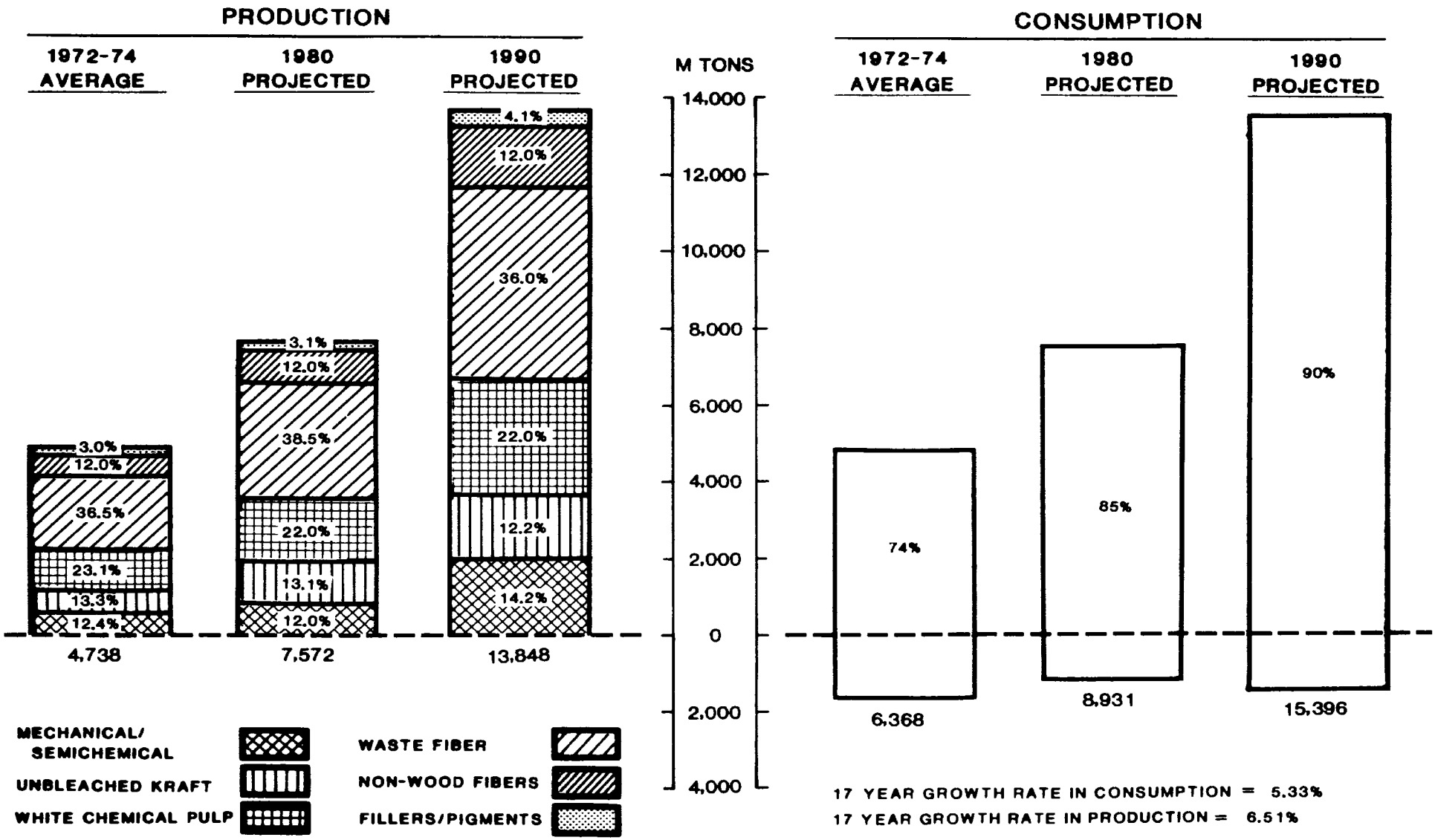


Table 6.2.2

LATIN AMERICA

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	264	600	987
Net Trade [Import, (Export)]	718	625	750
Apparent Consumption	982	1225	1737
Self-Sufficiency Percent*	27%	49%	57%

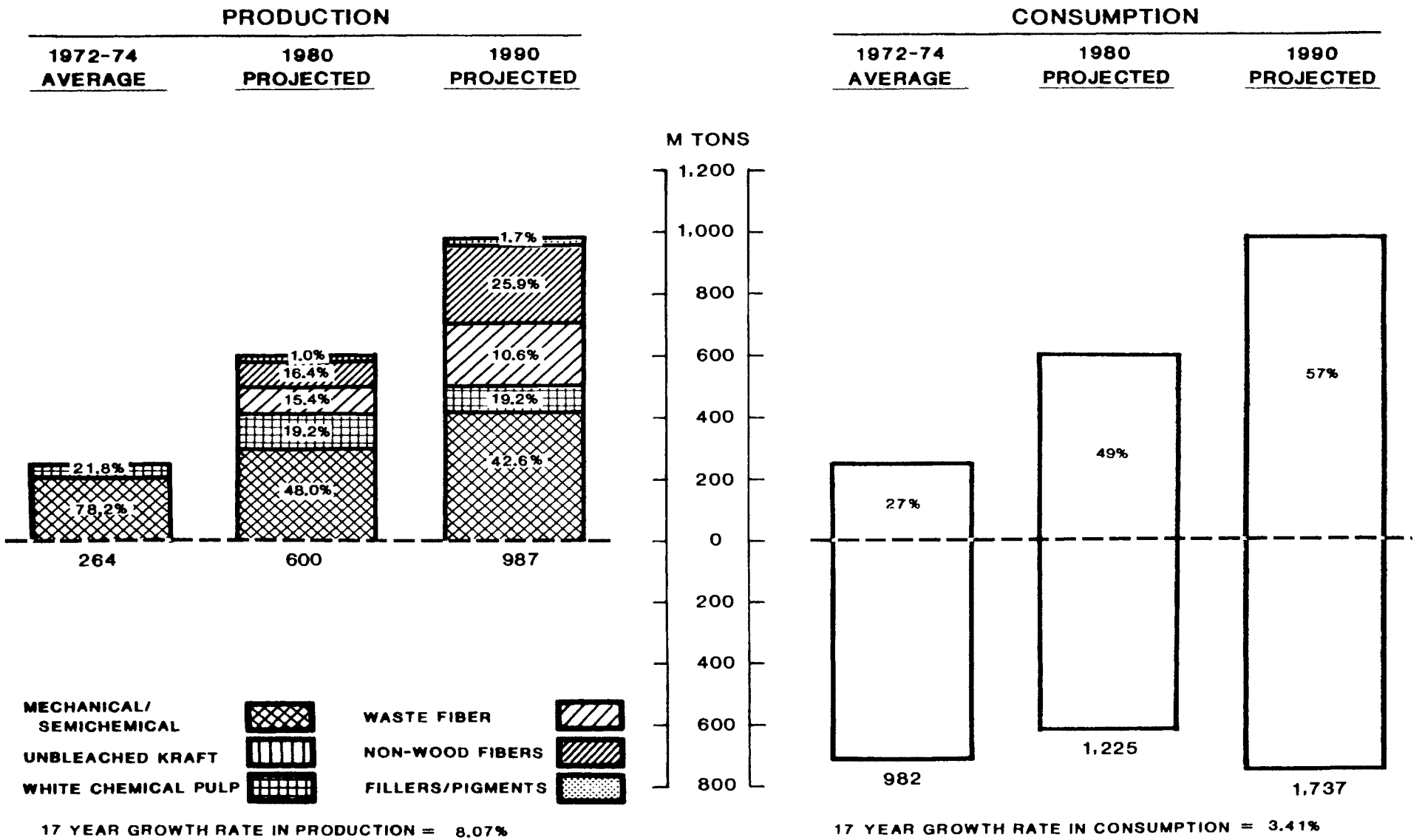
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	215	300	437
Unbleached Kraft White Chemical Pulp**	60	120	197
Waste Fiber		96	109
Non-Wood Fibers		102	266
Fillers/Pigments		6	17
Total Furnish	275	624	1026
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	81.4	50.0	44.3
Unbleached Kraft White Chemical Pulp	22.7	20.0	20.0
Waste Fiber		16.0	11.0
Non-Wood Fibers		17.0	27.0
Fillers/Pigments		1.0	1.7
Total Furnish Percent Input	104.1%	104.0%	104.0%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 6.2.2

LATIN AMERICA

Newsprint



17 YEAR GROWTH RATE IN PRODUCTION = 8.07%

17 YEAR GROWTH RATE IN CONSUMPTION = 3.41%

Table 6.2.3

LATIN AMERICA

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	905	1438	3138
Net Trade [Import, (Export)]	214	306	393
Apparent Consumption	1119	1744	3531
Self-Sufficiency Percent*	81%	83%	89%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	70	93	294
Unbleached Kraft White Chemical Pulp**	497	835	1834
Waste Fiber	125	230	586
Non-Wood Fibers	192	238	315
Fillers/Pigments	109	187	419
Total Furnish	993	1583	3448
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	7.7	6.5	9.4
Unbleached Kraft White Chemical Pulp	54.9	58.1	58.4
Waste Fiber	13.8	16.0	18.7
Non-Wood Fibers	21.2	16.6	10.0
Fillers/Pigments	12.0	13.0	13.4
Total Furnish Percent Input	109.6%	110.2%	109.9%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 6.2.3

LATIN AMERICA

Printing and Writing Paper

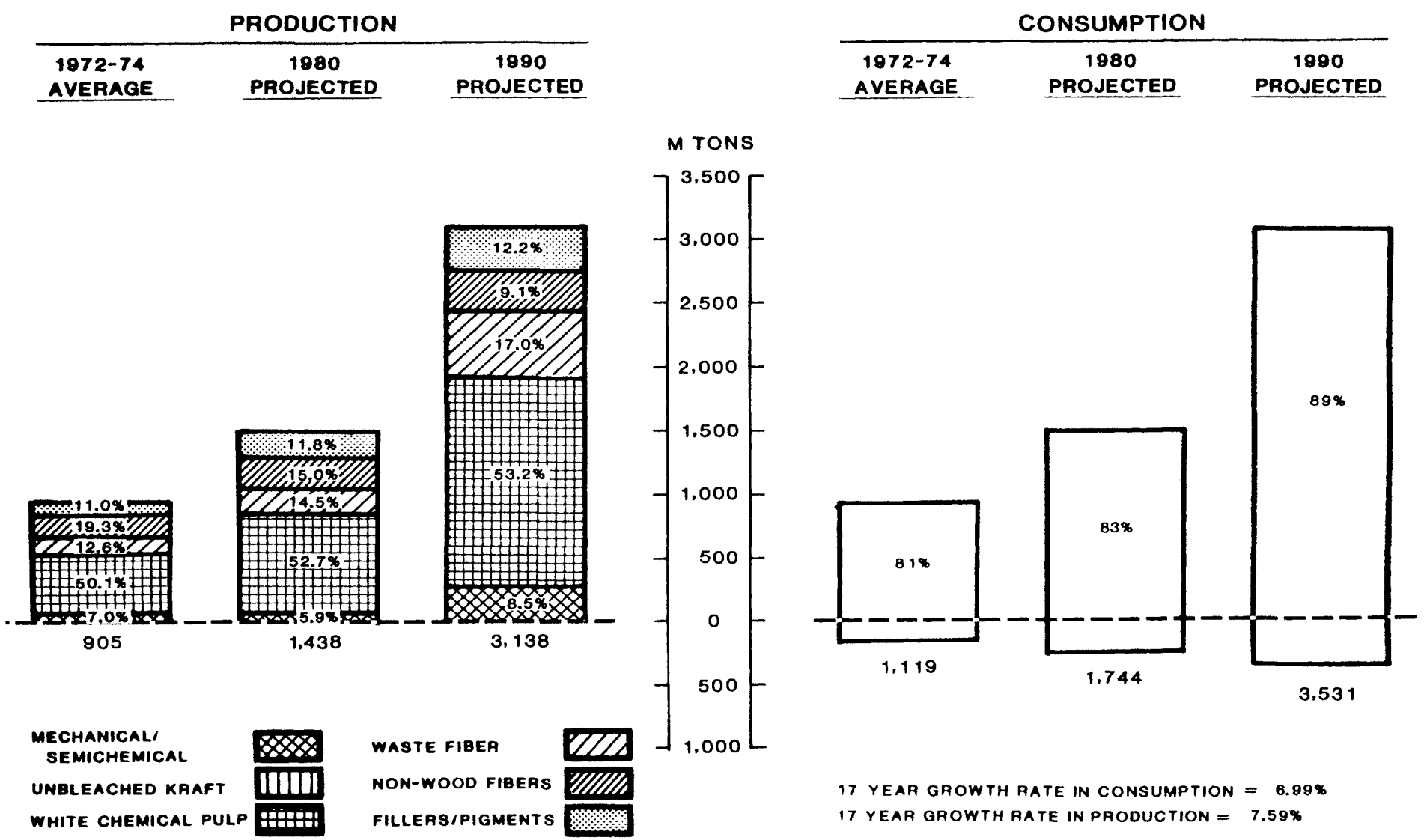


Table 6.2.4

LATIN AMERICA

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	3569	5534	9723
Net Trade [Import, (Export)]	698	428	405
Apparent Consumption	4267	5962	10128
Self-Sufficiency Percent*	84%	93%	96%

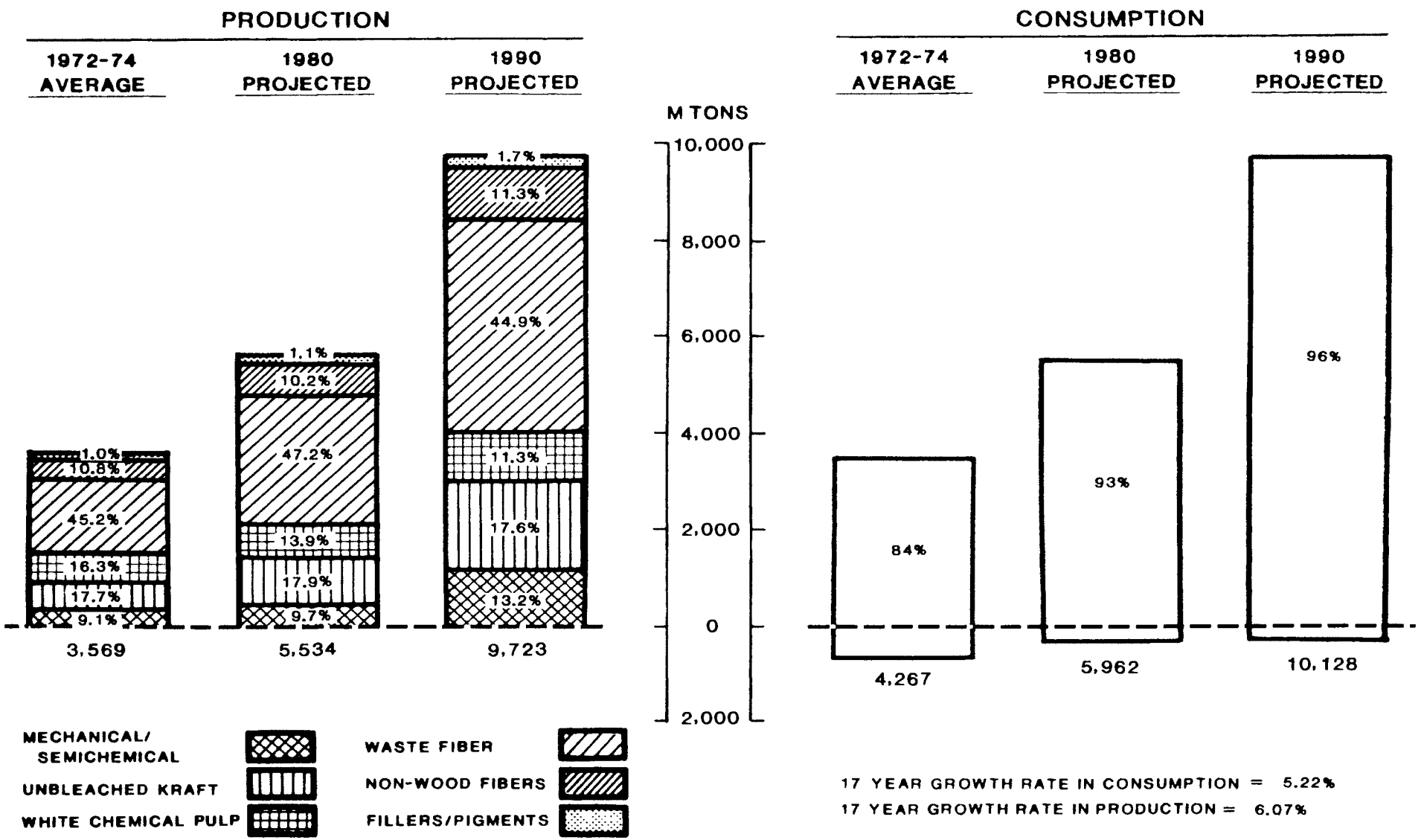
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	353	581	1361
Unbleached Kraft	687	1068	1809
White Chemical Pulp**	635	830	1167
Waste Fiber	1760	2822	4628
Non-Wood Fibers	419	609	1167
Fillers/Pigments	36	66	175
Total Furnish	3890	5976	10307
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	9.9	10.5	14.0
Unbleached Kraft	19.3	19.3	18.6
White Chemical Pulp	17.8	15.0	12.0
Waste Fiber	49.3	51.0	47.6
Non-Wood Fibers	11.7	11.0	12.0
Fillers/Pigments	1.0	1.2	1.8
Total Furnish Percent Input	109.0%	108.0%	106.0%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 6.2.4

LATIN AMERICA

Other Paper and Paperboard



17 YEAR GROWTH RATE IN CONSUMPTION = 5.22%

17 YEAR GROWTH RATE IN PRODUCTION = 6.07%

7.0 OTHER EASTERN HEMISPHERE

7.1 SELF-SUFFICIENCY

7.1.1 Total Paper and Paperboard

Despite a projected production increase of 5.2% per annum in the 1972/74-90 period, self-sufficiency of the Other Eastern Hemisphere region is projected to show very little change during that period. Table 7.1 shows that self-sufficiency is expected to rise from 67% in 1972/74 to only 69% in 1990.

A marked change in self-sufficiency is, however, projected for some subregions. Oceania is expected to increase its self-sufficiency from 80% to 91%, Africa South of the Sahara from 68% to 75% and the Far East from 69% to 75%. The Middle East plus North Africa subregion, however, is expected in 1990 to produce only 38% of its requirements. This represents no increase in self-sufficiency over the 1972/74 period.

7.1.2 Newsprint

The Other Eastern Hemisphere region is expected to increase its newsprint self-sufficiency markedly during the 1972/74-90 period. Table 7.2.2 shows that net imports into the region are projected to decline while production doubles.

While the region's self-sufficiency is estimated to rise from 56% to 79% in that period, Tables 7.2.2.1-4 show that the change anticipated for each subregion is quite different. Oceania is expected to become a net exporter with production doubling while consumption increases by only 40%. The Middle East should increase its self-sufficiency from 7% to 31%. Africa South of the Sahara is expected to supply its own needs by 1990. The Far East is expected to reduce its imports as consumption rises.

The Working Party retained its basic view of self-sufficiency for the region after examining the Review Panel's responses. In some cases, the panelists felt the Working Party too optimistic, suggesting that such factors as fiber availability and infrastructure cost would slow down the development of indigenous production. In other cases, however, the Working Party was viewed as too pessimistic because of the drive of specific countries to become self-sufficient for their newsprint.

7.1.3 Printing and Writing Paper

Self-sufficiency of printing and writing paper supply in the Other Eastern Hemisphere region is projected to rise from 70% to 74% in the 1972/74-90 period. Most regions are expected to increase their self-sufficiency, but Oceania is expected to experience just the reverse. Tables 7.2.3.1-4 show the individual statistics projected for each of the four subregions.

7.1.3 Printing and Writing Paper (continued)

For all subregions except Oceania, the Working Party retained its original outlook for interregional trade. Oceania's projected production was dropped markedly in response to the views of a particularly qualified panelist. He pointed to the severe competition from overseas suppliers, the high costs arising from imported raw materials and Oceania's fragmented grade slate.

7.1.4 Other Paper and Paperboard

Production growth in other paper and paperboard products is expected to rise 5.0% annually compared to a consumption growth of 5.4%. As a result self-sufficiency within the Other Eastern Hemisphere region is projected to fall from 70% in 1972/74 to 65% in 1990 (see Table 7.2.4). Two subregions (Middle East plus North Africa and the Far East) account for this decline. Self-sufficiency in Oceania and Africa South of the Sahara is projected to increase. Tables 7.2.4.1-4 show the trends anticipated by the Working Party.

The Working Party's view of total self-sufficiency for the region was unchanged as a result of the Review Panel's input. Production in 1990 for two subregions, however, was altered. Oceania's expected level of 1990 production was dropped 200,000 tons for reasons similar to the decline in printing and writing paper. Estimated production in the Far East, however, was increased by 200,000 tons to improve that subregion's expected self-sufficiency.

7.2 FIBER FURNISH

7.2.1 Total Paper and Paperboard

Fiber furnish within the Other Eastern Hemisphere region in 1990 is expected to show little change from the 1972/74 base period. Table 7.1 shows that a modest increase in chemical and mechanical/semi-chemical pulp is projected, primarily at the expense of waste and non-wood fibers. Although waste fiber utilization is expected to rise in all other regions, its decline is anticipated in the Other Eastern Hemisphere. Unbleached kraft paperboard production is expected to increase disproportionately in Oceania and the Far East, partially reducing imports from other regions.

7.2.2 Newsprint

Waste fiber utilization is expected to decline in newsprint production during the 1972/74 period primarily because of a shift in the Far East's furnish mix. Table 7.2.2.4 shows that the Far East is expected to add significant new newsprint capacity based on groundwood and non-wood fiber furnish. Despite a small increase in waste fiber utilization, its share of the furnish input is expected to decline from 36.1% in 1972/74 to 16.3% in 1990.

7.2.2 Newsprint (continued)

The Working Party has modified its 1980-90 outlook for the Far East in response to the Review Panel's input. Waste fiber figures more prominently in the furnish mix than the Working Party proposed in its preliminary outlook.

7.2.3 Printing and Writing Paper

Fiber furnish for printing and writing paper in the Other Eastern Hemisphere is projected to shift toward groundwood grades away from non-wood fibers. Table 7.2.3 shows the expected shift in mix which is primarily caused by a reduction in the Far East proportion of non-wood furnish. Table 7.2.3.4 shows the shift anticipated for the Far East which represents an estimated 56% of the subregion's 1990 production.

The Working Party modified its view of printing and writing paper furnish for all subregions in response to the Review Panel's input. The most significant shifts affected non-wood fibers in the Middle East and North Africa and in the Far East and waste fiber in Oceania.

7.2.4 Other Paper and Paperboard

The Other Eastern Hemisphere's fiber furnish mix for other paper and paperboard is not projected to change markedly between the 1972/74-90 period. Table 7.2.4 shows the magnitude of the decline noted in paragraph 7.2.1. Tables 7.2.4.1-4 provide the Working Party's outlook for each of the four subregions.

Comments from regional specialists on the Review Panel were particularly helpful in assisting the Working Party to develop its final outlook for this region. The Working Party believes that its revised outlook, although still speculative, is now grounded on a more substantial base.

