

# STRATEGIC MARKETING ADVANTAGES OF BRAZIL, PORTUGAL, THAILAND AND PAKISTAN IN EUCALYPTUS PULP PRODUCTION

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## ABSTRACT

The capabilities of Brazil, Portugal, Thailand and Pakistan to manufacture *Eucalyptus* market pulp were compared in this study. Strategic advantages of each country was evaluated on the basis of raw material resources, economies of scale, the level of technology, wood cost, the level of integration, geographical specialization and market share. Brazil and Portugal have clear advantages over the less industrialized countries like Thailand and Pakistan in hardwood pulping. However, increasing demand for *Eucalyptus* market pulp on the world market will help to develop the industries of the four countries.

## INTRODUCTION

Fast growing fiber resources such as, *Eucalyptus* species are currently attracting considerable international attention and have become a major raw material for hardwood pulp production in the world (Steir, 1990; Poyry, 1992). Increasing utilization of *Eucalyptus* wood for pulp and paper manufacture is due to its rapid growth, better adaptability, excellent regeneration capacity and better pulping and paper properties (Steir, 1990; FAO, 1980). As a result, *Eucalyptus* wood pulp has emerged as an important resource in the world market for paper grade pulp (Steir, 1990).

Presently, India, Portugal, Spain, South Africa, Australia, Brazil, Chile and Argentina



have 4.4 million hectares of *Eucalyptus* plantations. (Suchek, 1991). New plantations have also been established in Venezuela, Columbia, Angola, Gabon, Indonesia, Thailand and Pakistan (Steir, 1990). Brazil and Portugal are the major *Eucalyptus* pulp producers in the world. Thailand and Pakistan also intend to utilize their *Eucalyptus* resources for pulp manufacture. *Eucalyptus* plantations have been raised in both countries under social forestry, agro-forestry and other government supported programs.

The present study identifies the strategic advantages of Brazil, Portugal, Thailand and Pakistan and also discusses the probable market strategies of these four countries for *Eucalyptus* pulp production.

## MATERIALS AND METHODS

The strategic marketing advantages of Brazil, Portugal, Thailand and Pakistan were derived from published sources. Elements studied in detail included raw material availability, the size of pulping units, the degree of integration, the cost of production, the level of technology, the geographical position and objectives of the pulp producing firms in that country. Although no definite conclusions can be reached, some elements of long term strategy can be obtained by studying annually published data, particularly in developed countries such as Brazil and Portugal.

## RESULTS AND DISCUSSION

Worldwide, the competitive strength of a country in pulp and paper manufacture is determined by its available wood resource, the growth rate of the resources, the wood cost, the pulping capacity, the production cost, the level of technology, the market share, the economic

and political environment and the level of integration. A comparative analysis of the major factors affecting macro- and microenvironment of pulp and paper industry in Brazil, Portugal, Thailand and Pakistan are discussed below. A summary of the comparative data follows individual topic headings.

