CHINA AND FOREST TRADE IN THE ASIA-PACIFIC REGION:

IMPLICATIONS FOR FORESTS AND LIVELIHOODS

中国与亚太地区国家林产品贸易研究

CENTRAL PLANS AND GLOBAL EXPORTS:

TRACKING VIETNAM'S FORESTRY COMMODITY CHAINS AND EXPORT LINKS TO CHINA

Keith Barney

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See also http://www.yorku.ca/geograph/GraduateProgrammes/Graduate%20Students/PHD/barney.html

OVERVIEW OF VIETNAM'S FOREST SECTOR

After suffering forest cover declines of 185,000 ha per year from 1976 until 1990, Vietnam is attempting to stabilize deforestation trends, restructure the forest industry and the land tenure system, and move aggressively into fast-growing plantations. Reforestation of degraded forest land, natural regeneration of logged forest areas and more effective forest protection are key components of the Five Million Hectare Reforestation Plan (5MHRP), or Program 661, initiated in 1998. The Forestry Sector Development Strategy (FSDS) and the 5MHRP represent the cornerstones of current Vietnamese forest policy. Rather than representing static policies, however, the FSDS and the 5MHRP are best viewed as policies in progress, likely to be modified and altered as the forest sector and bureaucracy in Vietnam itself undergo institutional reform and become increasingly oriented away from central bureaucratic planning, towards market-based approaches.

There are a number of overarching developments which observers have noted in the last decade of forestry in Vietnam. First, although the striking deforestation rates evident from 1980 until 95[1] appear to have stabilized – with an export ban on logs and sawn wood enacted in 1992 and an 88-percent reduction in harvesting quotas (Poffenberger 1998) – illegal logging is still seen as a serious, but undocumented, threat. Second, and in parallel with neighbouring countries in the region, Vietnam is proceeding with a broad land reform program, which focuses on forest zoning and land allocation, and decentralization of forest management to local users. Tied to this process in Vietnam is a broader restructuring of the largely insolvent State Forest Enterprises. Third, ambitious reforestation programs in Vietnam, based on nationally-set tree planting and wood sector development targets under the 5MHRP are proceeding, although it appears that these targets will require some adjustment to better reflect socio-economic realities. The FSC and the Tropical Forest Trust are involved in Vietnam, attempting to identify and build potential sites for certified forestry, including those supplying Vietnam's furniture enterprises (for example the Danish furniture company Scancom). Fourth, rapid expansion of a number of regionally and globally competitive wood industries, including wood-chip production and furniture manufacturing, is currently taking place. And lastly, while China has become a major importer of forest products from many Southeast Asian countries, in the case of Vietnam, trade flows to China, remain largely undocumented. Therefore, while the effects of Chinese economic growth may indeed be impacting Vietnam's forest resources, it is also important not to assume this relationship. Indeed, in the case of Vietnam it may be more important to maintain the focus on Vietnam's log and sawntimber imports from Laos and Cambodia, rather than shifting to Chinese imports from Vietnam. The IUCN (2001:95) notes that in the case of Vietnam:

> "There has also not been any thorough research on the nature of illegal harvesting and trade of forest resources. The urgency of this research is illustrated by the estimation that illegally obtained volumes exceed legally obtained amounts…reports consulted speak unanimously of continued unregulated and ad hoc extraction from natural forests and the export of large volumes of timber outside the regulatory process."

[1] Nguyen (2003) notes that in the early 1990s, between 2 and 4.5 million m^3 of round wood was being removed from Vietnam's natural forest areas per year.

This report begins by outlining the major ongoing changes in forestland management and plantation forestry development in Vietnam and then relates these policy shifts to industrial development trends in the nation's various wood-manufacturing sectors. The present and potential role of China as an importer of Vietnamese wood products will be woven into this description. As this study has focused largely on the fast-growing pulp and woodchip plantations, further research will be required to determine in more detail the impacts of Chinese importing patterns upon other forest products from Vietnam.

VIETNAM'S NATURAL FORESTS AND WOOD-PROCESSING SECTOR

ORGANIZATION AND CHARACTERISTICS OF THE FOREST ESTATE

Territory classified as forest covers 58 percent (19 million ha) of the national territory of Vietnam. The area actually considered as "forest" by the Vietnamese Government, however, accounts for 33.2 percent (approximately 10.9 million ha), with other estimates coming in somewhat lower at 28 percent (ADB 2000). The gap between official figures for "forest", and the reality on the ground, is attributed to shrubland, grassland and bare rock (Gilmour et al. 2000).

There are 2 broad agencies responsible for forests in Vietnam: the Department of Forestry Development and the Department of Forest Protection. Both of these units are under the purview of the Ministry of Agriculture and Rural Development (MARD) in Hanoi. The Ministry of Agriculture and Rural Development (MARD) serves as the administrative head for State Forest Enterprises, and is in charge of legal forest harvesting in what are classified as "Production Forests." There are also special management boards for nature reserves and watersheds (Vu and Warfvinge 2002).

Jurisdiction over the forest estate can be further classified along a number of lines. Vietnam's forests are currently organized into Special Use Forests (5.6 million ha), Protection Forests (1.5 million ha), and Production Forest (4 million ha). Only in Production Forests, logging (of natural forest or plantation) is officially permitted. The working goal of the 5MHRP is in turn to develop the country's plantation resources, so that by 2010, all natural forests will be closed to commercial logging activities (IUCN 2001).

In terms of quality of remaining forest cover, 'rich' or 'average' forest accounts for 1.4 million ha (13 percent of the country), with areas classified as 'exhausted', 'young' and 'non-volume' forests representing 6 million ha The total forest area may also be divided into natural forest (9.4 million ha) and plantation forest (1.5 million ha). It is particularly noteworthy that areas of Vietnam classified as bare and denuded land are substantial, at 8.3 million ha (25 percent of national territory; FSDS 2001). These denuded lands are concentrated in the northern upland areas of the country. As shown in Table 1, which outlines forest types by region, much of the remaining natural forest cover in Vietnam is concentrated in the four central highland provinces.

The current 5MHRP represents the successor to Program 327 (1992-1997), the first effort to develop industrial plantations, decentralize control over and reallocate benefit-sharing of forest resources in Vietnam

along the lines of the *Doi Moi* economic reforms. In assessing the outcomes of Program 327, Gilmour et al. (2000) wrote:

> "Most of the efforts [of Program 327] were focused on conventional plantation establishment using exotic species (mainly eucalypts and acacias) in order to increase the economic production from the land by "regreening the barren hills". The programme was not universally successful, and many of the funds were used to support inefficient state bureaucracies. However, valuable experiences were gained."

The current form of the 5MHRP also suffers to some extent from a general under-emphasis on sound market and institutional-stakeholder analysis. A key area for ongoing reform in Vietnam over the coming years will thus be to continue the shift away from centralized-style bureaucratic planning, and to move towards targeted forest sector strategies that build upon the potential role of households and local organizations in forest management and that are grounded in accurate national and regional market assessments. A key means through which such reform is taking place are the financial resources of donor-linked forestry support. The national umbrella institution currently coordinating the role of these external donors working in the area of environmental protection, rural livelihoods and forestry-based economic development is the 2001-initiated Forest Sector Support Program (FSSP). The sums and stakes involved are not insubstantial; Vietnam's forest sector development programme will attract US$200 million in international donor funding between 2006 and 2010 (forests.org 2005). Meanwhile, international support for the 5MHRP has been criticized for supporting the establishment of exotic plantations, as opposed to more fully backing natural forest management, as well for supporting centralized programs which do not truly involve local forest managers and communities.[2] The coming years will therefore be crucial for the future of forest management in Vietnam. Given the suggested scale of timber inflows from adjacent countries and Vietnam's booming forest product-manufacturing sector, this applies to Vietnam's neighbours as well.

STATISTICS ON NATURAL FOREST RESOURCES

Phan Trung (2002) has provided estimates of natural forest resources in Vietnam, although work previous to this dates back to the late 1980s. Phan Trung estimates the total volume of standing stem wood in Vietnam at approximately 525 million m^3, in 9.3 million ha of forested area, indicating an average of 56 m^3 per hectare.[3] Castren (1999) wrote that the only national inventory completed to date in Vietnam dated from the late 1980s, and provided information on stem volume only. As a result, data for the stocking and yield of natural forests in Vietnam remained "not accurate or consistent." The 1980s study estimated standing stock in the forests to be between 560-590 million m^3, with the average stocking at 62 m^3/ha (forested lands) or 30 m^3/ha (all forestland). Estimates of average productivity in natural forests ranged from 1 to 3 m^3/ha/year, and were broken down by Castren into the following categories:

[2] For example, the third sentence in the Vietnam Forestry Development Strategy 2001-2010 reads: "People's livelihood in mountainous and remote areas is still difficult as characterized by low awareness, backward farming systems and shifting cultivation tradition. This is one of the main reasons attributed to forest resource depletion causing adverse impacts on country's socio-economy as well as environment."

[3] It is unclear upon which survey results Phan Trung (2002) draws upon, although the forest cover and standing wood volume information is suggested as dating from 1995.

- special and protection natural forest: 1.0 m^3/ha
- production natural forest (production): 1.5 m^3/ha
- plantations: 6.0 m^3/ha (over area of 0.6 million ha)
- trees on non-forestland

The low yields that Castren estimated for plantation production in Vietnam are notable; an average of 6 m^3/hectare/year. Table 2 below shows available forest and plantation area data broken down by province, as prepared by the Department of Planning and Projection, MARD in 2002 (data as of December 1999, no information on standing volume or yields appears to be available). No further detailed inventory data was uncovered in this research.

LEGAL CUTTING LIMITS AND FOREST HARVESTING IN VIETNAM

Vietnam is one of a number of countries in the Asia-Pacific to have imposed partial logging bans in recent years. Vietnam's ban was enacted in 1997, which halted logging by the state forest enterprises (SFEs) in 4.8 million hectares of natural forest (Waggener 2001). Harvesting was also banned in special-use forests and watershed forests. Limited cutting rights remained for 105 of the 241 SFEs, however, a new annual allowable cut (AAC) was set in 1999 at 300,000 cubic meters per year (ibid.). The new AAC represents a halving of the 1997 official forest harvest. Legal harvesting no longer occurs in any remaining natural forests situated in the north of the country, in the southeast Mekong delta, or the Red River delta (Brown and Durst, 2003).

An informant from Birdlife International in Hanoi provided a useful outline of the current situation of forest harvesting in Vietnam, dividing activities according to five broad categories, as defined in Box 1 below.

Box 1 – 'Ideal Types' of Forest Harvesting in Vietnam

A. Small-Scale "Illegal" Logging involving local people for local end uses: This includes logging for firewood, construction materials etc., with some higher value-added materials included.

B. Small-Scale Legal Logging, including social forestry and community forestry. This is largely concentrated in northern Vietnam, where local demand outweighs supply for timber products. The impacts of this form of logging are rather benign, although in some areas they may be more significant.

C. Commercial Legal Logging: Legal harvesting of forests has been closed since 1997 due to the logging ban, although commercial harvesting does continue in certain zones. Some State Forest Enterprises (SFEs) have been allowed to continue with commercial extraction, largely in the central highland areas. In some provinces, such as Ga Lai, Kontum, Quang Nam and Quang Binh, the impacts of this form of harvesting are significant. General opinion, however, holds that this is largely a sustainable sector. In theory, there are logging quotas, management standards and 25-year cutting cycles. Many if not most SFEs, however, are insolvent, which provides incentives for SFEs to harvest above allocated quotas.