Table 7.1

OTHER EASTERN HEMISPHERE

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons		
	1972-74	1980	1990
Production	5846	7906	13769
Net Trade [Import, (Export)]	2834	3884	6213
Apparent Consumption	8680	11790	19982
Self-Sufficiency Percent*	67%	67%	69%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	1016	1571	2655
Unbleached Kraft	1026	1433	2551
White Chemical Pulp**	1103	1461	2558
Waste Fiber	1694	2318	3654
Non-Wood Fibers	1297	1469	2880
Fillers/Pigments	178	254	478
Total Furnish	6314	8506	14776
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	17.4	19.9	19.3
Unbleached Kraft	17.6	18.1	18.5
White Chemical Pulp	18.9	18.5	18.6
Waste Fiber	29.0	29.3	26.5
Non-Wood Fibers	22.2	18.6	20.9
Fillers/Pigments	3.0	3.2	3.5
Total Furnish Percent Input	108.1%	107.6%	107.3%

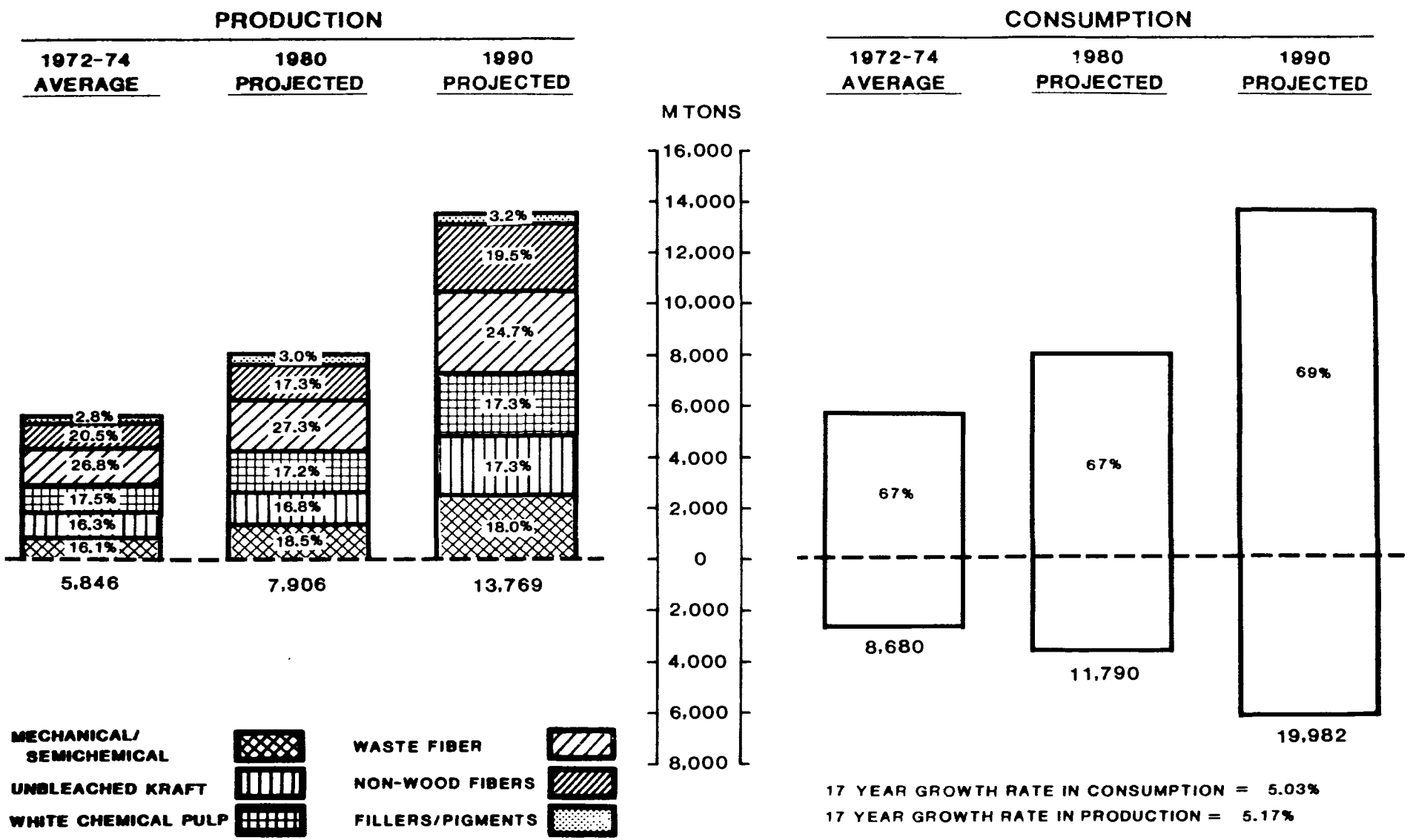
* Production + Consumption

** Includes Unbleached Sulfite

CHART 7.1

OTHER EASTERN HEMISPHERE

Total Paper and Paperboard



17 YEAR GROWTH RATE IN CONSUMPTION = 5.03%

17 YEAR GROWTH RATE IN PRODUCTION = 5.17%

Table 7.1.1

OCEANIA

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	1690	2246	3698
Net Trade [Import, (Export)]	422	527	366
Apparent Consumption	2112	2773	4064
Self-Sufficiency Percent*	80%	81%	91%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	474	598	1040
Unbleached Kraft	425	593	1125
White Chemical Pulp**	388	518	797
Waste Fiber	477	638	936
Non-Wood Fibers	5	7	12
Fillers/Pigments	38	54	84
Total Furnish	1807	2408	3994
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	28.0	26.6	28.1
Unbleached Kraft	25.1	26.4	30.4
White Chemical Pulp	23.0	23.7	22.0
Waste Fiber	28.2	28.4	25.3
Non-Wood Fibers	0.3	0.3	0.3
Fillers/Pigments	2.2	2.4	2.2
Total Furnish Percent Input	106.9%	107.2%	108.0%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 7.1.2

MIDDLE EAST

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	459	942	1914
Net Trade [Import, (Export)]	744	1178	3120
Apparent Consumption	1203	2120	5034
Self-Sufficiency Percent*	38%	44%	38%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	34	70	143
Unbleached Kraft	69	145	250
White Chemical Pulp**	59	115	312
Waste Fiber	149	300	496
Non-Wood Fibers	166	344	764
Fillers/Pigments	16	35	81
Total Furnish	493	1009	2046
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	7.4	7.4	7.5
Unbleached Kraft	15.0	15.4	13.1
White Chemical Pulp	13.0	12.2	16.3
Waste Fiber	32.4	32.0	26.0
Non-Wood Fibers	36.1	37.0	40.0
Fillers/Pigments	3.5	4.0	4.2
Total Furnish Percent Input	107.4%	107.1%	106.8%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 7.1.3

AFRICA SOUTH OF THE SAHARA

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	927	1265	2062
Net Trade [Import, (Export)]	445	548	693
Apparent Consumption	1372	1813	2755
Self-Sufficiency Percent*	68%	70%	75%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	269	400	577
Unbleached Kraft	232	253	376
White Chemical Pulp**	177	259	461
Waste Fiber	230	312	515
Non-Wood Fibers	50	74	148
Fillers/Pigments	38	57	118
Total Furnish	996	1355	2195
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	29.0	32.0	28.0
Unbleached Kraft	25.0	20.0	18.2
White Chemical Pulp	19.1	20.5	22.4
Waste Fiber	25.0	25.0	25.0
Non-Wood Fibers	5.4	5.8	7.1
Fillers/Pigments	4.1	4.5	5.7
Total Furnish Percent Input	107.4%	107.1%	106.4%

* Production + Consumption
** Includes Unbleached Sulfite

Table 7.1.4

FAR EAST

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2770	3453	6095
Net Trade [Import, (Export)]	1223	1631	2043
Apparent Consumption	3993	5084	8129
Self-Sufficiency Percent*	69%	68%	75%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	239	503	895
Unbleached Kraft	300	442	800
White Chemical Pulp**	479	569	988
Waste Fiber	838	1068	1707
Non-Wood Fibers	1076	1044	1956
Fillers/Pigments	86	108	195
Total Furnish	3018	3734	6541
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	8.6	14.6	14.7
Unbleached Kraft	10.3	12.8	13.1
White Chemical Pulp	17.3	16.5	16.2
Waste Fiber	30.3	31.0	28.0
Non-Wood Fibers	38.8	30.2	32.1
Fillers/Pigments	3.1	3.1	3.2
Total Furnish Percent Input	108.9%	108.1%	107.3%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 7.2.2

OTHER EASTERN HEMISPHERE

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	910	1323	2057
Net Trade [Import, (Export)]	706	574	550
Apparent Consumption	1616	1897	2607
Self-Sufficiency Percent*	56%	70%	79%

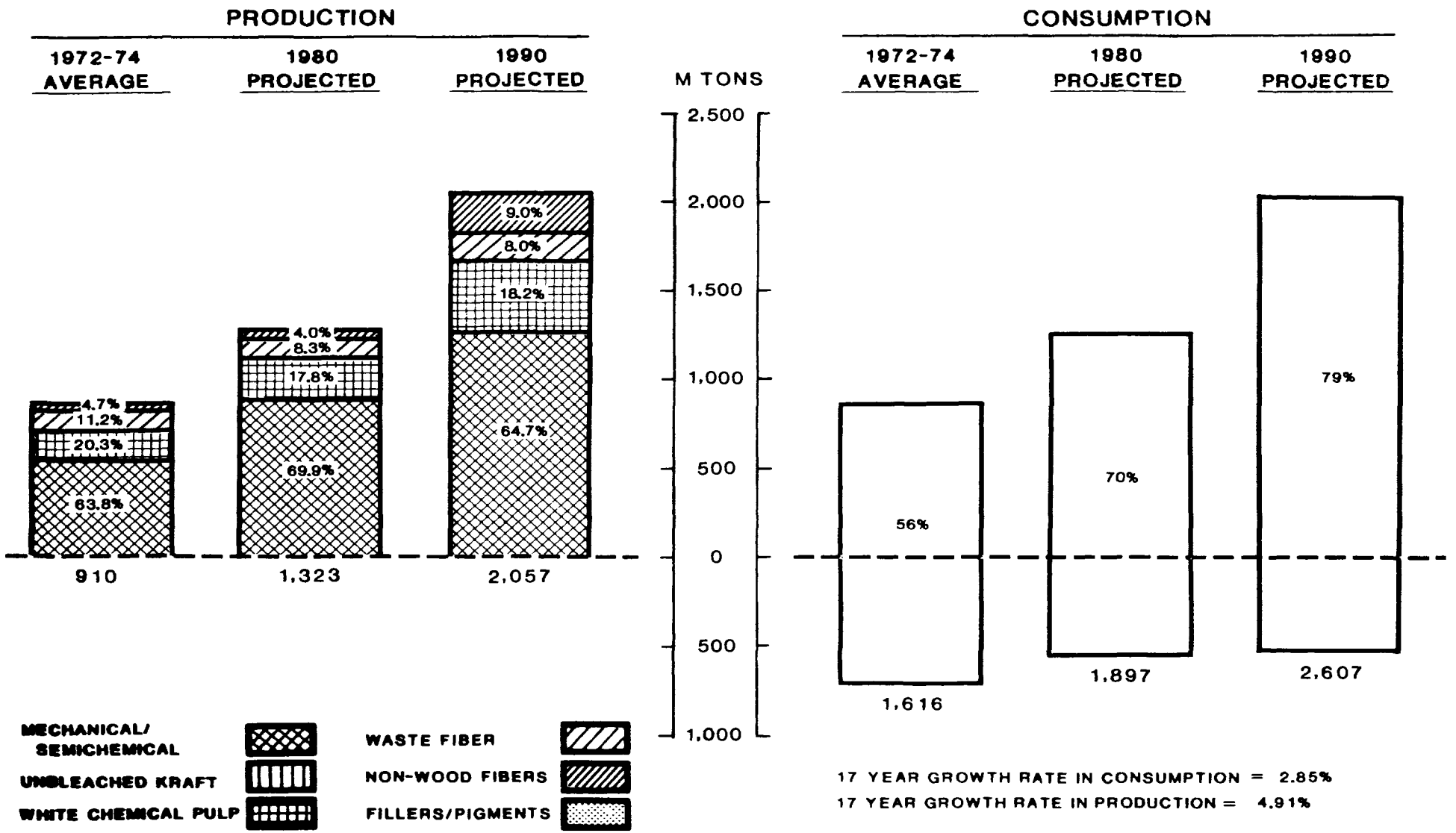
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	612	976	1395
Unbleached Kraft White Chemical Pulp**	195	248	393
Waste Fiber	107	116	172
Non-Wood Fibers	45	56	193
Fillers/Pigments			3
Total Furnish	959	1396	2156
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	67.3	73.8	67.8
Unbleached Kraft White Chemical Pulp	21.4	18.7	19.1
Waste Fiber	11.8	8.8	8.4
Non-Wood Fibers	4.9	4.2	9.4
Fillers/Pigments			0.1
Total Furnish Percent Input	105.4%	105.5%	104.8%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 7.2.2

OTHER EASTERN HEMISPHERE

Newsprint



17 YEAR GROWTH RATE IN CONSUMPTION = 2.85%

17 YEAR GROWTH RATE IN PRODUCTION = 4.91%

Table 7.2.2.1

OCEANIA

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	407	502	798
Net Trade [Import, (Export)]	133	119	(50)
Apparent Consumption	540	621	748
Self-Sufficiency Percent*	75%	81%	107%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	337	421	685
Unbleached Kraft White Chemical Pulp**	86	101	145
Waste Fiber			
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish	423	522	830
Percent	**Percent of Product Produced**		
Mechanical/Semi-Chemical	82.8	83.9	85.8
Unbleached Kraft White Chemical Pulp	21.1	20.1	18.2
Waste Fiber			
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish Percent Input	103.9%	104.0%	104.0%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 7.2.2.2

MIDDLE EAST AND NORTH AFRICA

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	9	20	80
Net Trade [Import, (Export)]	126	162	200
Apparent Consumption	135	182	288
Self-Sufficiency Percent*	7%	11%	31%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	6	10	10
Unbleached Kraft White Chemical Pulp**			14
Waste Fiber	5	5	5
Non-Wood Fibers		6	60
Fillers/Pigments			3
Total Furnish	9	21	92
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	66.7	50.0	11.4
Unbleached Kraft White Chemical Pulp			15.9
Waste Fiber	33.3	25.0	5.7
Non-Wood Fibers		30.0	68.1
Fillers/Pigments			3.4
Total Furnish Percent Input	100.0%	105.0%	104.6%

* Production + Consumption
** Includes Unbleached Sulfite

Table 7.2.2.3

AFRICA SOUTH OF THE SAHARA

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	206	300	373
Net Trade [Import, (Export)]	12	(48)	0
Apparent Consumption	218	252	373
Self-Sufficiency Percent*	95%	119%	100%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	162	237	261
Unbleached Kraft White Chemical Pulp**	52	75	90
Waste Fiber			37
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish	214	312	388
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	78.6	79.0	70.0
Unbleached Kraft White Chemical Pulp	25.2	25.0	24.1
Waste Fiber			9.9
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish Percent Input	103.9%	104.0%	104.0%

* Production + Consumption
** Includes Unbleached Sulfite

Table 7.2.2.4

FAR EAST

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	288	501	798
Net Trade [Import, (Export)]	435	341	400
Apparent Consumption	723	842	1198
Self-Sufficiency Percent*	40%	60%	67%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	107	308	439
Unbleached Kraft			
White Chemical Pulp**	57	72	144
Waste Fiber	104	111	130
Non-Wood Fibers	45	50	133
Fillers/Pigments			
Total Furnish	313	541	846
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	37.2	61.5	55.0
Unbleached Kraft			
White Chemical Pulp	19.8	14.4	18.1
Waste Fiber	36.1	22.2	16.3
Non-Wood Fibers	15.6	10.0	16.7
Fillers/Pigments			
Total Furnish Percent Input	108.7%	108.1%	106.1%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 7.2.3.

OTHER EASTERN HEMISPHERE

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	1415	1985	3712
Net Trade [Import, (Export)]	603	823	1301
Apparent Consumption	2018	2808	5013
Self-Sufficiency Percent*	70%	71%	74%

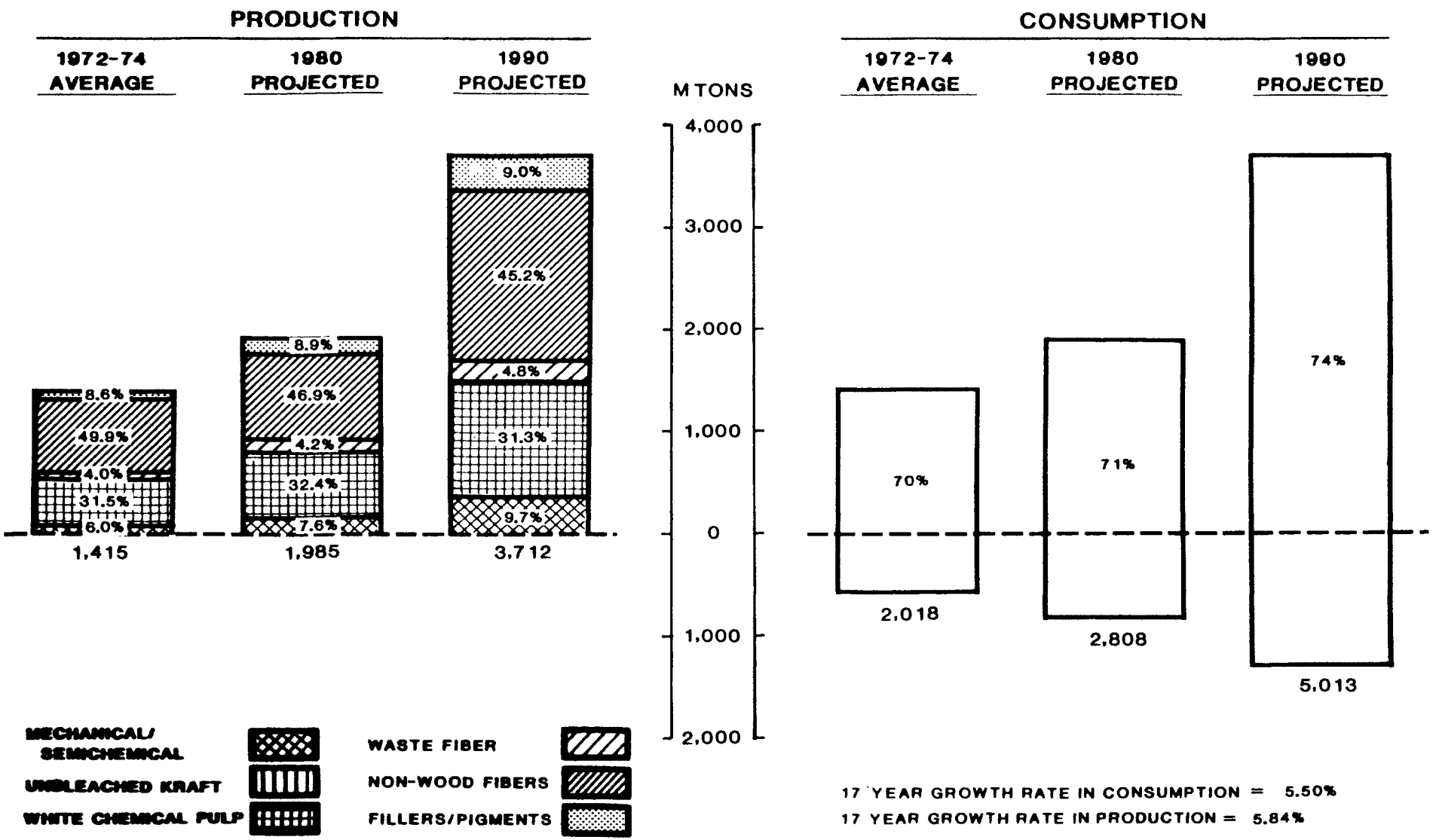
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	93	164	393
Unbleached Kraft White Chemical Pulp**	489	700	1263
Waste Fiber	62	90	193
Non-Wood Fibers	775	1012	1823
Fillers/Pigments	133	193	362
Total Furnish	1552	2159	4034
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	6.6	8.3	10.6
Unbleached Kraft White Chemical Pulp	34.6	35.3	34.0
Waste Fiber	4.4	4.5	5.2
Non-Wood Fibers	54.8	51.0	49.1
Fillers/Pigments	9.4	9.7	9.8
Total Furnish Percent Input	109.7%	108.8%	108.7%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 7.2.3

OTHER EASTERN HEMISPHERE

Printing and Writing Paper



17 YEAR GROWTH RATE IN CONSUMPTION = 5.50%

17 YEAR GROWTH RATE IN PRODUCTION = 5.84%

Table 7.2.3.1

OCEANIA

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	178	260	400
Net Trade [Import, (Export)]	133	210	380
Apparent Consumption	311	470	780
Self-Sufficiency Percent*	57%	55%	51%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	27	44	80
Unbleached Kraft White Chemical Pulp**	132	187	276
Waste Fiber	7	10	16
Non-Wood Fibers Fillers/Pigments	28	42	64
Total Furnish	194	283	436
Percent	**Percent of Product Produced**		
Mechanical/Semi-Chemical	15.2	16.9	20.0
Unbleached Kraft White Chemical Pulp	74.2	71.9	69.0
Waste Fiber	3.9	3.9	4.0
Non-Wood Fibers Fillers/Pigments	15.7	16.2	16.0
Total Furnish Percent Input	109.0%	108.9%	109.0%

* Production + Consumption
** Includes Unbleached Sulfite

Table 7.2.3.2

MIDDLE EAST AND NORTH AFRICA

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	173	342	826
Net Trade [Import, (Export)]	157	267	551
Apparent Consumption	330	609	1377
Self-Sufficiency Percent*	52%	56%	60%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical		17	83
Unbleached Kraft White Chemical Pulp**	45	86	248
Waste Fiber	9	17	41
Non-Wood Fibers	120	222	454
Fillers/Pigments	11	24	58
Total Furnish	185	366	884
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical		5.0	10.1
Unbleached Kraft White Chemical Pulp	26.0	25.2	30.0
Waste Fiber	5.2	5.0	5.0
Non-Wood Fibers	69.4	64.9	55.0
Fillers/Pigments	6.4	7.0	7.0
Total Furnish Percent Input	107.0%	107.1%	107.1%

* Production ÷ Consumption
** Includes Unbleached Sulfite

7.2.3.3

AFRICA SOUTH OF THE SAHARA

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons		
	1972-74	1980	1990
Production	115	199	389
Net Trade [Import, (Export)]	132	190	260
Apparent Consumption	247	389	649
Self-Sufficiency Percent*	47%	51%	60%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	17	32	62
Unbleached Kraft White Chemical Pulp**	70	107	215
Waste Fiber	2	4	10
Non-Wood Fibers	10	32	48
Fillers/Pigments	28	44	93
Total Furnish	127	219	428

Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	14.8	16.1	15.9
Unbleached Kraft White Chemical Pulp	60.9	53.8	55.3
Waste Fiber	1.7	2.0	2.6
Non-Wood Fibers	8.7	16.1	12.3
Fillers/Pigments	24.4	22.1	23.9
Total Furnish Percent Input	110.5%	110.1%	110.0%

* Production + Consumption
** Includes Unbleached Sulfite

Table 7.2.3.4

FAR EAST

PRINTING AND WRITING PAPER

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	949	1184	2097
Net Trade [Import, (Export)]	181	156	110
Apparent Consumption	1130	1340	2207
Self-Sufficiency Percent*	84%	88%	95%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	49	71	168
Unbleached Kraft White Chemical Pulp**	242	320	524
Waste Fiber	44	59	126
Non-Wood Fibers	645	758	1321
Fillers/Pigments	66	83	147
Total Furnish	1046	1291	2286
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	5.2	6.0	8.0
Unbleached Kraft White Chemical Pulp	25.5	27.0	25.0
Waste Fiber	4.6	5.0	6.0
Non-Wood Fibers	68.0	64.0	63.0
Fillers/Pigments	7.0	7.0	7.0
Total Furnish Percent Input	110.3%	109.0%	109.0%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 7.2.4

OTHER EASTERN HEMISPHERE

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	3521	4598	8000
Net Trade [Import, (Export)]	1525	2487	4362
Apparent Consumption	5046	7085	12362
Self-Sufficiency Percent*	70%	65%	65%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	311	431	867
Unbleached Kraft	1026	1433	2551
White Chemical Pulp**	419	513	902
Waste Fiber	1525	2112	3289
Non-Wood Fibers	477	401	864
Fillers/Pigments	45	61	113
Total Furnish	3803	4951	8586
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	8.8	9.4	10.8
Unbleached Kraft	29.1	31.2	31.9
White Chemical Pulp	11.9	11.2	11.3
Waste Fiber	43.3	45.9	41.1
Non-Wood Fibers	13.6	8.7	10.8
Fillers/Pigments	1.3	1.3	1.4
Total Furnish Percent Input	108.0%	107.7%	107.3%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 7.2.4

OTHER EASTERN HEMISPHERE

Other Paper and Paperboard

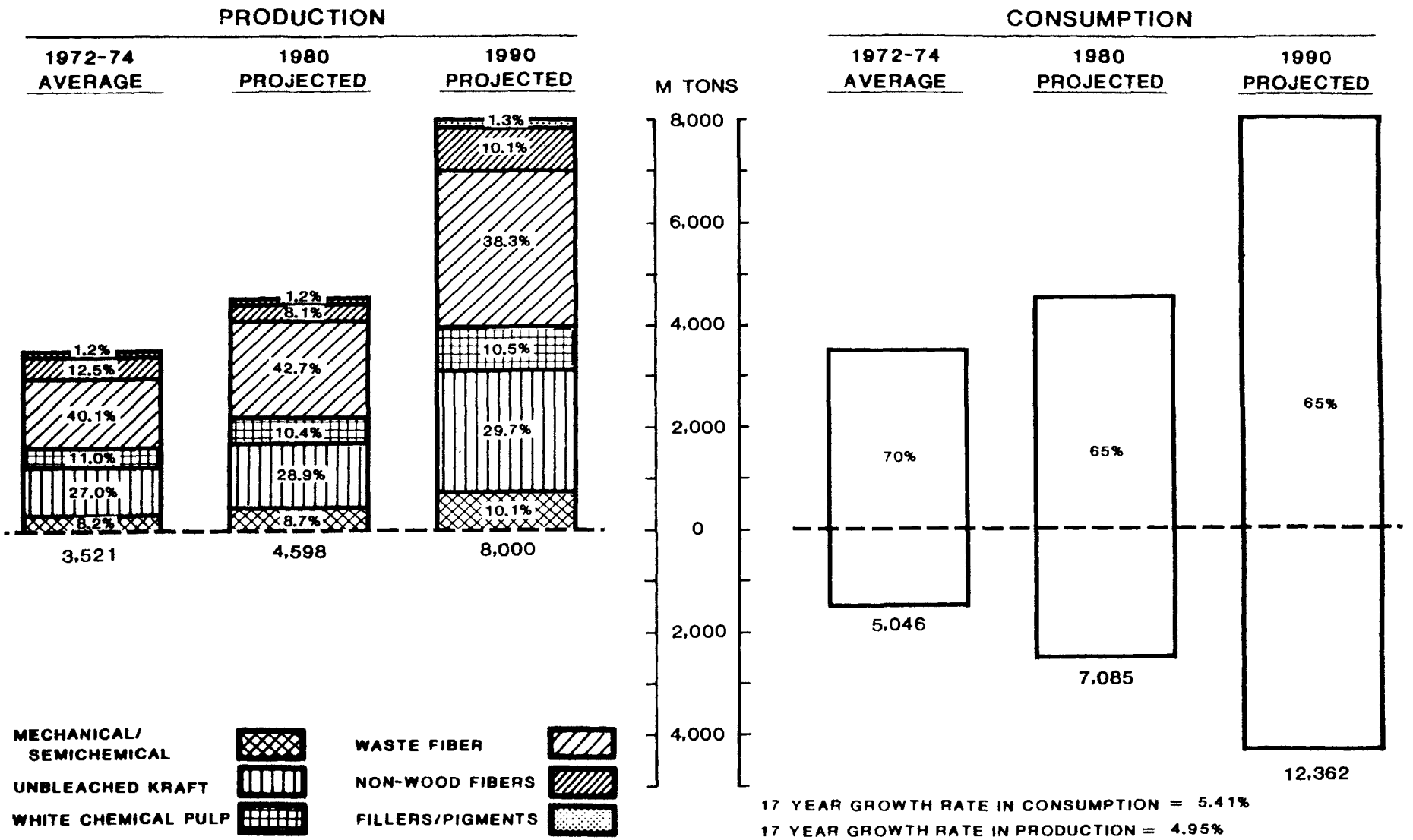


Table 7.2.4.1

OCEANIA

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	1105	1484	2500
Net Trade [Import, (Export)]	156	198	36
Apparent Consumption	1261	1682	2536
Self-Sufficiency Percent*	88%	88%	99%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	110	133	275
Unbleached Kraft	425	593	1125
White Chemical Pulp**	170	230	376
Waste Fiber	470	628	920
Non-Wood Fibers	5	7	12
Fillers/Pigments	10	12	20
Total Furnish	1190	1603	2728
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	9.2	9.0	11.0
Unbleached Kraft	35.7	40.0	45.0
White Chemical Pulp	14.3	15.5	14.7
Waste Fiber	39.5	42.3	36.0
Non-Wood Fibers	0.4	0.5	0.5
Fillers/Pigments	0.8	0.8	0.8
Total Furnish Percent Input	107.7%	108.0%	109.1%

* Production ÷ Consumption
** Includes Unbleached Sulfite

Table 7.2.4.2

MIDDLE EAST AND NORTH AFRICA

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	277	580	1000
Net Trade [Import, (Export)]	461	749	2369
Apparent Consumption	738	1329	3369
Self-Sufficiency Percent*	38%	44%	30%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	28	43	50
Unbleached Kraft	69	145	250
White Chemical Pulp**	14	29	50
Waste Fiber	137	278	450
Non-Wood Fibers	46	116	250
Fillers/Pigments	5	11	20
Total Furnish	299	622	1070
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	10.0	7.4	5.0
Unbleached Kraft	25.0	25.0	25.0
White Chemical Pulp	5.0	5.0	5.0
Waste Fiber	49.5	48.0	45.0
Non-Wood Fibers	16.6	20.0	25.0
Fillers/Pigments	2.0	2.0	2.0
Total Furnish Percent Input	108.1%	107.4%	107.0%

* Production + Consumption
** Includes Unbleached Sulfite

Table 7.2.4.3

AFRICA SOUTH OF THE SAHARA

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	606	766	1300
Net Trade [Import, (Export)]	301	406	433
Apparent Consumption	907	1172	1733
Self-Sufficiency Percent*	67%	65%	75%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	90	131	254
Unbleached Kraft	232	253	376
White Chemical Pulp**	55	77	156
Waste Fiber	228	308	468
Non-Wood Fibers	40	42	100
Fillers/Pigments	10	13	25
Total Furnish	655	824	1379
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	14.9	17.1	19.5
Unbleached Kraft	38.3	33.0	28.9
White Chemical Pulp	9.1	10.0	12.0
Waste Fiber	37.6	40.2	36.0
Non-Wood Fibers	6.6	5.5	8.0
Fillers/Pigments	1.6	1.7	1.9
Total Furnish Percent Input	108.1%	107.5%	106.3%

* Production + Consumption
** Includes Unbleached Sulfite

Table 7.2.4.4

FAR EAST

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	1533	1768	3200
Net Trade [Import, (Export)]	607	1134	1524
Apparent Consumption	2140	2902	4724
Self-Sufficiency Percent*	72%	61%	68%

FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	83	124	288
Unbleached Kraft	300	442	800
White Chemical Pulp**	180	177	320
Waste Fiber	690	898	1451
Non-Wood Fibers	386	236	502
Fillers/Pigments	20	25	48
Total Furnish	1659	1902	3409
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	5.4	7.0	9.0
Unbleached Kraft	19.6	25.0	25.0
White Chemical Pulp	11.7	10.0	10.0
Waste Fiber	45.0	50.8	45.3
Non-Wood Fibers	25.1	13.3	15.7
Fillers/Pigments	1.3	1.4	1.6
Total Furnish Percent Input	108.2%	107.5%	106.5%

* Production + Consumption
** Includes Unbleached Sulfite

8.0 CENTRALLY PLANNED ECONOMIES

8.1 SELF-SUFFICIENCY

8.1.1 Total Paper and Paperboard

Projections of self-sufficiency and fiber furnish for the Centrally Planned Economies are particularly speculative. The Working Party has prepared the outlook presented in this report using a data base of low quality and little information about future trends. Few Review Panel members responded to the Working Party's preliminary view. Those few responses received were fundamentally neutral. With one exception, the replies were limited to such comments as "agree", "makes sense" and "no challenge. Thus the Working Party's outlook for the Centrally Planned Economies was prepared in an information vacuum with a review process which mirrored its limited insights into historical statistics and emerging trends for the Centrally Planned Economies.