### 1. Forest area

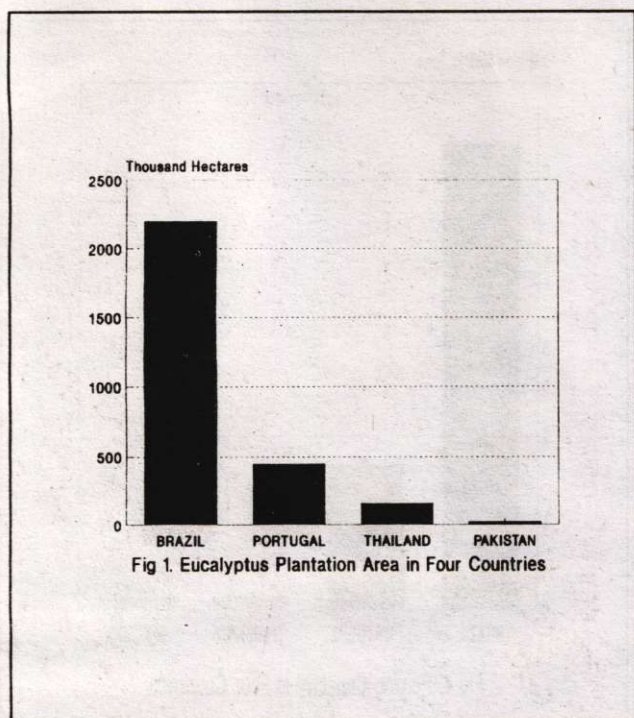
The *Eucalyptus* plantation area of Brazil, Portugal, Thailand and Pakistan are shown in Figure 1. Brazil has the world's largest *Eucalyptus* plantation area of totaling 2.2 million hectares. However, it represents less than one percent of the country's total forest area. In Brazil, reforestation is primarily carried out with three major *Eucalyptus* species: *E. grandis*, *E. saligna* and *E. urophylla*. Portugal has the second largest *Eucalyptus* plantation area in the world, covering about 450 thousand hectares. *E. globulus* and *E. camaldulensis* are the major species of the plantations. Thailand has 160 thousand hectares of *Eucalyptus* plantations and most of the plantations are on government lands. *E. camaldulensis* is the preferred species in plantation programs.

Pakistan has established *Eucalyptus* plantations on 26 thousand hectares under its social forestry and agro-forestry programs. Most of the plantations are on private lands. *E. camaldulensis* is the main species in them.

### 2. Growth rates

The growth rates of *Eucalyptus* trees in the four countries are shown in Figure 2. *Eucalyptus* grown in Brazil has the highest average growth rate at 29 m<sup>3</sup>/ha/year (Fig 2). The reported growth rate range is between 25-55m<sup>3</sup>/ha/year. Pakistan ranks second with an average growth rate of 24.16m<sup>3</sup>/ha/year. The



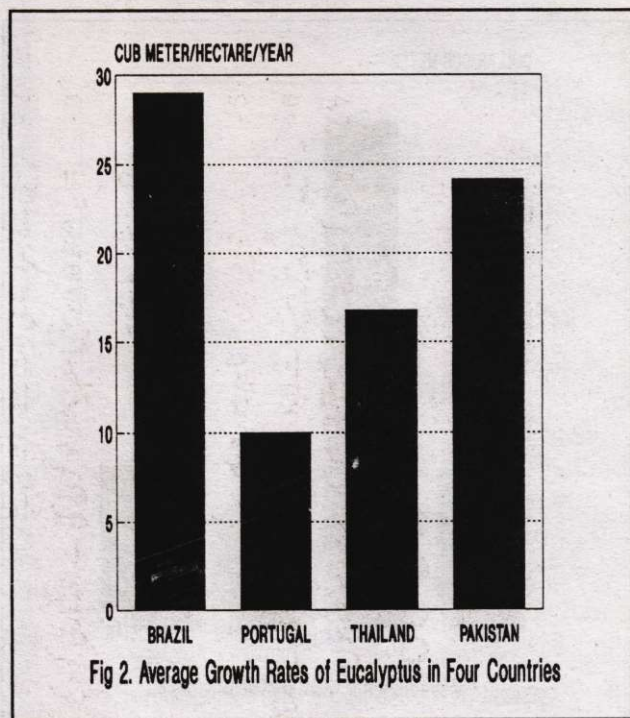


range is from 21-35m<sup>3</sup>/ha/year.

Both Portugal and Thailand have comparatively small growth rates with 10m<sup>3</sup>/ha/year and 16.8m<sup>3</sup>/ha/year respectively. In Portugal, the growth rate ranges from 3-30m<sup>3</sup>/ha/ year. No such data are available for Thailand.

### 3. Costs of *Eucalyptus* Wood

The cost of wood in the four countries is compared in Figure 3. Thailand has the lowest wood costs averaging about U.S. \$13 per cubic meter. Conversely, Portugal has the highest wood cost at about \$65 per cubic meter (Suchek, 1991). Pakistan and Brazil have nearly equivalent wood costs ranging in between \$19-20 per cubic meter.