D. Commercial Illegal Logging: Industrial-scale logging being undertaken without documentation and outside of the legal prescriptions for forest harvesting management. At times, individuals working in Forest Protection Units are involved. An additional source of commercial illegal logging involves organized work gangs removing timber resources without observation or detection. The scale of this form of logging is hard to determine; however, perhaps 5 to10 percent of protected areas are affected.

E. Upland Forest Clearing for Cash Cropping: This type of logging is largely an issue in the central highlands, involving global commodities including coffee, cashew nuts and tea. In the early 1990s, people were encouraged to migrate into upland areas in the development of 'New Economic Zones'. People were also resettled from the Red River Delta, particularly as sources of labour for large-scale enterprises (including coffee and tea); however, a vast spontaneous migration of people also occurred at this time. This trend has likely slowed significantly in recent years, in part due to a drop in key agricultural commodity prices such as coffee.

Indeed, forest harvesting occurs in Vietnam to a much greater extent than called for in the official harvest plans, through, for example, fuel wood harvests. Waggener (2001) estimates that the total current harvest in Vietnam for all categories is approximately 1.35 million m^3 of large diameter wood (over 30 cm) and 900,000 m^3 of smaller-dimension wood. In addition to the 300,000 m^3 of allowable cut in large diameter wood from natural forests, Waggener's estimates include 100,000 m^3 of non-licensed felling. The logging ban does not extend to plantation timber in Vietnam; and in 2001 this harvest was estimated at 700,000 m^3 (ibid.). Annual wood imports were estimated to be in the range of 300,000 m^3, although Waggener does suggest that provinces located next to the border zones with Laos and Cambodia would have direct relationships with suppliers from these countries and would be operating outside the purview of the central administration. Waggener (2001) writes:

> "Total demand is estimated to be over 4 million m^3, suggesting shortages of 1.5 to 2 million m^3 until 2005 when more plantation wood should be available."

It is somewhat unclear to what extent these domestic shortfalls are currently being met through unregulated imports from Laos and Cambodia, although various estimates are provided in Section 5 below.

STRUCTURE OF FOREST INDUSTRIES

The State Forest Enterprises are key institutions in Vietnam's forest industry. In the early 1990s, there were 412 SFEs, the majority responsible for a few hundred hectares, with each facing declining timber yields and profits as well as falling contributions to state budgets (Poffenberger 1998). 1991 was marked by an unprecedented shift away from centralized state forestry, in the formation of the first National Forest Policy,. Responsibility for silviculture and management of the SFEs has since been further devolved and split between the SFEs and the provincial and district administrations. The very largest SFEs control upwards of 10,000 ha each and have remained under a form of indirect central control through the state-owned forest company Vinafor. These larger SFEs have recently been grouped into 15 Forest Production Unions, each of which includes vertically integrated wood processing industries. The MARD maintains right of supervision and approval of silvicultural systems and provides technical assistance (Poffenberger 1998). An important thrust of current SFE reforms under Decision187 (which is also being promoted by multilateral and bilateral lenders) is the allocation of occupied productive forest land to the existing local land managers. Households are thus beginning to receive use rights over forests, technical assistance from the reformed state enterprises and credit from a new rural banking organization.

Reform of Vietnam's largely insolvent SFEs has been a priority for the Vietnamese Government for a number of years. Furthering and directing the progress of SFE reform is a key cross-cutting issue for both World Bank and Asian Development Bank loans to the forestry sector. Clarification of the respective roles of the SFEs and private sector initiatives in forestry development will be an important outcome to the interventions of these organizations (World Bank 2003).

WOOD-PROCESSING INDUSTRIES

The Ministry of Agriculture and Rural Development is also institutional overseer of between 1,200 (Viet Nam Economy 2005a) to 1,500 (USDA 2003) forest enterprises that specialize in wood processing and trading. The aggregate wood processing capacity of these units is estimated at 2.2 to 2.5 million m^3/year, with actual production suggested to be in the range of 55-60 percent of capacity (USDA 2003). Most of these state processing and trading enterprises are based in the Ho Chi Minh City (HCMC) area (30 percent) and the Red River Delta area (15 percent). The ratio of large-scale to small-scale industries (no definitions given) has been estimated at 1:4 (Viet Nam Economy 2005a). Reports suggest that between 75% (Viet Nam Economy 2005a) to 85% (Viet Nam Economy 2005b) of the timber for Vietnam's wood-processing and furnishing industry was based on imported supplies. This question of illegal supply sources for Vietnam's processing industry warrants a much higher degree of attention, given the suggested role that illegal timber imports from Cambodia and Laos have historically played in this sector (e.g. Global Witness 1999).

Woodchip Sector

Woodchip operations in Vietnam appear to be geared exclusively towards the export market, usually Japan, Korea or Taiwan. These operations involve foreign partners, most often in the form of joint venture arrangements with provincial forestry department partners. The latter are typically responsible for securing

plantation land for the joint venture or for handling the contracts for log supplies, gathering them from numerous small-scale growers. Research interviews (see below) suggest that in August 2003 there were six confirmed and operating wood chip mills along the Vietnamese coast (Vijachip Danang, Vijachip Vung An, QPFL, Cat Phu, Sanrimjohap, SFR); one which was no longer in operation (Vitaico-Haiphong); two wood chip mills in the planning stages (the domestic Vietnamese ventures Pisico and Vyfaco); one wood chip mill under construction (Vitaico-Hue); and one unconfirmed chipping operation (Vitaico-Vin Hung at Ba Ria/Vung Tau). Through the information gathered in interviews, the author arrived at an estimated annual current woodchip production total of 635,000 BDT's,[4] with near-term increases leading towards 745,000 BDTs annually. Importantly, for the first time, domestic Vietnamese entrepreneurs appear to be taking part in new capacity expansions.

Pulp and Paper Sector

In terms of the structure of the pulp and paper sector, the state-owned Vietnam Paper Corporation (Vinapimex) represents the major industrial player with a capacity of 171,000 tonnes per year through 20 subsidiaries (Paperloop.com 2002a). The pulp and paper sector as a whole produced an estimated 300,000 tonnes in 1999 (ADB, 2000). The largest Vinapimex operation is at Bai Bang near Hanoi (Bapaco pulp and paper mill), currently expanding capacity from 55,000 tonnes to 100,000 tonnes of paper, and from 48,000 to 61,000 tonnes of pulp. The longer range production targets for Bai Bang are reported to be 200,000 tonnes of paper, and 150,000 tonnes of pulp (Paperloop.com 2002a). Vinapimex also controls two other primary pulp mills in Vietnam, both located near HCMC: Tan Mai and Dong Nai. Together, these three mills account for 50 percent of Vietnamese production (ADB 2000). According to the ADB, the remainder of Vietnamese pulp and paper production is sourced from six other Vinapimex mills as well as 37 additional mills owned by the provinces or the private sector. The output from these smaller mills averages 1,000 tonnes of paper per annum, usually sourcing raw materials from bamboo for their predominantly kraft paper production (ADB 2000). The 2003 draft of the Vietnam Forestry Sector Development Strategy calls for an additional 18 pulp and paper projects to be developed in Vietnam, raising capacity in the sector to 5 million tonnes by 2010, although serious doubts remain as to how this will actually be achieved.

Vietnam's pulp and paper operations controlled through Vinapimex are supplied with logs through another sub-group of SFEs: State Raw Material Companies. A full listing of these raw material enterprises was not secured in the research; however, the largest plantation owner appears to be the South Raw Material Company – charged with supplying logs to pulp companies based in HCMC and Dong Nai Province (i.e. Dong Nai and Tan Mai) (Viet Nam News 2003) as well as for any future Kontum or Lam Dong pulp project [5] (for further information see the description of the South Raw Material Co. below). The primary state plantation enterprise in the north is Vin Phu Raw Material Company, with 70,000 ha of plantations and, according to author interviews, capable of supplying 300,000 Green Metric Tonnes (GMT) of pulp logs per year. According to Vinapimex Hanoi, Vin Phu currently supplies two thirds of Bai Bang's pulplog requirements as well as supplying some logs to the smaller Viet Tri pulp mill.

[4] BDT = Bone Dried Tonnes.

[5] Note: The Kontum pulp mill project has been placed on hold by the Vietnam government (Paperloop.com 2005). The Lam Dong pulp project near Dalat may be facing a similar fate, although at the time of writing this was unconfirmed.

Panel and Board Sector

The MARD's Forest Sector Development Strategy provides information on existing plywood, chipboard and fibreboard mills (MARD 2000), summarized below in Tables 4 and 5. FSDS planning targets for artificial board expansion is provided under Tables 6 and 7. The FSDS document states that medium-scale fiberboard factories with capacities of 30,000-55,000 m^3/year and smaller-scale particleboard factories with capacities of 15,000-20,000 m^3/year will be developed. By 2010, there are to be 21 particleboard factories with a total capacity of 538,000 m^3 of product per year and 10 fiberboard factories with a total capacity of 375,000 m^3 of product per year. The document also indicates that the particleboard industry will utilize 120,000 m^3/year of sugar cane residues in production.

In terms of actually existing panel and board factories, Viet Nam Economy (2004a) reported that in 2004 there were something less than 30 reconstituted MDF factories in Vietnam, many of them producing particleboard. MDF board manufacturers in Vietnam included "one producer in Quang Ninh Province (with capacity of 20,000 m^3 per year), one in Quang Tri Province (60,000 m^3), one in Nghe An Province (15,000 m^3) and another in Gia Lai Province (54,000 m^3). Demand is currently met with 200,000 m^3 of board imported each year."

Furniture Sector

A major success story in the Vietnam forest manufacturing in recent years has been the export-oriented furniture industry. Growth in this sector averaged an impressive 70% per year from 2000-2004, with sales turnover increasing from US$202 million in 1999 to US$1 billion in 2004 (Viet Nam Economy 2005). Sales have been projected to reach US$1.5 billion for the year 2005 (ibid.). Clusters of outdoor garden furniture exporters are forming in the Binh Dinh, Da Nang and the Central Highland regions. Indoor furniture and interior wood decoration enterprises are centered in HCMC, Hanoi, Binh Duong and Dong Nai (USDA 2001). In 2001, there were also approximately 60 foreign investment-based wood manufacturing operations in Vietnam, building upon the opening of investment regulations in wood processing. Countries which have been at the forefront of this move include Singapore, Taiwan, Malaysia, Norway, China and Sweden (USDA 2003). It is important to note that outdoor furniture manufacturing now accounts for approximately 90 percent of Vietnam's total wood product exports. Placing this trend in global perspective, Dossenbach (2003) writes:

> "Vietnam's furniture and woodworking industries have historically been relatively labor intensive and as a result have migrated to lower cost labor centers. With a minimum wage equal to approximately U.S. $35 per month (less than 18 cents per hour based on the typical work week), Vietnam ranks among the lowest industrial wage structures in the world with rates not seen in the United States since a few years before the Fair Labor Standards Act of 1938 when the minimum wage was set at 25 cents per hour.
>
> The infrastructure in the country is quite adequate to support the supply chains necessary for industrial growth and Vietnam has ready access to international shipping lines with nine ports and harbors on the Gulf of Tonkin and the South China Sea. This not only facilitates wood products exports but also imports of such materials as lumber, MDF, veneers, machinery and equipment needed to support a healthy and growing furniture and woodworking cluster."