Total paper and paperboard production in the Centrally Planned Economies is expected to grow at an average yearly rate of 4.6% between 1972/74 and 1990 while, consumption rises even faster at a rate of 4.8%. The difference in growth rates arises from an anticipated decline in net exports of paper from approximately half a million tons in 1972/74 to zero in 1990. In general, self-sufficiency is maintained with the exception of minor net imports around 1980 (see Table 8.1).

The highest contribution to general growth in paper and board consumption is made by other paper and board which is essentially packaging paper and board. Newsprint will show the relatively lowest growth although it is still high compared to other regions.

8.1.2 Newsprint

The Centrally Planned Economies are expected to be 100% self-sufficient in newsprint in 1990. This compares to a 107% level in 1972/74 when they had net exports of 150,000 tons. Production of newsprint is expected to grow by 2.3 million tons between 1972/74 and 1990 at an annual rate of 4.1%.

8.1.3 Printing and Writing

Production of printing and writing paper in the Centrally Planned Economies is projected roughly to double in the 1972/74-90 period. This translates to an annual growth in consumption of 4.5%. Table 8.2.3 shows that self-sufficiency in 1990 is assumed to be 100%.

8.1.4 Other Paper and Paperboard

Production of other paper and paperboard in the Centrally Planned Economies is expected to rise 4.7% per annum in the period 1972/74-90. Table 8.2.4 shows that self-sufficiency in 1990 is expected to be 100%.

8.2 FIBER FURNISH

8.2.1 Total Paper and Paperboard

The 1972/74 fiber furnish mix for total paper and paperboard is shown in Table 8.1. Projections for the change in this mix depend primarily on an expected increase in waste fiber utilization at the expense of non-wood fibers. Consumption of chemical pulp grades is projected to increase in share of total furnish. This is contrary to the trend in other geographic regions.

8.2.2 Newsprint

Information about the fiber furnish for newsprint is very sketchy. The Working Party believes that all newsprint in the Centrally Planned Economies is currently produced using groundwood and chemical pulp Waste and non-wood fibers are not believed to be used in newsprint, nor are they projected before 1990. A shift in mix between white pulp and groundwood is projected which is similar to that projected for the developed market economies.

8.2 3 Printing and Writing

The fiber furnish for printing and writing paper is expected to undergo little change in the 1972/74-90 period. Table 8.2.3 shows that groundwood is projected to lose share to waste fiber and to fillers and pigments.

8.2.4 Other Paper and Paperboard

The major change in furnish mix assumed for other paper and paperboard products is a decline in the relative importance of non-wood fibers. Table 8.2.4 shows that non-wood fibers are projected to fall from 30.4% in 1972/74 to 23.3% in 1990. Waste fiber is expected to substitute heavily for the non-wood fibers although unbleached kraft and white chemical pulp are also expected to gain share during the period.

Table 8.1

CENTRALLY PLANNED ECONOMIES

TOTAL PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	17469	23984	37303
Net Trade [Import, (Export)]	(528)	119	-
Apparent Consumption	16941	24103	37303
Self-Sufficiency Percent*	103%	100%	100%

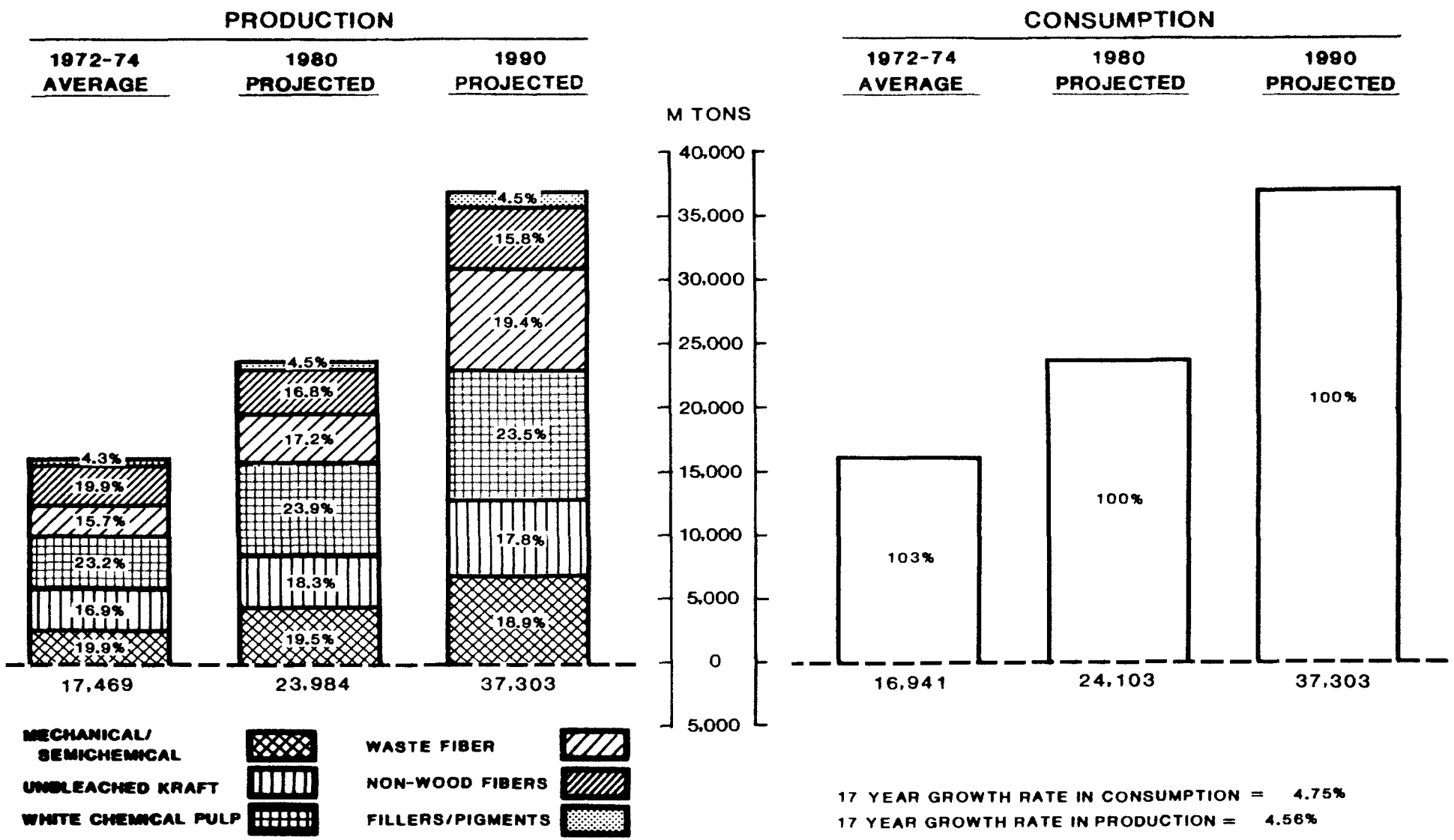
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	3671	4920	7407
Unbleached Kraft	3128	4620	7000
White Chemical Pulp**	4297	6033	9220
Waste Fiber	2900	4347	7630
Non-Wood Fibers	3675	4244	6220
Fillers/Pigments	785	1135	1781
Total Furnish	18456	25299	39258
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	21.0	20.5	19.9
Unbleached Kraft	17.9	19.2	18.8
White Chemical Pulp	24.6	25.2	24.7
Waste Fiber	16.6	18.1	20.5
Non-Wood Fibers	21.0	17.7	16.7
Fillers/Pigments	4.5	4.7	4.8
Total Furnish Percent Input	105.7%	105.5%	105.2%

* Production ÷ Consumption
** Includes Unbleached Sulfite

CHART 8.1

CENTRALLY PLANNED

Total Paper and Paperboard



17 YEAR GROWTH RATE IN CONSUMPTION = 4.75%

17 YEAR GROWTH RATE IN PRODUCTION = 4.56%

Table 8.2.2

CENTRALLY PLANNED ECONOMIES

NEWSPRINT

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	2400	3153	4712
Net Trade [Import, (Export)]	(150)	-	-
Apparent Consumption	2250	3153	4712
Self-Sufficiency Percent*	107%	100%	100%

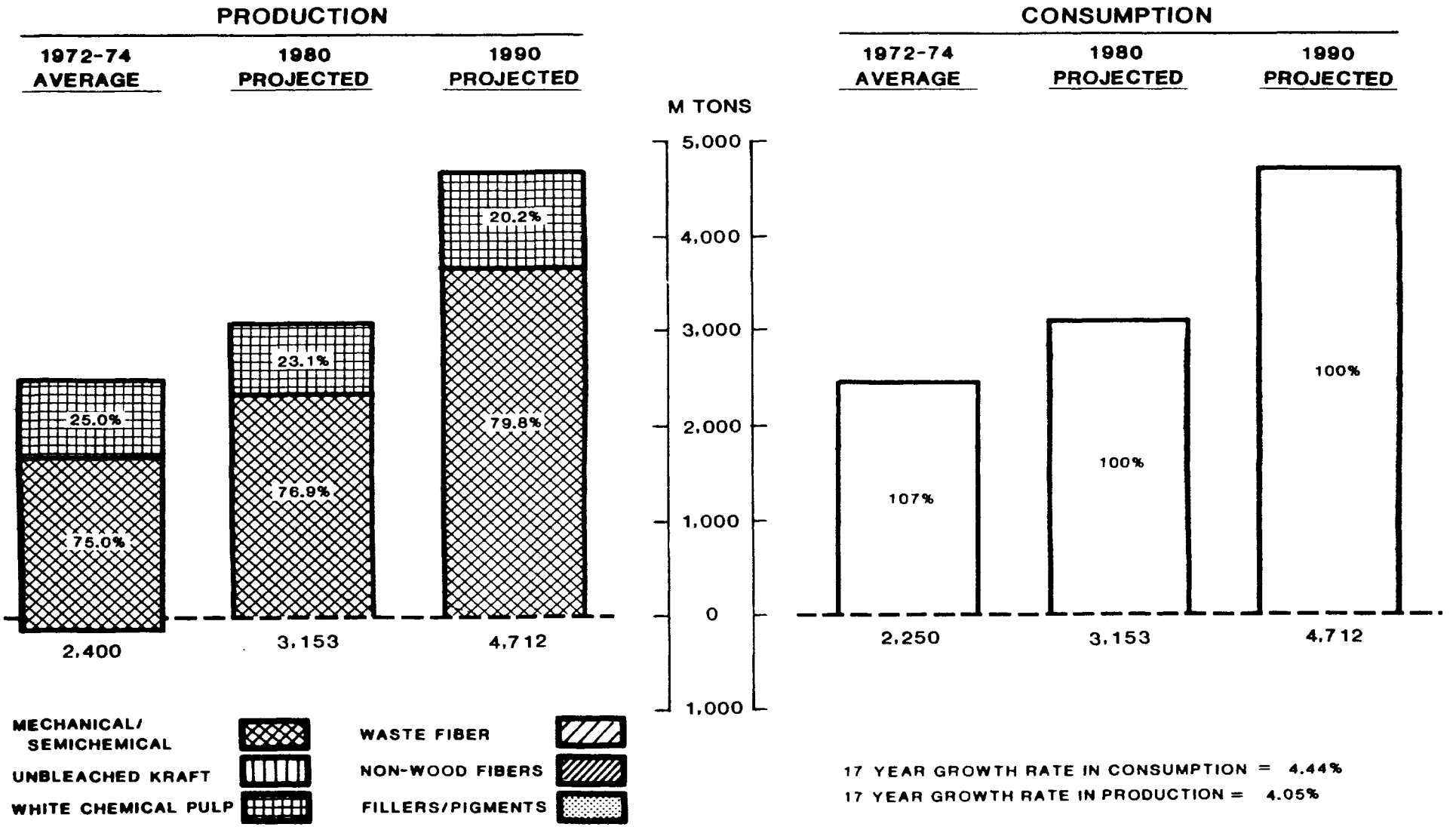
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	1872	2522	3911
Unbleached Kraft White Chemical Pulp**	624	757	990
Waste Fiber			
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish	2496	3279	4901
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	78.0	80.0	83.0
Unbleached Kraft White Chemical Pulp	26.0	24.0	21.0
Waste Fiber			
Non-Wood Fibers			
Fillers/Pigments			
Total Furnish Percent Input	104.0%	104.0%	104.0%

* Production ÷ Consumption
** Includes Unbleached Sulfite

CHART 8.2.2

CENTRALLY PLANNED

Newsprint



17 YEAR GROWTH RATE IN CONSUMPTION = 4.44%

17 YEAR GROWTH RATE IN PRODUCTION = 4.05%

Table 8.2.4

CENTRALLY PLANNED ECONOMIES

OTHER PAPER AND PAPERBOARD

SELF-SUFFICIENCY	Thousands of Air Dry Metric Tons 1972-74	1980	1990
Production	11766	16174	25725
Net Trade [Import, (Export)]	(315)	-	-
Apparent Consumption	11451	16174	25725
Self-Sufficiency Percent*	103%	100%	100%

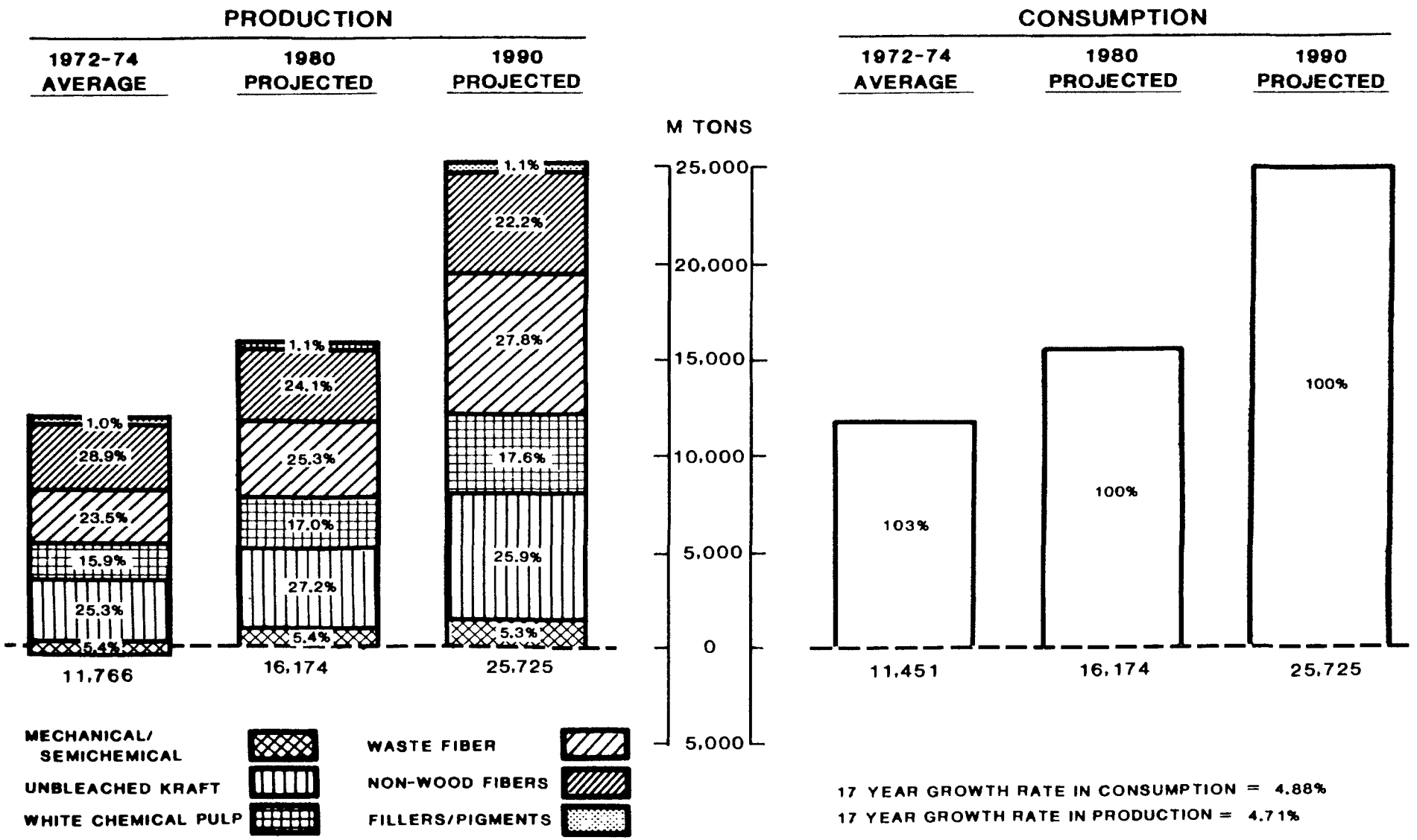
FIBER FURNISH	Thousands of Air Dry Metric Tons		
Quantity			
Mechanical/Semi-Chemical	669	910	1440
Unbleached Kraft	3128	4620	7000
White Chemical Pulp**	1963	2880	4760
Waste Fiber	2900	4300	7500
Non-Wood Fibers	3575	4100	6000
Fillers/Pigments	125	180	310
Total Furnish	12360	16990	27010
Percent	Percent of Product Produced		
Mechanical/Semi-Chemical	5.7	5.6	5.6
Unbleached Kraft	26.6	28.6	27.2
White Chemical Pulp	16.7	17.8	18.5
Waste Fiber	24.6	26.6	29.2
Non-Wood Fibers	30.4	25.4	23.3
Fillers/Pigments	1.1	1.1	1.2
Total Furnish Percent Input	105.1%	105.1%	105.0%

* Production + Consumption
** Includes Unbleached Sulfite

CHART 8.2.4

CENTRALLY PLANNED

Other Paper and Paperboard



APPENDIX I

WORKING PARTY COMPOSITION AND AREAS OF PRIMARY RESPONSIBILITIES

PHASE II

MEMBER and COMPANY	PRODUCTS	GEOGRAPHIC AREA	PRIMARY RESPONSIBILITIES
Mrs. Marjatta Malmipohja The Finnish Paper Mills' Association ET Esplanadi 2 SF-00130 Helsinki 13 Finland	Newsprint	Western Europe, Centrally Planned Economies	Prepared Fiber furnish and self-sufficiency assumptions submitted to Review Panel. Evaluated Review Panel responses. Coordinated development of Working Party's final view and prepared draft narrative for related sections of this report.
Mr. Dewar B. Cooke MacMillan Bloedel Limited 1075 West Georgia Street Vancouver, B.C., Canada V6E 3R9		North America, Developing Countries	
Mr. Peter Graff* Feldmuhle Aktiengesellschaft Fritz-Vomfelde-Platz 4 Dusseldorf-Oberkassel, West Germany	Printing and Writing Paper	Western Europe, Centrally Planned Economies	
Mr. Lars Ekstroem** Svenska Cellulosa Aktiebolaget SCA S-861 00 Timra, Sweden	Other Paper and Paperboard	Western Europe, Centrally Planned Economies	
Mr. Keith Buechel Weyerhaeuser Company Tacoma, Washington 98401 U.S.A.		North America, Developing Countries	
Mr. Mitsuo Goto Japan Paper Association Kami-Parupu Kaikan Building 9-11, 2-Chome, Ginza Chuo-ku, Tokyo Japan	All	Japan	Prepared fiber furnish and self-sufficiency assumptions submitted to Review Panel.
Mr. Youssef Fouad International Finance Corporation 1818 H Street, N.W. Washington, D.C. 20433 U.S.A.	All	Other Eastern Hemisphere	Evaluated Review Panel responses and coordinated development of Working Party's final view.
Mr. Stanley L. Pringle Food and Agriculture Organization of the United Nations Via Delle Terme de Caracalla 00100 Rome, Italy			
Mr. Theodore D. Frey Crown Zellerbach Corporation One Bush Street San Francisco, California 94119 U.S.A.	All	All	Prepared fiber furnish and self-sufficiency assumptions for printing and writing paper in North America. Coordinated evaluation of Review Panel's responses for all regions. Prepared draft narrative for Japan and Developing Countries. Edited and produced final report.

*With assistance from English China Clays and Papeteries de Condat
**With assistance from Finnboard

FAO WORLD PULP AND PAPER CONSUMPTION OUTLOOK

PHASE III

WORLD OUTLOOK FOR WHITE CHEMICAL PULP

PHASE III

Table of Contents

PHASE III

WORLD OUTLOOK FOR WHITE PULP

LIST OF TABLES AND CHARTS

*includes charts

*includes charts

1.0 INTRODUCTION

1.1 SUMMARY

This final section of the World Consumption Outlook for Paper and Paperboard contains estimates of regional self-sufficiency in white chemical pulps plus projections for the changing mix between their four major qualities. It provides a series of tables and charts for the six regions analyzed showing estimates for the white pulp consumption by paper and paperboard category in the 1972/74 period plus projections for 1980 and 1990. Supplemental tables are also provided for the 15 subregions analyzed to develop the regional outlooks presented in this report.

Self-sufficiency as analyzed in this report again relates to a region's production relative to its consumption. Regions with less than 100% self-sufficiency have a negative trade balance, i.e. they are net importers. The study foresees a marked change in the self-sufficiency of the two developing regions, Latin America and Other Eastern Hemisphere countries. Although these regions were projected in Phase II to remain major importers of paper and paperboard throughout the study period, Phase III projects them to become major net exporters of white chemical pulp by 1990. Japan and Western Europe are projected to become increasingly dependent on pulp imports, and the developing regions are expected to meet the bulk of their increased needs for bleached hardwood sulfate pulp. North America, on the other hand, is foreseen to continue dominating the interregional supply of bleached softwood sulfate pulp.

The world's growth in consumption of white chemical pulp has been forecast in Phase II. Phase III analyzes the four major white pulp qualities, unbleached sulfite, bleached sulfite, bleached hardwood sulfate and bleached softwood sulfate. It foresees an absolute decline in consumption of sulfite pulps from 13.2 million tons in 1972/74 to 10.0 million tons in 1990. Concurrently, both sulfate pulp qualities are projected to increase with bleached hardwood sulfate growing the most rapidly. Its consumption in 1990 is estimated at 25.1 million tons compared with 12.4 million tons in the 1972/74 period, a growth rate of 4.2%. Bleached softwood sulfate pulp on the other hand is expected to grow more in absolute tons,

1.1 SUMMARY (continued)

from 18.2 million in 1972/74 to 32.0 million in 1990. It's growth rate, however, is only projected at 3.4%.

1.2 BACKGROUND

This report to the FAO Pulp and Paper Advisory Committee is the final part of a three phase industry study for FAO. It covers expected changes in the interregional trade of white chemical pulp and it includes an outlook for the four major white pulp qualities, unbleached sulfite, bleached sulfite, bleached hardwood sulfate and bleached softwood sulfate. The potential shifts in interregional trade are based on the historical outlook for white pulp consumption defined in Phase II of the study. This outlook was reported to FAO in July, 1977 in the Phase II document, World Outlook for Regional Self-Sufficiency and Fiber Furnish. Readers are directed to that report for specific details associated with the outlook for white pulp consumption and to Phase I of the study, World Outlook for Paper and Paperboard, for underlying details about the study's products, regions, approach, methodology and review mechanism.

1.3 APPROACH

The Working Party's approach to effecting Phase III of the study was quite similar to that for Phase II. After preparing the necessary data base for white pulp consumption by product and evaluating the forces affecting self-sufficiency, the Working Party again prepared a preliminary outlook for evaluation by the Review Panel (see Appendix I). Panel members were again provided with charts and tables similar to those included in this report. Roughly 300 "green sheets" were returned by the Review Panel including several thoughtful letters addressing specific issues related to the historical base and outlook for white pulp consumption by product.

1.4 HISTORICAL DATA BASE

The "historical" data base used for Phase III of the study represents a blending of FAO statistics with the best judgments of industry experts about consumption patterns. The 1972/74 interregional trade of white pulp is based on reported statistics. It has been drawn from FAO's 1974 Yearbook of Forest Products. The consumption of each

1.4 HISTORICAL DATA BASE (continued)

pulp quality by major paper and paperboard category, however, does not come from a statistical report. It has been created by the Working Party after seeking supplemental support from pulp industry experts. It represents the best judgment available to the Working Party about historical patterns and future trends but must be considered as speculative since there are no known reports available to validate the Working Party's estimates.

