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THE DISSOLVING PULP INDUSTRY IN LATIN AMERICA: PRESENT SITUATION AND FUTURE PROSPECTS

Santiago, Chile

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Chapter I

INTRODUCTION, SUMMARY AND CONCLUSIONS

1. Introduction

Since its establishment in 1955, the United Nations ECLA/FAO/BTAO Pulp and Paper Advisory Group for Latin America has been studying the problems of the pulp and paper industry in Latin America.

In earlier studies, the analysis of pulp as an essential raw material in the manufacture of paper and paperboard did not take into account a special type, i.e., dissolving pulp, which is used in other industries and particularly in the manufacture of man-made fibres.

The spectacular development of man-made fibres throughout the world at the expense of natural fibre consumption, the advent of new products using dissolving pulp as a raw material, the dearth of information on this commodity in Latin America and the expected increase in demand, have led the Advisory Group to carry out a study of the present kind.

This study analyses for the first time the dissolving pulp situation in Latin America and will also attempt to make an approximate forecast of future demand and the prospects of satisfying it. It represents the first step towards a better knowledge of the industry and may serve as a guide for the planning and integration of its regional development. Unfortunately owing to the limitations set by the statistics available, the value of the projections given here is relative. What they attempt to do is to give an order of magnitude, and offer a hypothesis as to the trend of events in the next few years if no fundamental technological change takes place in the industry.

This paper was prepared mainly on the basis of two ECLA and FAO studies 1/ and direct information furnished by the principal Latin American producers and consumers.

2. Summary and Conclusions

Between 1954 and 1963 dissolving pulp consumption in the region rose from 91,000 tons to 115,000 tons, which represents an annual increment of only 2.2 per cent, a figure that is quite low in comparison with the world rate of 5.5 per cent.

1/ ECLA, La industria química en América Latina (1963 E/CN.12/Rev.1); FAO, Pulp and Paper Prospects in Western Europe, BLV Verlagsgesellschaft, Munich, 1963.

/The principal

The principal consumers in Latin America in order of importance are Brazil, Mexico and Argentina. In 1963 these three countries together absorbed 83 per cent of the total.

Production increased considerably from 34,000 to 57,000 tons between 1954 and 1963. This signifies an annual increment of 5.2 per cent which, compared with the rise in consumption, shows that the region is moving towards self-sufficiency. The entire output comes from three countries alone, namely, Brazil, Mexico and Argentina in order of importance. Mexico is notable for being the sole exporter, but is still importing more than it sells abroad.

Only nine Latin American countries make processed products from dissolving pulp, and all of them import some or the total amount of inputs they need to satisfy demand. In 1963 the region's net imports amounted to slightly over 58,000 tons and were worth approximately 11 million dollars. In that year, imports covered 51 per cent of demand, thereby improving upon the situation in 1954, when they supplied 63 per cent of requirements.

Projections of demand to 1970 indicate that there will be a substantial increase in consumption of slightly over 210,000 tons. This will include consumption of the manufacted products that are based on dissolving pulp and will continue to be imported in small quantities. If these forecasts are borne out by events, the annual increment in consumption up to 1970 will be 5.4 per cent, which is nearly the same as the increment in world consumption of dissolving pulp during the period 1954-62 (5.5 per cent).

Despite the additions that are being made to installed capacity in Argentina and Brazil, imports will continue to play a fairly important part in 1970, their contribution to regional consumption being estimated at slightly over 40 per cent. This would be about 80,000 tons in terms of volume and would involve the expenditure of foreign exchange to the value of 15 million dollars at current prices.

The main conclusions to be drawn from the study may be summed up as follows:

(a) In spite of the anticipated expansion in demand, it is doubtful whether the number of producer countries will increase because national markets are too limited to permit of the establishment of mills that are large enough for economies of scale, which are particularly marked in the pulp and paper industry.

(b) Even if customs duties on dissolving pulp are totally abolished in the ALALC market, this will not be enough to warrant the establishment of a new mill to supply the regional market.

/(c) Argentina,

(c) Argentina, Brazil and Mexico are at once the only producers and consumers of dissolving pulp, and are unlikely to be joined by others before 1970.

(d) The region has sufficient raw material to supply the industry's requirements. Most of the countries grow cotton, and have forest reserves that could be used if necessary.

Chapter II

MANUFACTURING AND USE OF DISSOLVING PULPS

1. Definition

The types of pulp defined as dissolving are those with a high content of alpha cellulose, i.e., cellulose highly purified and manufactured for subsequent chemical conversion into different cellulose derivatives.

2. Fibrous Raw Materials

The main raw material used in the manufacturing of dissolving pulps is wood, especially softwoods and, to a lesser degree, cotton linters. In terms of world utilization, the respective proportions are 93 and 7 per cent.

Since dissolving pulp is essentially cellulose, all plants are potential raw material sources. Thus, at least the following plants, in addition to the above, are at present in commercial use as fibrous raw material: beech, birch, poplar, maple, elm, oak, eucalyptus and mixed hardwoods. Also, bamboo, bagasse and other annually harvested plants are being considered and experimented as raw materials.

The table below gives some compositions of different raw materials for dissolving pulp manufacturing:

	Fibre length mm	Pentosans per cent	Lignin per cent	Cellulose Gross & Bevan per cent
softwoods	2.5 - 5.0	8 - 13	25 - 32	55 - 61
hardwoods	0.6 - 2.0	18 - 25	17 - 26	58 - 64
depithed bagasse	1.4	24 - 26	-	54 - 58
bamboo	2.5 - 4.0	15 - 32	-	56 - 67

In Latin America, cotton linters have been used, up to now, almost exclusively, because all of the producer countries are cotton-growing.

/3. Pulping

3. Pulping Processes

Dissolving pulps are manufactured by the same basic processes as paper pulps, but with smaller or bigger modifications. In the following these modifications are shortly discussed.

Wood handling is equal for dissolving and paper grade pulps. Process water quality requirements are considerably higher for dissolving pulps. Heat and power economy in the prehydrolyzed sulphate process is poorer than in the conventional kraft process.

In general, the manufacturing of dissolving pulps is more exacting than that of paper pulps, because the product specifications allow for very narrow tolerances in order to meet the demands of complex chemical conversion process.

Sulphite Process

The very first mill scale dissolving pulp was produced at the beginning of this century in Norway, from wood and by the sulphite process. Most dissolving pulp mills still are sulphite mills.

Calcium sulphite process is similar to that used for making paper pulps, although the cooking is usually carried further to produce a pulp with low chlorine demand.

Sodium- magnesium- and ammonium-base sulphite processes are also in commercial use.

Raw sulphite dissolving pulps contain 87-89 per cent of alpha cellulose.

Prehydrolysis Sulphate Process

In this process the chips in a conventional kraft digester are prehydrolyzed by heating them in water or diluted mineral acid or by direct steam, for two to one hours in a maximum temperature range of 150-175°C, in order to reduce pentosans contents. After the hydrolysate has been drained off, a regular sulphate cooking is performed.

Unpurified prehydrolyzed sulphate dissolving pulps contain 93.5 - 95 per cent alpha cellulose.