PLANTATION POLICY AND RESOURCES

PLANTATION POLICY

Detailed and specific information on plantation policies and incentives under the 5MHRP was difficult to gather from the Ministry offices in Hanoi or from the companies visited. Most of what follows has been gleaned from the Forestry Sector Development Strategy (MARD 2000). This document summarizes forestry planning in Vietnam, but only on a very broad level. The FSDS unfortunately contains little specific information on exactly how reforestation goals will be achieved, or on the economic feasibility of linking the planned plantation programs to viable processing industries.

The overall goal of forestry development in Vietnam is to establish a national forest cover of 43-44 percent by 2010 (MARD 2000). In terms of plantation forests, the 2010 goal is to develop a supply base for a paper industry producing 1.5 million tonnes/annum and 1 million tonnes of artificial board/annum (MARD 2000). Pulp production is to be ramped up to 3.5 million tonnes, holding the potential for 1 million tonnes in annual pulp exports. To this end, large plantations of 'economic forest' are to be developed in Vietnam, including 1 million ha for paper materials, 0.4 million ha for artificial board, 0.2 million ha for furniture exports, and 1.2 million ha for special forest products (MARD 2000). The MARD is to coordinate with Vinapimex to establish plantation areas according to the manufacturing capacity development goals in each region of the country.

MARD (2000) also provides further information on where plantation forests for each industry will be developed (see Table 8, which includes both natural forests and planned plantations to supply the industry). For the paper sector, the FSDS document targets the northeast and central highland areas as key regional areas for plantations development, although there is no detailed explanation of the rationale for these decisions or on how plantation areas will be secured. The suggested plantation programs are to correspond and be coordinated with planned expansions in pulp and paper manufacturing capacity. Table 3 provides a listing of the government's plans for the expansion of existing mills and the establishment of greenfield mills.

In all discussion of Vietnamese plantation policies, it bears reiterating that few outside observers consider industrial policies of the 5MHRP as fully implementable in their current form. An interview with a representative of the World Bank in Hanoi confirmed that the policies of the 5MHRP, in their current form, were not comprehensive or based on any substantive market analysis:

> "In Vietnam, they make plans which are inappropriate and then they cancel them. The provinces then try to negotiate with investors... For instance, the Vietnam Government has directed southern Vietnam to 'balance forest cover' - but there is just not the land base there… In the future, this policy [the 5MHRP] will be reshaped; they will do another assessment. These expansions must rely on foreign investors. So [there is a recognition that] the 5MHRP is not realistic, and then you sit down and discuss. It is better to do this step by step, project by project. The programs will all merge in the next five to ten years; then you will have one plan between the donors and the government." (personal communication, Hanoi, August, 2003).

With specific reference to a proposed pulp mill development project at Kontum, the above informant had similar perceptions. As a World Bank forestry specialist in Hanoi, the informant had not seen any kind of detailed plan for the Kontum project, nor any detailed feasibility study:

> "[I] agree somewhat with the justification, in that Kontum is a poor province, and has cheap land and labour. But once again, with commercial plantations, where will the product be sold? On what scale, and at what cost?" (ibid.)

As described below, such fundamental problems involving sound development planning and strategic policy coordination in relation to accurate market analysis can result in project abandonment in Vietnam, or unprofitable, inappropriate projects moving forward.

Plantation Incentives

It was also difficult to find information relating to state policies on the promotion of the economic tree plantation sector in Vietnam. The FSDS (MARD 2000) does provide some background on financial incentives, including:

- a future reduction in the interest rates for investments in forest plantations (to between 0-5 percent for the first rotation cycle);
- exemptions from land taxes for the first 2 production cycles for each species and increasing forest protection contracts (presumably both with villagers, SFEs and companies) through a more adequate sharing of benefits;
- provision of seedlings to farmers; and
- encouragement of joint ventures in plantation establishment, log processing and export manufacturing.

From interviews with chip producers, it was learned that a remaining 5 percent tax on woodchip exports had recently been reduced to zero. However, all pulp producers interviewed noted with concern the coming reductions in pulp and paper import tariffs – arriving in 2006 with the Asian Free Trade Agreement (down to 5 percent from 40 percent in 2003).

Lang (2002) also outlined a number of incentives behind plantation production in Vietnam, although it is not certain if these have been altered since the time of publication. These include:

- longer land leases for plantations than for other activities;
- exemptions from land rent for the first five years; and
- a 50-percent reduction in land rent for the five years following planting.

Lang also lists a number of other incentives under Decree 53 which apply to all foreign investment in Vietnam, including:

- cheaper electricity;
- no VAT to be charged on imports that foreign companies need to manufacture goods that are to be exported;
- tax on companies transferring profits abroad reduced to 5 per cent; and
- exemption from land rent for companies that export more than 80 percent of their products.

STATISTICS ON EXISTING TREE PLANTATION RESOURCES

Forest inventories are apparently carried out by the FIPI (Forest Inventory and Planning Institute), although no accurate data on forest plantation resources (or indeed harvesting of natural forests) are available. Eucalyptus, acacia and pine are said by the FIPI to account for 54 percent of total plantation area in Vietnam (MARD 2000). (However, according to the Central Board of Forest Statistics data given in Table 9, this figure is 57.2 percent and according to the FAO data in Table 10, the figure is 48.6 percent). The Forest Sector Development Strategy reports that forest plantation performance has generally been poor to date[6], with plantation yields averaging between 8-10 m^3/ha/year. The World Bank also has reported that many of Vietnam's tree plantation projects are not economically viable (World Bank 2003). As evident from interviews with woodchip operators in Vietnam, however, particularly in the south, yields in the range of 20-25 m^3/ha/year have been achieved. Raw material enterprises such as South Raw Material Co. also indicated very successful growth rates for acacia hybrid and pine (see below). The Central Board for Forest Statistics (2001; in Nguyen 2003) has provided estimates for area of forest and plantation by species as of December 1999 (see Table 9).

The FAO also tracks statistics on plantation area in Vietnam. According to their most recent survey (2000), the annual rate of plantations establishment was estimated bu the FAO at 80,300 ha/year. There are substantial divergences between FAO and Government of Vietnam (GoV) statistics, even between the primary plantation species. For example GoV cites 348,000 ha of eucalyptus in 2001, with the FAO arriving at a figure of 451,500 ha (see Table 10 for FAO statistics of plantation area in Vietnam by species). Table 11 gives FAO data on plantation ownership for selected species and shows that the majority of plantations in Vietnam, whether industrial or non-industrial, are publicly owned. From interviews with pulp and woodchip producers in Vietnam, however, the working plantation sector is a mix between state plantation holdings and small scale farmers. Some investors in the woodchip sector also control their own plantation land through leases provided through state governments, although most of the chip operators partner with provincial forest departments to coordinate their supply contracts.

A number of additional sources provide data on plantations in Vietnam. The ADB (2000) states that given a plantation wood Mean Annual Increment (MAI) of between 4 to 12 m^3/ha/year, and a domestic consumption of small diameter logs at 1,400,000 m^3, sourced entirely from plantations, a functioning plantation area in Vietnam of between 120,000 to 350,000 ha is implied. This figure is substantially lower than FIPI's estimates of 794,000 ha of eucalyptus, acacia and pine in 1999. A World Bank report prepared by

Jakko Poyeary (2001) provides some support to the higher plantation area estimates for the primary commercial species in Vietnam: acacia/eucalyptus (576,000 ha), pine (206,000 ha) and rubber (412,000 ha) (see Table 12).

Lastly, the MARD (2000), through the Forestry Sector Development Strategy document, also provides a snapshot of plantation development in Vietnam (see Table 13 for plantation area by region and age class and Table 14 for plantation standing volume by region and age class). These tables appear to be the most current and accurate information available on plantations in Vietnam, although there are some problems with the data. The total area of plantation forest is listed in this document at 1.471 million ha, with a standing volume of 30.578 million m^3.

Plantations Development under the Vinapimex Raw Material Companies

There is limited information available on the Vinapimex website regarding plantation development in each of the key raw material regions (Vinapimex 2002). In particular for Vinapimex state-owned enterprises it is very difficult to find data which distinguishes between 'planned' or proposed plantations and actually existing plantations. The available information found during the research is summarized below:

Vin Phu Raw Material Region:

- Total plan for 135,000 ha of plantations in 6 provinces (Ha Giang, Tuyen Quang, Yen Bai, Lao Cai, Phu Tho, Vinh Phuc);
- Small-scale outgrower strategies are included in this plan;
- Future capability of supplying 500-700,000 tonnes of logs per year expected.

Bac Kan Raw Material Region:

- Land held in 7 districts. Total planned plantation area is 480,000 ha, with 50,000 ha to be devoted to production of raw materials for paper making;
- Productivity of crossed popilac and eucalyptus to be planted in the region is stated at 100-120m^3/ha/8 years (12.5-15 m^3/ha/year).

Thanh Hoa Raw Material Region:

- Includes land held in 7 districts, total planned plantation area is 420,000 ha, 50,000 ha of which is targeted for raw materials for paper making.

Kontum Raw Material Region:

- Includes land in 6 districts, with total planned plantation area of 396,000 ha;
- Existing plantings consist of 125,000 ha of tree plantation, with 64,000 ha in the first stage;

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[6] An informant at the FSIV suggested that the survival rates of tree planting established under Program 661 (5MHRP) were approximately 20% in her field sites.

- Major species of existing stands are acacia and eucalyptus (20-25,000 ha) and pine (remainder);
- Productivity of pine on 15-year rotations is stated at 165 m^3/ha/rotation (11 m^3/ha/year);
- Productivity of eucalyptus and cross-bred acacia is 135 m^3/8 years = 16.9 m^3/ha/year.

Dong Nam Bo Raw Material Region:

- Includes areas in Dong Nai, Song Be and Binh Thuan provinces;
- Species are eucalyptus and acacia;
- Acacia productivity provided at 50-70 m^3/ha;
- Cross-bred acacia is 100-120 m^3/ha.

The above information indicates an existing and planned plantation area total of 1.43 million ha for the Vinapimex's Raw Material Regions, excluding data on the Dong Nam Bo Raw Material Region.

Statistics on high-yielding plantation development directly associated with some of Vinapimex's Raw Material Enterprises, and with export-oriented woodchip companies, were gathered in interviews, and are explained below under the individual wood chipping companies or State Plantation Enterprises. Summary data from interviews on plantation area, yield, and species are provided in Table 15, with additional information on plantation supply and price provided in Table 16.

LAND AND FOREST TENURE

There have been two key land laws enacted in Vietnam in recent years, the first in 1993 and the second in 1998. While there are positive aspects relating to the devolution of forest ownership away from insolvent SFEs to local users, an additional effect has been to promote the private ownership of farmland and the promotion of the use of land as a form of collateral. For the economy, this has likely meant a surge in local entrepreneurial activity; however, the downside for forests may also have been significant. Indeed, such donor-supported land reform programs, promoting larger holdings and 'rationalized' economies of scale are viewed by many as having serious unintended outcomes for forest resources in Vietnam. As land is individually titled without sufficient safeguards, and then sold, acquired and consolidated in the inevitable development of 'winners and losers', a parallel class of newly landless peasants emerges. In Vietnam this has occurred in places such as the heavily populated Red River Delta. Such newly landless peasants have been drawn to cash-cropping opportunities in upland frontier areas, particularly in the four central highland provinces, in turn displacing ethnic minorities. In the uplands, government statements and policies simultaneously acted to marginalize swidden cultivators. The recent completion of the Ho Chi Minh Highway through the central Annamite Mountains may set off another round of planned and spontaneous migration

and associated deforestation, although currently there is not a booming global cash crop, such as coffee, to draw migrants to this area.