1.5 STATISTICAL TABLES AND CHARTS

The Working Party's conclusions are presented in a detailed series of three tables for the regions and subregions analyzed. The first table shows the estimated volume breakdown between the four pulp qualities by product. The second table shows the same information in percentage form. The final table shows the estimated production and trade related to the consumption projected in the first table. Charts are provided which display the tabular information shown on all three tables for the six major regions and world total.

1.6 RESPONSIBILITY FOR OUTLOOK PRESENTED

The Working Party again assumes responsibility for this final report on Phase III. It has carefully evaluated all responses by the Review Panel and changed its outlook where appropriate to reflect that opinion. The Working Party wishes to acknowledge the supplemental support provided by Canadian Cellulose, Finncell, International Paper, ITT Rayoneer and Scott Paper Company in developing the data base used for this phase of the report. In addition, the Working Party also gratefully appreciates the continuing assistance of English China Clays and Papeteries de Condat. They have provided the Working Party with continuing high calibre support throughout all three phases of the project.

Members of the Working Party participating in Phase III are listed in Appendix II.

2.0 WORLD OUTLOOK

2.1 PULP GRADE BREAKDOWN

2.1.1 White Pulp Breakdown

Total world consumption of white chemical pulp is expected to rise from 43.8 million tons in the 1972/74 period to 51.5 million tons by 1980 and 67.1 million tons in 1990. Within the white pulp category, sulfite pulps are projected to lose half their share from 30% to 15% in the forecast period. Both sulfate pulp categories are expected to gain share with hardwood rising from 28% to 37% and softwood growing from 42% to 48%. Table 2.1.1 shows the world projections in absolute terms; Table 2.2.2 shows the same information as a percent of total white chemical pulp.

The Review Panel's impact on the final outlook is discussed separately for each of the regions analyzed.

2.1.2 Sulfite Pulp

World consumption of sulfite pulp is projected to decline in all categories throughout the forecast period. No growth is projected in any region for either unbleached or bleached sulfite pulp. Between the 1972/74 period and 1990, the absolute decline in sulfite pulp is projected at 3.2 million tons, with the 1972/74 level falling from 13.2 million tons to the projected 1990 level of 10.0 million tons. Table 2.2.2 shows the projected decline in sulfite's share of world white chemical pulp.

This projected decline is spread across all product grades. In newsprint, for example, consumption is expected to drop from 61% of white pulp furnish in 1972/74 to 39% in 1990. In printing and writing paper, a similar outlook is foreseen although it starts from a lower base. Compared with 23% in 1972/74, sulfite's share of printing and writing paper is projected to be halved to less than 11% by 1990. The pattern for other paper and paperboard grades is again similar. Sulfite's share is projected to fall from 29% in 1972/74 to only 15% in 1990.

2.1.3 Bleached Hardwood Sulfate Pulp

An opposite type of outlook is foreseen for bleached hardwood pulp. Compared with 12.4 million tons in 1972/74, consumption is foreseen to double by 1990 to 25.1 million tons. This represents a forecast annual growth rate of 4.2%. Hardwood sulfate's share of white pulp is projected to increase from 28% in 1972/74 to 37% in 1990.

All product qualities are projected to share in the growth although hardwood sulfate's share of newsprint is only projected to be in the 1-3% range. Hardwood sulfate's share of printing and writing paper white pulp should rise from 39% to 51%. It's growth in the other paper and paperboard sector, however, is foreseen to be less dramatic, increasing from 24% to a modest 29% during the forecast period.

2.1.4 Bleached Softwood Sulfate Pulp

The absolute volume growth foreseen for bleached softwood sulfate pulp between 1972/74 and 1990 is 13.8 million tons for an annual growth rate of 3.4%. This projected increase from 18.2 to 32.0 million tons corresponds to an increased share of white pulp furnish from 42% to 48%.

The impact of this projected growth is spread evenly across the paper and paperboard grades. Newsprint, for example, is foreseen roughly to double its consumption of softwood sulfate (from 2.0 to 3.7 million tons), increasing softwood's share from 38% to 59%. Printing and writing paper, however is projected to show a major volumetric increase (from 7.5 to 12.6 million tons), yet its share is expected to rise only from 37% to 38%. The other paper and paperboard product group should also come close to doubling its softwood consumption (rising from 8.7 to 15.6 million tons), but its share of white pulp is forecast to rise from 47% to 56%.

2.2 SELF-SUFFICIENCY

The concept of regional self-sufficiency has been developed to highlight changing patterns in interregional trade. For the world as a whole, however, there must be a balance between imports and exports. In other words, the world is 100% self-sufficient for its needs when cyclical short-term fluctuations have been removed. Thus, no table or chart has been prepared for world self-sufficiency.

The world's historical statistics for exports and imports do not, however, completely balance. Exporting regions report more shipments of product than the importing regions do receipts. Thus, the statistics for the 1972/74 period are somewhat misleading for that period. This difference, however, has been eliminated in the 1980 and 1990 periods, as exports have been forced to meet the import requirements of deficit regions.

There is one revealing relationship about self-sufficiency. It is the calculation of total world production which enters interregional trade. In the 1972/74 period, for example, about 3 million tons of white pulp were shipped interregionally

compared with a total production of 43.8 million tons. This is roughly 6.9% of the industry's production. By 1990, interregional trade is projected to double to 5.9 million tons while total production increases only to 67.1 million tons. Thus the pulp entering interregional trade is projected to rise to 8.8%. In other words, white chemical pulp is projected to become increasingly a world commodity.

Table 2.1.1

WORLD

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	3253	2904	2423	647	589	463
Bleached Sulfite	-	-	-	4040	3556	3011
Total Sulfite	3253	2904	2423	4687	4145	3474
Bleached Hardwood Sulfate	85	128	155	7909	11141	17003
Bleached Softwood Sulfate	2028	2488	3713	7484	9339	12599
Total	5366	5520	6291	20080	24625	33076

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	1458	1199	846	5358	4692	3732
Bleached Sulfite	3830	3613	3298	7870	7169	6309
Total Sulfite	5288	4812	4144	13228	11861	10041
Bleached Hardwood Sulfate	4441	5520	7932	12435	16789	25090
Bleached Softwood Sulfate	8670	10994	15643	18182	22821	31955
Total	18399	21326	27719	43845	51471	67086

CHART 2.1.1

WORLD White Pulp Consumption

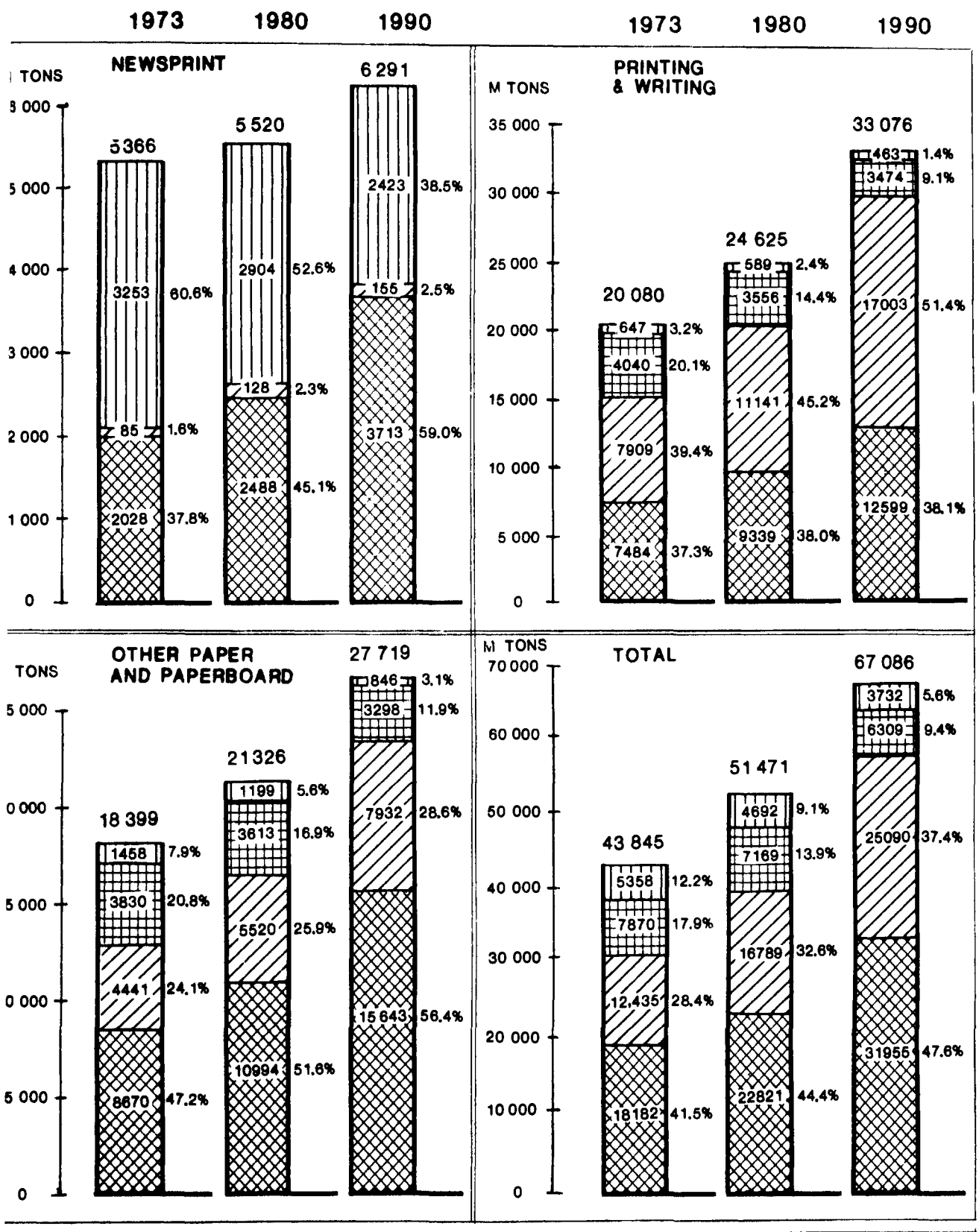


Table 2.1.2

WORLD

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	60.6	52.6	38.5	3.2	2.4	1.4
Bleached Sulfite	-	-	-	20.1	14.4	9.1
Total Sulfite	60.6	52.6	38.5	23.3	16.8	10.5
Bleached Hardwood Sulfate	1.6	2.3	2.5	39.4	45.2	51.4
Bleached Softwood Sulfate	37.8	45.1	59.0	37.3	38.0	38.1
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	7.9	5.6	3.1	12.2	9.1	5.6
Bleached Sulfite	20.8	16.9	11.9	17.9	13.9	9.4
Total Sulfite	28.7	22.5	15.0	30.1	23.0	15.0
Bleached Hardwood Sulfate	24.1	25.9	28.6	28.4	32.6	37.4
Bleached Softwood Sulfate	47.2	51.6	56.4	41.5	44.4	47.6
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

3.0 NORTH AMERICA

3.1 PULP GRADE BREAKDOWN

3.1.1 White Pulp Breakdown

Total consumption of white pulp in North America is expected to rise from 20.5 million tons in 1972/74 to 26.1 million tons in 1990. Within the white pulp category, sulfite pulps are projected to lose share from 20% to 10% during the forecast period, while bleached hardwood sulfate is projected to increase its share of white pulp from 27% to 33%. Bleached softwood sulfate, by comparison, is expected to show a smaller gain, rising from 53% to 57% during the 1972/74 to 1990 period. Table 3.1.1 shows the region's expected growth in consumption by product category.

3.1.2 Sulfite Pulp

Consumption of sulfite pulp in North America is expected to decline in all product categories. Total sulfite pulp consumption is expected to drop from 4.0 million tons in 1972/74 to 2.7 million tons by 1990. Compared with 20% of white pulp in 1972/74, the sulfite grades are projected to be only 10% by 1990. Table 3.1.2 shows that sulfite's share of white pulp in newsprint, for example, is projected to decline from 60% in 1972/74 to 45% in 1990. Printing and writing paper's sulfite component is predicted to fall from 11% to 5%. Other paper and paperboard grades are expected to experience a reduction from 15% to 9%.

The Review Panel generally supported the Working Party's position; Canadian consumption estimates for printing writing and other paper and paperboard were modified slightly to reflect the Review Panel's comments. U.S. consumption estimates for unbleached sulfite in 1990 were also reduced slightly because of a lower estimate of tonnage available for export from Canada.

3.1.3 Bleached Hardwood Sulfate Pulp

Consumption of bleached hardwood sulfate pulp grades is expected to show the fastest growth in North American white pulp during the forecast period. Total consumption of bleached hardwood sulfate is projected to grow at an annual rate of 2.7% compared to 1.4% for total white pulp. Consumption is expected to increase from 5.5 million tons in 1972/74 to 8.6 million tons in 1990. The bulk of this increase is slated for the United States which is expected to increase its consumption of bleached hardwood sulfate grades by 2.9 million tons during that period.

3.1.3 Bleached Hardwood Sulfate Pulp (continued)

Bleached hardwood sulfate is projected to increase its share of North America's white pulp furnish from 27% in 1972/74 to a full 33% in 1990. This increase is projected for both the printing and writing paper and other paper and paperboard sectors where its share is expected to rise from 40% to 46% and from 21% to 24% respectively.

The Review Panel suggested that the 1990 hardwood/softwood mix within the sulfate grades was weighted too heavily toward hardwood in printing and writing grades (in Canada) and in other paper and paperboard (in Canada and the U.S.). The mix was adjusted to delay the substitution of hardwood for softwood grades.

3.1.4 Bleached Softwood Sulfate Pulp

Consumption of bleached softwood sulfate pulp grades is expected to increase at an annual rate of 1.8% in the forecast period compared to 1.4% for total white pulp and 2.7% for bleached hardwood sulfate. Consumption is expected to increase from 10.9 million tons in 1972/74 to 14.7 million tons in 1990. The United States is expected to account for 3.3 million tons and Canada 540,000 tons of this increase.

The bulk of the growth in bleached softwood sulfate consumption is expected to occur in printing and writing papers. Consumption is expected to increase 2.2 million tons while its share in this product group increases marginally from 48% to 49%. In the other paper and paperboard group bleached softwood sulfate's share of furnish should increase from 63% to 67% while total volume increases by 1.3 million tons. The outlook for growth in share of newsprint furnish is far stronger (from 40% to 55% reflecting replacement of sulfite pulp) but growth in total volume is only expected to increase by 350,000 tons.

The Review Panel's views on the hardwood-softwood proportions in printing and writing grades and other paper and paperboard were reflected in modifications discussed in 3.1.3 above.

3.2 SELF-SUFFICIENCY

3.2.1 Total White Pulp

Production of total white pulp in North America during 1972/74 - 1990 period is projected to increase from 23.6 to 30.5 million tons. This estimated increase in

3.2.1 Total White Pulp (continued)

production represents an annual growth rate of 1.5%, slightly higher than the projected 1.4% growth rate in consumption. Most of the 6.9 million tons increased production is projected for the United States but Canada's production is estimated to increase by 1.8 million tons.

As a consequence of this expansion, net exports of white pulp are expected to increase from 3.1 to 4.4 million tons and self-sufficiency to increase from 115% to 117%.

The Review Panel generally agreed with the Working Party's original estimates of self-sufficiency for white pulp in Canada and the U.S. Exceptions stated to these estimates, and adjustments which were necessary in order to balance world production and consumption forecasts, are discussed below under the individual pulp grades.

3.2.2 Sulfite Pulp

Production of sulfite pulp is projected to decline from 4.4 to 2.7 million tons during the 1972/74 - 1990 period. Both unbleached and bleached grades are slated for significant reductions. Unbleached sulfite production is expected to be only 1.4 million tons in 1990 compared to 2.1 million tons in 1972/74. A slightly greater decline from 2.2 to 1.4 million tons is projected for bleached sulfite.

Consumption is forecast to decline slightly less than production, from 4.0 million tons in 1972/74 to 2.7 million tons in 1990. Net exports which were 330,000 tons in 1972/74 are expected to decline to 20,000 tons by 1990. Self-sufficiency is projected to fall from 108% to 101% during the forecast period.

Some Review Panel members said that Canadian sulfite exports for 1980 and 1990 were too high and these were reduced. Reductions to unbleached exports corresponded to a lower assessment of Canada's capacity to produce this grade for export. Reductions to bleached exports reflect lower demand for imports in other countries than originally estimated by the Working Party.

One Review Panel member suggested that Canadian production in 1990 would be much higher than estimated by

3.2.2 Sulfite Pulp (continued)

the Working Party, owing to the conversion of older mills to a recovery process such as magnefite.

3.2.3 Bleached Hardwood Sulfate

Exports of bleached hardwood sulfate pulp from North America are expected to increase only modestly during the forecast period. Compared with 670,000 tons in 1972/74, exports are expected to be 790,000 tons in 1990. Although production is projected to rise from 6.2 to 9.4 million tons all but 120,000 tons of the 3.2 million ton increase should be used within the region.

Thus North America's self-sufficiency in bleached hardwood is projected to decline, from 112% in 1972/74 to 109% in 1990.

The Review Panel generally agreed with the Working Party's estimates. However, production estimates were modified to reflect greater export demand and lower consumption than originally estimated by the Working Party.

3.2.4 Bleached Softwood Sulfate

North America's net exports of bleached softwood sulfate pulp are projected to increase 72% from 2.1 to 3.5 million tons during the 1972/74 - 1990 period. By comparison consumption is expected to increase by only 35% from 10.9 to 14.7 million tons so North America's self-sufficiency should rise from 119% to 124%.

Within the region, the United States is expected to continue as a net importer with self-sufficiency remaining in the range 83% - 85% throughout the period. Canada however should experience a further, substantial increase in exports, from 3.7 million tons in 1972/74 to 5.7 million tons in 1990. Canada's self-sufficiency is projected to increase from 398% in 1972/74 to 417% in 1990.

The Review Panel generally agreed with the Working Party's estimates. However, production and trade forecasts were modified to allow for revised consumption estimates and changes in export demand.

CHART 3.1.1

NORTH AMERICA — White Pulp Consumption

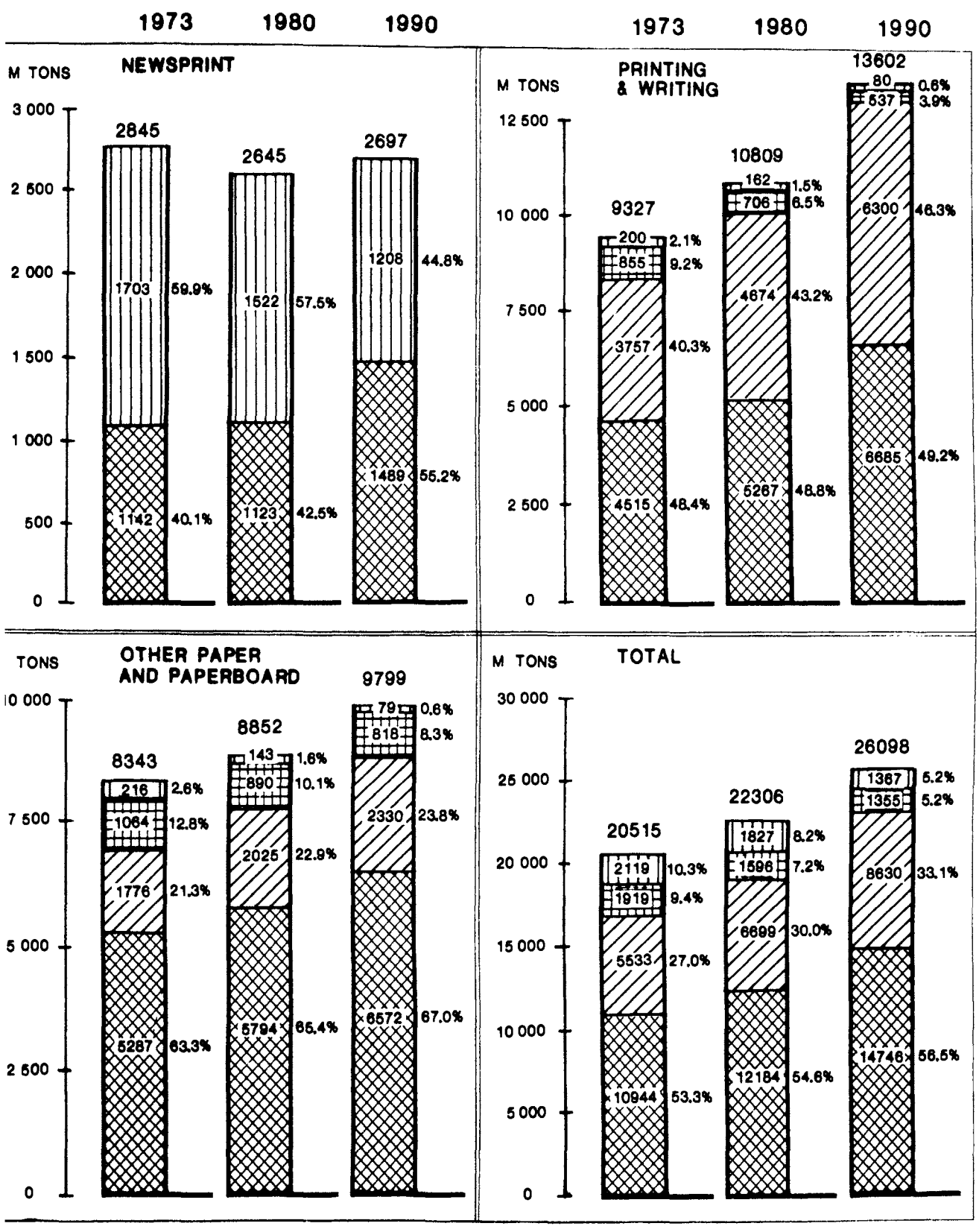


Table 3.1.1

NORTH AMERICA

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	1703	1522	1208	200	162	80
Bleached Sulfite	--	-	-	855	706	537
Total Sulfite	1703	1522	1208	1055	868	617
Bleached Hardwood Sulfate	-	-	-	3757	4674	6300
Bleached Softwood Sulfate	1142	1123	1489	4515	5267	6685
Total	2845	2645	2697	9327	10809	13602

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	216	143	79	2119	1827	1367
Bleached Sulfite	1064	890	818	1919	1596	1355
Total Sulfite	1280	1033	897	4038	3423	2722
Bleached Hardwood Sulfate	1776	2025	2330	5533	6699	8630
Bleached Softwood Sulfate	5287	5794	6572	10944	12184	14746
Total	8343	8852	9799	20515	22306	26098

Table 3.1.2

NORTH AMERICA

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	59.9	57.5	44.8	2.1	1.5	0.6
Bleached Sulfite	-	-	-	9.2	6.5	3.9
Total Sulfite	59.9	57.5	44.8	11.3	8.0	4.5
Bleached Hardwood Sulfate	-	-	-	40.3	43.2	46.3
Bleached Softwood Sulfate	40.1	42.5	55.2	48.4	48.8	49.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	2.6	1.6	0.8	10.3	8.2	5.2
Bleached Sulfite	12.8	10.1	8.3	9.4	7.2	5.2
Total Sulfite	15.4	11.7	9.2	19.7	15.4	10.4
Bleached Hardwood Sulfate	21.3	22.9	23.8	27.0	30.0	33.1
Bleached Softwood Sulfate	63.3	65.4	67.0	53.3	54.6	56.5
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 3.2.1

CANADA

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	1550	1387	1100	30	25	-
Bleached Sulfite				36	41	42
Total Sulfite	1550	1387	1100	66	66	42
Bleached Hardwood Sulfate				295	350	425
Bleached Softwood Sulfate	587	500	764	284	331	395
Total	2137	1887	1864	645	747	862

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	104	50	15	1684	1462	1115
Bleached Sulfite	94	50	15	130	91	57
Total Sulfite	198	100	30	1814	1553	1172
Bleached Hardwood Sulfate	55	100	120	350	450	545
Bleached Softwood Sulfate	382	535	631	1253	1366	1790
Total	635	735	781	3417	3369	3507

Table 3.2.2

CANADA

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	72.5	73.5	59.0	4.7	3.3	-
Bleached Sulfite	-	-	-	5.6	5.5	4.9
Total Sulfite	72.5	73.5	59.0	10.2	8.8	4.9
Bleached Hardwood Sulfate	-	-	-	45.7	46.9	49.3
Bleached Softwood Sulfate	27.5	26.5	41.0	44.0	44.3	45.8
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	16.4	6.8	1.9	49.3	43.4	31.8
Bleached Sulfite	14.8	6.8	1.9	3.8	2.7	1.6
Total Sulfite	31.2	13.6	3.8	53.1	46.1	33.4
Bleached Hardwood Sulfate	8.7	13.6	15.4	10.2	13.4	15.5
Bleached Softwood Sulfate	60.2	72.8	80.8	36.7	40.5	51.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 3.3.1

UNITED STATES

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	153	135	108	170	137	80
Bleached Sulfite	-	-	-	819	665	495
Total Sulfite	153	135	118	989	802	575
Bleached Hardwood Sulfate	-	-	-	3462	4324	5875
Bleached Softwood Sulfate	555	623	725	4231	4936	6290
Total	708	758	833	8682	10062	12740

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	112	93	64	435	365	252
Bleached Sulfite	970	840	803	1789	1505	1298
Total Sulfite	1082	933	867	2224	1870	1550
Bleached Hardwood Sulfate	1721	1925	2210	5183	6249	8085
Bleached Softwood Sulfate	4905	5259	5941	9691	10818	12956
Total	7708	8117	9018	17098	18937	22591

Table 3.3.2

UNITED STATES

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	21.6	17.8	13.0	2.0	1.4	0.6
Bleached Sulfite	-	-	-	9.4	6.6	3.9
Total Sulfite	21.6	17.8	13.0	11.4	8.0	4.5
Bleached Hardwood Sulfate	-	-	-	39.9	43.0	46.1
Bleached Softwood Sulfate	78.4	82.2	87.0	48.7	49.1	49.4
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	1.5	1.1	1.0	2.5	1.9	1.1
Bleached Sulfite	12.6	10.3	8.9	10.5	7.9	5.7
Total Sulfite	14.0	11.5	9.9	13.0	9.9	6.8
Bleached Hardwood Sulfate	22.3	23.7	24.5	30.3	33.0	35.8
Bleached Softwood Sulfate	63.6	64.8	65.8	56.7	57.1	57.4
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 3.4