Rauma-Sivola Process

By this process a higher alpha cellulose content unbleached pulp is made than in any other commercially used method, without any yield loss.

/The cooking

The cooking is started with sodium-base acid sulphite liquor and after a certain time, some of this liquor is drained off, and sodium carbonate solution injected in the digester to change the pH of the cook to the alkaline side.

4. Pulp Purification and Finishing

Cotton linters, which contain some 94 per cent of alpha cellulose, are purified by high temperature sodium hydroxide extraction, washing, and sodium hypochlorite bleaching, which procedures might be repeated in order to get still purer product.

Purified linters contain over 99 per cent alpha cellulose.

Wood pulps are purified by a multistage bleaching sequence consisting of chlorination, alkali extraction, hypochlorite and chlorine dioxide stages. Ash contents is controlled by sulphur dioxide solution treatment after bleaching, and dirt, fibre bundles and silica are removed by centrifugal cleaners. Resin and pitch contents are controlled by surface active agents and fibre fractionation.

The purity of the pulp is determined by both cooking (in prehydrolyzed sulphate and Rauma-Sivola processes) and bleaching alkaline extraction conditions (sulphite processes). Viscosity is controlled by cooking and hypochlorite bleaching.

After purification, dissolving pulps are dried on conventional pulp driers,1/ viscose pulp (see below) web is normally cut into about 80 x 65 cm sheets, and stacked in bales of about 250 kg. Acetate pulp is usually finished in rolls about 75 cm wide and 90 cm in diameter.

5. Economic Factors in Dissolving Pulp Manufacture

The following table gives the amounts of raw materials required to produce one bone dry metric ton of dissolving pulp by different methods and of different woods:

1/ Although some of the higher grade pulps require very specific and precise sheet qualities, which are obtained only by using cylinder driers.

RAW MATERIAL REQUIREMENTS FOR DISSOLVING PULPS

kg/BDMT	prehydrolysed sulphate		sulphite	
	pine	eucalyptus c/	spruce	beech
Percentage alpha cellulose	94-96	94-96	89-90	89-90
wood	2 700-3 000	3 500	2 600	2 700
cum wood (= Cubic Meters) a/	9-10	7	9.2	7.3
limestone b/	100	250	180	220
sulphur b/	-	-	120	165
sodium sulphate	45	150	-	-
sodium hydroxide	30	15	40	40
sodium chlorate	20	-	-	-
chlorine	45	60	40	45

a/ Piled volume, without bark: spruce 285 kg/m^3, pine 300 kg/m^3 beech 370 kg/m^3, eucalyptus 500 kg/m^3

b/ In magnesium-base process: magnesium oxide 14 kg, sulphur 40 kg. Ammonium-base process: ammonia 60 kg. Sodium-base process: sodium carbonate consumption depends on the efficiency of the recovery system.

c/ Continuous cooking, mill under planning.

Considering the present cost of one solid cubic meter of debarked eucalyptus wood delivered to mill in the São Paulo, S.P., area in Brazil, US$ 3.00, and the abundance of this raw material, it might not be wrong to say that the eucalyptus plantations of Brazil offer exceptional conditions for dissolving pulp industry's growth.

Even smaller prehydrolyzed sulphate mills, may be down to a size of 30 tons in 24 hours, having chemicals recovery system now offered for that size by local manufacturers, might prove out to be economical.

For comparison, the wood cost corresponding to the above is US$ 14 in Scandinavia, 9 in Southern USA and 5 in Chile.

6. Classification and Use of Dissolving Pulps

In the world trade dissolving pulps are divided into different groups according to several classifications:

/per cent

	per cent alpha cellulose
Standard grade	88.0 - 90.5
super I	90.6 - 92.0
super II	92.1 - 93.5

There are grades with higher alpha cellulose contents, e.g. the automobile tyre cord quality, which goes up to 96 per cent or even higher. The requirements for cellulose acetate as well as for some other derivatives might be still higher and more exacting. In many cases an alpha cellulose content as high as 97 - 98 per cent is required.

Two methods are in common use for the chemical conversion of dissolving pulps into products derived from cellulose:

(a) viscose process (rayon, regenerated cellulose). By this method, more than 80 per cent of derivatives are produced, particularly continuous rayon filament, staple fibre and cellophane;

(b) acetate process (cellulose acetate). This is used to manufacture cellulose acetate fibres, sheet, etc.

For the purpose of this report, the end products have been grouped in three broad categories, following common usage:

1. Cellulose acetate and rayon yarn, staple fibre, and tyre cord;

2. Cellophane and regenerated cellulose sheet;

3. Other products (cellulose sponges, acetate sheets and films, nitrocellulose products, etc.)

These groups will be referred to hereafter as "cellulose fibres", "cellophane" and "others", respectively.

Chapter III

CONSUMPTION, PRODUCTION AND TRADE

1. World Situation

World consumption of dissolving pulp increased moderately between 1953 and 1962, at an annual rate of 5.5 per cent. This increase is slightly less than the increase for pulps of all types, the annual increase in apparent consumption for all types during the period being 5.9 per cent.

Dissolving pulp represents slightly over 5 per cent of all types of pulp. Table 1 gives the figures for world apparent consumption of various types of pulp during the period 1953-62.

The main consumer regions are North America and Western Europe, which together account for three-quarters of world demand. The same applies, to an even greater degree, as regards production, of which those two regions produce 84 per cent of the total. World trade is fairly active, the total volume amounting to about 40 per cent of production. North America stands out here, since it is the only region that is a net exporter of any consequence. The other regions are net importers, except for Western Europe, which maintains a balance between imports and exports (see table 2).

Among the producer countries the United States is pre-eminent, since in 1961-62 it produced 34 per cent of the total. Next in importance are Sweden, Japan and Canada, which together account for 35 per cent of world production.

The United States is less predominant in the export field, although it stands in first place. Most of the total volume of exports is concentrated in a few countries, and the United States, Canada and the Scandinavian countries together export about 90 per cent of the total.

The number of importer countries is considerable, the principal among them being the United Kingdom, where no dissolving pulp is produced (see table 3).

2. Latin America

The region's consumption of dissolving pulp has increased by 26 per cent during the last decade, the annual average increase being 2.2 per cent, a rather low figure compared with the world rate of 5.5 per cent.

There has been a marked trend towards self-sufficiency in the region in recent years. Table 4 shows that the production of dissolving pulp increased by 66 per cent between 1953 and 1963, while imports remained practically unchanged.

/Table 1

Table 1

APPARENT WORLD a/ CONSUMPTION OF WOOD PULP

(Thousands of tons)

Year	Total b/	Dissolving pulp	Chemical pulp for paper	Semi-chemical pulp	Groundwood pulp	Defibrated Exploted
1953	35 240	1 972	19 733	1 057	10 969	1 290
1954	38 580	2 252	21 714	1 223	11 524	1 636
1955	42 747	2 459	24 309	1 479	12 330	1 952
1956	45 511	2 523	25 898	1 657	13 252	1 978
1957	46 121	2 700	26 089	1 754	13 414	1 979
1958	45 811	2 317	26 393	1 833	13 007	2 111
1959	50 309	2 710	28 967	2 245	13 954	2 279
1960	54 149	2 817	31 465	2 492	14 881	2 341
1961	57 304	2 956	33 477	2 939	15 379	2 400
1962	59 230	3 181	34 621	3 237	15 543	2 445

Source: Wood Pulp Statistics 28th. Edition, United States Pulp Producers Association Inc., September, 1963.

a/ Not including the countries with centrally planned economies.

b/ This total includes undistributed screenings.

