



Enthusiasm of Pulp Producers: Green Economy Project

Brief Overview of Frontline Research

This report vol. 4 covers the supply chain from the production of pulp in Brazil to the making of everyday paper tissues, by a nonfiction writer, Kazuma Yamane.

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Front-line Report: Kazuma Yamane (Nonfiction writer and Dokkyo University Department of Economics Specially-Appointed professor)

Visited Brazil for the first time in 1972, and has done on-site research in Brazil about 20 times. In 1996 sponsored the Amazon's first international environmental symposium as representative of Future Association Amazon, an NGO. In 1997, he received an award for distinguished service from the Para state legislature. Brazil and the Amazon are the starting point of his outlook on life and his environmental awareness.

* Photographs, except for photograph of portrait of Yamane and photographs of tissue paper boxes, were taken by Kazuma Yamane.



About CENIBRA

CENIBRA was established on September 13, 1973, as a Japan–Brazil joint venture project after a decision by the Japanese Cabinet. Japan Brazil paper and pulp Resources Development Co., Ltd. (JBP), which was a joint venture by large Japanese pulp and paper companies, OECF, and ITOCHU Corporation, owned 48.5% of CENIBRA. The other 51.5% was owned by Brazil's Companhia Vale do Rio Doce (currently Vale S.A.). CENIBRA began operations in March 1977. Subsequently, in 2001 JBP acquired shares in CENIBRA that were owned by Companhia Vale do Rio Doce, and today CENIBRA is operated with 100% Japanese capital. JBP is owned by 14 companies, including Ojipaper (48.98%) and ITOCHU (32.11%) (as of the end of June 2012). It is the seventh largest hardwood market pulp producer in the world, and sales in fiscal 2011 were \$728 million.



Islands of Green Amidst Treeless hills

Tissue paper is a product that we use everyday. I heard that pulp from CENIBRA, in Brazil, is the raw material for the well-known Nepia brand of tissue paper. To see the site where the pulp is produced, I traveled to Brazil to visit Ipatinga City in the state of Minas Gerais.

Ipatinga, a small city with a population of about 250,000 people, is located about 700 kilometers northeast of São paulo.

This was my 20th trip to Brazil since 1972, but my first visit to Minas Gerais. As the plane from Sao paulo entered Minas Gerais, I began to see a line of low, gently rolling mountains. On the surface of the mountains, I was surprised at the conspicuous reddish-brown clear areas. Through the window of the plane, I could see the western edge of the Atlantic Rainforest. This rainforest used to cover 1.3 million square kilometers, or about 3.3 times the size of Japan, but 93% of the rainforest has been lost, and today only 91,000 square kilometers remains.

However, as the plane approached Ipatinga, I began to see many dark green areas in the Rio Doce river basin's barren mountain surfaces and small flat spaces. I later learned that these were CENIBRA plantations.

15 Million Seedlings per Year



In one day, 50,000 eucalyptus logs are fed into the production line. That means that large quantities of eucalyptus seedlings are necessary for planting, more than 50,000 a day, and CENIBRA uses its own nursery to produce 100% of the seedlings it needs. At the nursery, which is like a large test plantation, highly experienced Japanese specialists from Oji Paper, which is the lead shareholder, provide enthusiastic guidance about seedling development. To select rootstock that are highly resistant to aridity, changes in temperature, insect pests, and wind; matches the soil; and will grow well, 10,000 seed plants are created each year by crossbreeding rootstock (100 x 100). After trial planting, the best rootstocks are selected.



The rootstocks selected in this way are known as clones, and the branches and leaves of the rootstocks (5 to 8 cm scions) are cut and placed in a small pot, in which they grow into 20– 30 cm seedlings in 70 to 80 days. If all goes well, they are then sent on to the plantation site. At the nursery, 15 million seedlings are produced in a year. The cost competitiveness of pulp producers is said to be based on the growth of the eucalyptus trees, which are the raw material. CENIBRA continually repeats the process of seed improvement, patiently taking time and selecting the best seed plants. Outstanding cost competitiveness is maintained by painstakingly producing each individual seed stock in-house.