NORTH AMERICA

SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	2125	1845	1367
Net Trade Imports, (Exports)	(6)	(18)	-
Consumption	2119	1827	1367
Self-Sufficiency	100%	101%	100%
Bleached Sulfite			
Production	2245	1752	1375
Net Trade Imports, (Exports)	(326)	(156)	(20)
Consumption	1919	1596	1355
Self-Sufficiency	117%	110%	101%
Total Sulfite			
Production	4370	3597	2742
Net Trade Imports, (Exports)	(332)	(174)	(20)
Consumption	4038	3423	2722
Self-Sufficiency	108%	105%	101%
Bleached Hardwood Sulfate			
Production	6205	7387	9420
Net Trade Imports, (Exports)	(672)	(688)	(790)
Consumption	5533	6699	8630
Self-Sufficiency	112%	110%	109%
Bleached Softwood Sulfate			
Production	13006	14935	18290
Net Trade Imports, (Exports)	(2062)	(2751)	(3544)
Consumption	10944	12184	14746
Self-Sufficiency	119%	123%	124%
Total White Pulp			
Production	23581	25919	30452
Net Trade Imports, (Exports)	(3066)	(3613)	(4354)
Consumption	20515	22306	26098
Self-Sufficiency	115%	116%	117%

NORTH AMERICA — White Pulp Self-Sufficiency

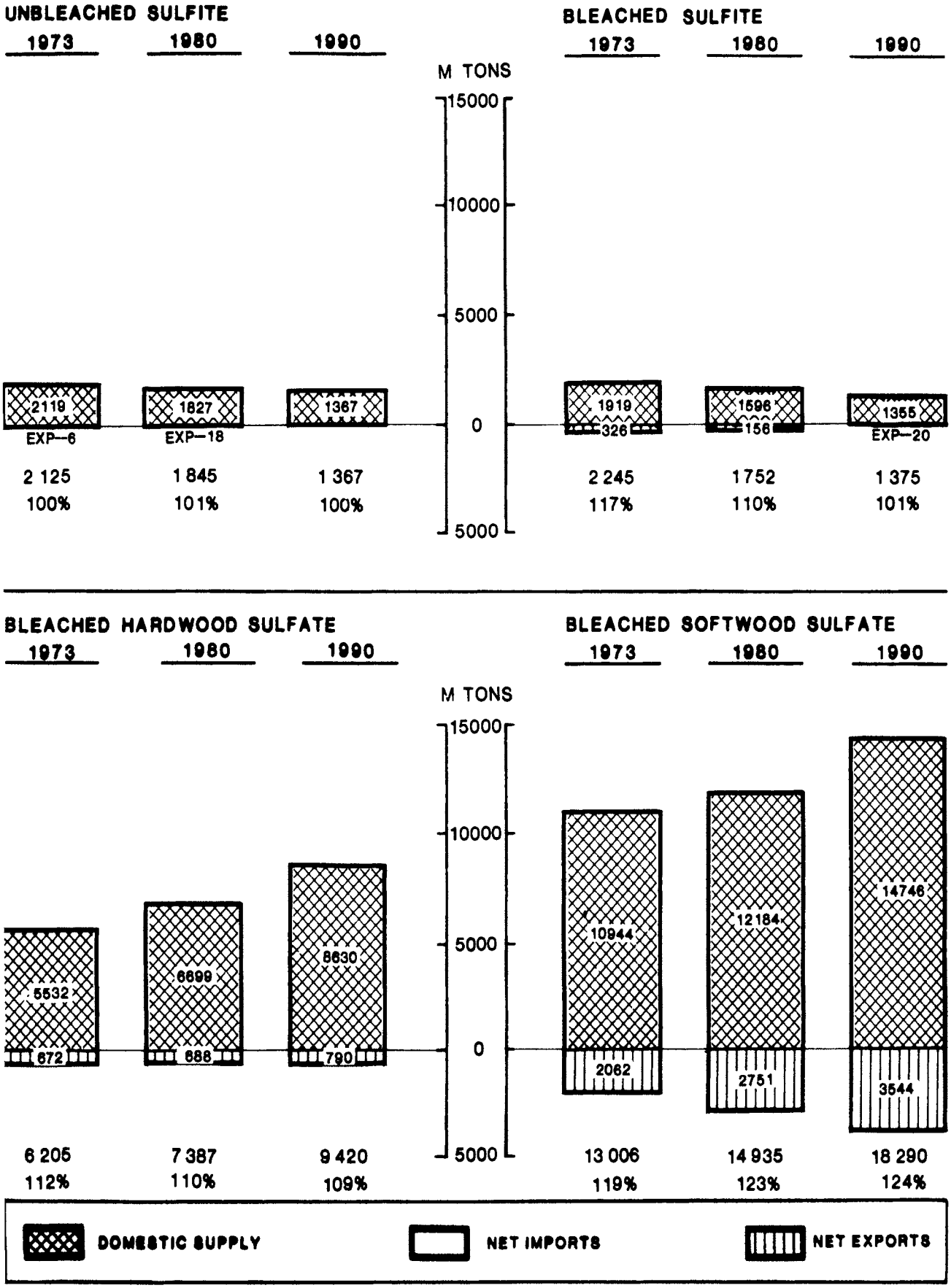


Table 3.5

CANADA

SELF-SUFFICIENCY

(thousands of metric tons)

Unbleached Sulfite	1972-74	1980	1990
Production	1790	1545	1165
Net Trade Imports, (Exports)	(106)	(83)	(50)
Consumption	1684	1462	1115
Self-Sufficiency	106%	106%	104%
Bleached Sulfite			
Production	553	447	277
Net Trade Imports, (Exports)	(423)	(356)	(220)
Consumption	130	91	57
Self-Sufficiency	425%	491%	486%
Total Sulfite			
Production	2343	1992	1442
Net Trade Imports, (Exports)	(529)	(439)	(270
Consumption	1814	1553	1172
Self-Sufficiency	129%	128%	123%
Bleached Hardwood Sulfate			
Production	740	815	990
Net Trade Imports, (Exports)	(390)	(365)	(445)
Consumption	350	450	545
Self-Sufficiency	211%	181%	182%
Bleached Softwood Sulfate			
Production	4990	5767	7469
Net Trade Imports, (Exports)	(3737)	(4401)	(5679)
Consumption	1253	1366	1790
Self-Sufficiency	398%	422%	417%
Total White Pulp			
Production	8073	8574	9901
Net Trade Imports, (Exports)	(4656)	(5205)	(6394)
Consumption	3417	3369	3507
Self-Sufficiency	236%	254%	282%

Table 3.6

UNITED STATES

SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	335	300	202
Net Trade Imports, (Exports)	100	65	50
Consumption	435	365	252
Self-Sufficiency	77%	82%	80%
Bleached Sulfite			
Production	1692	1305	1098
Net Trade Imports, (Exports)	97	200	200
Consumption	1789	1505	1298
Self-Sufficiency	95%	87%	85%
Total Sulfite			
Production	2027	1605	1300
Net Trade Imports, (Exports)	197	265	250
Consumption	2224	1870	1550
Self-Sufficiency	91%	86%	84%
Bleached Hardwood Sulfate			
Production	5465	6572	8430
Net Trade Imports, (Exports)	(282)	(323)	(345)
Consumption	5183	6249	8085
Self-Sufficiency	106%	105%	104%
Bleached Softwood Sulfate			
Production	8016	9168	10821
Net Trade Imports, (Exports)	1675	1650	2135
Consumption	9691	10818	12956
Self-Sufficiency	83%	85%	84%
Total White Pulp			
Production	15508	17345	20551
Net Trade Imports, (Exports)	1590	1592	2040
Consumption	17098	18937	22591
Self-Sufficiency	91%	92%	91%

4.0 WESTERN EUROPE

4.1 PULP GRADE BREAKDOWN

4.1.1 White Pulp Breakdown

Total consumption of white pulp in Western Europe is expected to rise from 12.5 million tons in 1972/74 to 18.2 million tons in 1990. Within the white pulps, sulfites are projected to lose share from 39% to 21% by 1990. Most of this loss is related to an increase in bleached hardwood sulfate which will increase its share of white pulp from 24% to 35%. Bleached softwood sulfate is also expected to gain, rising from 38% to 44% during the period. This pattern is foreseen within all major regions of Western Europe with only relatively minor variations.

4.1.2 Sulfite

Consumption of sulfite pulp in Western Europe is expected to decline in all product categories. Total consumption should drop from 4.9 million tons in 1972/74 to 3.7 million tons by 1990, a fall in share from 39% to 21%. Sulfite's share of white pulp in newsprint is expected to fall from 57% in 1972/74 to 39% in 1990. The sulfite component of printing and writing paper should halve from 28% to 14%. Other paper and paperboard grades are expected to experience a similar reduction from 47% to 24%.

Most Review Panel members felt that the Working Party's estimate of the rate of decline of sulfite was about right. Although some stated that the rate of decline could be slower because of the existing investment in this sector, this view was counter-balanced by those who thought the decline could be faster.

4.1.3 Bleached Hardwood Sulfate

Consumption of bleached hardwood is expected to show the fastest growth during the forecast period, from 2.9 million tons in 1972/74 to 6.4 million tons by 1990, an increase of 3.5 million tons (118%). Most of this increase is foreseen for the other paper and board category (up 1.9 million tons or 150%). Usage in printing and writing paper is projected to increase by 1.6 million tons (93%).

4.1.3 Bleached Hardwood Sulfate (continued)

Bleached hardwood sulfate is expected to increase its share of Western European white pulp consumption from 24% to 35%. In printing and writing the increase is expected to be comparable, up from 28% to 40%, and in other paper and board from 23% to 36%.

Two of the fastest growth sectors are projected to be printing and writing papers in West Germany and other paper and board in Other EEC Countries. Some members of the Review Panel felt that consumption of bleached hardwood sulfate could be increased even more, at the expense of softwood, by reason of its greater availability.

4.1.4 Bleached Softwood Sulfate

Consumption of bleached softwood is forecast to grow from 4.7 million tons in 1972/74 to 8.1 million tons in 1990, an increase of 3.4 million tons (72%). As a result, this grade should increase its share of Western European white pulp consumption from 38% in 1972/74 to 44% in 1990, replacing sulfite as the major white pulp. Although consumption of hardwood is expected to grow more, both in absolute and relative terms, softwood consumption by 1990 should still be greater by 1.6 million tons.

Most of the growth in softwood sulfate is expected to take place in the other paper and board sector, where consumption should increase by 2 million tons and share of total white pulp from 30% in 1972/74 to 40% in 1990. Within this category the two areas foreseen to have the fastest growth are the Nordic countries and West Germany.

The use of softwood sulfate in printing and writing paper should grow by 1.2 million tons by 1990, increasing market share from 43% to 46%. This increase should fairly evenly spread throughout Western Europe, with the exception of the U.K. where little change is expected and the Nordic countries where market share is actually expected to fall.

In newsprint, consumption of softwood sulfate is projected to grow by only about 230,000 tons between 1972/74 and 1990 although its share of the white pulp usage in this sector should increase substantially from 43% to 61% in 1990, at the expense of unbleached sulfite.

4.2 SELF-SUFFICIENCY

4.2.1 Total White Pulp

Production of total white pulp in Western Europe

4.2.1 Total White Pulp (continued)

during the 1972/74 to 1990 period is projected to rise from 10.6 to 14.8 million tons. This estimated increase in production represents an annual growth rate of just under 2%, slightly lower than the projected growth rate of 2.3% in consumption. As a result, net imports are expected to increase from 1.8 million tons in 1972/74 to 3.4 million tons in 1990. This should produce a decline in self-sufficiency from 85% to 81%.

Of the increase in Western European production (4.1 million tons), 1.8 million tons are expected to come from the Nordic countries and another 1.8 million tons from "Other" European countries, particularly Spain. There was, however, some disagreement among Review Panel members on the ability of the Nordic countries to achieve the required increase in production from available wood resources.

The study implies the following increases in Nordic wood production between 1972/74 and 1990:

Pulp	Million Cubic Meters
Mechanical	4.7
Unbleached Kraft	2.0
White	8.9
	15.6

In a recently completed study of wood availability in Western Europe, ECE/FAO arrived at the conclusion that removals of wood in the Nordic countries could be increased by 19 million cubic meters in the period up to 1990. The projected increase in pulp products by the Nordic countries, therefore, can be covered by the increase in wood supply, if it can be economically obtained for pulp production. The Working Party has assumed that imports of wood raw materials to the Nordic countries will remain at the present level and not change substantially in either direction.

4.2.2 Sulfite Pulp

Production of sulfite pulp in Western Europe is forecast to decline from 4.9 to 3.7 million tons with bleached slightly more affected than the unbleached grades and with the projected decline concentrated in

4.2.2 Sulfite Pulp (continued)

the Nordic countries. The drop in production slightly exceeds the 1.1 million tons decrease in consumption forecast for the same period and net exports by 1990 are forecast to be zero.

The Working Party's original estimates showed lower production of sulfite pulp in 1990 than the final figures, and also some net exports. The differences reflect higher domestic consumption and a reduction in export demand compared to the original figures.

4.2.3 Bleached Hardwood Sulfate

Production of this pulp grade in Western Europe is forecast to double from 2.3 million tons in 1972/74 to 4.6 million tons in 1990. The Nordic countries are expected to contribute 800,000 tons of the projected increase with most of the remaining growth coming from "Other" Western European countries, especially Spain.

Some concern was expressed that production of hardwood sulfate in France had not been projected to grow in line with increased consumption thus contradicting the French Government's stated objective of achieving greater self-sufficiency. After reconsidering the industry trends, however, the Working Party decided to maintain its proposed self-sufficiency level for the final report.

For Western Europe as a whole, production is forecast to increase less than consumption with a consequent increase in imports and a decline in self-sufficiency from 77% to 72%.

4.2.4 Bleached Softwood Sulfate

Production of this grade in Western Europe in 1990 is expected to be 3 million tons above the 1972/74 level of 3.4 million tons. Of this increase, 2.2 million tons should come from the Nordic countries with Spain and West Germany providing most of the remaining increase.

The increase in European production of this grade should grow at a faster rate than the forecast growth in consumption. Although net imports are expected to increase by 400,000 tons between 1972/74 and 1990, W. European self-sufficiency in softwood should still increase from 74% to 79%.

TOTAL WESTERN EUROPE White Pulp Consumption

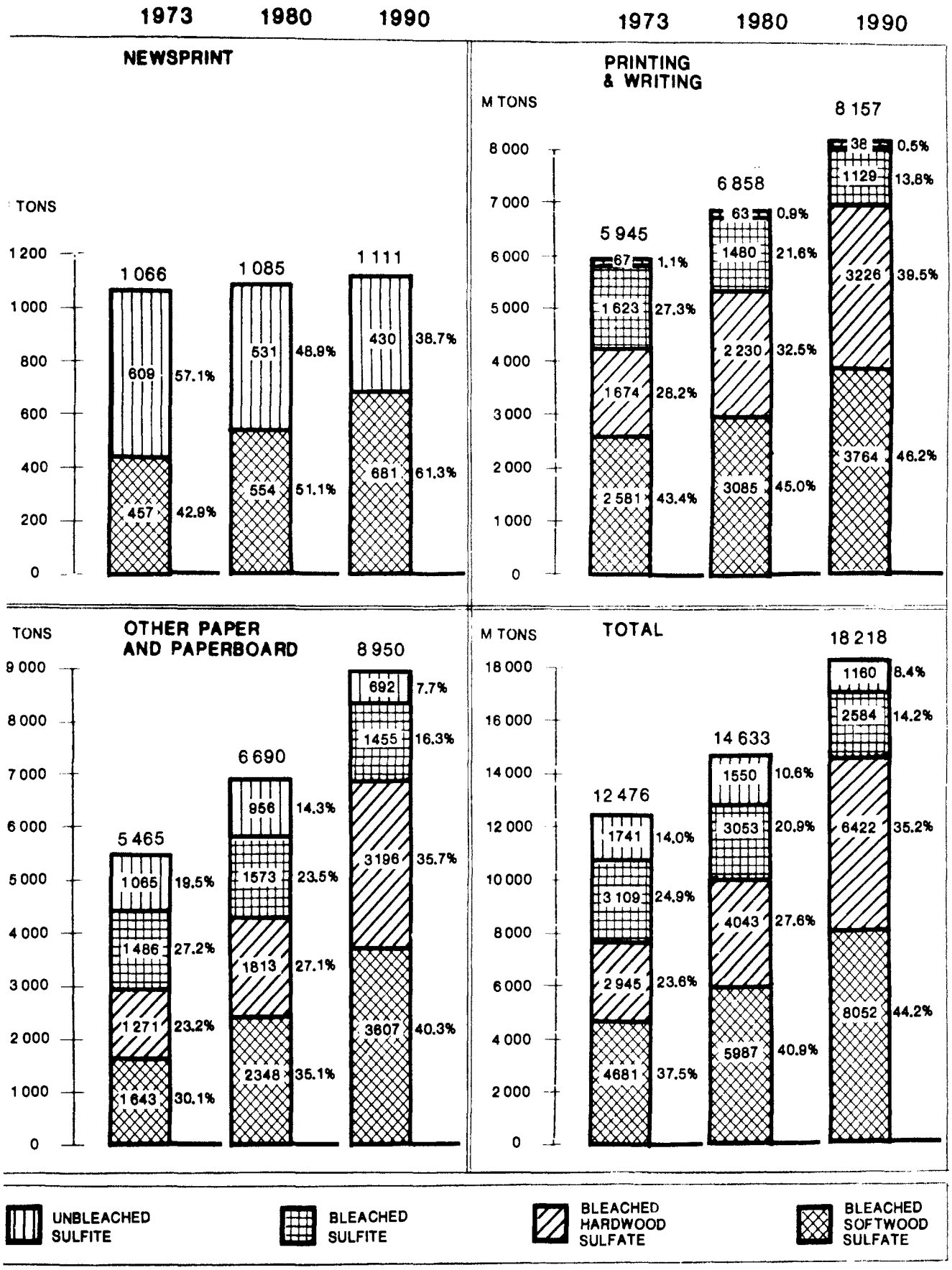


Table 4.1.1

WESTERN EUROPE

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	609	531	430	67	63	38
Bleached Sulfite	-	-	-	1623	1480	1129
Total Sulfite	609	531	430	1690	1543	1167
Bleached Hardwood Sulfate	-	-	-	1674	2230	3226
Bleached Softwood Sulfate	457	554	681	2581	3085	3764
Total	1066	1085	1111	5945	6858	8157

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	1065	956	692	1741	1550	1160
Bleached Sulfite	1486	1573	1455	3109	3053	2584
Total Sulfite	2551	2529	2147	4850	4603	3744
Bleached Hardwood Sulfate	1271	1813	3196	2945	4043	6422
Bleached Softwood Sulfate	1643	2348	3607	4681	5987	8052
Total	5465	6690	8950	12476	14633	18218

Table 4.1.2

WESTERN EUROPE

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	57.1	48.9	38.7	1.1	0.9	0.5
Bleached Sulfite	-	-	-	27.3	21.6	13.8
Total Sulfite	57.1	48.9	38.7	28.4	22.5	14.3
Bleached Hardwood Sulfate	-	-	-	28.2	32.5	39.5
Bleached Softwood Sulfate	42.9	51.1	61.3	43.4	45.0	46.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	19.5	14.3	7.7	14.0	10.6	6.4
Bleached Sulfite	27.2	23.5	16.3	24.9	20.9	14.2
Total Sulfite	46.7	37.8	24.0	38.9	31.5	20.6
Bleached Hardwood Sulfate	23.2	27.1	35.7	23.6	27.6	35.2
Bleached Softwood Sulfate	30.1	35.1	40.3	37.5	40.9	44.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.2.1

FRANCE

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	34	33	29	31	35	19
Bleached Sulfite	-	-	-	146	165	139
Total Sulfite	34	33	29	177	200	158
Bleached Hardwood Sulfate	-	-	-	366	411	477
Bleached Softwood Sulfate	24	34	55	402	451	557
Total	58	67	84	945	1062	1192

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	46	36	18	111	104	66
Bleached Sulfite	157	135	111	303	300	250
Total Sulfite	203	171	129	414	404	316
Bleached Hardwood Sulfate	155	256	379	521	667	856
Bleached Softwood Sulfate	216	353	422	642	838	1034
Total	574	780	930	1577	1909	2206

Table 4.2.2

FRANCE

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	58.6	49.3	34.5	3.3	3.3	1.6
Bleached Sulfite	-	-	-	15.4	15.5	11.6
Total Sulfite	58.6	49.3	34.5	18.7	18.8	13.2
Bleached Hardwood Sulfate	-	-	-	38.7	38.7	40.0
Bleached Softwood Sulfate	41.4	50.7	65.5	42.6	42.5	46.8
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	8.0	4.6	1.9	7.0	5.4	3.0
Bleached Sulfite	27.4	17.3	11.9	19.2	15.7	11.3
Total Sulfite	35.4	21.9	13.8	26.2	21.1	14.3
Bleached Hardwood Sulfate	27.0	32.8	40.8	33.0	34.9	38.8
Bleached Softwood Sulfate	37.6	45.3	45.4	40.8	44.0	46.9
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.3.1

WEST GERMANY

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	48	45	47	-	-	-
Bleached Sulfite	-	-	-	400	270	170
Total Sulfite	48	45	47	400	270	170
Bleached Hardwood Sulfate	-	-	-	95	330	490
Bleached Softwood Sulfate	43	50	69	400	574	748
Total	91	95	116	895	1174	1408

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	15	2	2	63	47	49
Bleached Sulfite	210	254	289	610	524	459
Total Sulfite	225	256	291	673	571	508
Bleached Hardwood Sulfate	325	394	504	420	724	994
Bleached Softwood Sulfate	405	540	815	848	1164	1632
Total	955	1190	1610	1941	2459	3134

Table 4.3.2

WEST GERMANY

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	52.7	47.4	40.5	-	-	-
Bleached Sulfite	-	-	-	44.7	23.0	12.1
Total Sulfite	52.7	47.4	40.5	44.7	23.0	12.1
Bleached Hardwood Sulfate	-	-	-	10.6	28.1	34.8
Bleached Softwood Sulfate	47.3	52.6	59.5	44.7	48.9	53.1
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	1.6	0.2	0.1	3.3	1.9	1.6
Bleached Sulfite	22.0	21.3	18.0	31.4	21.3	14.6
Total Sulfite	23.6	21.5	18.1	34.7	23.2	16.2
Bleached Hardwood Sulfate	34.0	33.1	31.3	21.6	29.5	31.7
Bleached Softwood Sulfate	42.4	45.4	50.6	43.7	47.3	52.1
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.4.1

UNITED KINGDOM

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	10	5	-	-	-	-
Bleached Sulfite	-	-	-	122	100	80
Total Sulfite	10	5	-	122	100	80
Bleached Hardwood Sulfate	-	-	-	196	216	240
Bleached Softwood Sulfate	63	49	48	472	482	486
Total	73	54	48	790	798	806

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	137	120	110	147	125	110
Bleached Sulfite	260	220	180	382	320	260
Total Sulfite	397	340	290	529	445	370
Bleached Hardwood Sulfate	271	410	540	467	626	780
Bleached Softwood Sulfate	167	240	310	702	771	844
Total	835	990	1140	1698	1842	1994

Table 4.4.2

UNITED KINGDOM

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	13.7	9.3		-	-	-
Bleached Sulfite	-	-		15.4	12.5	9.9
Total Sulfite	13.7	9.3		15.4	12.5	9.9
Bleached Hardwood Sulfate	-	-		24.8	27.1	29.8
Bleached Softwood Sulfate	86.3	90.7	100.0	59.8	60.4	60.3
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	16.4	12.1	9.6	8.7	6.6	5.5
Bleached Sulfite	31.1	22.2	15.8	22.5	17.4	13.0
Total Sulfite	47.5	34.3	25.4	31.2	24.0	18.5
Bleached Hardwood Sulfate	32.5	41.4	47.4	27.5	34.0	39.5
Bleached Softwood Sulfate	20.0	24.3	27.2	41.3	42.0	42.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.5.1

OTHER EEC

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	65	69	61	6	7	6
Bleached Sulfite	-	-	-	242	290	200
Total Sulfite	65	69	61	248	297	206
Bleached Hardwood Sulfate	-	-	-	467	435	659
Bleached Softwood Sulfate	45	35	35	500	597	814
Total	110	104	96	1215	1329	1679

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	149	249	133	220	325	200
Bleached Sulfite	269	410	250	511	700	450
Total Sulfite	418	659	383	731	1025	650
Bleached Hardwood Sulfate	70	90	514	537	525	1173
Bleached Softwood Sulfate	302	211	593	847	843	1442
Total	790	960	1490	2115	2393	3265

Table 4.5.2

OTHER EEC

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	59.1	66.3	63.5	0.5	0.5	0.4
Bleached Sulfite	-	-	-	19.9	21.8	11.9
Total Sulfite	59.1	66.3	63.5	20.4	22.3	12.3
Bleached Hardwood Sulfate	-	-	-	38.4	32.7	39.2
Bleached Softwood Sulfate	40.9	33.7	36.5	41.2	44.9	48.5
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	18.9	25.9	8.9	10.4	13.6	6.1
Bleached Sulfite	34.0	42.7	16.8	24.2	29.2	13.8
Total Sulfite	52.9	68.6	25.7	34.6	42.8	19.9
Bleached Hardwood Sulfate	8.9	9.4	34.5	25.4	21.9	35.9
Bleached Softwood Sulfate	38.2	22.0	39.8	40.0	35.3	44.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.6.1

NORDIC COUNTRIES

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	382	311	250	10	5	3
Bleached Sulfite	-	-	-	330	285	240
Total Sulfite	382	311	250	340	290	243
Bleached Hardwood Sulfate	-	-	-	300	435	750
Bleached Softwood Sulfate	212	277	331	570	651	718
Total	594	588	581	1210	1376	1711

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	498	363	312	890	679	565
Bleached Sulfite	330	304	285	660	589	525
Total Sulfite	828	667	597	1550	1268	1090
Bleached Hardwood Sulfate	200	279	570	500	714	1320
Bleached Softwood Sulfate	318	664	903	1100	1592	1952
Total	1346	1610	2070	3150	3574	4362

Table 4.6.2

NORDIC COUNTRIES

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	64.3	52.9	43.0	0.8	0.4	0.2
Bleached Sulfite	-	-	-	27.3	20.7	14.0
Total Sulfite	64.3	52.9	43.0	28.1	21.1	14.2
Bleached Hardwood Sulfate	-	-	-	24.8	31.6	43.8
Bleached Softwood Sulfate	35.7	47.1	57.0	47.1	47.3	42.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	37.0	22.5	15.1	28.3	19.0	13.0
Bleached Sulfite	24.5	18.9	13.8	21.0	16.5	12.0
Total Sulfite	61.5	41.4	28.9	49.3	35.5	25.0
Bleached Hardwood Sulfate	14.9	17.3	27.5	15.9	20.0	30.3
Bleached Softwood Sulfate	23.6	41.2	43.6	34.9	44.5	44.8
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.7.1