/Table 2

Table 2

WORLD[a/] TRADE IN DISSOLVING PULP BY MAJOR REGIONS

(Thousands of tons)

	1959	1960	1961	1962
North America				
Production	1 320	1 320	1 415	1 548
Imports	175	222	190	266
Exports	528	614	696	787
Apparent Consumption	967	928	906	1 027
Western Europe				
Production	1 080	1 240	1 245	1 274
Imports	662	746	722	765
Exports	685	766	743	728
Apparent consumption	1 057	1 220	1 224	1 311
Asia, Africa, Pacific				
Production	420	455	495	497
Imports	132	206	233	257
Exports	59	82	92	113
Apparent consumption	493	579	636	641
Latin America				
Production	-	-	45	50
Imports	52	48	58	51
Exports	-	-	-	-
Apparent consumption	52	48	103	101
Total				
Production	2 820	3 015	3 201	3 369
Imports	1 021	1 222	1 203	1 338
Exports	1 272	1 462	1 533	1 627
Apparent consumption	2 569	2 775	2 871	3 080

Source: World Wood Pulp Data ... Canadian Pulp and Paper Association and United States Pulp Producers Association, Inc. August, 1963.

a/ Not including the countries with centrally planned economies.

/Table 3

Table 3

DISSOLVING PULP: PRODUCTION, IMPORTS, EXPORTS AND APPARENT CONSUMPTION AVERAGE 1961-62

(Thousand of tons)

	Production	Imports	Exports	Apparent consumption
Austria	80	8	34	54
Canada	363	14	327	50
Federal Republic of Germany	227	117	38	306
Finland	222	-	200	22
France	74	78	-	152
Italy	78	123	1	200
Japan	394	162	5	551
Norway	123	-	107	16
South Africa	102	-	97	5
Sweden	400	-	356	44
United Kingdom	-	269	-	269
United States	1 119	214	415	918
Others	103	285	-	388
Total a/	3 285	1 270	1 580	2 975

Source: World Wood Pulp Date. August, 1963. Canadian Pulp and Paper Association. United States Pulp Producers Association Inc.

a/ Not including the countries with centrally planned economies.

/Table 4

Table 4

LATIN AMERICA: DISSOLVING PULP PRODUCTION
NET IMPORTS, AND APPARENT CONSUMPTION

(Tons)

	Production	Net Imports	Apparent consumption
1954	34 018	57 445	91 463
1955	36 274	57 363	93 637
1956	42 480	40 965	83 445
1957	47 000	47 832	94 832
1958	44 127	52 009	96 136
1959	47 798	47 418	95 216
1960	47 163	53 618	100 781
1961	54 305	51 881	106 186
1962	52 050	58 169	110 219
1963	56 749	58 649	115 398

/The increase

The increase in production was due mainly to the availability of abundant raw materials (cotton linters) at a reasonable cost, and to the tariff protection accorded to dissolving pulp, in particular in Argentina and Brazil.

Imports come mainly from the United States and Scandinavia, and represent a value of about 11 million dollars a year, not including imports of products manufactured from dissolving pulp.

An analysis of Latin American trade shows that only nine countries use dissolving pulp as a raw material for producing manufactures, while the other countries import the manufactured products. Of those nine countries, only three are producers of dissolving pulp; in order of importance, these are Brazil, Argentina and Mexico. Mexico is the only country in Latin America that exports dissolving pulp.

Table 5 gives the figures for production, imports and apparent consumption in the Latin American countries.

There now follows a more detailed study of the situation in the producer countries.

Argentina

The situation in Argentina is in marked contrast to that in the other producer countries. Argentina is the only country where there has been a decline in apparent consumption in the last few years of the period, notably in 1962 and 1963. The reasons for this include the critical financial situation of Argentina during the last few years, and the increased consumption of synthetic fibres and the promising outlook for those fibres. Thus one of the main plants producing cellulose fibres has decided to convert its production line to the manufacture of synthetic fibres.

Although installed capacity is sufficient to cover practically the whole of the demand, production has declined apprecaibly, with a consequent increase in imports.

Until 1961 there were three plants that supplied the bulk of domestic demand. Because of the difficult situation created by the decline in consumption, one of these plants converted its production line to the manufacture of pulp for paper and paperboard.

It is hard to understand why an industry protected by a tariff of over 65 per cent is unable to achieve normal prosperity. The reasons may be the obsolete nature of its equipment, the small production units, and the extensive variations in the price of the raw material used, cotton linters, which in the main have to be transported from the north of Argentina.

/Table 5

LATIN AMERICA: PRODUCTION, IMPORTS, AND APPARENT CONSUMPTION OF DISSOLVING PULP

(Tons)

	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Argentina										
Production	10 518	12 024	11 230	13 150	12 327	11 898	5 463	9 605	5 450	6 499
Imports	2 988	4 442	1 012	3 286	6 447	2 547	4 525	7 123	4 513	5 364
Apparent consumption	13 506	16 466	12 242	16 436	18 774	14 445	9 988	16 728	9 963	11 863
Brazil										
Production	17 500	18 250	21 650	25 250	24 800	28 150	31 900	32 500	33 250	36 200
Imports	27 002	20 782	19 233	16 720	18 774	12 385	16 201	20 713	22 748	21 504
Apparent consumption	44 502	39 032	40 883	41 970	43 574	40 535	48 101	53 213	55 998	57 704
Chile										
Imports and apparent consumption	5 636	5 028	2 209	2 484	2 609	3 844	6 466	3 967	4 228	4 551
Colombia										
Imports and apparent consumption	2 603 a/	4 250 a/	2 318 a/	5 180 a/	5 431 a/	5 039 a/	5 867 a/	3 893 a/	8 030 a/	6 000 b/
Cuba										
Imports and apparent consumption	9 895 a/	10 343 a/	9 682 a/	10 318 a/	6 458 a/	9 711 a/	7 601 a/	5 769 a/	9 330 a/	8 000 b/
Mexico										
Production	6 000 b/	6 000 b/	9 600	8 600	7 000	7 750	9 800	12 200	13 350	14 050
Imports c/	9 270 a/	11 310 a/	5 376	8 593	11 201	12 493	11 271	8 971	8 352	12 030
Apparent consumption	15 270	17 310	14 976	17 193	18 201	20 243	21 071	21 171	21 702	26 080
Peru										
Imports and apparent consumption	...	1 200 a/	900 a/	1 201 a/	900 a/	1 200 a/	1 203 a/	1 347 a/	900 a/	1 200 b/
Uruguay a/										
Imports and apparent consumption	...	0	235	50	92	0	25	76	-	...
Venezuela a/										
Imports and apparent consumption	51	0	0	0	97	199	459	31	468	...
Total										
Production	34 018	36 274	42 480	47 000	44 127	47 798	47 163	54 305	52 050	56 749
Imports	57 445	57 363	40 965	47 832	52 009	47 418	53 618	51 881	58 169	58 649
Apparent consumption	91 413	93 637	83 445	94 832	96 136	95 216	100 781	106 186	110 219	115 398

a/ Wood Pulp Statistics, op.cit.

b/ Estimated.

c/ Net imports.

