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BRAZIL – AMAZON OF THE SOUTH AMERICAN PULP AND PAPER INDUSTRY

Brazil, with all of its natural resources, has been called a country for the future.

The natural forest of Brazil covers nearly 400 million hectares, two-thirds of which is in the Amazon. However with 16 per cent of the world's forest, forest products account for only about four per cent of world production.

Keeping the environment in focus, there has been a reluctance to initiate a planned program of forest management development. Thus the dynamic part of the forest industry is based on only five million hectares of plantation forest, located in southern Brazil bordering the Atlantic Coast.

The plantation forest resulted from government fiscal incentives launched in 1966. The purpose was to establish a sustainable source of wood for expansion of pulp and paper production. The initiative was very successful and since then the plantation forests have been the heart and soul of an expanding forest products sector. It is the fibre source for the Pulp and Paper industry of Brazil.

The Pulp and Paper industry in Brazil is now an international benchmark for sustainable practices. 100% of its production comes from plantation forests.

In recent years, there has been a marked increase in paper consumption in Brazil. The CAGR of 4% is driven mainly by the tissue and packaging segments. This is an important indicator of the economic development of the country.

DEMAND AND SUPPLY

Brazil is the ninth largest paper producer and the fourth largest pulp producer in the world, having produced 9.8 million tons of paper and 14.0 million tons of pulp in 2010. In Latin America, it accounts for 48% of paper and board and 62% of pulp production and accounts for approximately 38% of total demand in the region for writing / printing paper.

Capitalizing on its advantages in pulp production, Brazil has developed a diversified paper industry with modern technology and a potential for growth in both domestic and export. It produces both commodity grade paper, such as kraft linerboard, and more value-added paper products, such as thermal, carbonless and fiduciary paper and is the only significant exporter of printing and writing grades in Latin America.

The Brazilian paper and pulp sector comprises of nearly 300 companies having 45 pulp mills, and 220 paper and board mills.

Three major groups in the paper industry are **Klabin**, **Suzano** and **Votorantim**. Their production is approximately 37% of Brazil's total paper production. **Klabin** group is the largest integrated pulp and paper producer in Brazil and is the leader in packing grade papers (29%) and tissue paper (25%). **Suzano** is

the leader in newsprint and cartonboard while **Votorantim** is the leader in printing and writing and specialty papers.

ADVANTAGE - PULP

Brazilian forestry productivity is envied by other manufacturing countries because the size and the climate of the country provides competitive edges for the pulp and paper production based on planted forests: eucalyptus and pine grow much faster than in other northern hemisphere countries.

In Brazil, eucalyptus trees have short growing cycles of approximately 7 years, compared to 10 years in Chile and 25 years in the United States. The shorter maturing period also enables Brazilian producers to expedite the process of genetically improving the Eucalyptus species utilized, due to which the species have evolved rapidly and consistently over recent years, resulting in significant improvements in its productivity. Lower growth cycle coupled with a smaller growing area results in higher yields and lower costs.

Eucalyptus is considered the world's top quality pulping species due to its high fibre yields. It is suitable for many tissue papers as the short and slender fibres gives a high number of fibres per gram and the low coarseness contributes to softness.

Brazil's high technology and natural advantages in forestry, makes it one of the world's lowest-cost producers of pulp, and in the last 20 years Brazil has become an important pulp exporter. The low cost also helps them to weather more favorably through periods of low pulp demand.

Brazil ranks today as the major bleached craft short fiber market pulp producer in the world. Sulfate and soda chemical pulp forms 90% of total pulp production.

The biggest pulp manufacturer in Brazil is Aracruz with 1 million tons per year, followed by Suzano, Klabin and Votorantim. Combined, they produce 60% of Brazil's total pulp production.

With the merger of Aracruz with Votorantim Celulose e Papel (VCP), the new company renamed **Fibria Cellulose** has emerged as the world's leading producer of eucalyptus, with a capacity of 6 million ton and a global market share of 37 per cent. With other hardwood pulps taken into account, the new company will have a 22 per cent market share.

SUSTAINABILITY

Contrary to European, Asiatic and North American countries, Brazil manufactures pulp and paper exclusively from planted forests of eucalyptus and pine. The total area of forest plantations used by the pulp and paper industry is 1.5 million hectares, of which 61% is eucalyptus and 36% pine.

Fast growing plantations benefit the environment by sequestering CO2 from the atmosphere, and young and fast growing forests sink more CO2 than old and slower growing forests.

INDUSTRY NEWS

less than USD 15 against the world average of USD 100. Paper and Paperboard packagings constitute about 40% of the total consumption.

The plant culture only uses degraded soil, never replacing native forests. On the contrary, the industry actively preserves an area of rain forests the same size as the area used for the industrial plantation of eucalyptus.