Tree planting / Felling

Logs That Can Be Harvested in 7 Years



The plantations of CENIBRA are interspersed among an area the size of the Kanto Plain, or about 17,000 square kilometers. Those were the green areas I saw out of the plane window when we were nearing Ipatinga. CENIBRA's holdings total 255,000 hectares, about the size of Kanagawa Prefecture.

I was able to visit one of the plantations. First, the employees open holes in the surface soil with a digging machine. Then other employees use a metal tube to plant the seedlings in the soil, and finally employees with a water supply hose sprinkle water on the seedlings and apply fertilizer.



Each hectare of eucalyptus trees grown in this way yields 41 cubic meters of wood a year, with harvesting conducted after seven years. The speed of this growth supports the international competitiveness of CENIBRA. At the harvest site, the arm of the harvester grabs and cuts the eucalyptus trees, which have grown to about 30 meters. It takes about 20 seconds to harvest one tree and turn it into a log. The efficiency of the process was hard to believe.

Forest Certification and 70 Awards



Near the plantation and the harvesting area, there is a temporary tent that is used for the workers to take breaks and have lunch. I was surprised at the thorough approach to appropriate working conditions. The reason is that the industrial use of forest resources entails the strict observance of such things as conservation of the natural environment, maintenance of biodiversity, and contributions to the workers and the local community. We have reached an age in which the only companies that survive will be those that market products that have been "certified" as clearing a management process that meets these social requirements.

In 2005, CENIBRA became the first company to simultaneously receive FSC (Forest Stewardship Council) forest certification and CERFLOR (Sistema Brasileiro de Certificação Florestal) forest certification. In total, the company has received 3,828 environmental licenses.

CENIBRA's eucalyptus plantations are not connected in any way to the harvesting of primary forests. Out of CENIBRA's holdings, an area of 103,000 hectares is sustaining the ecosystem as permanent forest reserve or legal forest reserve. These reserves account for about 40% of the forest holdings. Just since 2000, CENIBRA has received 70 awards, which is an indication of their passionate commitment to the environment.

Pulp production

Rigorous Approach to Saving Energy and Handling Wastewater and Odors



In the huge log yard at the pulp mill, there were mountains of eucalyptus logs brought in by truck and rail. Pulp is shipped in the form of sheets that look much like dried sake lees that are used as a raw material for amazake. The paper mills that buy the pulp dissolve the boards with water and use the fiber as raw material to make paper for specific needs, such as for tissues or printing.

Pulp plants require large quantities of water and fuel. The production process also generates substantial amounts of odors and wastewater. CENIBRA conducts rigorous daily monitoring of odors outside the plant grounds and of the degree of contamination of wastewater. The environmental facilities here are top level. In addition, the bark from the logs is used in biomass electric power generation, and the lignin, an impurity that is generated during the cooking process, is used as fuel for in-house power generation. In these ways, a rigorous approach to energy conservation is implemented.



The amount of water consumed in the production process has been reduced to one-fifteenth the level in 1977, and the amount of bleaching agent has been reduced 32% in comparison with 2006 (available chlorine equivalent units). The amount of electricity purchased has declined 29%, and boiler fuel is down 82% (both in comparison with 2011). Everywhere I looked, I saw this type of innovation and effort in the areas of production and the environment. This progress is the fruit of daily efforts to improve operations and cut costs, on a base of papermaking technology from Japan, which is at the world's highest level. ISO 9001 and ISO 14001 certifications have been acquired.

Shipping

Specialized Shipping Terminal for Pulp Export (5.5 Million Tons a Year)



Annual sales of this pulp total 1.2 million tons, with 90 customers in 25 countries. Sales to the domestic Brazilian market are handled directly by CENIBRA (5%), while exports are handled by ITOCHU Corporation. Exports to Asia, including Japan, are increasing, and now account for 48% of total exports. Exports to overseas destinations are shipped from Portocel, which is on the Atlantic Coast about 375 kilometers away from the mill. Each day, about 3,200 tons are carried to Portocel via the Vitoria a Minas Railway.

Portocel (full company name Terminal Especializado de Barra do Riacho S.A.), is owned 49% by CENIBRA and 51% by Fibria S.A. (Brazilian pulp maker). The world's largest specialized pulp terminal, it exported 5.5 million tons of pulp in 2011. Brazil is in the process of establishing its infrastructure. In this setting, the fact that CENIBRA had, in advance, secured a rail transport route from the mill to a port, and owned a shipping port, was one of the sources of CENIBRA's cost competitiveness.