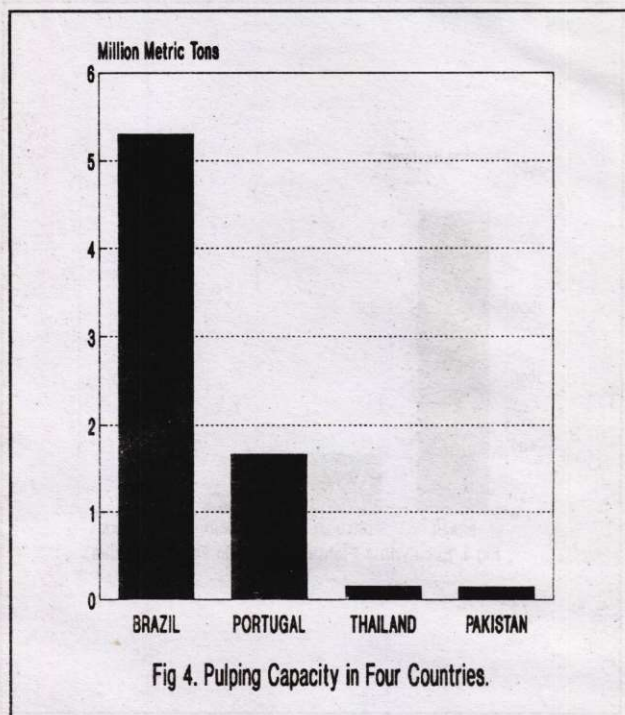
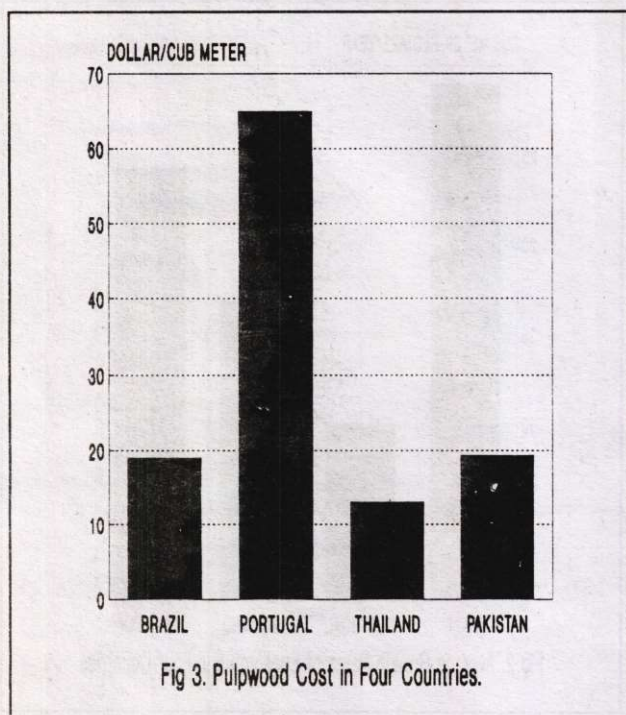
### 4. Pulping capacity

The pulping capacity of the four countries is shown in Figure 4. Brazil has the highest wood pulping capacity at 5,298 thousand metric tons and Portugal's capacity in wood pulping is 1,670 thousand metric tons. Pakistan and Thailand have pulping capacity of 145 thousand metric tons and 153 thousand metric tons respectively. Most of Pakistan's pulping capacity is in non-wood pulping.

### 5. Analysis of pulp production costs

The production costs for *Eucalyptus* pulp in four countries are compared in Figure 5. Brazil has the lowest production cost of manufacturing *Eucalyptus* wood pulps of U.S. \$180-190/metric ton (Edstorum, 1989). Production cost in Portugal is 46 percent higher than Brazil, averaging U.S. \$270 per metric ton due to higher wood, labor and energy costs in





Portugal (Rolo and Antonio, 1992).

Thailand and Pakistan have the highest production costs ranging from U.S. \$290-310/ton (Wire, 1990). Obsolete machinery, lower productivity, higher energy costs and small mill size are the likely causes of the production cost differential.

