Venezuela: a growing power in pulp, paper, and plantation forestry

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With the largest contiguous block of Caribbean pine plantations in the world and plans for a five-fold increase in pulp production by the year 2000, Venezuela is becoming a major player in the forest industry in South America.

The pulp and paper industry has seen dramatic changes take place in recent years with the advent of new pulping processes, industrial expansions, and new sources of raw material. This has enhanced the use of timbers grown in tropical environments. Major new pulping capacity is being installed in tropical countries, most notably Brazil and Indonesia. Of major importance is the increased emphasis on plantation forestry in the tropics and subtropics, particularly in South America, where technological developments have enhanced the fast growth and better utilization of wood (*1*) and the production of wood with wide utility.

One of the key reasons for the movement of forest production toward the tropics is found in plantation forestry. The ability to grow more wood faster on shorter rotations than in the temperate regions of the world translates into reduced raw material costs. This, then, reduces the pressures to use the heterogeneous wood found in tropical rain forests.

Although conifer plantations in temperate countries still outnumber tropical pine plantations, tropical pine growth rates are, overall, considerably higher than for their temperate counterparts. Tropical pines, once considered to have inferior wood properties for many paper products, are becoming an important raw material for pulp and paper. They can compete in world markets as well as supply local markets, which once relied on imported pulp and paper, due to technological improvements in manufacture and the production of more desirable and highly uniform wood in plantations.

Outside of the tropics and subtropics, investments in short-fiber plantation forestry are, at best, minimal. Not only are wood yields generally lower than those of temperate conifer plantations, but those lower yields also are achieved at higher costs. Not so for fast-growing tropical hardwoods, which produce much higher yields than tropical pines under intensive management. At the same time, mixed temperate hardwood pulps, such as those produced in the southeastern United States, are losing their competitive advantage, compared with the uniform tropical hardwood plantation pulps, in both quality and raw material availability.

The tropical consumer markets for imported pulp and paper from temperate industries are being eroded by local production, and the tropical forest industry is competing successfully in world pulp and paper markets (*2*). Some tropical countries have become pulp and paper powers through aggressive incentive programs to private industry. Notable is the incentive program of the government of Brazil, which began in 1967 and converted that country from a net importer of pulp and paper into an exporter within 10 years (*3*).

Although Brazil, Chile, Mexico, and Argentina currently account for over 92% of Latin American pulp production (*2*), Venezuela has a growing pulp and paper industry and an impressive forestry potential. Traditionally based on bagasse fiber from sugarcane, recycled paper, and imported pulp, the Venezuelan paper industry is rapidly developing a wood-based pulp industry, and there are plans for major expansions in the near future.

Extensive land areas are available to grow trees in natural savannas, open woodlands, and scrub brushlands which have traditionally been under-utilized, mainly for extensive cattle grazing, or have no productive use at all. Many of these have been found suitable for intensive forest production. Relatively unrecognized for its forestry potential, Venezuela has been developing a solid plantation forestry base in recent years, both with long-fiber and short-fiber species, and both government and private industry are participating in the forestry effort.

The Venezuelan pulp and paper industry

National production of paper and paper products reached a high of 708,000 metric tons/year in 1988, compared with a national consumption of 955,000 metric tons/year during the same period (*4*). Production declined sharply in 1989, to 525,000 metric tons/year, due to recessionary pressures in the national economy coupled with the elimination of the preferential dollar exchange rate for industrial imports and exports. However, the percentage of national production rose from 75% to 80% of national consumption during the same period because of a decrease in imports.

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I. Installed and planned pulp capacity in Venezuela (metric tons/year)

Company	Installed capacity[a]	Future capacity[b]	Type of pulp	Raw material
C. A. Fabrica de Papel de Maracay	12,000	24,000	TMP	Pine
C. A. Venezolana de Pulpa y Papel	90,000		Brown kraft	Bagasse
C. A. Venezolana de Pulpa y Papel		140,000	Bleached kraft	Bagasse
MOCARPEL, Cartón de Venezuela, S.A.	50,000	50,000	Brown kraft	Bagasse
MOCARPEL, Cartón de Venezuela, S.A.	15,000	15,000	Brown kraft	Pine
Papeles Venezolanos, C. A.	35,000	35,000	Bleached CTMP	Pine
CVG-Pulpa y Papel del Orinoco (1992)		200,000	Bleached CTMP	Pine
CVG-Pulpa y Papel del Orinoco (1994)		200,000	Bleached CTMP	Pine
CVG/industry feasibility study		300,000	Bleached kraft	Wood
Total	202,000	964,000		

[a]As of 1990.
[b]By the year 2000.

Production in 1990 is expected to recover and reach 686,000 metric tons/year (*5*).

The trend toward increased national production is expected to continue as the country recovers from the recession. By the year 2000, the production of paper and paper products is expected to increase to 1.6 million metric tons/year (*5*). As of 1990, Venezuela continues to be a net importer of paper and paper products, but by 1993 it will become a net exporter. By the year 2000, exports will nearly double imports, with net exports predicted to surpass 200,000 metric tons/year (*5*).