OTHER WESTERN EUROPE

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	70	68	43	20	16	10
Bleached Sulfite	-	-	-	383	370	300
Total Sulfite	70	68	43	403	386	310
Bleached Hardwood Sulfate	-	-	-	250	403	610
Bleached Softwood Sulfate	70	109	143	237	330	441
Total	140	177	186	890	1119	1361

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	220	186	117	310	270	170
Bleached Sulfite	260	250	340	643	620	640
Total Sulfite	480	436	457	953	890	810
Bleached Hardwood Sulfate	250	384	689	500	787	1299
Bleached Softwood Sulfate	235	340	564	542	779	1148
Total	965	1160	1710	1995	2456	3257

Table 4.7.2

OTHER WESTERN EUROPE

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	50.0	38.4	23.1	2.3	1.4	0.8
Bleached Sulfite	-	-	-	43.0	33.1	22.0
Total Sulfite	50.0	38.4	23.1	45.3	34.5	22.8
Bleached Hardwood Sulfate	-	-	-	28.1	36.0	44.8
Bleached Softwood Sulfate	50.0	61.6	76.9	26.6	29.5	32.4
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	22.8	16.0	6.8	15.6	11.0	5.3
Bleached Sulfite	26.9	21.6	19.9	32.2	25.3	19.6
Total Sulfite	49.7	37.6	26.7	47.8	36.3	24.9
Bleached Hardwood Sulfate	25.9	33.1	40.3	25.1	32.0	39.9
Bleached Softwood Sulfate	24.4	29.3	33.0	27.1	31.7	35.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.8

WESTERN EUROPE

SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	1715	1532	1160
Net Trade Imports, (Exports)	26	18	-
Consumption	1741	1550	1160
Self-Sufficiency	99%	99%	100%
Bleached Sulfite			
Production	3204	2947	2584
Net Trade Imports, (Exports)	(95)	106	-
Consumption	3109	3053	2584
Self-Sufficiency	103%	97%	100%
Total Sulfite			
Production	4919	4479	3744
Net Trade Imports, (Exports)	(79)	124	-
Consumption	4850	4603	3744
Self-Sufficiency	101%	97%	100%
Bleached Hardwood Sulfate			
Production	2273	3222	4630
Net Trade Imports, (Exports)	672	821	1792
Consumption	2945	4043	6422
Self-Sufficiency	77%	80%	72%
Bleached Softwood Sulfate			
Production	3448	4659	6400
Net Trade Imports, (Exports)	1233	1328	1652
Consumption	4681	5987	8052
Self-Sufficiency	74%	78%	79%
Total White Pulp			
Production	10640	12360	14774
Net Trade Imports, (Exports)	1836	2273	3444
Consumption	12476	14633	18218
Self-Sufficiency	85%	84%	81%

CHART 4.8

TOTAL WESTERN EUROPE White Pulp Self-Sufficiency

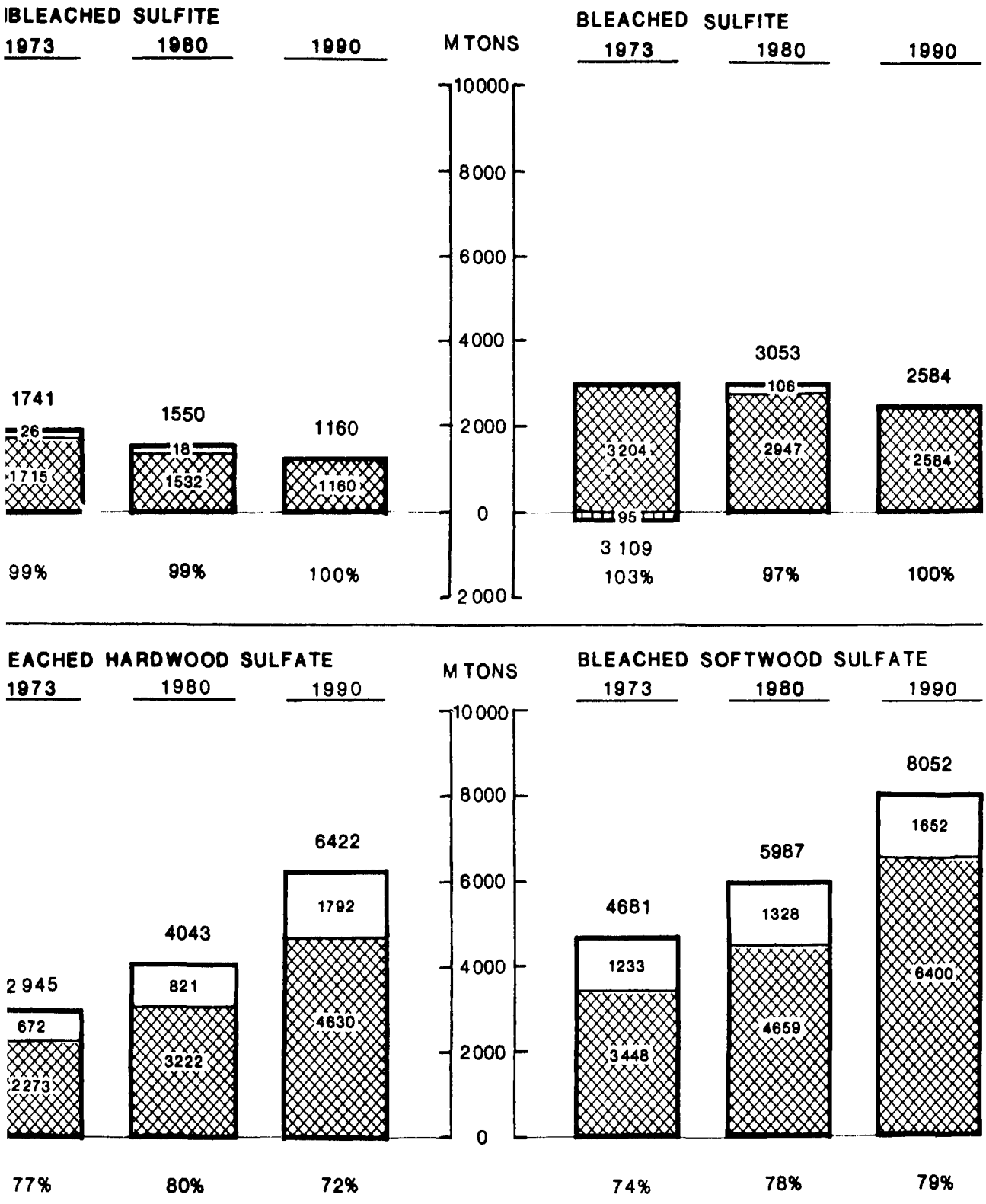


Table 4.9

FRANCE

SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	40	40	40
Net Trade Imports, (Exports)	71	64	26
Consumption	111	104	66
Self-Sufficiency	36%	38%	61%
Bleached Sulfite			
Production	281	252	250
Net Trade Imports, (Exports)	22	48	-
Consumption	303	300	250
Self-Sufficiency	93%	84%	100%
Total Sulfite			
Production	321	292	290
Net Trade Imports, (Exports)	93	112	26
Consumption	414	404	316
Self-Sufficiency	78%	72%	92%
Bleached Hardwood Sulfate			
Production	353	400	440
Net Trade Imports, (Exports)	168	267	416
Consumption	521	667	856
Self-Sufficiency	68%	60%	51%
Bleached Softwood Sulfate			
Production	139	230	300
Net Trade Imports, (Exports)	503	608	734
Consumption	642	838	1034
Self-Sufficiency	22%	27%	29%
Total White Pulp			
Production	813	922	1030
Net Trade Imports, (Exports)	764	987	1176
Consumption	1577	1909	2206
Self-Sufficiency	52%	48%	47%

Table 4.10

WEST GERMANY

SELF-SUFFICIENCY

(thousands of metric tons)

Unbleached Sulfite	1972-74	1980	1990
Production	40	45	48
Net Trade Imports, (Exports)	23	2	1
Consumption	63	47	49
Self-Sufficiency	63%	96%	98%
Bleached Sulfite			
Production	524	516	459
Net Trade Imports, (Exports)	86	8	-
Consumption	610	524	459
Self-Sufficiency	86%	98%	100%
Total Sulfite			
Production	564	561	507
Net Trade Imports, (Exports)	109	10	1
Consumption	673	571	508
Self-Sufficiency	84%	98%	111%
Bleached Hardwood Sulfate			
Production	-	-	50
Net Trade Imports, (Exports)	420	724	944
Consumption	420	724	994
Self-Sufficiency	0%	0%	5%
Bleached Softwood Sulfate			
Production	-	-	200
Net Trade Imports, (Exports)	848	1164	1432
Consumption	848	1164	1632
Self-Sufficiency	0%	0%	12%
Total White Pulp			
Production	564	561	757
Net Trade Imports, (Exports)	1377	1898	2377
Consumption	1941	2459	3134
Self-Sufficiency	29%	23%	26%

Table 4.11

UNITED KINGDOM

SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	-	-	-
Net Trade Imports, (Exports)	147	125	110
Consumption	147	125	110
Self-Sufficiency	0%	0%	0%
Bleached Sulfite			
Production	67	67	67
Net Trade Imports, (Exports)	315	253	193
Consumption	382	320	260
Self-Sufficiency	18%	21%	26%
Total Sulfite			
Production	67	67	67
Net Trade Imports, (Exports)	462	378	303
Consumption	529	445	370
Self-Sufficiency	13%	15%	18%
Bleached Hardwood Sulfate			
Production	-	-	-
Net Trade Imports, (Exports)	467	626	780
Consumption	467	626	780
Self-Sufficiency	0%	0%	0%
Bleached Softwood Sulfate			
Production	-	-	-
Net Trade Imports, (Exports)	702	771	844
Consumption	702	771	844
Self-Sufficiency	0%	0%	0%
Total White Pulp			
Production	67	67	67
Net Trade Imports, (Exports)	1631	1775	1927
Consumption	1698	1842	1994
Self-Sufficiency	4%	4%	3%

Table 4.12

OTHER EEC

SELF-SUFFICIENCY

(thousands of metric tons)

Unbleached Sulfite	1972-74	1980	1990
Production	24	23	25
Net Trade Imports, (Exports)	196	302	175
Consumption	220	325	200
Self-Sufficiency	11%	7%	13%
Bleached Sulfite			
Production	97	122	115
Net Trade Imports, (Exports)	414	578	335
Consumption	511	700	450
Self-Sufficiency	19%	17%	26%
Total Sulfite			
Production	121	145	140
Net Trade Imports, (Exports)	610	880	510
Consumption	731	1025	650
Self-Sufficiency	17%	14%	22%
Bleached Hardwood Sulfate			
Production	195	200	300
Net Trade Imports, (Exports)	342	325	873
Consumption	537	525	1173
Self-Sufficiency	36%	38%	26%
Bleached Softwood Sulfate			
Production	28	30	30
Net Trade Imports, (Exports)	819	813	1412
Consumption	847	843	1442
Self-Sufficiency	3%	4%	2%
Total White Pulp			
Production	344	375	470
Net Trade Imports, (Exports)	1771	2018	2795
Consumption	2115	2393	3265
Self-Sufficiency	16%	16%	14%

Table 4.13

NORDIC COUNTRIES

SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	1404	1241	947
Net Trade Imports, (Exports)	(514)	(562)	(382)
Consumption	890	679	565
Self-Sufficiency	158%	183%	168%
Bleached Sulfite			
Production	1678	1290	893
Net Trade Imports, (Exports)	(1018)	(701)	(368)
Consumption	660	589	525
Self-Sufficiency	254%	219%	170%
Total Sulfite			
Production	3082	2531	1840
Net Trade Imports, (Exports)	(1532)	(1263)	(750)
Consumption	1550	1268	1090
Self-Sufficiency	199%	200%	169%
Bleached Hardwood Sulfate			
Production	1375	1732	2190
Net Trade Imports, (Exports)	(875)	(1018)	(870
Consumption	500	714	1320
Self-Sufficiency	275%	243%	166%
Bleached Softwood Sulfate			
Production	2956	3999	5170
Net Trade Imports, (Exports)	(1856)	(2407)	(3218)
Consumption	1100	1592	1952
Self-Sufficiency	269%	251%	265%
Total White Pulp			
Production	7413	8262	9200
Net Trade Imports, (Exports)	(4263)	(4688)	(4838)
Consumption	3150	3574	4362
Self-Sufficiency	235%	231%	211%

Table 4.14

OTHER WESTERN EUROPE

SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	207	183	100
Net Trade Imports, (Exports)	103	87	70
Consumption	310	270	170
Self-Sufficiency	67%	68%	59%
Bleached Sulfite			
Production	557	700	800
Net Trade Imports, (Exports)	86	(80)	(160)
Consumption	643	620	640
Self-Sufficiency	87%	113%	125%
Total Sulfite			
Production	764	883	900
Net Trade Imports, (Exports)	189	7	(90)
Consumption	953	890	810
Self-Sufficiency	80%	99%	111%
Bleached Hardwood Sulfate			
Production	350	890	1650
Net Trade Imports, (Exports)	150	(103)	(351)
Consumption	500	787	1299
Self-Sufficiency	70%	113%	127%
Bleached Softwood Sulfate			
Production	325	400	700
Net Trade Imports, (Exports)	217	379	448
Consumption	542	779	1148
Self-Sufficiency	60%	51%	61%
Total White Pulp			
Production	1439	2173	3250
Net Trade Imports, (Exports)	556	283	7
Consumption	1995	2456	3257
Self-Sufficiency	72%	88%	100%

5.0 JAPAN

5.1 PULP GRADE BREAKDOWN

5.1.1 White Pulp Breakdown

Total consumption of white pulp in Japan is expected to rise from 4.3 million metric tons in 1972/74 to 7.8 million tons in 1990. Within the white pulp category, sulfite pulps are projected to lose share from 9% to approximately 2% during the forecast period. Bleached softwood sulfate is expected to show a modest increase from 23% to 25% in the forecast period. Bleached hardwood sulfate, on the other hand, has a substantial increase in tonnage but with a major share today shows only an increase from 68% to 73%.

In general the Review Panel agreed with the Working Party's estimate of white pulp usage in all grades.

5.1.2 Sulfite Pulp

Consumption of sulfite pulp in Japan is expected to decline by more than 50% from 370,000 tons in 1972/74 to 180,000 tons in 1990. Table 5.1.2 shows that sulfite grades are projected to be only 2.3% of the total in 1990. Use of sulfite pulp will decline in all grades.

5.1.3 Bleached Hardwood Sulfate Pulp

Consumption of bleached hardwood sulfate pulp is forecast to grow 4%/year between 1972/74 and 1990. Consumption should reach 5.7 million tons by 1990 compared to 2.9 million tons in 1972/74. The bulk of this increase is expected to take place in printing and writing paper where consumption grows from 1.9 million tons in 1972/74 to 4.5 million tons in 1990, implying an increase from 91% of the total white pulp furnish in 1972/74 to almost 95% in 1990. Hardwood pulp's share of total white pulp consumption is expected to decline in newsprint and other paper and board, although some modest tonnage gains are forecast.

5.1.4 Bleached Softwood Sulfate

Consumption of bleached softwood sulfate is forecast to increase from 1.0 million tons in 1972/74 to 1.9 million tons in 1990 and to maintain an approximately unchanged share of 23-25% of the total consumption of white pulp. The softwood pulp share is projected to decline

5.1.4 Bleached Softwood Sulfate (continued)

marginally in printing and writing paper but to increase rapidly from a low base in newsprint and other paper and board.

5.2 JAPAN SELF-SUFFICIENCY

5.2.1 Total White Pulp

White pulp production is forecast to increase from 3.7 million tons in 1972/74 to 5.3 million tons in 1990. Self-sufficiency is estimated to decline from 87% in 1972/74 to 68% in 1990 in spite of the large expansion in production.

Several members of the Review Panel expressed concern that pollution control requirements and limited energy resources could restrict large increases in pulp production. In general, however, the Review Panel viewed the Working Party's production forecast as being realistic.

5.2.2 Sulfite Pulp

Production of sulfite pulp is expected to drop approximately 50% in the 1972/74 to 1990 period, largely following the forecast decline in consumption. Self-sufficiency is projected to remain almost unchanged in the 84-89% range.

The Review Panel agreed with the Working Party's forecast.

5.2.3 Bleached Hardwood Sulfate

Almost all of the increase in white pulp production is forecast to be hardwood sulfate. Production is expected to increase from 2.9 million tons in 1972/74 to 4.5 million tons in 1990. Even so, imports should climb rapidly to reach a level of almost 1.2 million tons in 1990 compared to a small net export in 1972/74. Self-sufficiency is projected to drop from 101% in 1972/74 to 79% in 1990.

The Review Panel's views were discussed in paragraph 5.2.1.

5.2.4 Bleached Softwood Sulfate

Production of bleached softwood sulfate is forecast to increase modestly from 460,000 tons in 1972/74 to 670,000 tons in 1990. The already low self-sufficiency of 46% is expected to further decline to 34% by 1990, implying rapidly growing imports. Imports are projected to reach 1.3 million tons compared to 0.5 million tons in 1972/74.

The Review Panel generally agreed with the Working Party's view.

CHART 5.1.1

JAPAN White Pulp Consumption

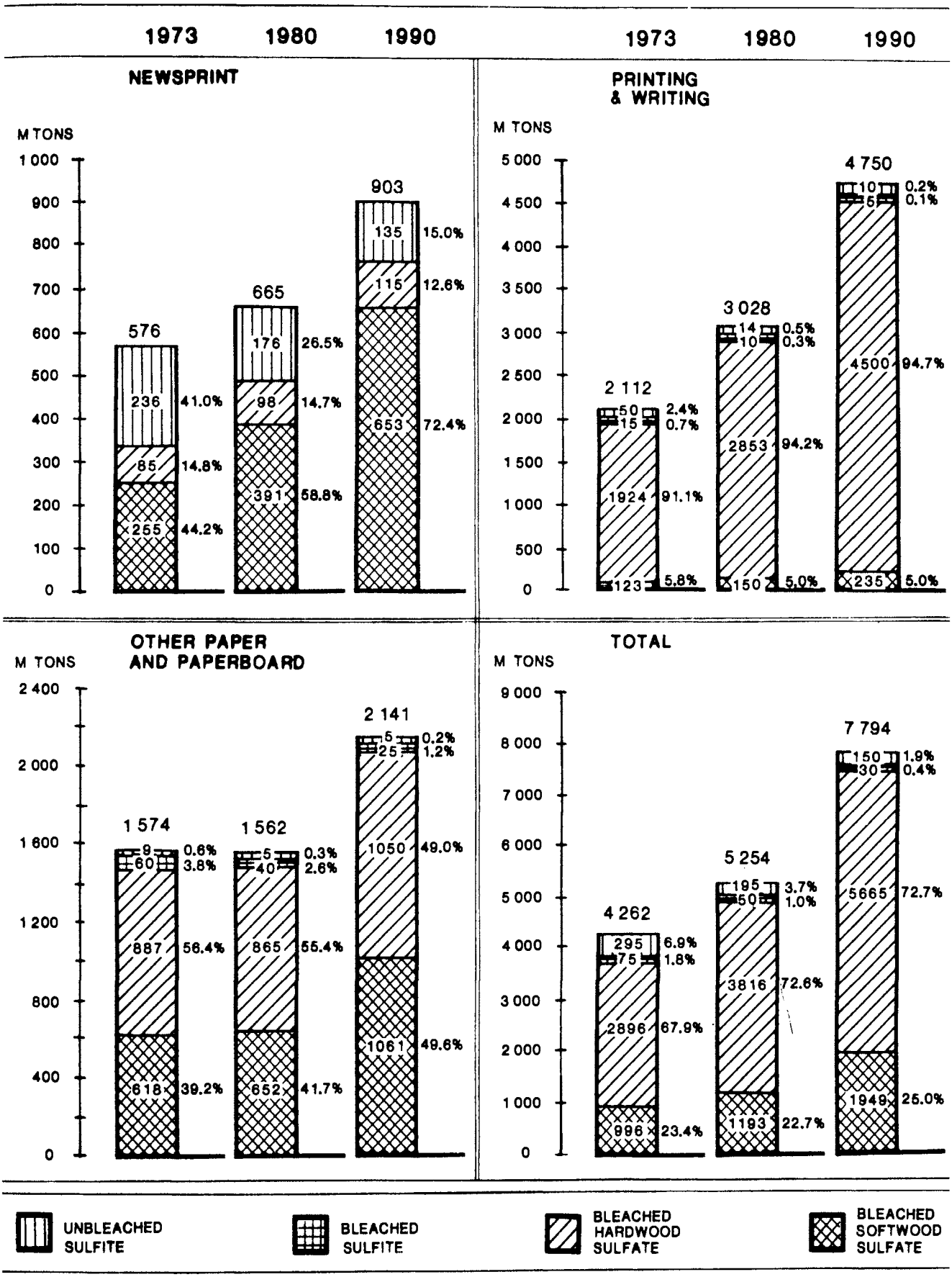


Table 5.1.1

JAPAN

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	236	176	135	50	14	10
Bleached Sulfite	-	-	-	15	10	5
Total Sulfite	236	176	135	65	24	15
Bleached Hardwood Sulfate	85	98	115	1924	2853	4500
Bleached Softwood Sulfate	255	391	653	123	150	235
Total	576	665	903	2112	3028	4750

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	9	5	5	295	195	150
Bleached Sulfite	60	40	25	75	50	30
Total Sulfite	69	45	30	370	245	180
Bleached Hardwood Sulfate	887	865	1050	2896	3816	5665
Bleached Softwood Sulfate	618	652	1061	996	1193	1949
Total	1574	1562	2141	4262	5254	7794

Table 5.1.2

JAPAN

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	41.0	26.5	15.0	2.4	0.5	0.2
Bleached Sulfite	-	-	-	0.7	0.3	0.1
Total Sulfite	41.0	26.5	15.0	3.1	0.8	0.3
Bleached Hardwood Sulfate	14.8	14.7	12.6	91.1	94.2	94.7
Bleached Softwood Sulfate	44.2	58.8	72.4	5.8	5.0	5.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	0.6	0.3	0.2	6.9	3.7	1.9
Bleached Sulfite	3.8	2.6	1.2	1.8	1.0	0.4
Total Sulfite	4.4	2.9	1.4	8.7	4.7	2.3
Bleached Hardwood Sulfate	56.4	55.4	49.0	67.9	72.6	72.7
Bleached Softwood Sulfate	39.2	41.7	49.6	23.4	22.7	25.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 5.2

JAPAN

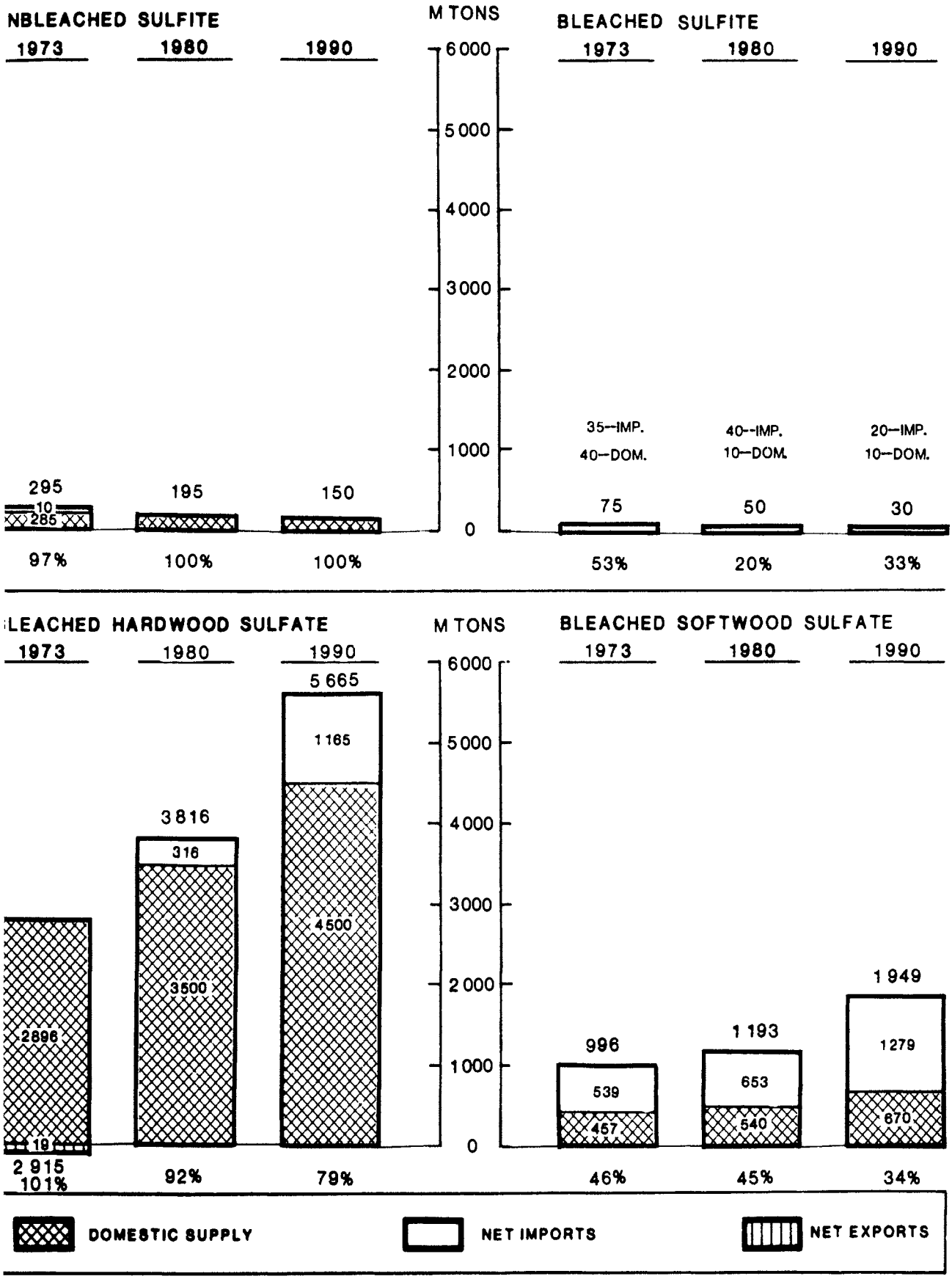
SELF-SUFFICIENCY

(thousands of metric tons)

Unbleached Sulfite	1972-74	1980	1990
Production	285	195	150
Net Trade Imports, (Exports)	10	-	-
Consumption	295	195	150
Self-Sufficiency	97%	100%	100%
Bleached Sulfite			
Production	40	10	10
Net Trade Imports, (Exports)	35	40	20
Consumption	75	50	30
Self-Sufficiency	53%	20%	33%
Total Sulfite			
Production	325	205	160
Net Trade Imports, (Exports)	45	40	20
Consumption	370	245	180
Self-Sufficiency	88%	84%	89%
Bleached Hardwood Sulfate			
Production	2915	3500	4500
Net Trade Imports, (Exports)	(19)	316	1165
Consumption	2896	3816	5665
Self-Sufficiency	101%	92%	79%
Bleached Softwood Sulfate			
Production	457	540	670
Net Trade Imports, (Exports)	539	653	1279
Consumption	996	1193	1949
Self-Sufficiency	46%	45%	34%
Total White Pulp			
Production	3697	4245	5330
Net Trade Imports, (Exports)	565	1009	2464
Consumption	4262	5254	7794
Self-Sufficiency	87%	81%	68%

CHART 5.2

JAPAN — White Pulp Self-Sufficiency



6.0 LATIN AMERICA

6.1 PULP GRADE BREAKDOWN

6.1.1 White Pulp Breakdown

Total consumption of white pulp in Latin America is expected to rise from 1.2 million tons in 1972/74 to 3.2 million tons in 1990. Within the white pulp category sulfite pulps are projected to lose share from 17% to 3% while bleached hardwood sulfate is projected to increase its share from 40% to 65%. Bleached softwood sulfate, while declining in share from 43% in 1972/74 to 32% in 1990, is forecast to double in volume from 520,000 tons to 1,030,000 tons.