Economic and political reforms occurring in Vietnam from the mid-1980s have gradually shifted land management away from the commune level. From 1993 to 1998, the key piece of legislation on land and forest tenure was Program 327. According to the Forestry Sector Development Strategy (MARD 2000), 1.6 million ha of forest land was assigned to households for protection and rehabilitation under Programme 327 through the issuing of temporary Land Use Certificates (LUCs) (Vu and Warfvinge 2002). These temporary LUCs are also called Management or Protection Contracts, and are valid for 5 year periods. Programme 327, however, rarely involved allocating actually forested lands. Most of the assignments involved 'forest land without cover', which was provided to households at an average of 2 hectares each. The ADB (2000) states that these temporary LUCs include numerous restrictions on land management, which in effect undermined the initial rationale for issuing land rights. The LUC contracts did involve a cash provision for villagers to protect and manage existing, quality forests ($3/ha/year) as a temporary incentive to retain forest cover.

The most secure land document for rural people and households in rural Vietnam are the allocated permanent Land Use Certificates (or 'Red Books'). Tran Ngoc, Nguyen Quang and Sikor (2003) write that Red Books "accord forest recipients the same rights as recipients of agricultural land, including the five rights stipulated in the 1993 Land Law." Red Book certificates provide 50-year use rights and are transferable, exchangeable and available for use in leasing arrangements and as loan collateral. They do not, however, permit the right to full formal ownership. The ADB (2000) report suggests that only 0.5-0.6 million ha of standing forest land (5 percent) has been devolved with Red Books to local users, which suggests that decentralization is proceeding, albeit at a slow pace and with much foot-dragging by the departments involved. In some areas, bamboo groves or areas of forest planted by villagers have been allocated to households, particularly trees planted with overseas aid money.

In addition to forested lands, Vu and Warfvinge (in 2002) state that less that 50 percent of the actual land *without* forest cover has been allocated to non-state units. The remainder continues to be claimed by State Forest Enterprises, although in reality these lands are most often used by local farmers. More permanent reforms and policies on decentralized and community-based management are still being considered by the Vietnamese government. For the moment however, 'communities' and 'villages' (smaller than communes, but larger than households) are not recognized as legal units in Vietnam.

In summary, the following decentralization components of forest management in Vietnam have occurred (ADB 2000):

- 0.1 million ha of forests (primarily production forests) under red books managed by 27 units of State Forest Enterprises (SFEs);
- 0.5-0.6 million ha of forests under red books, managed by 350,000 households;
- 1.6 million ha assigned to 246,537 farmers for protection through management or protection contracts (Department of Forest Protection 2000).

In general, many NGOs and development practitioners would advocate for an increased commitment to community-based management in Vietnam, although Vu and Warfvinge (2002) do caution that in many cases local preference may actually be for continued allocation of state land to households:

> "Clearly, the character and location of the forest has something to do with the [local] preference for household or larger units of management. For relatively small areas of relatively good forest located relatively close to the homesteads, preference is almost universally for household management. For larger areas of forest, especially if poor and located far away, the preference is instead for sharing of the management duty among members of a larger community."

A second clear issue related to community resource management issues is the poor recognition by state institutions of complex local forms of land and resource tenure and the lack of attention paid to local resource usage by the officials implementing land titling and decentralization measures. This is especially true in Vietnam's upland areas. For example, the FSDS (MARD 2000) document provides positive signals that land tenure rights of SFEs, companies and smallholders would be broadened and strengthened under the 5MHRP through the following directives:

- Carrying out forest estate planning and designation, including the stipulation of land rights for forestry corporations, SFEs and households for long term production;
- Gradually allocating land for community forests and developing regulations for protection, utilization and commercial development;
- Developing household agroforestry, particularly in mountainous zones;
- Allocating land by local authorities to those without land, particularly ethnic minorities;
- Strengthening land rights and simplifying the procedures for land allocation, with the understanding that it is not permissible to change land designations, particularly that of natural forest.

However, in a 2002 report for the World Resources Institute, Dupar and Badenoch (2002) characterize Vietnam's decentralization efforts under the land allocation program and the 5MHRP (Program 661) as more akin to efforts to consolidate state control over peripheral zones. Under the 5MHRP, numerous local reforestation and forest protection programs are being passed down to local governments. A coordination committee is appointed in each province for oversight, and management committees comprised of officials from district-level DARD offices are appointed to assign tree planting and forest protection responsibilities over forests to local authorities. As mentioned above, there are no current provisions in Vietnam for handing land over to community scale units; instead, at this time transfers of degraded land are targeted towards individual households, in 50-year leases. The level of consultations between local authorities and communities under this process has been described as weak, largely due to an "almost entirely top-down approach":

> "The overall effect of the policies, as implemented, has been to increase the insecurity of upland livelihoods…Implementation is a question of district authorities trying to apply methods and practices that have been decided by the central government for the country as a whole. Both the land allocation and the reforestation programs are formulated for blanket implementation, without consideration of different biophysical conditions, social customs, and pre-existing natural resource management norms in the uplands."

In one sense, then, it appears that ittle has changed from when the first upland forestry policies were being developed in Vietnam during the 1950s and 60s. Gilmour et al. (2000) write that between 1954 and 65, forestry sector goals in Vietnam were:

> "… among other things, [to] 'suitably' guide the cultivation on burnt-out clearings (swidden agriculture) in order to stop 'deforestation.' It was perceived that swidden agriculture could be replaced by other modes of production."

A crucial aspect to any study of livelihood change associated with plantation development and growing regional trade linkages, then, needs to be fully cognizant of the relation between forestry development, land tenure, resource use and livelihood security for the most vulnerable people. Recognizing the present and potential role of common property systems and the continued salience of locally adapted agricultural practices, particularly swidden agriculture, in the livelihoods of many rural and upland farmers needs to be a part of this approach within forestry policy.

FOREST PRODUCTS TRADE DATA AND LINKS WITH CHINA

Before beginning an examination of trade trends, it is worth recalling Castren's (1999) statements concerning the availability and accuracy of Vietnam forest trade data and associated wood flows. Although the situation is improving, in general it is still very difficult to develop a detailed view of the sector in Vietnam.

> "Any statistical information related to production or data on international trade is classified, and no national *Forest Statistics Yearbook* is being published in the country… The Vietnamese forest sector has been decentralised to provincial authorities and recently in an increasing manner to the private sector and joint ventures (JV). In such a context of scattered information generation, concise analysis of the sector and wood flows has become utterly complicated… Like the industrial production statistics, also the foreign trade statistics are state secrets and trade analysis based on local data is not possible."

The overall obscurity of what is happening with forest product trade in Vietnam is not simply a function of poor record keeping. As the IUCN (2001) outlines, the institutional framework for regulating the timber trade in Vietnam is at once complicated and opaque and in fact facilitates the general trend towards regulatory avoidance.

For instance, the IUCN (2001) lists 11 legal instruments in Vietnam governing transboundary trade in forest products and non-timber forest products (NTFPs) enacted since 1991. These include:

- Circular No. 02/1999/TT-BTM guiding the re-export of timber of lawful import origin from Cambodia;
- No. 122/1999/TT-BNN/PTLN guiding the export of fine-art timber and finished wood products made from domestic natural timber;

- Decision No. 65/1998/QD-TTg of the Prime Minister on the export of timber and forest products and import of raw timber and forest material;
- Decision No. 136/1998/QD-TTg of the Prime Minister on amending a number of regulations on the procedures for export of wood and forest products;
- Decision No. 1124/1997/QDT-TTg of the Prime Minister on the export of wood products and forest products and import of raw timber material;
- Decision No. 06/QD on export of in stock wood products as per instruction No. 462/TTg, 1994;
- Decision No. 624/TTg of the Prime Minister on the export of wood products and forest products, 1993;
- Law on Export and Import Duties (amended and supplemented by the National Assembly dated July 5, 1993 and May 20, 1998), 1991;
- Directive No. 462/TTg of the Prime Minister on strengthening the control of timber harvest, timber transport and export, 1993;
- Order No. 90-CT of the Chairman of the Council of Ministers on urgent measures to stop deforestation immediately, 1992;
- Decision No. 146-CT of the President of Ministers' Council on the export of wood and forest products for 1991 and subsequent years, 1991.

The IUCN (2001) proceeds to list the primary institutional actors involved in regulating the trade in timber and NTFPs in Vietnam and provides their relevant responsibilities as follows:

- Ministry of Agriculture and Rural Development (MARD): Regulates export of forest products generally. Provincial offices issue certificates of origin for domestic timber;
- Forest Protection Department (FPD): Acts as the primary enforcement arm of MARD in the area of forest management and protection;
- Ministry of Foreign Trade: Administers foreign trade transactions carried out by specialized state import/export corporations, cooperatives or state-owned enterprises;
- Ministry of Commerce: Issues import licenses;
- Customs Department: Collects customs duties for imports and exports and inspects shipments for contraband;
- Prime Minister: Approves annual export quotas; issues special regulations governing timber imported from Cambodia; approves export of any timber products not listed in Decision No. 65/1998/QD-TTg;
- People's Committees: Support MARD in monitoring imports and exports;

- Armed Forces: Have de facto jurisdiction over transboundary trade in military-controlled border areas.

The IUCN (2001) report concludes with the following analysis of the effectiveness of the Vietnam's forest regulatory regime:

> "There are no significant conflicts of statutory jurisdiction for trade regulation to create loopholes that can be exploited for illegal trade. While jurisdiction is relatively straightforward, the overall regulatory regime itself is ad hoc, and therefore lacking coherence, and as a result, complicated. In the decade since the 1991 and 1992 law and decree were issued, so many supplementary instruments have been issued at such a level of detail that the resulting paper burden impedes effective monitoring and creates a disincentive to compliance."

With significant caution in mind therefore, we can proceed to evaluate the available data on Vietnam's forest commodity import and export trends and linkages with China.

VIETNAM'S FOREST PRODUCT IMPORTS

In official terms, the annual quota for forest harvesting in natural forests has been set by MARD at 300,000 m^3 since 1999. The four central highland provinces (Kontum, Dak Lak, Gia Lai and Lam Dong) account for approximately 60 percent of the total quota (USDA 2001). According to all reports however, total consumption of wood products in Vietnam cannot be accounted for through domestic production and official import statistics. For instance, the ADB (2000; see Table 17) has provided documentation which suggests that, given a total consumption level for natural forest large diameter logs at 1.6 million m^3, with harvesting quotas set at 300,000 m^3, "the implication is that the balance of 1.3 million m^3 was illegal." These illegal logs would then have been sourced from either inside Vietnam or from harvesting operations in Cambodia and Laos, the latter at an estimated volume of 400,000 m^3 in 1999.