#### 6. Pulp production technology

Brazil has modern Scandinavian harvesting and pulping technology (Pilar, 1992). Similarly, Portugal has modern pulping machinery and their pulp industry is considered among the most developed and dynamic in the forest products industry (OBR, 1991). Thailand has recently established several new pulping units fully equipped with the latest technology. However, Thailand's pulp and paper industry is not yet in a position to compete with North America, Europe or Japan because it lacks an established fiber base and most of the Thailand's machinery is old and produces low

quality paper grades (Anonymous, 1990).

Pakistan also has old machines for non-wood pulping and most of them need replacement. Repeated break downs result in high operating costs and reduce the profitability of the industry. Recently one modern pulping unit of 30,000 ton pulping capacity, has been installed and is expected to start production in 1994 (Anonymous, 1993).

#### 7. Market pulp production capacity

Brazil holds a 38.02 percent *Eucalyptus* pulp share in the world market (Table 1). During 1991, lower domestic demand caused an increase in the export of *Eucalyptus* pulp from Brazil. Brazil has concentrated its efforts to increase the waste paper recovery from domestic resources to meet its needs and to save *Eucalyptus* pulp for exports (Knight, 1992). Portugal's market share in the *Eucalyptus*



market pulp export is about 31.58 percent of the total. Thailand has started short fiber pulp export to Korea, India and to some other countries in the region. With the

implementation of new projects, Thailand's market share is expected to increase from the present level of 0.39 percent. Pakistan is a net importer of hardwood and softwood pulp.

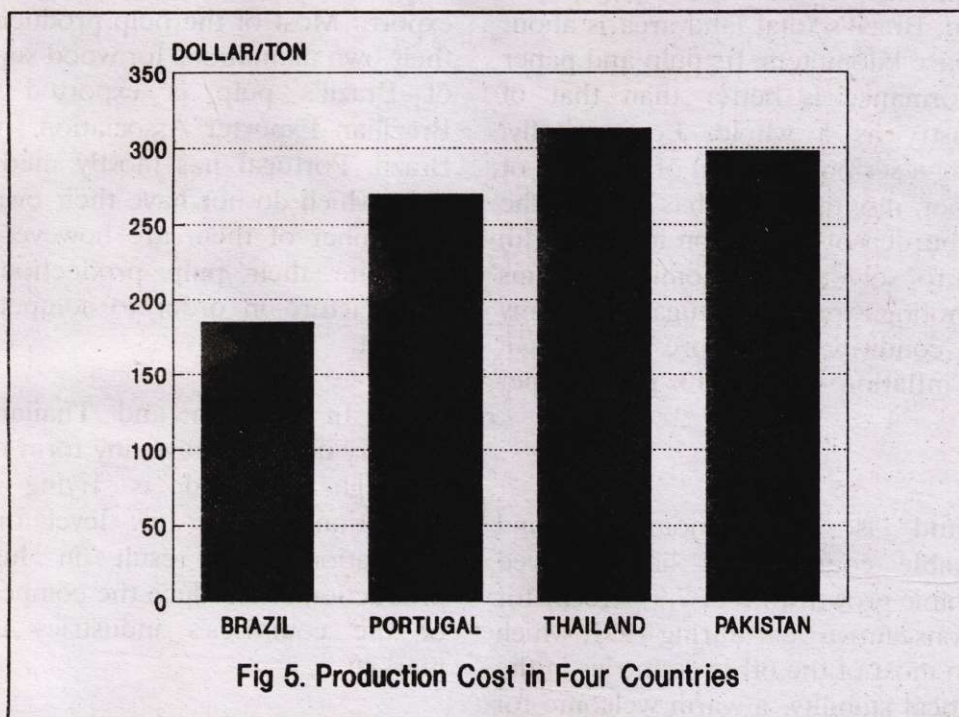


Table 1. Hardwood Pulp Production and Pulp Export				
Potential	Brazil	Portugal	Thailand	Pakistan
Total <i>Eucalyptus</i> Pulp Production	4,839,000	1,619,000	143,000	--
Bleached Sulfate	2,891,000	1,148,000	125,000	--
Market Pulp	2,039,000	1,315,000	96,000	--
Export	1,375,000	1,045,000	14,400	--