Installed pulp production in existing companies as of December, 1990 was 202,000 metric tons/year, but future expansions within these same companies have been announced that will increase pulp production in both kraft and mechanical pulps to 264,000 metric tons/year during this decade (**Table I**).

The major imported paper in Venezuela is newsprint because there is currently no national production of this product; this will change soon. In 1988, a new company, Pulpa y Papel del Orinoco, was created with the objective to produce newsprint. Shareholders in this company are Bowater Inc. (U.S.A.), Abitibi-Price Inc. (Canada), CVG/Fondo de Inversiones de Venezuela, and Gruprensa (Venezuela). Initial plans have been announced for the production of 200,000 metric tons/year of newsprint in 1992, to be made from Caribbean pine, with an expansion to 400,000 metric tons/year in 1994 (*6*). However, ground had not been broken for the initial construction as of December, 1990.

The Venezuelan Corp. for the Guayana (CVG) has also announced plans for a 300,000-metric-ton/year kraft pulp mill to start up by the year 2000, which will also use Caribbean pine as its raw material (*6*). In 1989, a letter of intent was signed between the CVG and the four major Venezuelan pulp and paper producers to establish the terms of reference for a study of the construction and operation of a 300,000-metric-ton/year bleached kraft pulp mill based on wood fiber.

The total Venezuelan pulp mill capacity of 202,000 metric tons/year in 1990 will be expanded to 964,000 metric tons/year by the year 2000 (Table I).

Plantation forestry in Venezuela

The greatest extensions of Caribbean pine plantations in the world exist in eastern Venezuela. The CVG is a government company responsible for the development of the Guayana region of Venezuela, which encompasses more than half of the national territory. CVG-PROFORCA (Productos Forestales de Oriente, C.A.) is a profit-oriented subsidiary of the CVG which was created in 1988 to integrate the management of the government-held plantations in the states of Monagas and Anzoategui and to promote the commercialization and marketing of existing plantations of pine timber and to expand the planted area.

PROFORCA is unique in the tropics in that it machine plants all of its pines "bare root" in a hostile environment with less than 1000 mm of annual rainfall and poor sandy

1. "Bare root" seedlings of Caribbean pine are grown large and husky in the four PROFORCA forest tree nurseries in eastern Venezuela.



soils (**Fig. 1**). The planting is done during the rainy season of June and July but, during the dry season of December through May, rainfall is typically less than 40 mm/month for up to four consecutive months. Pine planting in this region began in 1969 and, as of 1988, a total of 257,000 ha had been established (*7*). In 1989, 34,000 ha were planted, and an additional 36,000 ha were planted in 1990 (**Fig. 2**) for a total of 327,000 ha. Future goals of PROFORCA are to plant between 30,000 ha and 36,000 ha of Caribbean pine annually, supported by continuing loans from the InterAmerican Development Bank.

Growth rates for the initial pine plantations have not been spectacular, with mean annual increments underbark for pulpwood of just over 6 m^3/ha/year for plantations around 15 years of age. However, PROFORCA has become quite aggressive and, using greatly improved forestry, has instituted efficient management procedures and research support to increase the growth of future plantations significantly. Key among the improved forest management procedures are: better site selection, intensive site preparation, strict control of spacing (planting 1350 trees/ha), and increased initial survival and growth through improved management of bare-root nurseries, clay dipping of seedling roots, and strict control of the planting operations.

The early control of leaf-cutting ants, a major defoliating pest, is an absolute necessity. Because of these improvements, the mean annual increment of new plantations established on the better sites is estimated by some to be 12–15 m^3/ha/year. When seed from the local land race of pine becomes available, an additional yield improvement of 15–30% will be obtained.

PROFORCA is actively engaged in harvesting and marketing of its pine resources and now owns two saw mills with a combined production capacity of 40,000 m^3/year/shift and a wood pressure treatment plant, all of which use plantation pines as the raw material (**Fig. 3**). A major market for pulpwood will be the recently created company, Pulpa y Papel del Orinoco, when it comes on-stream producing chemithermomechanical pulp (CTMP) for newsprint. Additionally, the company sells stumpage from its plantations to several national companies which manufacture packaging papers, tissue papers, and particle board.

CONARE (Corporacion Nacional de Reforestacion) is another government corporation which is responsible for reforestation projects on private and public lands in other parts of the country. CONARE has been successful in implementing tropical pine plantation projects of over 10,000 ha on some very inhospitable and marginal sites. Notable are the plantations of Nirgua in Yaracuy State. Begun in 1973 on extremely poor, gravelly mountain sites, these plantations, which cover approximately 3000 ha, are now being harvested for pulpwood.