The USDA Foreign Agricultural Service provides periodic assessments of Vietnam's solid wood products sector (USDA 2001; USDA 2003). Table 18 shows the 2001 and 2003 USDA estimates for the supply of timber for Vietnam's wood-processing sector for the years 1998 through 2002. Of particular interest here are the estimates for timber of 'unknown source', which amounts from 300,000 m^3 to 640,000 m^3 to for the years 1999 and 2002 (a substantially lower figure than the illegal log component in the ADB data, in Table 17).

Estimates are also available in the 2003 USDA report concerning the country source of forest product imports into Vietnam (USDA 2003); and these are provided in Table 19. While the import figures are provided in terms of value, the report also arrives at a 2002 estimate for total official volume of log and sawn wood imports into Vietnam: 600-660,000 m^3. Notably, Laos is identified by the 2001 USDA report as the leading source for both semi-processed wood and illegal wood imported into Vietnam (which differs from the mid 1990s assessment by Castren 1999, see below).

An additional overall picture on Vietnamese forest product trade emerges from Castren's (1999) important work on regional timber trade and wood flow studies. Estimates for total Cambodian log exports to Vietnam in the late 1990s by Global Witness, Development Alternatives Inc. and Forest Research are summarized in

Castren (1999) and provided in Table 20. These estimates range up to 1 million m^3 for the year 1997. Castren (1999) writes:

> "Despite Cambodia being by far the most important source of supply, other countries have a role in the Vietnamese wood supply strategy. Information on these imports is even coarser than that on the Cambodian wood. Based on scattered information from exporting countries it may safely be assumed that Lao PDR is clearly the second most important source of supply. Much of the wood imported from Laos to Vietnam has been logged by Vietnamese companies that have been subcontracted by Lao counterpart state enterprises who have been issued with concessions, often from dam and other infrastructure construction sites. Some wood is also being received in barter trade for implementation of construction projects in Laos. In total, the imports may be estimated to be in the range of 100,000 m^3 annually. Other countries from where Vietnam imports are Myanmar, Malaysia and Indonesia. There is little information on the shares of individual countries, although the total may be estimated at 100-150,000 m^3."

For the pulp and paper sector, Vietnam's pulp imports were listed at 8,000 tonnes for the month of April 2004 (Viet Nam Economy 2004c), which suggests yearly imports in the range of 100,000 tonnes. 2003 pulp import totals were stated at 128,000 tonnes, including 8,000 tonnes bleached hardwood and 120,000 tonnes bleached softwood pulp (ibid.). Vietnam paper imports were reported in the news media at 400,000 tonnes for 2003 (Viet Nam Economy 2004d).

Lastly, the USDA (2001) also provides some estimates for Vietnam's manufactured forest product imports by port of arrival (see Table 21). Ho Chi Minh City/Dong Na handle over half of the total manufactured wood imports into Vietnam.

VIETNAM'S FOREST PRODUCT EXPORTS

Logs and Sawnwood

With respect to forestry exports, Vietnam has enacted a ban on exports of roundwood and sawnwood since 1994 (Castren 1999). However Castren (1999) goes on to state:

> "There exists wide-scale evidence that at least Cambodian and Lao logs are being re-exported through Vietnam. The Cambodian logs exported are illegal, as there is a log export ban in Cambodia. Nevertheless, Vietnamese officials have allowed such re-exports despite public policy statements otherwise. However, there is no accurate information on volumes of roundwood and sawn wood exported in such a way. The volumes are, however, adequate to justify BPKP [Bolisat Phathana Khet Phoi Doi, or the Lao Mountainous Regions Development Company, a military linked Lao logging and development company]… to have a merchant fleet stationed in Vietnamese ports. There have been unconfirmed allegations that wood is being exported to Yunnan and Guangxi provinces in China from various parts of Northern Vietnam. Like in the case of re-export of logs from neighbouring countries, the volumes involved are unknown."

This research was unable to shed further light on the nature of the log and sawn wood trade flows between these countries. This would likely require a much more detailed study of the border regions and port facilities in Vietnam.

Woodchips

Nearly 100 per cent of woodchips manufactured in Vietnam are targeted towards export markets. The producers are most often foreign joint venture arrangements between Japanese, Korean or Taiwanese firms and provincial level partners. These woodchip exporters maintain long-term supply contracts with their parent investors (Oji Paper, Itochu, Nissho Iwai etc.). The actual extent to which there is a competitive export market in woodchips from Vietnam is thus open to question. There did not appear to be any woodchip exports heading towards China at the time of research in 2003. A Hong Kong firm is a joint partner in the SFR chipping operation outside Ho Chi Minh City, although the woodchips are currently being directed towards Japan (see below). Where available, supply strategies for the respective pulp and chip mill are provided in the sections later in this paper.

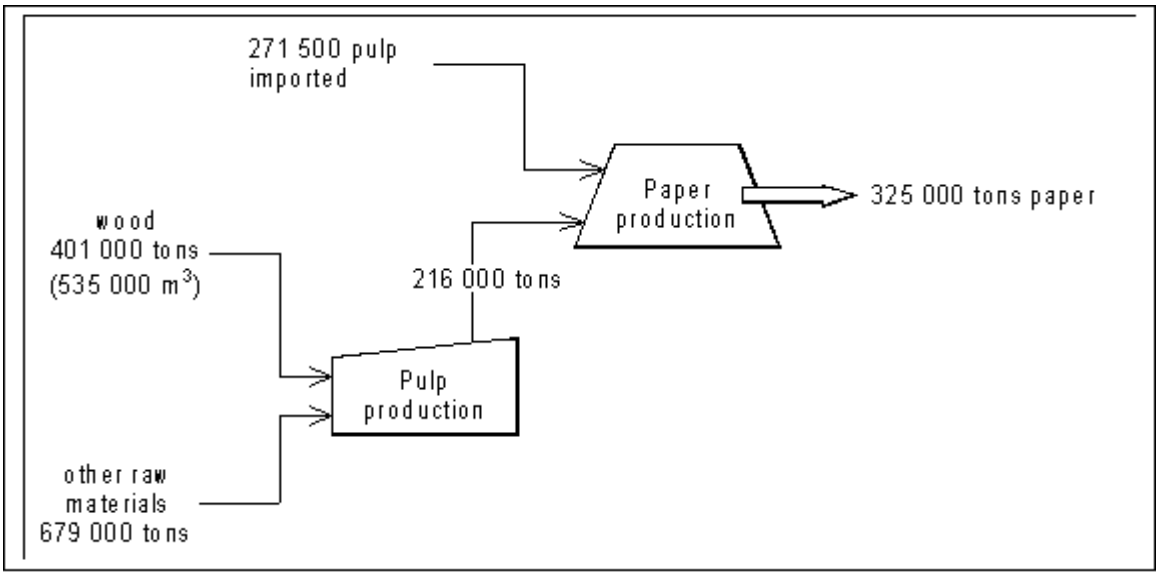
Pulp and Paper

From research interviews, it is clear that almost all pulp and paper production in Vietnam is geared towards the domestic market. Currently, Vietnam does not have a regionally competitive pulp sector capable of matching the prices or production levels of the major Indonesian and Thai pulp and paper exporters. The new pulp and paper production facilities proposed at Kontum and Lam Dong, among others, may have included export markets in their strategies, although these projects appear to have been shelved indefinitely. Given the competitive position of the Vietnamese producers vis-à-vis the major Southeast Asian exporters (APP, APRIL, Phoenix/Siam Pulp and Advance Agro), with the exception of Bai Bang existing Vietnamese pulp and paper producers will be under severe pressure in the coming years, particularly with the regional reduction in tariff barriers in paper imports (from 40 percent to 20 percent in September 2003 and to 5 percent in 2006) under the ASEAN Free Trade Agreement.

Castren (1999; see Figure 1) provides an overview of the overall fiber supply balance in Vietnam. It is important to note that Vietnam's pulp production lags behind its paper output; thus, Vietnam imports a substantial amount of pulp from neighbouring countries, particularly Indonesia and Thailand, as well as recycled paper from Western countries.[7]

[7] Castren's data is based on the following unit assumptions: 6.7 m^3 wood = 5 tonnes wood = 1 ton pulp ; 1.5 tonnes pulp = 1.0 ton paper

Figure 1: Pulp and Paper Industry Fiber Balance



Source: Castren (1999).

Furniture

The 2003 ITTO Timber Outlook study states that Vietnam is rapidly becoming a major exporter of semi-processed wood products, particularly in the form of wood furniture. Viet Nam Economy (2004b) recently reported that Vietnam held a 7.3% market share in Japan's US$10.4 billion per year furniture market (suggesting an approximate export value of US$759 million, a substantial portion of the total value of Vietnam's furniture manufacturing sector). Meanwhile, Vietnam's furniture exports to the US market were listed at $2.1 million in 1999; $7.1 million for 2000; $10.6 million in 2001; and $63.1 million for 2002 (Dossenbach 2003). Exports to the US market were projected to increase by another 250% for the following year, suggesting a 2003 total in the range of US$160 million. ITTO (2003) states that Vietnam maintained lower production costs than China in this sector and that the Vietnamese wood furniture sector was an industry attracting substantial foreign interest and investment. Castren (1999) provides estimates for the mass of furniture exports from Vietnam to the EU and Japan between 1995 and 97, using import statistics from these countries (see Table 22).

PROFILES OF EXISTING AND PLANNED WOOD PULP MILLS

The current production capacity of Vietnam's pulp and paper sector under Vinapimex (through its 7 sub-companies) is 225,000 tonnes of paper and 143,000 tonnes of pulp per year (Vinapimex 2002a). Paperloop.com (2005a) reported that total pulp and paper production capacity for the country as a whole is now at 262,000 tonnes/year of pulp and 800,000 tonnes/year of paper. Actual national production, however,

was substantially lower than capacity at 219,000 tonnes of pulp and almost 754,000 tonnes of paper in 2004. Vietnam also imports a substantial amount of wood pulp: approximately 120,000 tonnes of pulp per year according to USDA (2001) data; with Paperloop.com (2005a) reporting 80,000 tonnes of pulp imports for 2004.

The ADB (2000) states that the state-controlled Vinapimex controls 9 pulp or paper mills, including those at Bai Bang, Tan Mai and Dong Nai. In 1999, these latter three mills accounted for 50 percent of Vietnam's paper production of approximately 300,000 tonnes. The remaining 50 percent was produced by the other six mills controlled by Vinapimex and the 37 other mills, owned either by the provinces or private sector, in the country. The average production of the smaller mills is listed at 1,000 tonnes; and these mills largely utilize bamboo as a raw material.

In an interview with Vinapimex in Hanoi, the following pulp expansion and greenfield projects were described as "in the pipeline" for Vinapimex:

- Bai Bang: pulp and paper expansion project
- Thanh Hoa Province: 60,000 tonnes pulp (greenfield project)
- Kontum: pulp capacity 130,000 tonnes (greenfield)
- Bac Kin pulp mill: 50,000 tonnes pulp (greenfield)
- Lam Dong: pre-feasibility study: pulp capacity 200,000 tonnes (greenfield)

The 5MHRP aims to increase domestic pulp and paper production to 1.2 million tonnes by 2005 and 5 million tonnes by 2010. The key current expansion projects under consideration as of 2003 included the Bai Bang upgrade, the Kontum greenfield project (up to 260,000 tonnes/year) and the Lam Dong greenfield project (up to 260,000 tonnes/year). At the time of field research, many of the proposed expansions in pulp and paper capacity called for under the draft of the 5MHRP were considered as unviable, particularly with the coming tariff reductions under ATFA, and a seeming lack of a coherent fiber supply strategy. Subsequent developments have largely borne out this analysis, with the Kontum project shelved and the status of the Lam Dong expansion unclear. Notably, Paperloop.com (2004) recently reported that four of Vinapimex's subsidiaries, including two major operations at Viet Tri and Bai Bang (highlighted below), were now "facing bankruptcy. The firms lost a total of Dong 47 billion [approximately $US 2.9 million] in the first half of 2004."