## 8. Economic and political environments

Brazil is a politically stable country with occasional political swings (Anonymous, 1993). It is an intermediate income country with ninth largest economy in the world and a population of 146 million. Brazil's total land area is about 8,511,965 square kilometers. Its pulp and paper sector's performance is better than that of Brazil's industry as a whole. Economically, Brazil is facing a serious problem of inflation of 20 percent per month which has led to the highest debt burden of any nation in the world. It has tried to solve its economic problems through promoting exports. Portugal's economy and political conditions are more stable than Brazil. The inflation rate is 13 percent per annum.

Thailand is an economically and politically stable country and has achieved annual economic growth rate of 7.9 percent for the second consecutive year during 1991, which is higher than most of the other countries in the region. Political stability, a warm welcome for foreign investors and lower labor costs, are factors that have contributed to Thailand's prosperity and progress. Further, its pulp and paper industry has enjoyed growth rates well above those of the GDP growth rate in recent years. A high growth rate in the industrial sector has created a great demand for packaging and printing types of paper.

Pakistan's economic stability is unbalanced by its political instability. Its budgetary deficit during 1993 was in excess of \$3.8 billion dollars compared with an earlier target of \$2.5 billion (Bokhari, 1993).

## 9. Level of integration in the pulp industry

The Brazilian pulp industry has a high level of integration in its 161 firms in the pulping units. Of these, 31 firms are fully integrated and 6 firms produce only pulp for export. Most of the pulp producing units have their own plantations for wood supply and most of Brazil's pulp is exported through the Brazilian Exporter Association. Compared to Brazil, Portugal has mostly medium to small units which do not have their own plantations. A number of them are however, planning to integrate their pulp production with paper manufacture in order to compete in the EC market.

In Pakistan and Thailand, the pulp industry does not have any form of integration, although Thailand is trying to establish plantations. The low level or absence of integration may result in high costs of production and reduce the competitive position of the countries's industries in the world market.

### Strategic Marketing Advantages

The comparative analysis in the previous section indicates that vast differences in resources and technology exist among the four countries. Strictly, a country does not possess a "marketing strategy" or a strategic marketing advantage. However, government policies and major industry initiatives provide some insight into the directions of various industries or industry segments. From these directions and initiatives, the strategic marketing advantages were derived.

In this analysis, elements of competitive advantage such as raw material resources (plantation area), economies of scale, the level



of technology, wood cost, production cost, the level of integration, geographical specialization and market share were used for speculation.

## **Brazil**

Brazil has developed forest products initiatives over several decades that will allow the country to become the major exporter of *Eucalyptus* market pulp in the world (Anonymous, 1989). In order to achieve this far-reaching objective, the government and pulp industry have taken a number of measures that have increased their competitive advantages in *Eucalyptus* wood pulping. These measures include: increasing the *Eucalyptus* plantation area by offering financial incentives to investors and growers, a tree improvement program to increase the productivity and quality of *Eucalyptus* wood, increasing pulping capacity and the importation of advanced technology in wood pulping.

Brazil has also established large pulping units at the center of the forests to achieve economies of scale in their production functions, and to reduce their transportation costs. Additional measures involve backward and forward integration, the development of technology to manufacture pulp and paper machinery (Hall, 1988), the utilization of a cheap labor force and the offering monetary incentives for export promotion (Paoliello, 1988; Suchek, 1991).

When combined, Brazil's efforts have resulted in the lowest cost/ton of hardwood pulp in the world market. The characteristics of the Brazilian pulp market, particularly a broad target and competitive advantage in the production of *Eucalyptus* pulp, provides some insight into their strategic marketing plans.