6.1.2 Sulfite Pulp

Consumption of sulfite pulp in Latin America is expected to decline in printing and writing grades and other paper and paperboard and remain essentially unchanged in newsprint. Total sulfite consumption is expected to drop from 200,000 tons in 1972/74 to 100,000 in 1990 and its share of white pulps from 17% to 3%. Table 6.1.2 shows that sulfite's share of white pulp in newsprint is projected to decline from 67% in 1972/74 to 25% in 1990, in printing and writing grades from 26% to 3% and in other paper and paperboard from 5% to nil.

The Review Panel generally supported the Working Party's position.

6.1.3 Bleached Hardwood Sulfate Pulp

Consumption of bleached hardwood sulfate pulp grades is expected to show the fastest growth of white pulp grades in Latin America during the forecast period. This reflects the substantial increase in availability of domestically produced bleached hardwood sulfate in that period. Consumption is forecast to grow at an annual rate of 9.1% compared to 6.0% for total white pulp. Consumption is forecast to increase from 500,000 tons in 1972/74 to 2,100,000 tons in 1990.

Bleached hardwood sulfate is projected to increase its share of Latin America's white pulp furnish from 40% in 1972/74 to 65% in 1990. This increase applies to both the printing and writing paper and other paper and paper-

6.1.3 Bleached Hardwood Sulfate Pulp (continued)

board sectors where its share is expected to rise from 54% to 83% and 32% to 48% respectively.

The Review Panel generally supported the Working Party's position.

6.1.4 Bleached Softwood Sulfate Pulp

Consumption of bleached softwood sulfate pulp is expected to increase at an annual rate of 4.1% in the forecast period compared to 6.0% for total white pulp and 9.1% for bleached hardwood sulfate. Consumption is expected to double, from 520,000 tons in 1972/74 to 1,030,000 tons in 1990.

Consumption of bleached softwood sulfate in newsprint should increase by 130,000 tons while its share of white pulp jumps from 33% to 75% (because sulfite consumption does not increase while newsprint production nearly quadruples in the forecast period). Consumption in printing and writing papers is forecast to increase from 100,000 tons to 270,000 tons while the share decreases from 20% to 15%. Consumption in other paper and paperboard is forecast to increase from 400,000 tons to 610,000 with the share dropping from 63% to 52%.

There was no disagreement by the Review Panel with the Working Party's preliminary outlook.

6.2 SELF-SUFFICIENCY

6.2.1 Total White Pulp

Production of total white pulp in Latin America during the 1972/74 - 1900 period is forecast to increase from 850,000 to 4.4 million tons. This represents an annual growth rate of 10.1% which is considerably higher than the 6.0% forecast growth rate for consumption. Latin America is forecast to be a net exporter of 1.2 million tons of white pulp in 1990, compared to net imports of 340,000 tons in 1972/74. Self-sufficiency should increase from 71% to 134%.

The Review Panel generally agreed with the Working Party's estimates of self-sufficiency though some members felt the forecasts of bleached sulfate production and exports were too high.

6.2.2 Sulfite Pulp

Production of sulfite pulp is projected to decline from 156,000 tons in 1972/74 to 95,000 tons in 1990. Since consumption is forecast to decline by a larger amount, no net imports of either bleached or unbleached sulfite will be required by 1990.

The Review Panel generally agreed with the Working Party's estimates.

6.2.3 Bleached Hardwood Sulfate

Production of bleached hardwood sulfate pulp in Latin America is expected to increase more than six-fold in the 1972/74 - 1990 period, from 475,000 to 3.1 million tons. Of the 2.6 million ton increase 1.0 million tons should be exported and the remainder consumed within the region. Self-sufficiency is forecast to increase from 100% to 149%.

The Review Panel generally agreed with the Working Party's estimates though one member said the production figure for 1990 was far too optimistic. Export forecasts were increased slightly because of higher export demand than originally estimated by the Working Party.

6.2.4 Bleached Softwood Sulfate

Production of bleached softwood sulfate in Latin America is expected to increase more than five-fold in the 1972/74 - 1990 period, from 220,000 to 1.2 million tons. Of the 1 million ton increase half should be consumed within the region and the other half will be exported, changing the region from a net importer of this grade to a net exporter. Self-sufficiency is forecast to increase from 42% to 117%.

Several Review Panel members felt that the production and export figures for 1990 were too high.

CHART 6.1.1

LATIN AMERICA — White Pulp Consumption

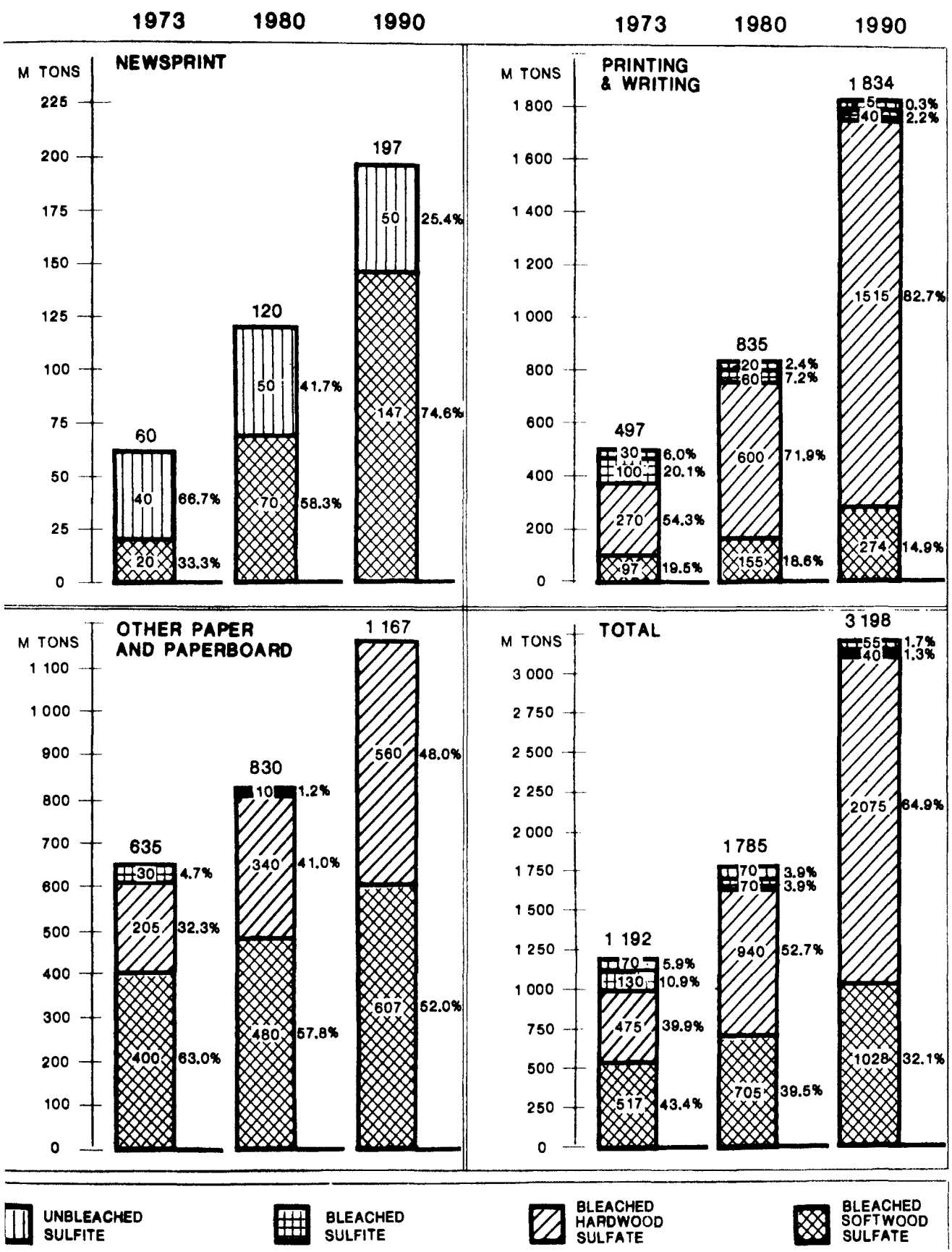


Table 6.1.1

LATIN AMERICA

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	40	50	50	30	20	5
Bleached Sulfite				100	60	40
Total Sulfite	40	50	50	130	80	45
Bleached Hardwood Sulfate				270	600	1515
Bleached Softwood Sulfate	20	70	147	97	155	274
Total	60	120	197	497	835	1834

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite				70	70	55
Bleached Sulfite	30	10		130	70	40
Total Sulfite	30	10		200	140	95
Bleached Hardwood Sulfate	205	340	560	475	940	2075
Bleached Softwood Sulfate	400	480	607	517	705	1028
Total	635	830	1167	1192	1785	3198

Table 6.1.2

LATIN AMERICA

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	66.7	41.7	25.4	6.0	2.4	0.3
Bleached Sulfite	-	-	-	20.1	7.2	2.2
Total Sulfite	66.7	41.7	25.4	26.2	9.6	2.5
Bleached Hardwood Sulfate	-	-	-	54.3	71.9	82.7
Bleached Softwood Sulfate	33.3	58.3	74.6	19.5	18.6	14.9
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	-	-		5.9	3.9	1.7
Bleached Sulfite	4.7	1.2		10.9	3.9	1.3
Total Sulfite	4.7	1.2		16.8	7.8	3.0
Bleached Hardwood Sulfate	32.3	41.0	48.0	39.9	52.7	64.9
Bleached Softwood Sulfate	63.0	57.8	52.0	43.4	39.5	32.1
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 6.2

LATIN AMERICA

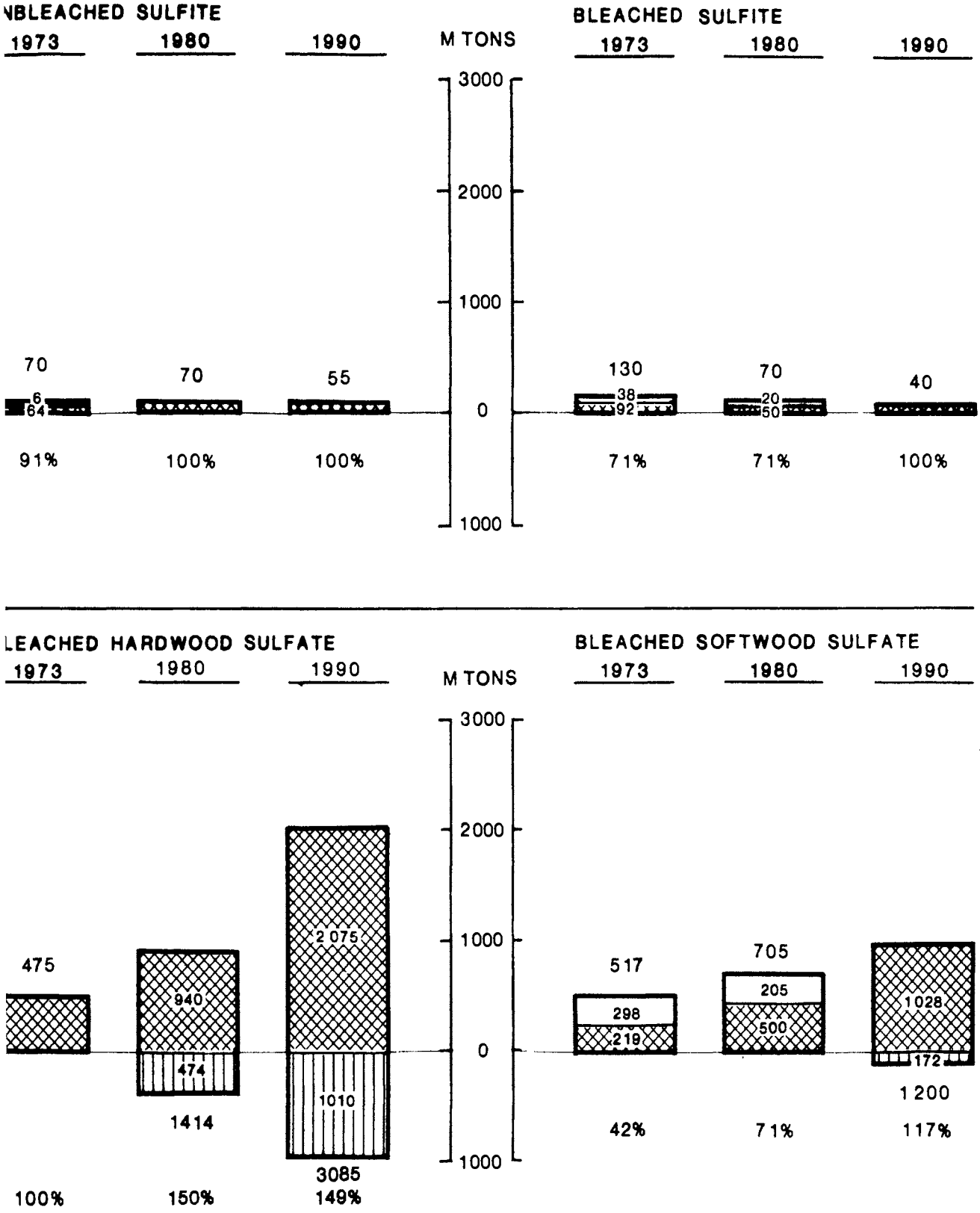
SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	64	70	55
Net Trade Imports, (Exports)	6	-	-
Consumption	70	70	55
Self-Sufficiency	91%	100%	100%
Bleached Sulfite			
Production	92	50	40
Net Trade Imports, (Exports)	38	20	-
Consumption	130	70	40
Self-Sufficiency	71%	71%	100%
Total Sulfite			
Production	156	120	95
Net Trade Imports, (Exports)	44	20	-
Consumption	200	140	95
Self-Sufficiency	78%	86%	100%
Bleached Hardwood Sulfate			
Production	475	1414	3085
Net Trade Imports, (Exports)	-	(474)	(1010)
Consumption	475	940	2075
Self-Sufficiency	100%	150%	149%
Bleached Softwood Sulfate			
Production	219	500	1200
Net Trade Imports, (Exports)	298	205	(172)
Consumption	517	705	1028
Self-Sufficiency	42%	71%	117%
Total White Pulp			
Production	850	2034	4380
Net Trade Imports, (Exports)	342	(249)	(1182)
Consumption	1192	1785	3198
Self-Sufficiency	71%	114%	134%

CHART 6.2

LATIN AMERICA — White Pulp Self-Sufficiency



7.0 OTHER EASTERN HEMISPHERE

7.1 PULP GRADE BREAKDOWN

7.1.1 White Pulp Breakdown

Total consumption of white pulp in Other Eastern Hemisphere countries is foreseen to grow from 1.1 million tons in 1972/74 to 1.5 million tons in 1980 and to 2.6 million tons in 1990. In this region, largely the Middle East, North Africa and the Far East, non-wood pulps play an important role and are a considerable replacement of white wood pulps in many grades of paper and paperboard. In total the non-wood pulps are foreseen to grow at about the same rate as white pulps. Consequently white pulps are here discussed as only part of the fiber supply. Within total white pulp consumption, there is expected to be a decline in the consumption of sulfite pulps (bleached and unbleached) from the real level of 340 thousand tons in 1972/74 to essentially none in the 1980's. By contrast both bleached hardwood and especially softwood sulfate pulps are foreseen to grow rapidly in their share of white pulp consumption.

The Review Panel either agreed with the Working Party's outlook or pointed to the difficulty of being able to question it because of the difficulties in precise allocation of grades.

7.1.2 Sulfite Pulp

Sulfite pulps, now largely limited to the Far East and Oceania, are expected to disappear from the fibre furnish consumption pattern by 1980.

7.1.3 Bleached Hardwood Sulfate Pulp

Bleached hardwood sulfate pulps, two-thirds of which are used for printing and writing papers and the remainder for other paper and paperboard, are foreseen to maintain their share of white pulp consumption.

7.1.4 Bleached Softwood Sulfate Pulp

The relative importance of bleached softwood sulfate pulp in white pulp consumption is estimated to increase rapidly from 36% in 1972/74 to 69% in 1990. Its relative role is expected to grow in all three major paper and paperboard groups and in all the sub-regions of this heterogeneous region.

7.2 SELF-SUFFICIENCY

7.2.1 Total White Pulp

White pulp production in the region is foreseen to expand modestly into 1980 at a rate less than consumption growth so that self-sufficiency declines from 64% in 1972/74 to 60% in 1980. However, from 1980 to 1990 production is expected to grow rapidly to 2.9 million tons, more than four times the 1972/74 output. This increases self-sufficiency to 115% and results in an estimated net export of more than 370 thousand tons. Substantial increases are foreseen for all sub-regions.

7.2.2 Sulfite Pulp

The production of sulfite pulp, some 150 thousand tons in 1972/74, primarily in the Far East sub-region is expected to decline rapidly and to disappear by 1990.

7.2.3 Bleached Hardwood Sulfate

Bleached hardwood sulfate production, about 370 thousand tons, is largely consumed in the region. Production is foreseen to grow modestly to 1980, less rapidly than consumption so that self-sufficiency drops from 103% to 95%. A rapid expansion of production foreseen in the 1980's is expected to lead to a self-sufficiency of 245% and exports of nearly 1.2 million tons. This export potential is expected to develop in all sub-regions based primarily on mixed tropical hardwoods in Africa (South of the Sahara) and the Far East and in eucalyptus in the Middle East/North Africa and Oceania sub-regions.

7.2.4 Bleached Softwood Sulfate

Production of bleached softwood sulfate is foreseen to grow fairly rapidly to 1980, although not quite as fast as consumption so that self-sufficiency drops from 46% to 40%. Production will grow more rapidly to 1990 and the self-sufficiency will improve to 55%. Only in Africa (South of the Sahara) is there expected to be an export potential, based on softwood plantations. Oceania is expected to become nearly self-sufficient while the imports of the Far East, Middle East and the North Africa sub-regions are expected to grow appreciably in tonnage.

CHART 7.1.1

OTHER EASTERN HEMISPHERE

White Pulp Consumption

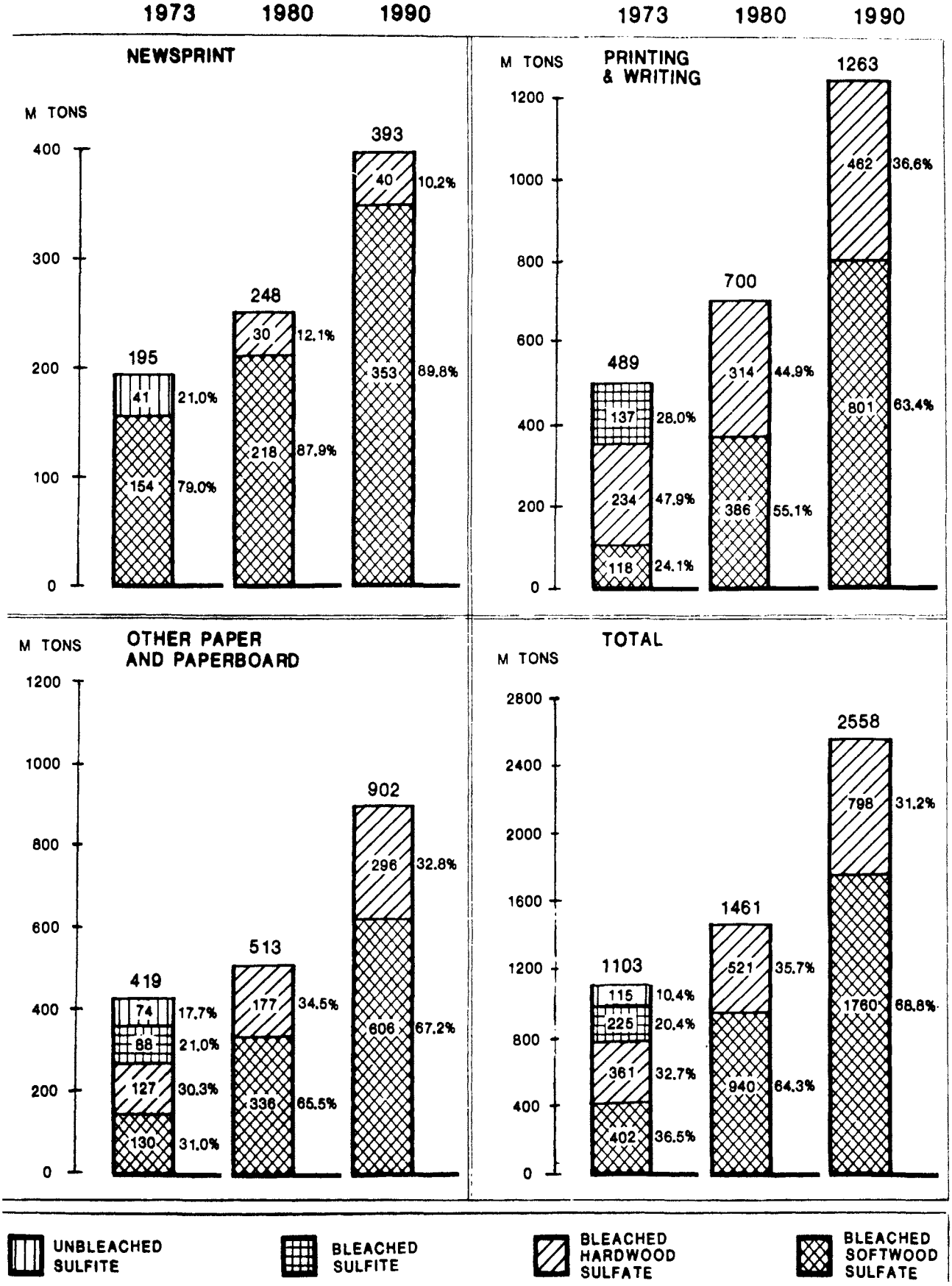


Table 7.1.1

OTHER EASTERN HEMISPHERE

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	41	-	-	-	-	-
Bleached Sulfite	-	-	-	137	-	-
Total Sulfite	41	-	-	137	-	-
Bleached Hardwood Sulfate	-	30	40	234	314	462
Bleached Softwood Sulfate	154	218	353	118	386	801
Total	195	248	393	489	700	1263

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	74	-	-	115	-	-
Bleached Sulfite	88	-	-	225	-	-
Total Sulfite	162	-	-	340	-	-
Bleached Hardwood Sulfate	127	177	296	361	521	798
Bleached Softwood Sulfate	130	336	606	402	940	1760
Total	419	513	902	1103	1461	2558

Table 7.1.2

OTHER EASTERN HEMISPHERE

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	21.0	-	-	-	-	-
Bleached Sulfite	-	-	-	28.0	-	-
Total Sulfite	21.0	-	-	28.0	-	-
Bleached Hardwood Sulfate	-	12.1	10.2	47.9	44.9	36.6
Bleached Softwood Sulfate	79.0	87.9	89.8	24.1	55.1	63.4
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	17.7	-	-	10.4	-	-
Bleached Sulfite	21.0	-	-	20.4	-	-
Total Sulfite	38.7	-	-	30.8	-	-
Bleached Hardwood Sulfate	30.3	34.5	32.8	32.7	35.7	31.2
Bleached Softwood Sulfate	31.0	65.5	67.2	36.5	64.3	68.8
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 7.2.1

OCEANIA

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	8	-	-	-	-	-
Bleached Sulfite	-	-	-	30	-	-
Total Sulfite	8	-	-	30	-	-
Bleached Hardwood Sulfate	-	-	-	72	87	100
Bleached Softwood Sulfate	78	101	145	30	100	176
Total	86	101	145	132	187	276

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	16	-	-	24	-	-
Bleached Sulfite	29	-	-	59	-	-
Total Sulfite	45	-	-	83	-	-
Bleached Hardwood Sulfate	74	103	206	146	190	306
Bleached Softwood Sulfate	51	127	170	159	328	491
Total	170	230	376	388	518	797

Table 7.2.2

OCEANIA

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	9.3			-		
Bleached Sulfite	-			22.7		
Total Sulfite	9.3			22.7		
Bleached Hardwood Sulfate	-			54.5	46.5	36.2
Bleached Softwood Sulfate	90.7	100.0	100.0	22.7	53.5	63.8
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	9.4			6.2		
Bleached Sulfite	17.1			15.2		
Total Sulfite	26.5			21.4		
Bleached Hardwood Sulfate	43.5	44.8	54.8	37.6	36.7	38.4
Bleached Softwood Sulfate	30.0	55.2	45.2	41.0	63.3	61.6
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 7.3.1

MIDDLE EAST AND NORTH AFRICA

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	-	-	-	-	-	-
Bleached Sulfite	-	-	-	-	-	-
Total Sulfite	-	-	-	-	-	-
Bleached Hardwood Sulfate	-	-	-	10	17	28
Bleached Softwood Sulfate	-	-	14	35	69	220
Total	-	-	14	45	86	248

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	2	-	-	2	-	-
Bleached Sulfite	1	-	-	1	-	-
Total Sulfite	3	-	-	3	-	-
Bleached Hardwood Sulfate	-	14	26	10	31	54
Bleached Softwood Sulfate	11	15	24	46	84	258
Total	14	29	50	59	115	312

Table 7.3.2

MIDDLE EAST AND NORTH AFRICA

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite						
Bleached Sulfite						
Total Sulfite						
Bleached Hardwood Sulfate				22.2	19.8	11.3
Bleached Softwood Sulfate			100.0	77.8	80.2	88.7
Total			100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	14.3			3.4		
Bleached Sulfite	0.7			1.7		
Total Sulfite	21.4			5.1		
Bleached Hardwood Sulfate	-	48.3	52.0	16.9	27.0	17.3
Bleached Softwood Sulfate	78.6	51.7	48.0	78.0	73.0	82.7
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 7.4.1