Cotton production in Argentina is substantially less than in the other two producer countries, and this is reflected in a higher price for cotton linters. The main Argentina producer, faced by the above-mentioned difficulties, has begun to build a new plant, of larger capacity, that will use rapid growth conifers as its raw material. This plant will be in a position to satisfy most part of domestic demand.

The other existing plant is a small unit, but is integrated, and hence is able to produce its own raw materials to the extent needed for the manufacture of artificial fibres.

Brazil

Brazil is the main producer and consumer of dissolving pulp in Latin America. In the last decade production increased rapidly, from 17,500 tons in 1954 to double that amount in 1963 (see table 5), and accounts for 64 per cent of Latin America's total production. The increase in consumption during the period was more moderate, at the level of 30 per cent, rising to 58,000 tons in 1963, which represents about 50 per cent of total Latin American consumption.

In 1963 Brazil depended on imports to cover only 37 per cent of domestic demand, a figure that reflects the improvement in the situation since 1954, when imports supplied 61 per cent of domestic demand. This shows the great effort being made by Brazil to achieve self-sufficiency, but despite this effort about 20,000 tons a year are still imported, representing a value of about 4 million dollars.

There are five producers of dissolving pulp in Brazil, who use the bulk of their own output to produce manufactured products, and leave only a small surplus for the domestic market. This limited supply has had the effect of raising the domestic prices of dissolving pulp to a level 30 or 40 per cent above that of other types of bleached pulp, a situation entirely out of line with that on the world market, where prices of dissolving pulp are only about 10 or 15 per cent higher.

The production deficit, the attractive price of this product and the tariff protection it enjoys (28 per cent) have induced the main Brazilian producer to install a new plant with a capacity sufficient to cover the deficit.

Brazil has the only Latin American plant that uses wood (Eucalyptus) as a raw material for the production of dissolving pulp. Its output represents about 10 per cent of the total for Brazil, the remaining 90 per cent being manufactured from cotton linters.

Mexico

Mexico is the only Latin American country that exports dissolving pulp, but its total imports exceed its exports.

Table 6 gives the data on Mexico's production, trade and apparent consumption in recent years.

/Table 6

Table 6

MEXICO: DISSOLVING PULP PRODUCTION, IMPORTS, EXPORTS AND APPARENT CONSUMPTION

(Tons)

	Production	Imports	Exports	Apparent Consumption
1956	9 600	12 876	7 500	14 976
1957	8 600	15 043	6 450	17 193
1958	7 000	14 851	3 650	18 201
1959	7 750	16 493	4 000	20 243
1960	9 800	16 871	5 600	21 071
1961	12 200	16 171	7 200	21 171
1962	13 350	15 367	7 015	21 702
1963	14 050	18 687	6 657	26 080

Apparent consumption has increased steadily, and Mexico has maintained its place as the second largest Latin American consumer. To meet this increased consumption there has been an increase in both production and imports, and exports have remained more or less stable.

There is only one plant that produces dissolving pulp, and it is now working practically at full capacity. This plant absorbs part of its own output for the production of cellulose fibres, and exports the remaining output to the United States, where there is a large market for it because of the great decline in the production of dissolving pulp from cotton linter in the United States pulp industry.

The plentiful supply of cotton in Mexico, and the low level of tariff protection (8.5 per cent) afforded to domestic production gives ground for believing that the Mexican dissolving pulp industry is in an excellent position to export its output to other Latin American countries if it obtains preferential tariffs from the ALALC countries.

Chapter IV

PROJECTIONS OF REGIONAL CONSUMPTION

1. Generalities

Projections of dissolving pulp consumption are difficult to establish because the product is a multi-purpose one and the relevant Latin American statistics are not particularly representative. Only four countries have a special tariff item for trade in dissolving pulp, the remainder grouping the different kinds of pulp together under a single heading.

It was not until 1963 that the member countries of ALALC adopted a resolution calling for more precise and detailed information to be made available on production and trade in pulp products. This is a pre-requisite for analysing the changes and future prospects of development in this broad industrial sector.

In order to make it easier to work out the projections, the main types of end products needing soluble pulp for their manufacture were divided into three groups, as indicated in chapter II:

Group I	Pulp fibres
Group II	Cellophane
Group III	Others

Consumption of the principal components in each group was projected separately and different conversion coefficients were applied according to the amount of pulp used in manufacturing. The results represent Latin America's probable dissolving pulp requirements in future.

The importance attaching to these groups differed considerably from one region to another mainly in relation to per capita income, the stage of development reached by the corresponding industries, consumer trends and preferences and the availability and price of substitute products.

Table 7 presents a consumption breakdown for these products in selected areas. It will be seen that despite the variations that exist, Group I ranks first in for dissolving pulp demand, accounting for more than 75 per cent of total consumption in Western Europe and Latin America.

The advent of rayon, at the beginning of the century, led to substantial changes in the market. The share of rayon in world fibre consumption increased steadily until it amounted to nearly 18 per cent of total consumption, a proportion which it has maintained more or less the same for the last fifteen years. Its upward trend was checked by the discovery of synthetic fibres, which have made striking progress during the last few years at the expense of natural fibres, particularly cotton, as table 8 indicates.

/Table 7

Table 7

PRINCIPAL USES OF DISSOLVING PULP

(Percentage)

	United States[a/]	Western Europe[b/]	Latin America[c/]
Textile fibres	58	85	77
Cellophane	19	9	19
Others	23	6	4
Total	100	100	100

a/ Wood Pulp Statistics, 1962.

b/ Pulp and Paper Prospects in Western Europe, op. cit., 1959.

c/ Textile fibre group: La industria química en América Latina, op. cit.; other groups: based on available information for 1959.

In 1950 synthetic fibres represented one per cent of consumption and from then on accounted for an increasing proportion until by 1962 they amounted to 7 per cent.

Total consumption of artificial fibres expanded during the same space of time from 17 to 25 per cent of aggregate fibre consumption, thereby reducing the share of natural fibres from 83 to 75 per cent.

The trend in Latin America has evidently followed much the same course as that of world consumption, as table 9 indicates. However, the displacement of natural by man-made fibres has been less marked in Latin America, since the decrease in the former's share of consumption from 87 per cent in 1950 to 82 per cent in 1962 was due entirely to wool - the only item to show a decline.

The increase in the share of cotton in world fibre consumption, contrary to the trend in the world as a whole, may be explained by the fact that most of the Latin American countries are cotton growers and that income-elasticity of demand for cotton textiles is greater at lower income levels. Moreover, man-made fibres cannot put up as much competition in the less industrialized areas, mainly because of their relatively high prices.