Brazil seems to fulfil the conditions necessary for a cost leadership strategy. The cost leadership strategy is a successful strategy, particularly in price sensitive markets when demand for a commodity is elastic (Thompson and Strickland, 1986). A country or firm that aims at a cost leadership strategy usually concentrates on competitive pricing, rapid delivery, efficient procurement of raw materials and developing experience in the field of production (Mater et al, 1992). The cost leadership strategy is usually adopted to attain a maximum market share and other benefits (Sinclair, 1992)

## **Portugal**

Portugal is the second largest producer of *Eucalyptus* pulp. A major portion (70-80 percent) of Portugal's exports go to Western Europe. The remainder is exported to the United States and Far Eastern markets. Its pulp industry has limited resources and a narrow target. Higher labor, energy and transportation costs are the major disadvantages of the pulp industry when compared to Brazil. Therefore, Portugal's most effective approach would be a focus or specialization strategy, particularly a geographical focus. By exporting over 70 percent of their market pulp to EC countries, it has effectively developed a targeted marketing strategy (Rolo and Antonio, 1992). Thus, Portugal can exploit the benefits of EC integration. Much emphasis is being given to the integration of pulp into paper manufacture in order to compete in the EC markets (Anon., 1990).

## **Thailand**

Thailand has heavily concentrated on planting fast-growing species such as *Eucalyptus camaldulensis* as a part of its reforestation



programs on degraded lands through both private and government agencies (Hirsch, 1990). Government lands have been leased for 30 years for raising *Eucalyptus* plantations by private agencies. A number of international agencies are also helping Thailand to increase its wood resources which have been badly depleted by over cutting in the past.

Thailand has recently increased its hardwood pulping capacity and, by the year 1996, and will have 717 thousand tons of short fiber pulping capacity that will increase the countries future pulping potential (Price, 1992). Moreover, modern technology has been imported from western countries including a continuous digester, water treatment and oxygen bleaching plants.

### Pakistan

Pakistan does not have enough wood resources to meet the country's demand for pulp and paper. The non-wood raw materials now used have low yield and produce poor quality paper. Furthermore, these resources meet less than 50 percent of the country's demand.

During the last few years, a number of programs like social-forestry and agro-forestry have been started with the help of international donor agencies (Naughton and Wire, 1990). The main objective of these efforts is to increase the forest resources of the country and to ensure wood supply for domestic as well as commercial utilization. Pakistan is therefore concentrating on a focus strategy based on import substitution.

National efforts such as an increase in the *Eucalyptus* plantation area, establishment of wood pulping units, financial incentives for growers and investors, promotion of the benefits of *Eucalyptus* growing, tree improvement programs, provisions for seed and seedlings to the farmers are a part of an ambitious plan to achieve self-sufficiency in wood pulp.

Table 2 is a summary of factors affecting develop marketing strategies in four countries.

It is evident that Brazil has a clear advantage in cost leadership over others.

Table 2. A Comparison of Strategic Marketing Elements for *Eucalyptus* Pulp Production

Functions	Brazil	Portugal	Thailand	Pakistan
Raw Material Resources	rich	moderate	not sufficient	poor
Economies of Scale	high	low	absent	absent
Level of Technology	high	high	low	poor
Wood Cost	low	high	very low	low
Production Cost	low	high	high	high
Level of Integration	high	low	none	none
Geographical Specialization	Worldwide	EC countries	NIC and Southeast Asian Market	none
Market share in EU Market Pulp	highest	second	nominal	none
Competitive Scope	broad target	narrow target	narrow target	none
Objectives	major exporter of <i>Eucalyptus</i> pulp	protect the position in Europe	Focus on growing NIC and Asian market	Import substitution
Probable Strategy	Cost leadership	Geographical Focus	Geographical Focus	Unspecific

Pakistan is only interested in import substitution by utilizing its *Eucalyptus* resources. Limited wood resources, lack of pulping

capacity, poor level of technology, an absence of economies of scale and any form of integration, limit the competitive scope of Pakistan in the



foreseeable future. Pakistan must begin, as Brazil did, by securing raw materials via improved productivity. This must then be followed with the development of modern processing. Only then can they become self sufficient in the supply of pulp and paper and eventually become competitive on an international scale.

