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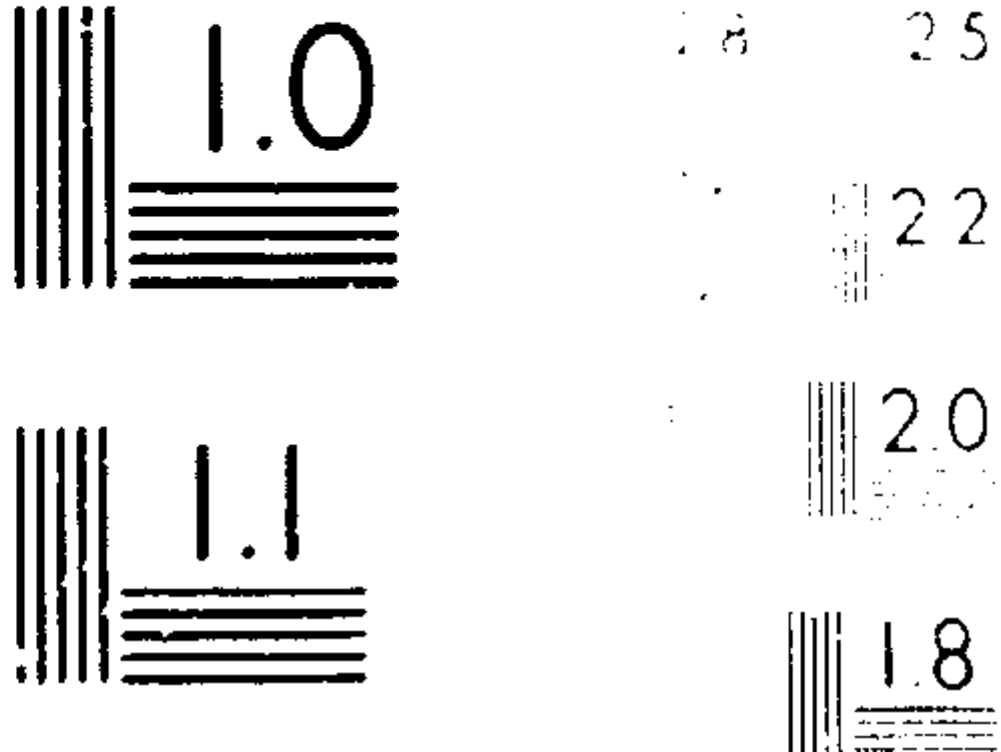
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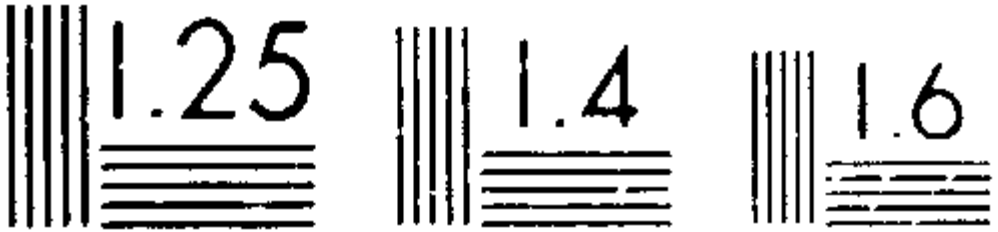
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THE PULP AND PAPER INDUSTRY IN BRAZIL: FUTURE PERSPECTIVES*

by

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Late in 1974, the Brazilian Government approved the National Development Program for Pulp and Paper setting export goals of two million metric tons of market pulp in 1980 and five million tons in 1985. At that time, not all the implications of the just initiated petroleum crisis were felt as by now. To support the program, ambitious reforestation goals were also established and strong reinforcement was given by the Brazilian Government to the promotion of reforestation, initiated in 1967 through fiscal incentives. The initial enthusiasm cooled down and resulted into a postponement of some of the initial projects, in view of the special situation of the world market in the late 70's. Even so, it can be said that the Program was successful if we realize that the reforestation area growth during the period from 1974 to 1978 was 19.36% per annum, supporting a pulp and paper industrial growth of 15.7% for the same period, and if we compare these figures against the overall industrial growth of 9% in Brazil.

The overall national experience gain made possible through this reforestation program is providing a sound and factual basis which allows us to face a challenging future resulting from the fact that an increasing cost of petroleum energy is opening to consideration, alternative energy sources among which the traditional fiber supplying lignocellulosic materials rate very high.

The order of magnitude of the overall demand on reforestation areas resulting from the consolidation of the traditional demands and the new energetic ones are shown in Table I.

If we have in mind that in 1978, planted forests had a total area of 3.3×10^6 ha., the 1987 overall demand of 16×10^6 ha. implies a compound increase of about 9% each year. As mentioned above, this high growth was already attained after the National Development Program for Pulp and Paper was launched. Therefore, while it should be considered quite a challenge, it can also be considered a feasible target.