BAI BANG PAPER COMPANY (BAPACO)

It was not possible to secure an interview with Bai Bang during this research period. However, according to interviews with Vinapimex in Hanoi, the Bai Bang mill is supplied through the Vin Phu Raw Material Co., a subsidiary of Vinapimex . The ADB (2000) states that Vin Phu Paper Raw Material Company (VPMC) supplied Bai Bang through quotas provided to 17 SFEs in five provinces, quotas with private suppliers and from its own plantations of 22,000 hectares in 2000. According to Vinapimex, Vin Phu Raw Material Co. was

said to manage 70,000 ha of plantations in northern Vietnam.[8] Included in this total are 16 Junior State Forest Enterprise plantation companies, each managing 2,000 ha

Bai Bang's current pulping capacity of 45,000 tonnes per year suggests a raw material log demand of approximately 225,000 m^3 of wood [using a conversion ratio of green logs:pulp of 5], which appears to be within the capacity of Vin Phu's plantations (reported to be 300,000 GMT/year). With the Bai Bang expansion project lifting pulp capacity to over 60,000 tonnes, the mill would require approximately 300,000 m^3 of wood fibre at a 5:1 ratio.

According to Paperloop.com (2002a), the new expansion project at Bai Bang will increase pulp production from 48,000 tonnes to 61,000 tonnes, with paper production increasing from 55,000 to 100,000 tonnes/year. Phase 2 of the expansion (2005-2010) will result in further increases to 150,000 tonnes pulp and 200,000 tonnes paper. The Swedish International Development Agency (SIDA) has been the primary lender for this project, providing 70 percent of the US$51 million in financing required for phase 1 of the expansion.

In an interview with Vinapimex Hanoi, the suggestion was that they were planning for an additional 150,000 ha of forest plantations for Bai Bang Phase 2. The informant stated verbally that these plantations would be located in the following provinces:

- Phu Tho: 40,000 ha
- Tuyen Quang: 30,000 ha
- Yen Bai 50,000 ha
- Vin Phu 5,000 ha
- Plus others (including Hoa Binh)

The ADB (2000) has performed a more detailed assessment of Bai Bang's fibre supply and cost situation (see Table 23 and Box 2 below). The report estimates that 28 percent of the raw materials for Bai Bang's current production volumes were sourced from bamboo, and 50 percent of the bamboo and wood volumes were supplied through Vinapimex (with the remainder sourced from smaller SFEs and private growers).

More current information on Bai Bang has been secured through personal correspondence with Mr. Bo Ohlsson, a Swedish forestry researcher (Email, April 18, 2005). According to Mr. Ohlsson, the updated Bai Bang expansion plan is to ramp pulp production towards 311,000 tonnes per annum by 2006 and to increase paper output from a present 60,000 tonnes per annum, to 100,000 tonnes. A merger between Bai Bang and 16 SFEs took place in 2003. These SFEs are located in the provinces of Ha Giang, Tuyen Quang, Phu Tho and Vinh Yen, and hold a total production area of 63,000 ha Additional areas are to be secured from the provinces of Son La and Yen Bai, increasing the total area of Bai Bang production forest land to approximately 164,000 ha

> "The 16 SFEs deliver 50% of the total volume of wood consumed by the mill, the total consumption of which presently is 250,000 tonnes of pulpwood. The balance comes from farmers, having mainly below 5 ha of plantations each. The SFEs delivers directly to the mill whilst the production from the

[8] Although the ADB (2000) reported that Vin Phu held 22,000 ha of plantations in 2000.

farmers is mainly purchased at the farmgate by wood procurement companies or individuals. In the Doan Hung District alone, there are some 30 procurement units, i.e. companies or private entrepreneurs. Procurement companies visited purchased some 600 tonnes per month for delivery to the mill, while also purchasing some 300 tonnes per month for delivery elsewhere – to Ha Noi, Hai Phong and the mining industry in the coastal zones. The wood catchment area at present stretches from Lau Cai 170 km in the north, some 80 km east and west of Bai Bang and some 70 km to the south. The previous timber yards in the Districts have now been replaced by all wood now being delivered directly to the mill.

According to BAPACO, the wood prices are increasing because of expanding markets, whilst paper prices are stable. The expected increase in wood prices was also indicated by farmers. There appears to be a shortage of forest land for plantations. The wood trade appears competitive. In the District, there was a functioning infrastructure for plantation forestry. Seedlings were available at Phu Tho as well as training. Secure land tenure, in the form of the Red Book, was in place. There is also an expanding market. A major advantage of plantation forestry, mentioned by farmers, was the security it offers. During the land allocation, substantial amount of farmers did not get forest land because of distance from the land, they were not interested or it was not enough for all. Today, it appears to be a very strong demand for plantation forest land. The BAPACO has strong confidence in the farm based plantation forestry." (Email Correspondence, Bo Ohlsson, April 18, 2005).

Box 2 – ADB's Assessment of Bai Bang

"Logs are delivered to the factory gate at prices agreed between BAPACO and VPMC, which range from VND 420,000 per ton for eucalyptus species to 324,000 per ton for bamboo. Transport, at official rates which vary by distance and type of road and which date from 1997, is by a mix of vehicles owned by NPMC, provinces and the private sector. SFEs may either produce the logs themselves, or buy from small farmers.

The evaluation of Swedish support to the Bai Bang Paper and Pulp Mill (Paper, Prices and Politics, Centre for International Economics, Final Report, 1999) estimated that, between 1974 and 1995, Sweden committed SEK 6.5 billion at 1996 prices (equivalent to 1996 USD one billion) to Bai Bang and its ancillary plantations. The evaluation showed that the mill was trading profitably in 1996. This was assisted by the fact that, having received its capital as an aid transfer, it did not have to make a commercial return on capital.

Cost per ton of paper is estimated in the report to be USD 805, of which costs of buying logs and imported pulp were USD 123 and 103, respectively. Without raw materials, the cost of production was therefore USD 579. These cost figures are summarized in [Table 24].

Total cost of production, at the 1996 exchange rate, was the equivalent of VND 8.9 million per ton of paper. With the exception of raw materials, this study has been unable to obtain more recent figures for costs of production. It was indicated at Bai Bang that current costs were about VND 9 million per ton, of which raw materials were 25-30 percent. These are very similar to the figures in Table 24 (perhaps the official may simply have been quoting the evaluation report). In any event, this study has no option but to rely on evaluation report estimates.

The evaluation report concluded that profitability was very sensitive to the price of paper. It calculated that, if the 40 percent tariff on imported paper were removed, and with the mill working at its design capacity for pulp (which was roughly the case in 1999) a 32 percent reduction in operating costs would be required for Bai Bang to be competitive on the world market. The tariff level was still 40 percent in September 2000.

As Table 25 demonstrates, the actual farmgate price for logs paid to a private individual about 100 km from Bai Bang is VND 280,000 per m^3. According to VPC, prices for imported pulp, depending on quality, currently (in September 2000) range between US$ 400 and 750 per ton cif Haiphong, with an average of USD 600; in which case the table shows that it would be financially preferable to import pulp rather than buy logs locally. VPC also said that pulp prices follow a five year cycle, and are currently at or near the top of the cycle. Two years ago, the price range was USD 320-550. The Woodchip and Pulpwood Trade Review states that there has been a secular declining trend in pulp prices since 1970, and that by late 1999 the marker fob price for pulp from US hardwood was USD 600 per ton.

The breakeven point for pulp production from local raw material appears from the table to be about USD 700 per ton and the case for import substitution rests on future pulp prices being at or above that figure. On the basis of available data, this seems unlikely. For local production of logs to be justified in financial terms, farmgate prices would have to drop to the point where costs of production could not be covered and it would probably not be worthwhile to grow timber.

Yet even the USD 700 figure in Table 9 is based on the assumption that the present sale price of paper will be maintained. As discussed earlier, it has been estimated that, if the 40 percent import tariff on imported paper were removed, processing costs at Bai Bang would have to drop by a third for profitability to be maintained. As a member of the ASEAN Free Trade Association (AFTA), Vietnam is committed to reducing the tariff to 5 percent by 2006."

Source: Asian Development Bank (2000).

VIET TRI PAPER COMPANY

Viet Tri Paper Company is located approximately 2 hours outside of Hanoi, in the Red River Delta region. The company began operations 42 years ago and now employs 13,000 persons in three factories. An older production line produces mainly writing paper and some tissue paper and a newer line (with a paper machine purchased from Korea) produces wrapping paper. Hoa Binh raw material factory, located approximately 70 km away, produces the pulp required for the two paper machines at Viet Tri.

In terms of production, the older factory line produces 15,000 tonnes of writing paper. The newer facility, which was still coming on-line in 2003, would produce between 25,000 and 30,000 tonnes per year. The total capacity of Viet Tri would then be in the range of 40,000 tonnes. Viet Tri purchased their new paper machine in 2001 from Hansol of Korea and started to run the machine in October 2002. It will be running at capacity by 2004.

The capacity and actual production of the Hoa Binh pulp factory is 3,000 tonnes per year, with all of the non-bleached pulp sent on to Viet Tri. The Hoa Binh factory purchases 100 percent bamboo for long fiber pulp. Approximately 50 percent of this bamboo was stated as sourced from state forests and 50 percent from private growers. An informant stated that Hoa Binh did not purchase directly from small farmers – more likely from commune leaders. However, the informant from Viet Tri apparently did not know definitively, stating: "Hoa Binh is far from here, so we leave them to do their business."

Viet Tri also has to buy pulp from other factories, particularly from foreign sources. Each year the company purchases 1,500 tonnes of long fiber pulp and 4,000 to 5,000 tonnes of short fiber pulp from foreign sources, including Indonesia and North America.

The materials used for the new machine is OCC-wastepaper. Prices were said to be in the range of 120-135 US$/tonne for waste paper. All production is targeted for the domestic market. The informant stated that the mill may have the capability to export new products in the future, particularly wrapping paper to Korea. Box 3 below summarizes findings on the supply of raw materials and the production of Viet Tri.

Foreign Pulp Supply Sources for Viet Tri Paper Company

Pulp supplies for Viet Tri were listed as coming largely from Indonesia, Thailand and New Zealand, although the supplier sources were said to change regularly depending upon prices. The New Zealand price for short fiber pulp was estimated at US$446/tonne and New Zealand long fiber at US$520. Viet Tri stated that they purchased between 1,500-3,000 tonnes per order, 80 percent of which was short fiber pulp. At the time of the author's visit in August, 2003, Viet Tri had just purchased 1,500 tonnes of short fiber pulp from Thailand. The engineer informant did not know the name of the Thai exporting company. The volumes of pulp purchased form Indonesian sources were suggested to be approximately the same as from Thailand.