## CONCLUSIONS

Pakistan has excellent growing conditions for *Eucalyptus* trees due to its geographical location and extensive irrigation system. Further, it has wood cost comparable to Brazil and may increase its wood pulping potential by increasing the *Eucalyptus* plantation area and pulping capacity. Most of all, Pakistan must internally promote the attractiveness of *Eucalyptus* to land owners/growers.

Pakistan is net importer of wood pulp and is interested in import substitution by developing its pulping resources. Because of its domestic demand, the development of an export strategy would not be appropriate. More important would be to focus on decreasing the use of *Eucalyptus* as fuelwood and increase it in paper and pulp processing.

## REFERENCES

- Anonymous. 1989. Brazil Plans to be World Supplier. Paper February 21. pp 27-28.
- , 1990. Markets, Technology and Environment. Paper January. pp 20-21.
- , 1990. Down the Integration Road. Paper October. p 30.
- , 1993. Faurooki Paper Mills Lahore, Pakistan. Paper May.
- Anonymous. 1993. Brazil and Indonesia. How Do They Compare. Papermaker May. pp 17-18.
- Bokhari, Farhan. 1993. Pakistan Enters Uncertain Period. Financial Times May 1, 1993.
- Edstrom, Sven. 1989. Mass Industrian I global Prospective. Svensk Paper Stidning vol 92 Sept. pp 32-35.
- F.A.O, 1980. Pulping and paper-making properties of fast-growing plantation wood species vol 2 Rome. pp 73-77.
- Freitas, Amantino. Romas De. 1992. Wood Utilization Issues In South America. Proceedings, An international perspective of Wood Science & Technology and Issues Affecting Wood Utilization. Society of Wood Science and Technology. One Gifford Pinchot Drive Madison, Wisconsin 53705-2398.
- Hall, Claes. 1988. Global Issues in Pulp and Paper. A Brazilian Prospective. University Of Washington Press. Seattle pp 66-68.
- Hirsch, Philip. 1990. Forest, Forest Reserves and Forest Lands in Thailand. Geographical Journal. Vol 56 # 2 July. pp 166-174.
- Knight, Patrick. 1992. Brazil: Profit Poor, But Production Prolific. PPI July. pp 103-104.
- Mater, Jean, Scott Mater, and Catherine M. Mater. 1992. Marketing Forest Products, Gaining the Competitive edge. Miller Freeman Inc., San Francisco. pp 8-9.
- Naughton, G., Wire, G. 1990. Pakistan Tree Farm Stands and Projected Pulpwood Yield. U.S AID Islamabad. p A 1.1



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O.B.R., 1991. Marketing in Portugal. U.S. Department of Commerce, International Trade Administration U.S.A.

Paoliello, J.L. 1988. Brazilian Pulp Industry Background Present Structure and future outlook. Pulp and Paper Symposium, University of Washington, May 27-29.

Pilar, Marcello. L. 1992. World's First One Million Ton Per Year Market Pulp - Mill Begins Operation. American Papermaker. 3:48-50.

Povry, Jakko. 1992. Multiclient Study: Fast Growing Plantations.

Price, David. 1992. Thailand's Great Expectations. Paper June. pp 48-51.

Rolo, Bernard and Antonio Simau. 1992. Portugal: Political Stability but Slower Growth. July. PPI. pp 50-51.

Sinclair, Steven, A. 1992. Forest Products Marketing. Mc Graw-Hill Inc., NY. p 109

Stier, Jaffery C. 1990. The World of Eucapulp Industry and its Impacts on the Northern U.S. Pulp and Paper Industry. Northern Journal of Applied Forestry. 7:158-163

Suchek, Valentine, I. 1991. The Role of Planted Forests in the Pulp and Paper Industry in Brazil. The Forestry Chronicle, Vol 67(6):636-648.

Thompson, Arther. A. and A.J. Strickland. 1986. Strategy Formulation and Implementation. Third Edition. Business Publication Inc Plano, Texas 75075 pp 156-195.