Timing is very important in forestation programs and a rather tight overall chronogram must be followed to attain the long range goals. Unfortunately, a period of policy indecision at the planning agencies resulted into an actual reforestation below the expectations, which in turn resulted into a probable shortage of available "matured" wood by 1984-85. Prices of delivered wood are still very attractive, but they will probably rise along with the increased demand for both land and wood.

It must be mentioned here that there is plenty of room for improvement in the present silviculture and management of the planted forests. The implementation of improved practices, as well as better utilization, should result into lower operational costs which should at least partially compensate for the expected increases in land costs. It should also be mentioned that very promising results have been obtained in the on-going research efforts aimed to produce a "super-tree," with a higher wood yield, higher cellulose content, better resistance to diseases and pests, and better quality fibers.

One of the main growth constraints is the expected increase in the demand of agricultural areas resulting from the National Sugar Cane Alcohol Program (4.5×10^6 ha.) in addition to those required for the staple foods production and main exportation agricultural products, adding up to a total of approximately 30×10^6 ha. by 1985. This order of magnitude of the estimated agricultural land requirements will probably not allow forestation projects in any land suitable for agricultural activities, reinforcing the displacement trend towards the interior of the country where new lands are often of lower productivity and are almost always more distant from present markets.

The large growth potential of the Brazilian market is based on the present low annual paper consumption per capita of about 26 kilos. The natural expansion of this internal market will allow the paper companies to expand and, through eventual vertical integrations, participate with investments in the forestation programs with their own forestation, in this way, also assuring their respective future requirements of pulp supply.

The awareness of the growth potential of the internal market together with the opportunities identified in the export market, led the Advisory Council of our Technical Research Center for Cellulose and Paper to set up a Committee for Strategic Planning of the Cellulose and Paper industrial sector. The idea behind this activity is that by properly identifying the strong and weak points as well as the opportunities and menaces, adequate solutions and most convenient guidelines and policies could be developed for the next decade, thus, allowing the optimization of the already available resources.

The twelve-member Committee has been meeting since almost one year ago and has identified strategic policies for raw materials, production, technological research, commercialization, financial resources, human resources and communications.

A way to partially solve the expected shortage of wood available for cellulosic fibers will be the increased use of secondary fibers which, being rather low at present (about 30%), it should not be too difficult to increase. Also, careful attention is being paid to the potential of some of the annual plants that yield cellulosic fibers which showed an increase from 90,000 tons in 1975 to 144,000 tons last year. Even with this increase, the annual plants only provided 5.8% of the total cellulose produced. Any additional increase would probably lead to a step into competition for agricultural land, which, as it has been said above, will be needed for food. The agricultural wastes are also under study but here, the limiting factor is that they are also sought as renewable energy sources. This is the case of bagasse, a waste material available in increasing amounts because of the ethanol from sugar cane program. As it is well known, bagasse cellulose and hemicellulose can be converted into simple hexose and pentose sugars by acid hydrolysis processes, allowing additional ethanol through fermentation processes.

With all this in mind, the estimated production expansion will have to be based on wood cellulose and, therefore, on the on-going reforestation and on new ones, for which the country's vast territory and tropical climate with plenty of sun offers the most adequate conditions for the photosynthetic reactions to provide the necessary rapid growth of planted forests.

But even before the Strategic Planning Committee started to meet, the Pulp and Paper industries and the Government altogether had to identify ways and means to reduce the energy consumption. With this objective in mind,

our Technical Center helped prepare a publication, the title of which is self-explanatory: "Energy Conservation Handbook for the Pulp and Paper Industries." Widely distributed throughout the industrial sector, the handbook allowed to start a "hunting calories party" which is still on-going and has already provided very satisfactory results.

From all that has been said above, it can be concluded that the future perspectives for the Brazilian Pulp and Paper Industry indicate that there is a growth opportunity conditioned to a qualitative and quantitative energy availability. And that the Government, the Industries and the Technical Research people, accepting the collective challenge, are joining and complementing their respective efforts towards the by-passing of the identified limiting factors.

TABLE I

ESTIMATED OVERALL DEMAND OF PLANTED FOREST AREA FOR 1987

TRADITIONAL DEMANDS	AREA (10^6 HA)	%
CHARCOAL	2.04	12.8
CELLULOSE	1.72	10.8
CONSTRUCTION	0.93	5.8
FIREWOOD	0.82	5.1
	5.51	34.6
ENERGETIC DEMANDS		
ETHANOL	6.91	43.3
CHARCOAL	2.97	18.6
FIREWOOD	0.32	2.0
METHANOL	0.22	1.4
	10.42	65.4
TOTAL	15.93	100.0

15.93×10^6 ha. = 3.2% total area of Brazilian natural forest ($494. \times 10^6$ ha.)