/Table 8

Table 8

APPARENT WORLD FIBRE CONSUMPTION

Fibre	1950	1955	1960	1961	1962
			Thousands of tons		
Cotton	6 960	8 075	10 280	10 285	10 116
Wool	1 217	1 189	1 461	1 476	1 488
Rayon	1 579	2 281	2 616	2 725	2 871
Synthetic fibres	70	264	716	837	1 065
Total	9 826	11 809	15 081	15 323	15 540
			Percentages		
Cotton	71	69	68	67	65
Wool	12	10	10	10	10
Total natural fibres	83	78	78	77	75
Rayon	16	19	17	18	18
Synthetic fibres	1	2	5	5	7
Total man-made fibres	17	21	22	23	25
Grand total	100	100	100	100	100

Source: FAO, Monthly Bulletin of Agricultural Economics and Statistics, April 1964.

/Table 9

Table 9

LATIN AMERICA: APPARENT FIBRE CONSUMPTION

Fibre	1950	1954	1955	1956	1957	1958	1959	1960	1961	1962
					Thousands of tons					
Cotton	471.2	527.6	573.1	599.1	606.1	601.5	621.1	660.8	673.6	686.1
Wool	78.7	72.5	73.4	68.4	73.3	67.7	71.5	61.9	68.2	56.8
Rayon	85.0	102.9	106.6	117.6	143.7	115.5	117.9	131.7	132.0	126.2
Synthetic fibres	0.1	3.5	4.3	5.6	6.1	8.5	14.3	17.7	24.7	31.4
Total fibres	635.0	706.5	757.4	790.7	829.2	793.2	824.8	872.1	898.5	900.5
					Percentages					
Cotton	74	75	76	76	73	76	75	76	75	76
Wool	13	10	10	9	9	8	9	7	7	6
Total natural fibres	87	85	86	85	82	84	84	83	82	82
Rayon	13	15	14	14	17	15	14	15	15	14
Synthetic fibres	-	-	-	1	1	1	2	2	3	4
Total man-made fibres	13	15	14	15	18	16	17	17	18	18
Grand total	100	100	100	100	100	100	100	100	100	100

Source: FAO, Monthly Bulletin of Agricultural Economics and Statistics. April 1964.

Consumption of synthetic fibres in Latin America has followed an upward trend from 1950, when they were hardly used at all, to 1962, when it reached 31,400 tons or 4 per cent of total fibre consumption. According to ECLA projections, this proportion will climb to 8 per cent in 1965 and 13 per cent in 1970 (see table 10).

2. Cellulose Fibres

Consumption of cellulose fibres in the Latin American countries is depicted in table 11. The main producer and also consumer countries are Argentina, Brazil and Mexico, which together account for 78 per cent of production and 62 per cent of demand.

In the ECLA study on the chemical industries in Latin America, projections of demand for cellulose fibres were made for 1965 and 1970 on the basis of consumption figures in 1959 (see table 12).

If the projections for 1965 are compared with the consumption figures given in table 11, it will be seen that there have been no great variations in the region as a whole, and that the targets set are therefore well within reach. However, when the projections are analysed country by country, real consumption will be seen to have already exceeded the hypothetical figures in the case of Venezuela. This is mainly due to an under-estimation of imports. Despite this difference it was thought best not to alter the projections, on the grounds that regional demand would be more or less in accordance with the figures presented in them.

In the present study potential regional demand for dissolving pulp is estimated by applying different conversion factors to projections of demand for cellulose fibres (see table 13).

The situation reflected in table 13 shows no more than a potential market for dissolving pulp owing to the fact that the data available when the study on the chemical industries was being prepared indicated that future installed capacity would outstrip demand in 1965 and 1970 in the case of viscose only. On the other hand, installed capacity for producing cellulose acetate, the raw material used in making acetate fibre, would be too small to meet demand in the two years in question, and the region would therefore have to import intermediate or processed products (see table 14).

According to a recent study by du Pont based on data for 1963, which was presented at the seminar on the chemical industries, installed capacity would have increased considerably by 1965 thereby reducing the deficit revealed in table 14.

/Table 10

Table 10

LATIN AMERICA: PROJECTIONS OF TEXTILE FIBRE DEMAND, 1965 AND 1970

	1965	1970
Cellulose fibres	14	13
Synthetic fibres	8	13
Natural fibres	78	74
Total	100	100

Source: La industria química en América Latina, op.cit.

/Table 11

Table 11

LATIN AMERICA: AVERAGE PRODUCTION, TRADE AND APPARENT CONSUMPTION IN RESPECT OF CELLULOSE FIBRES, a/ 1960-62

(Thousands of tons)

Cellulose fibres	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela	Others	Latin America
Production									
Staple fibre	3.3	9.5	1.6	4.1	8.2	-	0.3	2.8	29.8
Continuous filament	10.9	30.5	1.5	4.1	14.2	1.2	2.7	2.9	68.0
Total	14.2	40.0	3.1	8.2	22.4	1.2	3.0	5.7	97.8
Foreign trade									
Exports: Staple fibre				0.8				1.4	2.2
Yarn and thread				0.3	1.0			1.2	2.5
Fabric								0.1	0.1
Other manufactures									
Total				1.1	1.0			2.7	4.8
Imports: staple fibre			0.2	0.1	0.2	3.0	2.8	2.6	8.9
Yarn and thread	2.1		0.1	1.1	0.1		0.8	5.0	9.2
Fabric	1.6		0.2		0.3		2.3	13.6	18.0
Other manufactures	-		0.3		0.1		0.2	1.7	2.3
Total	3.7		0.8	1.2	0.7	3.0	6.1	22.9	38.4
Foreign trade balance	+3.7		+0.8	+0.1	-0.3	+3.0	+6.1	+20.2	+33.6
Availabilities for domestic consumption	17.9	40.0	3.9	8.3	22.1	4.2	9.1	25.9	130.0

Source: FAO, Monthly Bulletin of Agricultural Economics and Statistics. April, 1964.

a/ Cellulose staple fibre and continous filament, produced by the viscose, acetate and cupro-amoniacal methods, including high tenacity and triacetate types.

b/ The total does not coincide, because in some cases the average was for two years only.

/Table 12

Table 12

LATIN AMERICA: PROJECTIONS OF CELLULOSE FIBRE CONSUMPTION

(Thousands of tons)

Country	Viscose			Acetate		
	1959	1965	1970	1959	1965	1970
Argentina	14.9	24.0	27.0	1.4	2.5	4.0
Brazil	30.2	34.0	37.0	4.1	6.0	9.0
Chile	3.4	5.5	5.7	0.1	0.6	1.5
Colombia	4.5	4.8	5.0	3.9	4.0	4.2
Mexico	14.8	13.0	14.0	9.2	11.0	13.0
Peru	3.3	4.5	4.8	0.7	1.2	1.4
Venezuela	1.1	2.4	3.5	4.7	5.0	5.0
Others	...	21.8	26.0	...	7.7	8.9
Total	72.1	110.0	123.0	24.1	38.0	47.0

Source: La Industria Química en América Latina, op.cit.