Box 3 – Viet Tri Raw Material Supply and Production Summary

Old Machine Production Capacity:

- 15,000 tonnes per year; printing and writing paper

New Machine Production Capacity:

- 25-30,000 tonnes per year, on-line by 2004; wrapping paper

Primary Pulp Supply, from Hoa Binh:

- Hoa Binh produces 3,000 tonnes of bamboo pulp per year, and 50-60 tonnes of wood pulp*
- The future target for production at Hoa Binh is 3,000 tonnes of bamboo pulp and 3,000 tonnes of wood pulp
- The goal is for a 50:50 mix of wood and bamboo pulp for this factory, but this will not all be produced at Hoa Binh**

Additional Pulp Supply:

- Hai Duoung (100 percent wood pulp)
- Bac Giang (wood pulp and bamboo)
- Turgen Quang (100 percent bamboo)
- Total = 300-400 tonnes/month

Estimate of Total Pulp Supply:

- Hoa Binh's pulp production is 200-250 tonnes/month
- Total domestic supply of pulp is 500 to 650 tonnes/month or 6,000 to 7,800 tonnes/year
- Imports estimated at 1,500 tonnes of long fiber and 4 to 5,000 tonnes of short fiber from foreign sources
- Total pulp supply 11,500 to 14,300 tonnes per year

*Notes: *This is consistent with a paper production capacity of 10,000 tonnes for Viet Tri as listed in the Forestry Sector (Development Strategy, MARD 2001).*
*** Paperloop.com (2004) recently reported that Viet Tri produces annually 10,000 tonnes/year of bamboo and bleached hardwood kraft pulp, and 35,000 tonnes/year of tissue and printing/writing paper.*

Source: Author Interviews.

TAN MAI PAPER COMPANY

Tan Mai produces about even ratios of newspaper, printing and writing paper. The company was established in 1958, and now has a capacity in the range of 66,000 tonnes per year in three production lines. Box 4 below provides a brief chronology and production data for Tan Mai.

Box 4 – Chronology and Production Data for Tan Mai Paper, 1958-1998

1958	Vietnam Paper Industry Company (COGIVINA) established on Oct. 14, 1958 and invested by Former Vietnamese Government and American Parsons and Whittemore Development Co. Ltd.
1959	Started building Paper Machine No.1 and utilities work
1962	Started up Paper Machine No. 1
1967	Built Paper Machine No. 2
1968	Started up Paper Machine No. 2
1972	Installed Boiler No. 2
1975	Rehabilitated production after the national unification
1978	Signed agreement for expanding mill (SOGEE project) between Vietnamese and French government
1980	Carried out expansion project
1985	Signed agreement for rehabilitating mill between Vietnamese and Swedish Government (Financed by SIDA)
1987	Put chipping plant into operation
1989	Started up thermo mechanical pulp plant (TMP)
1990	Started up Paper Machine No. 3
1991	Carried out Environmental Protection Project as financed by SIDA
1992	Attained combined pulp and paper production capacity of 20,100 tonnes per year
1993	Replaced pine raw material with eucalyptus
1994	Obtained combined capacity of 30,500 tonnes per year (increased by more than 37 percent from 1993 capacity)
1995	Changed TMP into CTMP Process. Attained combined capacity of 42,000 tonnes per year
1996	Signed contract with ABB (Singapore) for improving Newsprint Quality (installed QCS System)
1997	Signed contract with ALLIMAND (France) for upgrading Paper Machine No. 3; Signed Contract with Black Clawson (UK) for DIP project
1998	Upgraded Paper Machine No. 2; Reached combined pulp and paper capacity of 60,000 tonnes per year

Main products: newsprint, writing paper, high quality printing paper, photocopy paper, wrapping paper, corrugated paper.

1998 Production Capacity:

Pulp	49,000 tonnes/year	
Paper	48,000 tonnes/year	
Water	24,500 m^3/day	
Power	2 transformers: 20 MVA 66/15 KV; 25 MVA 66/15 KV	
Steam	2 boilers:	Saturated Steam, 17 bar-28 tonnes/hour Superheated Steam, 17 bar-31 tonnes/hour

Chipping Capacity: 15 tonnes per hour

Paper Production Capacity:

Paper Machine 1 (1961):	30 tonnes/day
Paper Machine 2 (1966, upgraded 1998):	40 tonnes/day
Paper Machine 3 (1990):	120 tonnes/day

Source: Tan Mai Paper Company Brochure.

The capacity of the CTMP line is 40,000 tonnes per year, but production is approximately 50 percent of this total. All of the production from this line is targeted towards newsprint pulp. The DIP line began operations in 2000 with a capacity of approximately 20,000 tonnes per year and production at 50 percent of this total. This pulping line is also for newsprint. The OCC line started operations in June of 2003 and it is still in the pilot phase. Capacity for this machine in 30,000 tonnes per year. Ninety percent of the supply for the DIP pulping machine comes from imports of wastepaper; however, 10 percent comes from domestic supplies of wood fiber – mainly pine from Lam Dong province (approximately 6,000 tonnes per year).

Tan Mai also imports approximately 30,000 tonnes per year of pulp, sourced from Canada, Indonesia, Sweden and Brazil. Hardwood pulp represents 90 percent of pulp imports, and softwood pulp represents 10 percent. The source of imports basically depends on the relative prices, although no pulp is sourced from other facilities inside Vietnam.

All paper production was stated as for the domestic Vietnamese market, although the informants were unsure concerning the potential markets for the new OCC line. The ratio of production from wastepaper to pulp was approximately 1.3:1 for the OCC line.

As of 2003, as suggested by informants, there were small quantities of pulp imports from China to Vietnam. However, if China were to become a major pulp producer they could pose a competitive threat to Vietnamese pulp producers (although China is not part of the ASEAN Free Trade Agreement).

Tan Mai's Raw Material Supply Strategies

Tan Mai's wood chip and pulp supply and its production are summarized in Box 5 below. The logs used for chipping and pulping at Tan Mai Paper come mainly from SFEs in southern Vietnam. The average prices paid for pine logs was between US$29.09 –US$32.32 at the factory gate. These logs are coming from Lam Dong province; the author's informant, however, was not sure of the transportation costs. The Kontum greenfield pulp project was suggested as a potential future pulp source for Tan Mai. According to the informant, the government was still in the process of monitoring and assessing the raw material supply areas for the Kontum project. Riau Andalan was listed as one of the Indonesian firms supplying Tan Mai, which sources both plantation pulp and mixed tropical hardwood pulp from Indonesia.

Box 5 – Tan Mai Raw Material Supply and Production Summary

Woodchips:

9,000 m^3/year (from brochure); including 6,000 m^3 pine/year
Source: SFEs in Lam Dong province

Pulp:

Imports: 30,000 tonnes/year
Hardwood 90% [= 27,000 m^3]
Softwood 10% [= 3,000 m^3]

CTMP Line:

Capacity is 40,000 tonnes/year
Production is 20,000 tonnes for newsprint line (Paper Machine #3)

De-Inking Pulp Line:

Capacity is 20,000 tonnes/year
Production is 10,000 tonnes/year, for newsprint line (PM#3)
Imported wastepaper accounts for 90% of supply at a conversion ratio of 1.3:1 = 11,700 tonnes wastepaper
10% production is from pine raw material
This represents approximately 1,000 tonnes of pulp from a stated pine log supply of 6,000 m^3.

OCC Line (Wastepaper Source):

30,000 tonnes per year, production has not started yet

Paper:

Total factory production is confirmed at 66,000 tonnes/year, split "about 50:50" between newsprint and printing and writing paper

Paper Machine 1:

Production: Printing and writing paper
Production approx. 15,000 tonnes/year [consistent with 45 tonnes/day times 330 days/ year]
Pulp probably sourced from abroad, consistent with a 50% share of 30,000 tonnes pulp imports/year

Paper Machine 2:

Production: Printing and writing paper
Production approx. 15,000 tonnes/year [consistent with 45 tonnes/day, 330 days /year]
Pulp sourced from abroad, consistent with a 50% share of 30,000 tonnes pulp imports/year

Paper Machine 3:

Production: Newsprint
Annual production estimated at 36,000 tonnes/year (pulp supplies are only 30,000 tonnes from the CTMP (20,000 tonnes) and DIP (10,000 tonnes) units, but DIP line production may have been underestimated)
Production listed at 150 tonnes/day, consistent with stated total of 36,000 tonnes/year, operating 240 days per year

Source: Author Interviews.

DONG NAI PAPER CO.

It was not possible to secure an interview with Dong Nai Paper during the research for this paper. Paperloop.com (2002b) provides information indicating that Dong Nai's production capacity in printing and writing paper was 14,000 tonnes per year and that Vinapimex was then seeking to purchase a second hand paper machine to boost capacity to 27,000 tonnes per year.

In an interview with South Raw Material Company, The Dong Nai Paper Company was referred to as a heavily polluting company which released its effluent into the Dong Nai river, a source of drinking water for the residents of HCMC. According to the author's informant, the likely trend would be towards shifting production capacity away from the Dong Nai plant: "Slowly the authorities would like this mill to be phased out." The suggestion was that due to these environmental reasons, Vietnam would be developing the Kontum and Lam Dong projects. Efforts to inquire if South Raw Material Co. supplied logs for the Dong Nai or Tan Mai pulp mills was met with conflicting and confusing responses.

KONTUM PULP AND PAPER PROJECT (SHELVED)

The Kontum pulp and paper project first started in 2001 and was projected to cost US $285 million. Lang (2003) suggested that the Vietnamese authorities from Vinapimex were seeking to develop 125,000 ha of tree plantations for the Kontum project, as well as to use the fiber available from 38,000 ha of natural forests in the area. According to another industry contact who had recently visited the Kontum site, however, there was little in the way of natural forests in the area surrounding the mill, so that it was doubtful that natural forests in the area would be capable of supplying the mill. There were, however, extensive areas of pine and eucalyptus plantations in the area (Interview, August 13, 2003, Hanoi).

The initial phase of the Kontum project, with a targeted capacity of 130,000 tonnes of pulp/year, using a wood to pulp conversion ratio of 5:1, would require approximately 650,000 m^3 of wood. The *Vietnam News* (2003) suggested that the authorities were designating 38,000 ha of plantations for the Kontum project. Using this area of 38,000 ha, the Kontum plantations would require a productivity of approximately 17 m^3/ha/year to feed the mill, which appears to be plausible. Second-phase increases in capacity, to 260,000 tonnes of pulp per year, would require a doubling of plantation area, unless plantation productivity could be increased beyond 17m^3/ha/year. Note that according to MARD (2000), there are 180,000 ha of plantation forest planned for Kontum province.

Paperloop.com (2001) reported that 6,500 ha of trees had been planted by December 2001 in the Tay Nguyen Province of Kontum; 13,000 ha had been planted near the mill's site in Dac To District; 2,700 ha had been planted in Sa Thay and; 1,500 hectares in Ngoc Hoi. In January 2003 Lang noted that less than 15,000 ha of plantations had been developed in the area surrounding Kontum and that in October 2002, the Kontum project had been suspended until a viable supply strategy was developed by Vinapimex. After a news report from July 2003 suggesting that the Vietnamese Prime Minister had placed the Kontum project "back on track" (Viet Nam News. 2003), Paperloop.com (2005b) reported in January 2005 that the Kontum greenfield

project had again been "suspended indefinitely" and that it had been shelved due to lack of financing and poor planning.