Public opinion is of the utmost importance and for this, environmental performance is critical. Increasingly, to gain public acceptance most Brazilian paper products now have clear environmental credentials - duly certified by the labels of the FSC, PEFC, Nordic Swan and European Flower. At the same time, the Brazilian companies are working on processes for the development of the local "hummingbird" Brazilian eco-label.

ENGINEERED PULP DEVELOPMENT

VCP is Brazil's biggest producer of eucalyptus pulp. Much of the development work on fibre and paper properties is carried out in close co-operation with paper mills - in the mills themselves and in the R&D laboratories of VCP.

But the starting point is the forests of Brazil where decades of investment and intensive R&D have combined with favourable climatic conditions to produce an ideal and sustainable papermaking fibre.

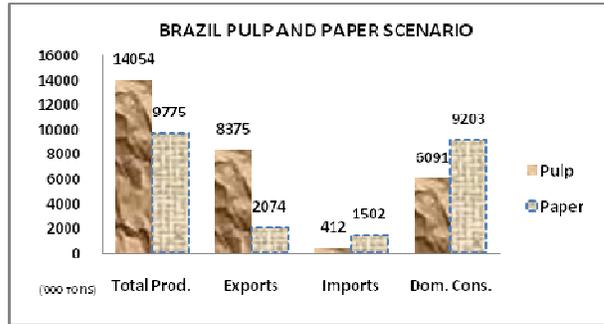
The various eucalyptus species - the varieties within the Globulus and Grandis families - impart different properties to paper and packaging; and, they are -

- i) hybridised by VCP to optimise growth and quality, and
- ii) blended to produce tailored pulps for specific end products.

VCP's relationship with client mills does not end with the delivery of the pulp. It often involves multidisciplinary projects which focus on productivity and innovation. They also help define the profitable fibre blend for an individual mill in view of product requirements and process characteristics.

For example, a pulpwood furnish can be engineered to impart softness, smoothness, strength and absorption to tissue grades or, to improve the opacity and strength of printings and writings. For speciality papers, such as thermal paper and filters, pulpwoods from different species and from different plantations are blended to achieve the formation, smoothness dimensional

stability, bulk and porosity required by the paper mills.



ENVIRONMENTAL ISSUES

Plantation forestry for the Pulp and Paper industry has not gone unopposed by the environmentalists.

The battle against the wood pulp industry has intensified in the Brazilian courts, especially in those states where eucalyptus plantations have expanded the most: Bahia and Espírito Santo in the east and Rio Grande do Sul in the south.

Rio Grande do Sul Environment Minister Carlos Brenner de Moraes defended the investments in tree plantations, which will reach 10.7 billion real (6.55 billion dollars) over the 2007-2011 period. "Every one million real represent 76 jobs," he argues.

CONCLUSION

The European Investment Bank and the World Bank have given full public support for foreign investment in Brazil's pulp and paper industry and cellulose processing plants.

Over the next ten years, the Brazilian pulp and paper will invest about \$ 20 billion aimed at increasing the forest base of 2.2 million hectares to 3.2 million hectares.

Also planned are the construction of new units and modernization of factories, which will raise the annual pulp production by 57% by 2020 from 14 million tons to 22 million metric tons, and similarly paper by 34%, increasing annual production from 9.5 million tons to 12.7 million tons.

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| QUOTABLE QUOTE | The most wasted day in our life is the day we have not laughed – Charlie Chaplin |
| SCRABBLE | What does D P I stand for ? (Hint : Relates to print sharpness) First correct answer will win a Parker Vector Roller Pen (Maximum two prizes for one person in a year). Post / Fax / Email your answers to EDITOR-W&F SNIPPETS by 20 th March, 2011. |
| WINNER FEB'11 | Mr. Prasad Reddy BVVSV, Central laboratory, ITC Ltd PSPD, SARAPAKA, Khammam Dist, A.P Correct Answer: C S R : CORPORATE SOCIAL RESPONSIBILITY |
| ?QUIZ | Which polymeric wet-end sizing chemicals has a lower 'sizing threshold' limit. (a) ASA (b) AKD Post / Fax / Email your answers to EDITOR-W&F SNIPPETS by 20th March, 2011. |
| WINNER FEB'11 | Mr. A.Bhaskar Rao , AGM (Paper), Emami Paper Mills Limited, Balgopalpur, Post: Rasulpur, Dist: Balasore-756020 Quiz: Which among these are titrants used in polyelectrolyte titrations for charge measurement in a papermaking stock? (a) Polydadmac (b) Pes-Na (c) Potassium Permanganate (d) KPVS Correct Answer: (a) Polydadmac - cationic titrant (d) KPVS / (b) PES-Na – anionic titrants |
| Prizes | 1. Best / first correct answer received will win one-year subscription to IPPTA Journal (Maximum one prize for one person in a year). 2. Best of the 12 monthly winners in a year, will win one-year subscription to Paper 360^o Magazine, USA. |

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