Note: Total demand, including the demand implicit in imports of fibres and finished products.

/Table 13

Table 13

LATIN AMERICA: DISSOLVING PULP REQUIREMENTS FOR COVERING CELLULOSE FIBRE DEMAND

(Thousand of tons)

Country	Viscose rayon a/			Acetate rayon b/		
	1959	1965	1970	1959	1965	1970
Argentina	15.8	25.4	28.6	0.9	1.6	2.5
Brazil	32.0	36.0	39.2	2.5	3.7	5.6
Chile	3.6	5.8	6.0	0.1	0.4	0.9
Colombia	4.8	5.1	5.3	2.4	2.5	2.6
Mexico	15.7	13.8	14.8	5.7	6.8	8.1
Peru	3.5	4.8	5.1	0.4	0.7	0.9
Venezuela	1.2	2.5	3.7	2.9	3.1	3.1
Others	...	23.1	27.6	...	4.8	5.5
Total	76.4	116.6	130.4	14.9	23.6	29.1

a/ Convertion factors 1.06.

b/ Convertion factors 0.62.

/Table 14

Table 14

LATIN AMERICA: ESTIMATED CELLULOSE FIBRE PRODUCTION CAPACITY

(Thousand of tons)

Country	Viscose		Acetate fibre a/	
	1965	1970	1965	1970
Argentina	- 6.0	- 9.0	- 2.5	- 4.0
Brazil	+ 9.5	+ 6.5	-	- 3.0
Chile	+ 5.5	+ 5.2	- 0.6	- 1.5
Colombia	+ 1.7	+ 1.5	- 4.0	- 4.2
Mexico	+ 9.0	+ 8.1	-11.0	-13.0
Peru	- 3.2	- 3.5	- 1.2	- 1.4
Venezuela	- 2.4	- 3.5	- 5.0	- 5.0
Sub-total	+14.1	+ 5.3	-24.3	-32.1
Other countries	-	...	- 7.7	- 8.9
Total	+14.1	...	-32.0	-41.0

Source: La Industria Química en América Latina. op.cit.

a/ Raw material for fibre.

(+) Surplus.

(-) Deficit.

/3. Cellophane

3. Cellophane

The main consumers of cellophane in the region, which are Brazil, Mexico and Argentina in order of importance, produce enough cellophane themselves to satisfy demand, their imports being on a very small scale. The great majority of the other Latin American countries have to import all they need.

In recent years cellophane has met with strong competition from polyethylene and other synthetics, which indicates that future demand will not be as high as the regional producers expect. Present installed capacity is more than enough for domestic consumption, so that it will probably be possible to cover future demand without any difficulty.

The data on production and consumption in the different countries are very fragmentary, and, with few exceptions, are several years old when obtained.

The consumption projections had to be worked out with 1958 as the base year. A general correlation was made between the nine major consumers in Latin America and nineteen countries in the rest of the world. 1/ On the basis of the figures for per capita consumption and the gross domestic product in 1958, a logarithmic adjustment was made to a parabola. The elasticity coefficients were then calculated by finding in each case the first derivatives (slopes) of the function corresponding to the income level at either end of the projection (1958 and 1970). Finally, the arithmetic mean was estimated from the coefficients, and applied to the 1958 consumption figures for the nine countries selected. The projections of the gross product and population were also used to estimate demand in each country up to 1970.

The individual consumption figures for the other Latin American countries were contradictory and very low (3 per cent of the regional total), which meant that they had to be considered as a whole. Demand in those countries is expected to increase to the same extent as in the other nine.

The same method of projection was employed as in the study entitled Pulp and Paper in Latin America. The same hypotheses were also adopted for the growth of the gross product, except for Argentina and Uruguay on which fresh information has been obtained. It was estimated that the product would increase in those two countries at an annual rate of only 0.5 per cent between 1958 and 1965, and, subsequently, from 1965 to 1970 at the rate specified in the above-mentioned document.

1/ Figures extracted from Pulp and Paper Prospects in Western Europe, op. cit., special annex to table I.19.

Consumption was related to the product in terms of the following equation:

$$Y = 1.614767 + 1.664887 \log x - 0.09698 (\log x)^2$$

r = (correlation coefficient) = 0.88

Table 15 gives the basic figures used to calculate the projections of demand, and table 16 shows the results obtained.

4. Others

Owing to the complex number of products in this group (cellulose sponges, acetate sheet, lacquers, varnishes, nitrocellulose products and others) and to the big disparity in the amount of dissolving pulp employed in their manufacture, it is practically impossible to make an accurate assessment of the volume of dissolving pulp required for the future manufacture of these products in the different regions of the world. As regards Latin America, where the statistics are less detailed the effort required to quantify projections of dissolving pulp consumption in this group on a country-by-country basis would not be justified. It has been calculated from partial data 2/ and other information that the volume of dissolving pulp consumed by this group of products in Latin America in 1959 was 5,000 tons. This is little more than 4 per cent of total consumption.

In view of the future development of the chemical industry, dissolving pulp is likely to be increasingly used for new products. It has therefore been assumed that the growth of demand in this group of products will be greater than in the cellulose fibre and cellophane groups.

The projections indicate that requirements of dissolving pulp will probably increase at an annual rate of 5.6 per cent for cellophane and of 5.2 per cent for cellulose fibres. For the group "Others", the increment in demand is estimated to be 8 per cent. Latin America's dissolving pulp requirements for "Others" were 5,000 tons in 1959, and are expected to be 7,900 in 1965 and 11,700 in 1970.

5. Summary of Projections

Table 17 sets forth the projections of dissolving pulp demand for the production of cellulose fibres and cellophane on a country-by-country basis.

The projections of dissolving pulp demand in Latin America in 1965 and 1970 are given in summarized form below:

2/ See ECLA, La industria química en América Latina, op.cit.

		1965 (Tons)	1970
Group I	Fibres	140 200	159 500
Group II	Cellophane	31 030	40 910
Group III	Others	7 900	11 700
	Total	179 130	212 110

As pointed out before, these projections are aggregates including implicit demand in the shape of the fibres and end goods imported. Consequently, it would be difficult to supply the whole of this demand from regional production, since the existing or projected plants will hardly be able to process all the derivatives and will have to resort to imports to cover part of the demand. They do, however, give a fairly good idea of the region's dissolving pulp requirements.

/Table 15

Table 15

LATIN AMERICA: BASIC DATA FOR PROJECTING DEMAND

Country	Consumption in 1958 (kg/per capita)	Population in 1958 (thousands)	Total consumption (tons)	Per capita gross domestic product a/ (dollars at 1958 prices)	Income-elasticity b/
Argentina	0.121	20 248	2 440	527	1.13
Brazil	0.130	62 725	8 148	267	1.18
Chile	0.029	7 298	213	356	1.16
Colombia	0.110	14 098	1 550	269	1.18
Cuba	0.116	6 541	759	413	1.11
Mexico	0.152	32 518	4 955	290	1.17
Peru	0.023	10 213	238	175	1.22
Venezuela	0.329	6 320	2 080	436	1.14
Uruguay	0.069	2 700	185	652	1.10
Others			600		
Total			21 168		

a/ Data of P.M. Rosenteins-Rodan, Massachusetts Institute of Technology, Center of International Studies, Cambridge, Mass., 1961.

b/ Calculated in accordance with the equation relating consumption to the product.