AFRICA SOUTH OF THE SAHARA

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	8	-	-	-	-	-
Bleached Sulfite	-	-	-	7	-	-
Total Sulfite	8	-	-	7	-	-
Bleached Hardwood Sulfate	-	-	-	35	70	150
Bleached Softwood Sulfate	44	75	90	28	37	65
Total	52	75	90	70	107	215

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	-	-	-	8	-	-
Bleached Sulfite	7	-	-	14	-	-
Total Sulfite	7	-	-	22	-	-
Bleached Hardwood Sulfate	-	-	-	35	70	150
Bleached Softwood Sulfate	48	77	156	120	189	311
Total	55	77	156	177	259	461

Table 7.4.2

AFRICA SOUTH OF THE SAHARA

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	15.5			-		
Bleached Sulfite	-			10.0		
Total Sulfite	15.5			10.0		
Bleached Hardwood Sulfate	-			50.0	65.4	69.8
Bleached Softwood Sulfate	84.5	100.0	100.0	40.0	34.6	30.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	-			4.5		
Bleached Sulfite	12.7			7.9		
Total Sulfite	12.7			12.4		
Bleached Hardwood Sulfate	-			19.8	27.0	32.5
Bleached Softwood Sulfate	87.3	100.0	100.0	67.8	73.0	67.5
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 7.5.1

FAR EAST

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	25	-	-	-	-	-
Bleached Sulfite	-	-	-	100	-	-
Total Sulfite	25	-	-	100	-	-
Bleached Hardwood Sulfate	-	30	40	117	140	184
Bleached Softwood Sulfate	32	42	104	25	180	340
Total	57	72	144	242	320	524

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	56	-	-	81	-	-
Bleached Sulfite	51	-	-	151	-	-
Total Sulfite	107	-	-	232	-	-
Bleached Hardwood Sulfate	53	60	64	170	230	288
Bleached Softwood Sulfate	20	117	256	77	339	700
Total	180	177	320	479	569	988

Table 7.5.2

FAR EAST

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	43.9			-		
Bleached Sulfite	-			41.3		
Total Sulfite	43.9			41.3		
Bleached Hardwood Sulfate	-			48.3	53.1	42.7
Bleached Softwood Sulfate	56.1	100.0	100.0	10.3	46.9	57.3
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	31.1			16.9		
Bleached Sulfite	28.3			31.5		
Total Sulfite	59.4			48.4		
Bleached Hardwood Sulfate	29.4	33.9	20.0	35.5	40.4	29.1
Bleached Softwood Sulfate	11.1	66.1	80.0	16.1	59.6	70.9
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 7.6

OTHER EASTERN HEMISPHERE

SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	53		
Net Trade Imports, (Exports)	62		
Consumption	115		
Self-Sufficiency	46%		
Bleached Sulfite			
Production	97	10	
Net Trade Imports, (Exports)	128	(10)	
Consumption	225	0	
Self-Sufficiency	43%		
Total Sulfite			
Production	150	10	
Net Trade Imports, (Exports)	190	(10)	
Consumption	340	0	
Self-Sufficiency	44%		
Bleached Hardwood Sulfate			
Production	371	496	1955
Net Trade Imports, (Exports)	(10)	25	(1157)
Consumption	361	521	798
Self-Sufficiency	103%	95%	245%
Bleached Softwood Sulfate			
Production	185	375	975
Net Trade Imports, (Exports)	217	565	785
Consumption	402	940	1760
Self-Sufficiency	46%	40%	55%
Total White Pulp			
Production	706	881	2930
Net Trade Imports, (Exports)	397	580	(372)
Consumption	1103	1461	2558
Self-Sufficiency	64%	60%	115%

CHART 7.6

OTHER EASTERN HEMISPHERE White Pulp Self-Sufficiency

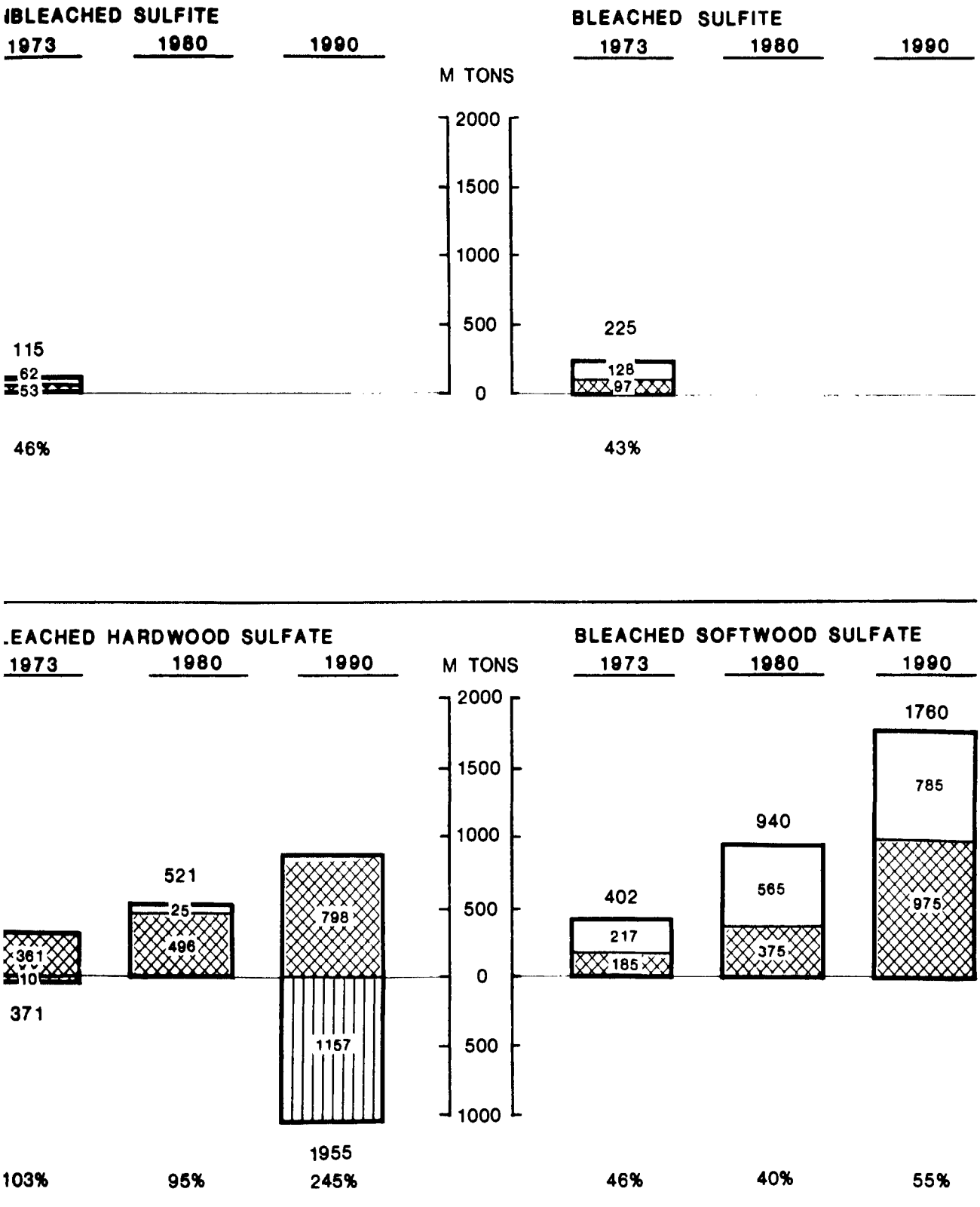


Table 7.7

OCEANIA

SELF-SUFFICIENCY

(thousands of metric tons)

	1972-74	1980	1990
Unbleached Sulfite			
Production	3		
Net Trade Imports, (Exports)	21		
Consumption	24		
Self-Sufficiency	13%		
Bleached Sulfite			
Production	17		
Net Trade Imports, (Exports)	42		
Consumption	59		
Self-Sufficiency	29%		
Total Sulfite			
Production	20		
Net Trade Imports, (Exports)	63		
Consumption	83		
Self-Sufficiency	24%		
Bleached Hardwood Sulfate			
Production	116	122	435
Net Trade Imports, (Exports)	30	68	(129)
Consumption	146	190	306
Self-Sufficiency	80%	64%	142%
Bleached Softwood Sulfate			
Production	100	225	445
Net Trade Imports, (Exports)	59	103	46
Consumption	159	328	491
Self-Sufficiency	63%	69%	91%
Total White Pulp			
Production	236	347	880
Net Trade Imports, (Exports)	152	171	(83)
Consumption	388	518	797
Self-Sufficiency	61%	67%	110%

Table 7.8

MIDDLE EAST AND NORTH AFRICA

SELF-SUFFICIENCY

(thousands of metric tons)

Unbleached Sulfite	1972-74	1980	1990
Production	-		
Net Trade Imports, (Exports)	2		
Consumption	2		
Self-Sufficiency	0%		
Bleached Sulfite			
Production	-		
Net Trade Imports, (Exports)	1		
Consumption	1		
Self-Sufficiency	0%		
Total Sulfite			
Production	-		
Net Trade Imports, (Exports)	3		
Consumption	3		
Self-Sufficiency	0%		
Bleached Hardwood Sulfate			
Production	50	81	250
Net Trade Imports, (Exports)	(40)	(50)	(196)
Consumption	10	31	54
Self-Sufficiency	500%	261%	463%
Bleached Softwood Sulfate			
Production	-	-	-
Net Trade Imports, (Exports)	46	84	258
Consumption	46	84	258
Self-Sufficiency	0%	0%	0%
Total White Pulp			
Production	50	81	250
Net Trade Imports, (Exports)	9	34	62
Consumption	59	115	312
Self-Sufficiency	85%	70%	80%

Table 7.9

AFRICA SOUTH OF THE SAHARA

SELF-SUFFICIENCY

(thousands of metric tons)

Unbleached Sulfite	1972-74	1980	1990
Production	-		
Net Trade Imports, (Exports)	8		
Consumption	8		
Self-Sufficiency	0%		
Bleached Sulfite			
Production	-		
Net Trade Imports, (Exports)	14		
Consumption	14		
Self-Sufficiency	0%		
Total Sulfite			
Production	-		
Net Trade Imports, (Exports)	22		
Consumption	22		
Self-Sufficiency	0%		
Bleached Hardwood Sulfate			
Production	35	63	570
Net Trade Imports, (Exports)	-	7	(420)
Consumption	35	70	150
Self-Sufficiency	100%	90%	380%
Bleached Softwood Sulfate			
Production	85	115	380
Net Trade Imports, (Exports)	35	74	(69)
Consumption	120	189	311
Self-Sufficiency	71%	61%	122%
Total White Pulp			
Production	120	178	950
Net Trade Imports, (Exports)	57	81	(489)
Consumption	177	259	461
Self-Sufficiency	68%	69%	206%

Table 7.10

FAR EAST

SELF-SUFFICIENCY

(thousands of metric tons)

Unbleached Sulfite	1972-74	1980	1990
Production	50		
Net Trade Imports, (Exports)	31		
Consumption	81		
Self-Sufficiency	62%		
Bleached Sulfite			
Production	80	10	
Net Trade Imports, (Exports)	71	(10)	
Consumption	151	0	
Self-Sufficiency	53%		
Total Sulfite			
Production	130	10	
Net Trade Imports, (Exports)	102	(10)	
Consumption	232	0	
Self-Sufficiency	56%		
Bleached Hardwood Sulfate			
Production	170	230	700
Net Trade Imports, (Exports)	-	-	(412)
Consumption	170	230	288
Self-Sufficiency	100%	100%	243%
Bleached Softwood Sulfate			
Production	-	35	150
Net Trade Imports, (Exports)	77	304	550
Consumption	77	339	700
Self-Sufficiency	0%	10%	21%
Total White Pulp			
Production	300	275	850
Net Trade Imports, (Exports)	179	294	138
Consumption	479	569	988
Self-Sufficiency	63%	48%	

8.0 CENTRALLY PLANNED

8.1 PULP GRADE BREAKDOWN

8.1.1 White Pulp Breakdown

Total consumption of white pulp in the Centrally Planned Economies is expected to more than double in the period from 1972/74 to 1990. The rise from 4.3 million tons in 1972/74 to 9.2 million tons in 1990 is equivalent to an average yearly growth rate of 4.6%. From 1980 on, sulfite pulp will gradually be replaced by sulfate pulp especially by bleached softwood sulfate. Sulfite's share in 1972/74 of 80% is foreseen to diminish to a mere 36% in 1990, while the share of bleached softwood sulfate in the same time changes from 15% to nearly 50%.

It has already been noted in earlier phases of this report that of all the world's regions, the figures for Centrally Planned Economies are the least reliable. This of course leads to an equivalent uncertainty about the forecasts.

8.1.2 Sulfite Pulp

It is assumed that the consumption of unbleached sulfite pulp will be practically stable in tonnage from 1972/74 to 1990 although that means a substantial loss of its share in total pulp consumption. This is mainly due to the high percentage of unbleached sulfite used in newsprint and printing and writing paper. Bleached sulfite in comparison is to a high percentage used in packaging paper grades and is accordingly projected to lose not only its share in total pulp consumption but also some tonnage.

8.1.3 Bleached Hardwood Sulfate Pulp

The consumption of bleached hardwood pulp is expected to rise at an average yearly growth rate of 11.8%. This steep rise is mainly explained by an increasing consumption in the manufacture of printing and writing papers. Consumption is forecast to rise from 0.2 million tons in 1972/74 to 1.5 million tons in 1990.

8.2.4 Bleached Softwood Sulfate Pulp

Bleached softwood sulfate pulp is expected to make the biggest contribution to rising consumption of white pulp. Consumption of bleached sulfate in 1990 is forecast to be 4.4 million tons -- nearly seven times the 1972/74 consumption of approximately 0.6 million tons. This strong position of bleached softwood among the other kinds of white pulp is mainly due to the availability of softwood in the USSR. Most of the additional consumption of bleached softwood is forecast to be used in the other paper and board sector. The relatively strong growth of these product groups arises from the projected increase in the standard of living in the Centrally Planned Economies.

8.2 SELF-SUFFICIENCY

Contrary to the other regions of the world the Working Party had such limited data about the Centrally Planned Economies that it felt unable to forecast interregional trade patterns. Because of this problem and the tendency of the Centrally Planned Economies to be self-sufficient the Working Party decided to forecast no trade for the 1980-1990 period even though there has been a certain trend towards a limited net import in all grades of white pulp. Total white pulp self-sufficiency in 1972/74 was 96% with higher imports of sulfate pulp compared to sulfite pulp.

It has to be pointed out that any unforeseen shift towards a higher consumption of white pulp in the Centrally Planned Economies not matched by equivalent production could lead to significant changes in the world balance of pulp capacity surplus projected for the 1980 period.

CHART 8.1.1

CENTRALLY PLANNED White Pulp Consumption

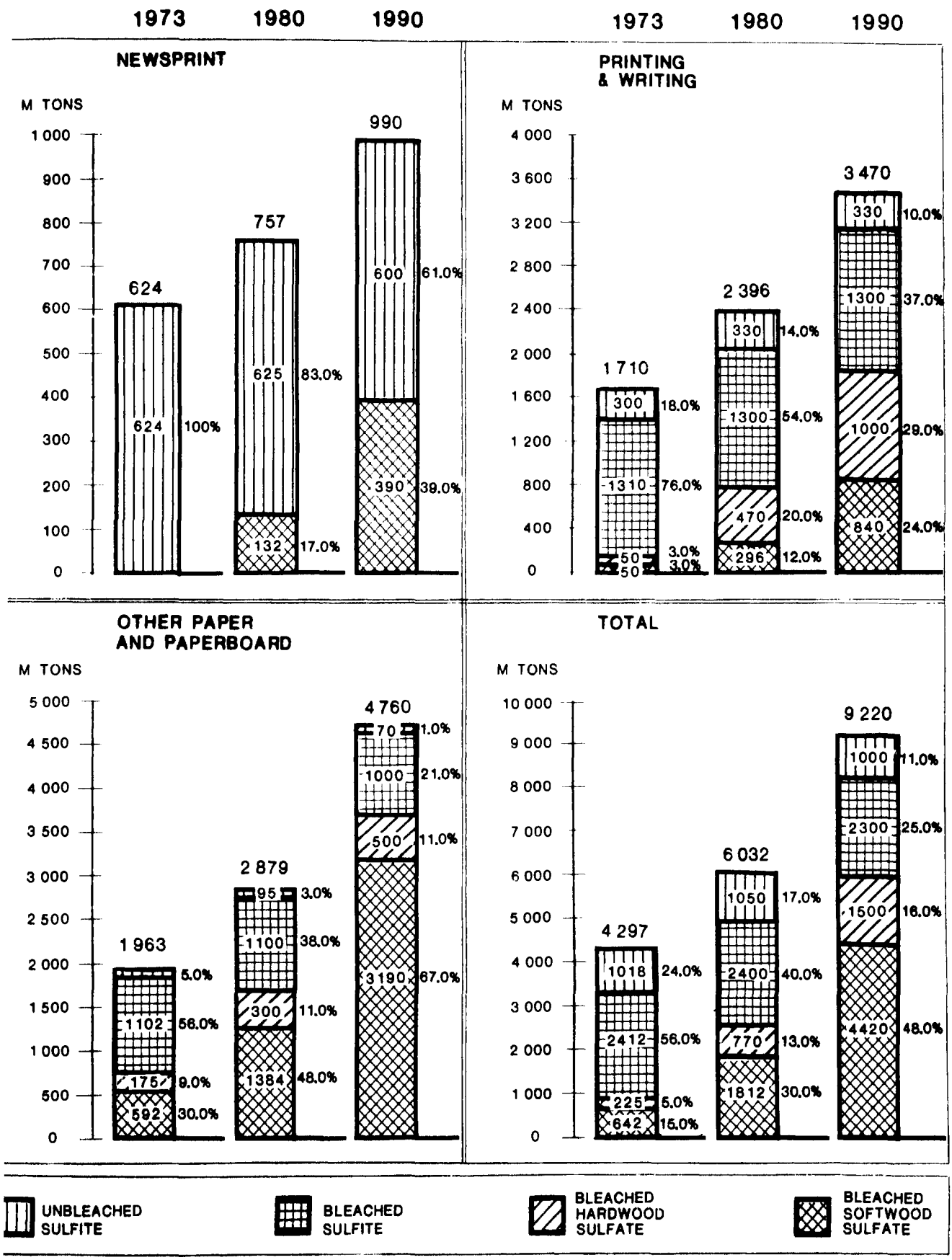


Table 8.1.1

CENTRALLY PLANNED

CONSUMPTION

(thousands of metric tons)

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	624	625	600	300	330	330
Bleached Sulfite	-	-	-	1310	1300	1300
Total Sulfite	624	625	600	1610	1630	1630
Bleached Hardwood Sulfate	-	-	-	50	470	1000
Bleached Softwood Sulfate	-	132	390	50	296	840
Total	624	757	990	1710	2396	3470

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	94	95	70	1018	1050	1000
Bleached Sulfite	1102	1100	1000	2412	2400	2300
Total Sulfite	1196	1195	1070	3430	3450	3300
Bleached Hardwood Sulfate	175	300	500	225	770	1500
Bleached Softwood Sulfate	592	1384	3190	642	1812	4420
Total	1963	2879	4760	4297	6032	9220

Table 8.1.2

CENTRALLY PLANNED

PERCENT SHARE BY PRODUCT GROUP

	Newsprint			Printing and Writing		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	100.0	83.0	61.0	18.0	14.0	10.0
Bleached Sulfite	-	-	-	76.0	54.0	37.0
Total Sulfite	100.0	83.0	61.0	94.0	68.0	47.0
Bleached Hardwood Sulfate	-	-	-	3.0	20.0	29.0
Bleached Softwood Sulfate	-	17.0	39.0	3.0	12.0	24.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

	Other Paper & Paperboard			Total White Pulp		
	1972-74	1980	1990	1972-74	1980	1990
Unbleached Sulfite	5.0	3.0	1.0	24.0	17.0	11.0
Bleached Sulfite	56.0	38.0	21.0	56.0	40.0	25.0
Total Sulfite	61.0	41.0	22.0	80.0	57.0	36.0
Bleached Hardwood Sulfate	9.0	11.0	11.0	5.0	13.0	16.0
Bleached Softwood Sulfate	30.0	48.0	67.0	15.0	30.0	48.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 8.2

CENTRALLY PLANNED

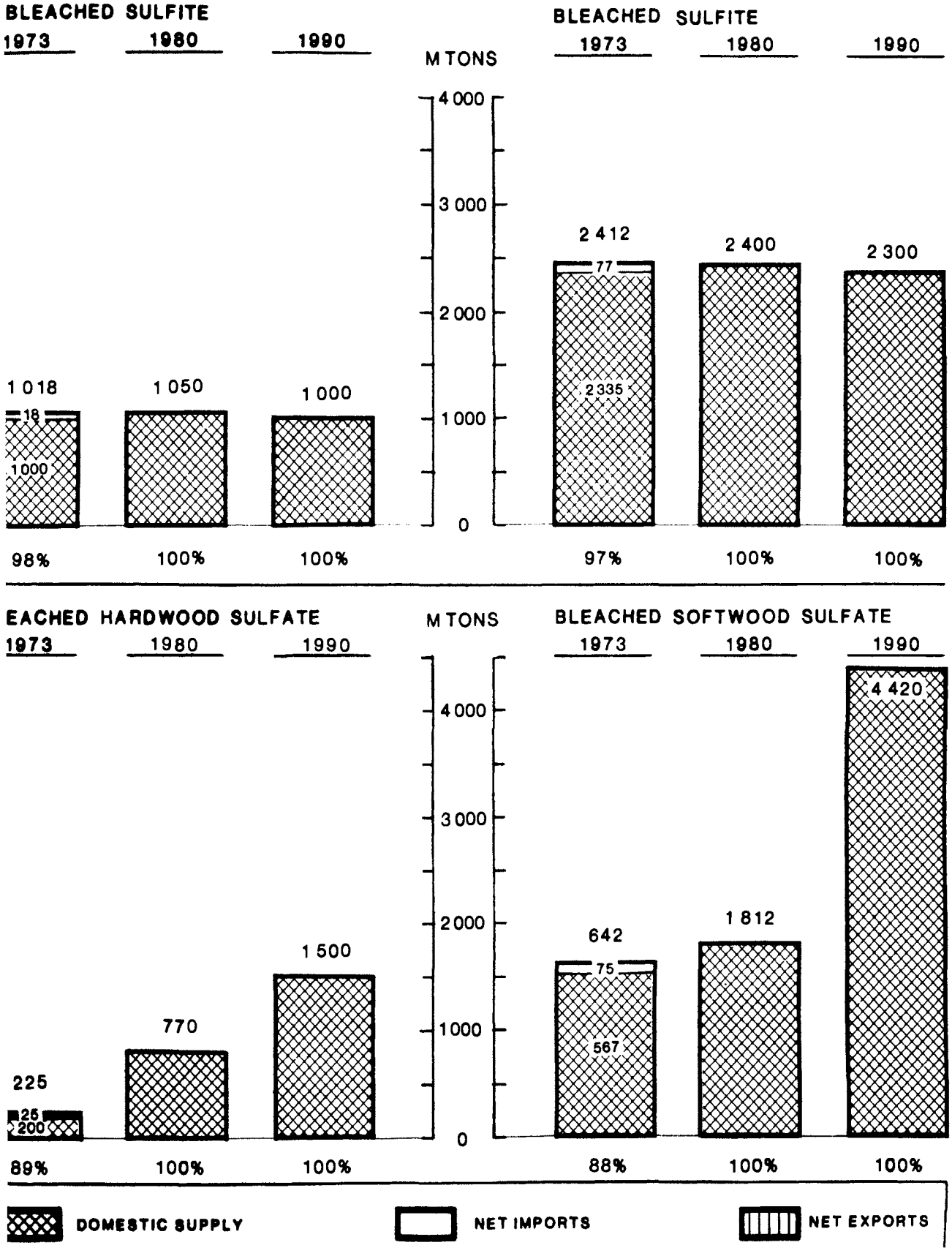
SELF-SUFFICIENCY

(thousands of metric tons)

Unbleached Sulfite	1972-74	1980	1990
Production	1000	1050	1000
Net Trade Imports, (Exports)	18	-	-
Consumption	1018	1050	1000
Self-Sufficiency	98%	100%	100%
Bleached Sulfite			
Production	2335	2400	2300
Net Trade Imports, (Exports)	77	-	-
Consumption	2412	2400	2300
Self-Sufficiency	97%	100%	100%
Total Sulfite			
Production	3335	3450	3300
Net Trade Imports, (Exports)	95	-	-
Consumption	3430	3450	3300
Self-Sufficiency	97%	100%	100%
Bleached Hardwood Sulfate			
Production	200	770	1500
Net Trade Imports, (Exports)	25	-	-
Consumption	225	770	1500
Self-Sufficiency	89%	100%	100%
Bleached Softwood Sulfate			
Production	567	1812	4420
Net Trade Imports, (Exports)	75	-	-
Consumption	642	1812	4420
Self-Sufficiency	88%	100%	100%
Total White Pulp			
Production	4102	6032	9220
Net Trade Imports, (Exports)	195	-	-
Consumption	4297	6032	9220
Self-Sufficiency	96%	100%	100%

CHART 8.2

CENTRALLY PLANNED — White Pulp Self-Sufficiency



APPENDIX I

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APPENDIX II

WORKING PARTY COMPOSITION AND AREAS OF PRIMARY RESPONSIBILITIES PHASE III		
MEMBER AND COMPANY	GEOGRAPHIC AREA	PRIMARY RESPONSIBILITIES
Mr. Lars Ekstroem Svenska Cellulosa Aktiebolaget SCA S-861 00 Timra, Sweden	Western Europe Centrally Planned Economies	Prepared white pulp self-sufficiency assumptions and preliminary pulp grade breakdown by product.* Evaluated Review Panel responses, coordinated development of Working Party's final view and prepared draft narrative for related sections of this report.
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Mr. Youssef Fouad International Finance Corporation 1818 H Street, N.W. Washington, D.C. 20433 USA	Other Eastern Hemisphere	
Mr. Stanley L. Pringle Food and Agriculture Organization of the United Nations Via Delle Terme de Caracalla 00100 Rome, Italy		
Mr. Mitsuo Goto Japan Paper Association Kami-Parupu Kaikan Building 9-11, 2-Chome, Ginza Chuo-ku, Tokyo, Japan	Japan	Prepared white pulp self-sufficiency assumptions and preliminary pulp grade breakdown by product. Evaluation of Review Panel responses and narrative prepared by K. Beuchel.
Mr. Theodore D. Frey Crown Zellerbach Corporation One Bush Street San Francisco, California 94119 USA	All	Developed project structure. Coordinated development of regional data, production of preliminary outlook for Review Panel and evaluation of responses. Edited and produced final report.

* With assistance from Finncell, Canadian Cellulose, IP, ITT, Scott

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