Processing

400 Million Boxes of Tissue Paper Annually



After I came back to Japan, I visited the Oji Nepia Nagoya Plant (Kasugai City, Aichi Prefecture), which is a major user of CENIBRA pulp and is the maker of Nepia brand tissue paper.

When I observed the final production line of the Nagoya Plant, which has an area equivalent to about two Tokyo Domes, I was overwhelmed by the scene of high-speed tissue packaging. The production volume reaches 400 million boxes a year.

The process of making tissue paper uses only one gram of pulp fiber per liter of water, to realize the soft texture that is easy on the skin. However, the ultra-thin tissue has two-ply construction, with the side that touches the skin using soft fibers and the back side using slightly stiffer fibers for support. The fibers that are used on the easy-on-the-skin portion are made from CENIBRA pulp from Brazil. The CENIBRA pulp is produced with 100% plantation trees, and the raw material eucalyptus trees are produced and managed by the company from the individual seedling stage. Today, when environmental problems are the focus of attention, this traceability gives consumers a sense of security.

In harmony with local communities



Moving Ahead in Tandem with Local Communities and Farmers

CENIBRA is moving ahead with contracts under which it consigns the plantations to local farmers and then purchases the logs that they cultivate. Many of the farming families operate pastureland, but the eucalyptus plantations turn barren areas into green areas, and the income is more than from farming, so it is a very attractive business for the farming households. The contract farmer that I visited was satisfied with the stable income from eucalyptus plantations. The "contract plantations," which began in 1985, already number 1,200, with total plantation area of 25,000 hectares. This is a new business model that helps the environment through the greening of barren areas and also reduces plantation costs for CENIBRA.

Initiatives targeting biodiversity



Conservation and Breeding of Rare Endangered Species

Over many years, much forest area has been lost, and CENIBRA is working to restore natural forests. In an area totaling 300 hectares that constitute natural forest, the company is planting 40 varieties of tree seedlings, a total of 70,000 seedlings a year.

A representative example of these efforts to sustain and restore biodiversity is the Reserva Particular do Patrimônio Natural (RPPN) Macedonia Farm. I wanted to visit when I heard that endangered birds are protected and bred here.

The forests in this area are the habitat of a pheasant family bird with the Brazilian name mutum (a type of curassow). The mutum habitat here is the only one in the Americas, so there are very few people in Japan who know of it. When I first saw it, I was impressed with the black, rather large bird that flew slowly and walked like a chicken. The conservation, breeding, and release activities, are, in the final analysis, Brazil's version of the Japanese programs for the crested ibis and white stork. It was 21 years ago that CENIBRA, with partners Crax NPO and Crax Internacional, began working to prevent the extinction of these birds with the conservation, breeding, and release project.

The base for those activities is in the forest. There are seven endangered bird species being raised in cages, awaiting release, including the mutum and the Black-fronted Piping Guan. I received a several-hour presentation from a CENIBRA team, and I was overwhelmed with their enthusiasm. As a result of continued breeding and release, 20% of the world's mutum are on the Macedonia Farm. The curassow have been around since 4,000 to 5,000 years ago, and they are considered to be something like the "coelacanth" of birds. As a result, CENIBRA's enthusiastic activities are well-known in Brazil.

Activities to conserve and breed rare endangered species have a significant educational effect. At the Macedonia Farm, they are also working to welcome ordinary environmental visitors (6,000 a year) and offer school teacher training (1,760 people). The public school teachers who have received training here have already gone on to teach 220,000 students. I admired the manner in which the program to raise local environmental awareness has been enriched.



Concluding the Observation



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Tissue paper, an everyday product that I have always used without really thinking about it, is made from raw materials that are obtained through rigorous consideration for the environment and hard work. It was at just this point when the theme of the United Nations Conference on Sustainable Development, known as Rio +20, was released: "Green Economy." The eco business advanced by CENIBRA is certainly a desirable "green economy," I think. CENIBRA's implementation of environmental measures should be studied by many other companies.