/Table 16

Table 16

LATIN AMERICA: PROJECTIONS OF CELLOPHANE DEMAND, 1965 AND 1970

(Tons)

Country	1958 a/	1965	1970
Argentina	2 440	2 890	3 520
Brazil	8 148	11 860	15 540
Chile	213	290	370
Colombia	1 550	2 240	2 940
Cuba	759	1 100	1 440
Mexico	4 955	7 880	10 710
Peru	238	340	440
Uruguay	2 080	3 340	4 550
Venezuela	185	210	240
Others	600	880	1 160
Total	21 168	31 030	40 910

Note: The amount of dissolving pulp needed for this volume of cellophane paper demand is equivalent to cellophane requirements, as the conversion coefficient is one to one.

a/ Real figures.

/Table 17

Table 17

LATIN AMERICA: PROJECTIONS OF DISSOLVING PULP DEMAND IN GROUPS I AND II
(tons)

Country	1965 Fibres	1965 Cellophane	1965 Total	1970 Fibres	1970 Cellophane	1970 Total
Argentina	27 000	2 890	29 890	31 100	3 520	34 620
Brazil	39 700	11 860	51 560	44 800	15 540	60 340
Chile	6 200	290	6 490	6 900	370	7 270
Colombia	7 600	2 240	9 840	7 900	2 940	10 840
Cuba	a/	1 100	1 100	a/	1 440	1 440
Mexico	20 600	7 880	22 480	22 900	10 710	33 610
Peru	5 500	340	5 840	6 000	440	6 440
Uruguay	a/	210	210	a/	240	240
Venezuela	5 600	3 340	8 940	6 800	4 550	11 350
Others	27 900	880	28 780	33 100	1 160	34 260
Total	140 200	31 030	171 230	159 500	40 910	200 410

Source:

a/ Included under Others.

Chapter V

DEVELOPMENT PLANS FOR THE INDUSTRY: BALANCE OF SUPPLY AND DEMAND IN RESPECT OF DISSOLVING PULP IN 1970

1. World Trends

The steady increase in world demand for dissolving pulp has brought in its train a substantial expansion in production capacity (see table 18). Between 1960 and 1965, an increment of 27 per cent (1,077 million tons) is expected to take place. It will be achieved mainly through the large-scale expansion projects envisaged by the countries with centrally-planned economies, although these plans may not wholly materialize in 1965, one or two projects being likely to fall behind schedule, according to observations made in the course of the work.

Table 18

WORLD PRODUCTION CAPACITY FOR DISSOLVING PULP

(Thousands of tons)

Region or area	1960	1965	Percentage increase
North America	1 617	1 805	12
Western Europe	1 387	1 605	16
Asia, Africa and the Pacific	566	700	24
Centrally-planned economies	410	940	129
Latin America	80	93	16
Total	4 060	5 143	27

In 1965 North America will still have the greatest amount of installed capacity, although the additions made will have been the smallest (12 per cent). This is because the industry was working at only 82 per cent of capacity in 1960, and can therefore step up its production without expanding its plants to any great extent.

Installed capacity in Western Europe is expected to increase slightly more than in North America (16 per cent), since the industry was using more of its capacity in 1960 (89 per cent).

/The Centrally-planned

The centrally-planned economies would pass to third with the implementation of their projects for expansion, which should bring about an increment of 120 per cent between 1960 and 1965.

2. Latin America

A more detailed analysis will be made here of Latin America's supply and demand prospects in respect of dissolving pulp during the next few years.

Since we are now in the beginning of 1965, and the situation is expected to be much the same than as in 1963, it has been decided to confine the analysis to 1970 only.

The figures for installed capacity in 1964 were added to those for expansion and for entirely new mills to be built between 1964 and 1970,1/ so that they could be compared with the figures for demand, as projected in chapter IV, in order to determine Latin America's probable supply and demand situation in respect of dissolving pulp in 1970.

According to the data in Annex I, installed capacity will increase by 48,500 tons (68 per cent) between 1964 and 1970, thanks solely to Argentina and Brazil, which are carrying out a plan to enable them to become self-sufficient in dissolving pulp in future.

By 1970, the region's dissolving pulp requirements as set forth in table 19 will be about 200,000 tons while installed capacity will be only 120,000 tons. Accordingly, even if capacity is used to the full, the region will have to import about 80,000 tons, which at current prices, would mean a disbursement of approximately 15 million dollars.

In Argentina, it is hoped to cover the bulk of domestic demand, once the new Argentina pulp mill at Puerto Piray, which is to have an annual capacity of 20,000 tons, enters into operation at the beginning of 1966. The raw material will come from the artificial plantations in the neighbourhood.

Brazilian industry will be able to supply the whole of domestic demand for dissolving pulp and to export a small amount as well as soon as the new I. R. F. Matarazzo mill enters into operation in 1967 as scheduled. This mill has been designed to produce 33,000 tons annually on the basis of cotton linters, and is intended to replace the old mill that used the same raw material.

There is also a project afoot to build another mill using eucalyptus with an initial capacity of 33,000 tons a year. This project is based on the assumption that a large part of the mill's production will be sold on the home market and the rest used for processing derivatives.

1/ For further details see annex I.

/Table 19

Table 19

LATIN AMERICA: ESTIMATED BALANCE OF SUPPLY AND DEMAND IN RESPECT OF DISSOLVING PULP, 1970

(Tons)

Country	Installed capacity	Projected demand	Balance
Argentina	30 200	34 620	- 4 620
Brazil	74 000	60 340	+ 13 660
Colombia	-	10 840	- 10 840
Chile	-	7 270	- 7 270
México	16 000	33 610	- 17 610
Peru	-	6 440	- 6 440
Venezuela	-	11 350	- 11 350
Others	-	34 260	- 34 260
Total	120 200	200 410	- 80 210

Note: A plus sign means a surplus and a minus sign a deficit.

Demand does not cover the group "Others", but as the figures for that group include demand for manufactured products, which will be difficult to replace entirely by local items, the figures given here are considered to be representative of what is most likely to happen in practice.

/In view

In view of the state of the Brazilian market, which has been described earlier in this paper, a thorough study should be made to see whether the project is feasible or not.

Mexico, the other Latin American producer, does not plan to expand its installed capacity for the time being, but its growing domestic market and prospects of increasing its exports, together with the abundant supply of cotton linters for raw material, indicate that it would be possible to enlarge its production capacity.

The other countries apparently have no plans for producing dissolving pulp at the present time.

Chapter VI

THE LATIN AMERICAN FREE-TRADE AREA

1. Aims

Early in 1960, Argentina, Brazil, Chile, Mexico, Paraguay, Peru and Uruguay agreed to establish the Latin American Free-Trade Association (ALALC) by signing the Treaty of Montevideo. They were joined by Colombia and Ecuador in December 1961, and it is hoped that before the end of 1965 Venezuela will have decided whether or not it also plans to enter the group.