Private industry has likewise been active in plantations in Venezuela. Besides PROFORCA, other companies are planting pines in the Monagas and Anzoategui States. Principal among these are Corporation Forestal Guayamure C. A. and Corporacion Forestal Imataca C. A., both with lands contiguous to the plantations of PROFORCA. These companies are affiliated with C. A. Fabrica de Papel

2. PROFORCA planted 36,000 ha of "bare root" Caribbean pine seedlings in 1990. Four planting machines can be pulled by one wheel tractor in the open savannah with good site preparation.



3. Caribbean pine plantations over 15 years old are being harvested for sawlogs and pulpwood. These logs will go to the PROFORCA saw mill at Uverito.



4. This plantation of 2.5-year-old *Gmelina arborea* is growing well on lands of Smurfit Carton de Venezuela in western Venezuela. The trees will be harvested for pulpwood in their fifth or sixth year.



de Maracay, which is using the pine stumpage as raw material for its pulp mill.

Although Venezuela does not have plantation incentive programs comparable to those of Brazil or Chile, there has been an incentive for foreign investment through debt-equity swaps which have been generous in recent years. An attraction to forest investment is the availability of large blocks of land in natural savannah or brushland in the Orinoco River Basin which have great potential for plantation forestry. The great majority of these lands, which are flat to gently rolling and lend themselves to mechanization, occur in the states of Monagas, Anzoategui, Guarico, Cojedes, Portuguesa, and Barinas to the north, and Bolivar State to the south of the Orinoco River. Land prices for plantation forestry in Venezuela are still among the lowest in Latin America.

The primary international companies actively engaged in plantation forestry in Venezuela are Smurfit Carton de Venezuela S. A., a subsidiary of the Jefferson Smurfit Group, Dublin, Ireland, and Papeles Venezolanos C. A., a subsidiary of Kruger Pulp & Paper Ltd., Montreal, Que., Canada.

Smurfit Carton de Venezuela began an active reforestation program in 1980 to supply its kraft pulp mill at San Felipe, Yaracuy State, and, by 1988, had planted 4000 ha of eucalypts, Gmelina, and Caribbean pine in western Venezuela in the states of Portuguesa and Lara (*8*) (**Fig. 4**). This planting program continues to expand and is supported by an aggressive forest research organization that has facilitated excellent yields of quality wood.

Papeles Venezolanos, C. A., through its subsidiary, Desarrollos Forestales San Carlos, S. A., began an active planting program in 1988 and planted 1100 ha of Caribbean pine and eucalypts in 1990. These plantations will produce pulpwood as raw material to supply the new CTMP mill at its tissue manufacturing facility in Guacara, near Valencia. That CTMP mill came on-stream during 1990.

Several thousand hectares of plantations of Gmelina and teak have been established in Barinas State, mostly on lands within government forest reserves. Some of the older teak plantations, between 15 and 20 years of age, are among the best to be found in the Americas. Additional plantations of other species of conifers and hardwoods have been established in the Andean highlands, but these are primarily for watershed protection and other nonindustrial applications.

At the beginning of 1990, there was a total of 330,000 ha of forest plantations in Venezuela. By the year 2000, the area in forest plantations is expected to reach 700,000 ha (*5*).

One deterrent to large-scale industrial forestry in the central and western savannas has been the lack of a transportation network to the Caribbean ports, but this is being remedied by major highway arteries which connect major inland cities to the north coast and a standard gauge rail system which is being constructed nationwide and which will eventually connect the Orinoco/Meta savannah region with the northern port cities. Railroads now reach south from Puerto Cabello on the Caribbean Sea to Acarigua in Portuguesa State and from Barcelona, also a port city, to El Tigre in Anzoategui State. An east-west rail line is being proposed across the

savannah through Guarico State, south of the coastal mountains, but its exact location has not yet been defined.

Educational support

National training in pulp and paper sciences, wood technology, and forest management is well established in Venezuela.

The School of Forest Resources at the University of the Andes, at Merida, has excellent undergraduate curricula in forest management and wood technology and also has a center for graduate studies. Most of the professors have received advanced degrees, many of them abroad in diverse countries, and many have received their doctoral degrees.

The Technical Association of the Venezuelan Pulp and Paper Industry has excellent laboratories in Merida associated with the University of the Andes and is supported by all of the major national pulp and paper companies.

Another forestry faculty was created in 1989 at the University of Guayana near Puerto Ordaz. Although this program is new, it is expected to graduate foresters specially trained in industrial forest management due to the proximity of the extensive pine plantations in the nearby states of Monagas and Anzoategui.

These and other national institutions offer quality assistance in forestry-related fields including soils and soil fertility, entomology, pathology, and other natural sciences.

The verdict

Venezuela possesses investment opportunities for wood-based industries. National interest in plantation forestry is at an all-time high, and Venezuela has a tradition of welcoming foreign investors. Although still not recognized as an export force in international pulp and paper commerce, with a 230% increase in paper production and a five-fold increase in pulp production by the year 2000, Venezuela is definitely a country to be watched closely.□

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