ALALC is working for the expansion of national markets through the gradual elimination of intra-regional trade barriers, since the substantial broadening of such markets is considered to be an essential pre-requisite for the acceleration of the countries' economic development.

The period for lifting the duties and restrictions on substantially all their trade has been fixed at twelve years. Duties are eliminated by means of periodic negotiations between the Contracting Parties, the result being the establishment of:

(a) National schedules with the reductions conceded by each country to the others in respect of duties and other charges; and

(b) A common schedule indicating the relations of the products in respect of which the Contracting Parties jointly undertake to eliminate all duties and during the above-mentioned period.

In this way ALALC is endeavouring to combine the efforts being made and direct them towards the progressive complementarity and integration of the economies of the signatory States.

2. Customs Duties

Only four countries have made tariff reductions in respect of dissolving pulp. This is mainly because the producer countries have little interest in the subject owing to the fact that their output is not enough to supply the home market.

Table 20 lists the customs duties and other similar charges imposed on imports into the principal consumer countries of Latin America.

3. Intra-regional Trade Prospects

There is no intra-regional trade in dissolving pulp at present and future prospects are not very encouraging.

/Table 20

Table 20

SELECTED LATIN AMERICAN COUNTRIES: CUSTOMS DUTIES AND SIMILAR CHARGES ON IMPORTS OF DISSOLVING PULP

Country	Customs duties							Similar charges			Duties and charges expressed as a percentage of c.i.f. value a/
	Treatment	Legal regime	Unit	Specific	Percentage of c.i.f. value	Percentage of official base value (aforo)	Additional (percentage)	Percentage of c.i.f. value	Prior deposit (percentage)	Consular fees (percentage)	
Argentina	A	FI			6		4	54.5	0	1.5	66.0
Brazil	A	FI			20			6	80	E	26.0
	B	FI			0			1	0	E	1.0
Colombia	A	PA	Gross kg	$ 0.10	15				65	1	21.0
	B	FI		0	4				0	1	5.0
Chile	A		100 gross kg	$ 5.0 gold				30			35.0
Mexico	A	PA	gross kg	$ 0.01		5.0	3			E	8.5
	B	FI		0		0	0			E	0.0
Peru	A		gross kg	$ 0.12	13.5						15.5
Uruguay	A	FI				8.08		27.45		E	35.53
	B	FI				0		0		E	0.0
Venezuela			gross kg	0.04 bolívares							4.0

Notes: A: Duties applicable to imports from the rest of the world.
B: Duties applicable to the countries members of the Latin American Free-Trade Association.
FI: Free imports.
PA: Prior authorization.
E: Exempt.

a/ Interest on prior deposits has not been included. This interest is difficult to compute because of the great variations which take place while the funds must remain in deposit and also because of the different interest rates applied.

/Argentine and

Argentina and Brazil have projects on hand for expanding their production capacity, from which it may be assumed that they will be self-supporting in the next few years. These countries' prospects of exporting to the Area are doubtful since prices on the internal market are currently higher than international prices. With the aid of the modern mills that are being set up, it may be possible to lower production costs and export to the other Latin American countries, although the surplus available would not be very large because of the size of the domestic market.

Mexico, the other producer in the region, is the only exporter in Latin America (the bulk being sent to the United States market and the remainder to Europe), but is in the last analysis a net importer, since it buys more than it sells and is likely to do so on an even greater scale in future. It is currently importing 99 per cent of its requirements from the United States, and in view of its proximity to that country will probably continue to use the same source of supply in future.

The figures in table 17 indicate that the rest of the ALALC countries do not have large enough markets to justify the establishment of economic plants. Consequently, if a mill is to be set up to complete with the traditional producers, most of its output would have to be sold in the other Latin American countries.

The probable balance between supply and demand in 1970 in the ALALC countries is shown below. Mexico has been excluded, since, in spite of the protection (8.5 per cent) enjoyed by the producers of the Area in that country, they would probably not be able to compete with the United States because of differences in freight charges (see table 21)

Table 21

LATIN AMERICA: BALANCE OF DOMESTIC SUPPLIES OF DISSOLVING PULP, 1970

(Thousand of tons)

Country	Installed capacity	Projected demand a/	Balance
Argentina	30 200	34 620	- 4 420
Brazil	74 000	60 340	+ 13 660
Colombia		10 840	- 10 840
Chile		7 270	- 7 270
Peru		6 440	- 6 440
Bolivia b/ Paraguay b/ Uruguay b/		6 000	- 6 000
Total	104 200	125 510	- 21 310

Note: A plus sign means a surplus and a minus sign a deficit.

a/ Not including "Others". b/ Estimates. /It emerges

It emerges from table 21 that the ALALC market, excluding Mexico, would be limited to little more than 21,000 tons for a new producer in the Area if import duties were abolished. The market may increase to about 35,000 tons if Brazil is unable to export to it. But even so it is not large enough to warrant the installation of a new mill in Latin America. Moreover, the users of dissolving pulp in the different Latin American countries are subsidiaries of international companies which supply them with the necessary raw material, thereby reducing the market even further.

Annex I

LATIN AMERICA: LIST OF DISSOLVING PULP MILLS WITH THEIR RESPECTIVE ANNUAL CAPACITIES, 1964

(Tons)

Name	Place	Capacity	Fibrous raw material used	Pulping process
Argentina				
Celulosa Argentina	Zárate (province of Buenos Aires)	7 200	Cotton linters	Soda
Raysol S.A.	Zárate (province of Buenos Aires)	3 000	Cotton linters	Soda
		10 200		
Brazil				
Brasil Viscosa S.A.	Mogy das Cruzes (S. Paulo)	9 000	Cotton linters	Soda
Cía. Brasileira Rhodiaceta	Santo André (S. Paulo)	12 000	Cotton linters	Soda Ash
Cía. Nitro Química Brasileira	São Miguel Paulista (S. Paulo)	10 000	Cotton linters	Soda
Fiacao Brasileira do Rayon S.A.	Americana (São Paulo)	5 500	Cotton linters	Soda
Industrias R. Francisco Matarazzo	São Caetano do Sul (São Paulo)	4 500	Eucalyptus	Sulphide (sodium base)
Industrias R. Francisco Matarazzo	São Caetano do Sul (São Paulo)	13 500	Cotton linters	Soda
		54 500		
Mexico				
Celanese Mexicana S.A.		16 000	Cotton linters	..
		16 000		
Total 1964		80 700		
	Additions to capacity to enter into operation in 1964-70			
Argentina				
Celulosa Argentina	Puerto Piray (Misiones)	20 600	Soft woods and eucalyptus	Sodium bisulphide
Total 1970		90 200		
Brazil a/				
Industrias R. Francisco Matarazzo	São José dos Campos (S. Paulo)	33 000	Cotton linters	Soda
Total 1970		74 000 b/		
Total Latin America 1970		120 000		

a/ A Votorantim project is still under study, and has therefore not been included here. The mill will have a capacity of 53 000 tons annually and will use eucalyptus.

b/ The new mill will replace the old plant at São Caetano do Sul (33 000 - 13 500 = 19 500 additional tons).