LAM DONG (PROPOSED)

No interview with representatives from Lam Dong was secured in the research period. Vinapimex Hanoi suggested that the Vietnamese Government would be planning for 100,000 ha of plantations to feed this project. Most reports suggest that the Lam Dong project will be similar to the Kontum mill, starting with 130,000 tonnes pulp/year capacity and then increasing to 260,000 tonnes.

SINGAPOREAN-VIETNAM PAPER MILL PROJECT

Very recent reports from Paperloop.com (2003) state that a Singaporean firm (IHP) has joined with a Vietnamese partner (Hiep Phuc) to develop a $360 million pulp and paper mill in Phu Yen, near HCMC. Projected capacity is listed at 250,000 tonnes/year of pulp and 200,000 tonnes/year of paper. As of yet, however, there is no information available regarding the potential fiber supplies for this project.

SAI GON PAPER JOINT STOCK COMPANY

Viet Nam Economy (2004e) carried a story regarding a new paper mill under development in Ba Ria-Vung Tau province near HCMC. Capacity for this new paper mill, Sai Gon's second such project, would be 58,000 tonnes per year. "The company is the first private enterprise using Chinese and Japanese-imported technologies that can produce 18,000 tonnes of DIP pulp and 40,000 tonnes of OCC pulp annually for paper production."

PROFILES OF EXISTING AND PLANNED WOOD CHIP MILLS

Table 26 provides a complete summary of supply and production data secured in the course of research interviews with woodchip exporters based along the coast of Vietnam. Detailed reports on each of these exporters are given below.

VIETNAM-JAPAN CHIP CORPORATION (VIJACHIP): DANANG

Vijachip began its first surveys in Vietnam in 1989 and was the first foreign woodchip exporter to begin operation in Vietnam. A license was secured in 1993 and the venture began operations in January 1994 with

Nissho Iwai and 5 provincial Vietnamese partners (all provincial branch offices of Vinafor). These five partners are affiliated with the port of Danang, and the provinces of Quang Tri, Quang Ngai and two others (geographically these are likely to be Quang Nam and Thua Thien Hue). Box 6 below provides a brief analysis of the competitiveness of Viachip's operations by the ADB.

Vijachip's plantations were initiated in 1993 and as of August 2003, they had secured an area exceeding 13,000 ha through the Vinafor partners. The species are eucalyptus and acacia, with 100 percent of production exported to Japan. Their recent history of exports includes the following totals:

1994	25,000 BDTs
1995	50,000
1996	70,000
1998	72,000
2000	100,000 plus
2001	100,000 plus
2002	134,000
2003 (proj.)	135,000

In terms of capacity, if Vijachip employed three shifts of workers and if there were sufficient logs, capacity would be 180,000 BDTs. According to an interview with the company, there are enough forest resources in the area to feed this capacity, however, there are also a growing number of competitors. Specifically, there are three new woodchip mills under way in the area: two in Quang Ngai (Vietnamese entrepreneurs) and one in Thua Thien Hue (Taiwanese entrepreneurs - already under construction). Each of these would have a capacity in the range of 50-60,000 BDTs. Thus, the company foresees increasing competition between buyers in the Danang area.

Vijachip's Raw Material Supply

Vijachip has signed contracts with their five partners for supplying logs to the Danang chip mill. However, these plantations are not sufficient for Vijachip's log demand. Thus Vijachip also purchases logs from smallholder farm forestry operations. The supply coming from smallholder operations is where new competition may cut supply and raise logs prices for companies such as Vijachip. The supply coming from smallholders is a crucial aspect to Vijachip's operations, accounting for 50-60 percent of their log supply. According to an informant, the company's five Vietnamese partners maintain a supply network to collect logs. Farmers supplying the mill would most often be planting 1-3 ha of land with fast growing trees, with the largest farmers holding between 50 and 100 ha. Vijachip does not keep records of these farmers and does not have data on their respective locations.

Vijachip's own eucalyptus plantations have been slow to develop. According to an informant, disease has been an issue, particularly a fungus which causes eucalyptus dry leaf disease. Initially, MAI's of 12 m^3/ha/year were hoped for. However, the actual productivity in this area of the central coast has been closer to 4-5 m^3/ha/year. Acacia has shown much better results, with growth rates upwards of 12 m^3/ha/year. Vijachip is in the process of replacing their eucalyptus plantations with acacia. At the moment their mix is 60 percent acacia and 40 percent eucalyptus.

The actual farmgate price for farmers is dependent on the location and road access, distance to the mill, harvesting technique and so forth. The author's informant did not have the actual prices for smallholders in the Danang area available.[9] In 2001, Vijachip established a program for distributing seedlings to farmers. Under this effort, 2 million seedlings have been distributed.

Viachip's Financial Investors

Nissho Iwai has provided 60 percent of the capital for Vijachip Danang. Additional Nissho Iwai operations in Vietnam include Vijachip Vung An (Ha Tinh province) and the Quy Nhon project (partnered with Oji). All of these facilities are producing woodchips exclusively for export. The Vung An facility has just been established, with a production close to Vijachip Danang's. The Quy Nhon facility has about 50 percent of the production of Danang.

Vijachip Comments on Export Taxes and Investment Policies

The export taxes in Vietnam have been progressively reduced, as follows:

1995	15%
1996	10%
1998	5%
2000	0%

This reduction applies for all woodchip exporters. The company informant suggested that year by year, investment policies are improving in Vietnam. "Now there is almost no problem with doing business in Vietnam."

The Danang port is being upgraded as well, with Phase 1 to be completed by 2005 and Phase 2 by 2008. This is an ODA project supported by foreign donors. Within the next year, the highway will be completed from Savannakhet, Laos, to the port of Hai Ting, at Dong Ha City. According to the informant, all of this infrastructure development will assist in furthering exports from the central coast region.

[9] Note: According to the ADB (2000), the price Vijachip offered for logs was US $29.80/GMT in September 2000.

Box 6 – ADB's Assessment of Vijachip Danag

"Vijachip… achieved an average fob price of USD 87.7 per BDT in 1999. Its costs of production were USD 77.5/ton, or 88 percent of the fob price. The purchase of logs was the largest component of costs at 57 percent of the fob price or around two-thirds of total costs of production. According to the Managing Director, the break-even production level is around 70,000 tonnes, and with variable costs such a high proportion, profitability will be very sensitive to both volume and the price of logs. Production has increased from 22,000 BDT in 1994 to 91,000 BDT in 1999. Taxes and profits both amounted to 6 percent of sales in 1999.

International comparison shows that Vijachip is competitive. Its fob prices in September 2000 are some USD 20 lower than hardwood exports from the United States and USD 15 lower than those from Australia. No firm figures are available, but according to Vijachip its prices are slightly lower than those of China and comparable to exports from Thailand. The dominant market for woodchips in the Pacific Rim is Japan, and Vietnam should be able to land woodchips there at prices which are similar to those of its Asian competitors (including Australia) and lower than those from the USA or Chile."

Source: ADB (2000); see also Table 27.

QUY NHON PLANTATION FOREST CO. VIETNAM LTD.

According to Lang (2001), Quy Nhon Plantation Forest Company, Ltd. (QPFL) is a Vietnamese-based venture between Oji Paper (51 per cent); Nissho Iwai (39 per cent); and Dai Nippon (10 per cent). QPFL Vietnam is one of 9 overseas plantation operations of Oji Paper, situated in Asia, Australia and South America, together representing 156,000 ha of Oji-linked overseas pulpwood plantation area. Box 7, below, provides additional details on the organizational structure of QPFL.

Box 7 – Organizational Structure of QPFL

Oji Paper (51%) + Nishho Iwai (39%) + Dai Nippon Printing (10%)

↓

Quy Nhon Plantation Forest Limited (QPFL)

Established 1995; plantation holdings of 10,000 ha (Eucalyptus MAI = 5m^3/hayear; Acacia MAI = 12-14 m^3/ha/year); production in 2002 = 40-50,000 BDTs; plantations are in 7-year rotations; 1,200-1,500 ha come to maturity each year.

QPFL (55%) + Quy Nhon Wood Company (QNWC) (Vietnam) (45%)

↓

Bin Dinh Chip Corporation (BDCC)

QPFL sends logs representing 20-30,000 BDTs to Binh Dinh Chip Corp.

QNWC sends logs representing 50,000 BDTs to Binh Dinh Chip Corporation => BDCC produces 80,000 BDTs of woodchips for export to Oji; QNWC also exports chips through their own chipping facility, 60-70,000 QDT's, 50% to Taiwan and 50% to Japan

QNWC is comprised of Pisico, Vinafor, Vyfaco and the Quy Nhon State Forest Enterprise

Source: Author Interviews.

Binh Dinh Chip Corporation is comprised of two shareholders, the Quy Nhon Plantation Forest Company (QPFL) (55%) and the Quy Nhon Wood Company (45%), which is a Vietnamese firm. Binh Dinh Chip

Corporation (BDCC) currently processes logs equivalent to 70-80,000 BDTs per year (capacity is 120,000). 20,000-30,000 BDTs of logs comes from QPFL and the ownership of these woodchips remains with QPFL. QPFL then exports these woodchips to Japan. QNWC provides 50,000 BDTs of logs. Binh Dinh Chip Corporation purchases these logs from QNWC and exports the woodchips to Japan (all exports from the BDCC facility are sold to Oji Paper). The Vietnamese partner QNWC also has their own woodchip production facility, which is of the same capacity as BDCC. Therefore, QNWC sells logs to BDCC (50,000 BDTs equivalent) and then also exports their own woodchips from their own, somewhat outdated, facility to the Japanese and Taiwanese markets (with a volume of about 50-60,000 BDTs per year).

To summarize, QNWC gathers logs equivalent to 100-110,000 BDTs in total (part of which is supplied to Binh Dinh); and QPFL gathers logs equivalent to 20-30,000 BDTs. However, when all of QPFL's newer high yielding plantations (of acacia hybrid; see below) come on line, the capacity of its plantation operation will be between 40-50,000 BDTs. The total woodchip exports through the port of Quy Nhon, presently in the range of 120,000-140,000 BDTs, should reach up to 140-160,000 BDTs when QPFL's higher yielding acacia hybrid plantations come on line.

QPFL obtains the share of the chips it provides to Binh Dinh from the 10,000 ha of plantations it has planted to date. Each year for the past 7 years (i.e. since 1995) they have planted between 1,200-1,500 ha. Initially the focus was on planting a 50:50 mix of eucalyptus (which was achieving a productivity of 5 m^3/ha/year) and *Acacia mangium* (8 m^3/ha/year). However, in 2000 the company changed planting material to 100 percent acacia. Now, 80 percent of the acacia being planted is acacia hybrid (*A. mangium* + *A. auriculiformis*), with the remaining 20 percent being *A. mangium*. The hybrid strains have been achieving an MAI of between 12 and 15 m^3/ha/year. At the time of interviewing (August 2003), QPFL's plantations consisted of 7,000-8,000 ha of acacia hybrid and in 2 or 3 years the company will have phased out eucalyptus from their holdings completely. There are no plans to deviate from the 7-year plantation cycles currently being used.

The plantation land used by the QPFL is leased from local authorities. According to sources, the company was promised 10,000 ha in the original contract, "so we cannot get any more, the Vietnamese have already fulfilled their obligation." The source was unsure of the potential for future expansions, stating that, with the increasing population in Vietnam, preference would likely be given to agricultural land uses. According to the interviewee, QPFL pays a land lease fee, calculated by the harvested area, starting with the first year of harvest. For his company, although they began planting in 1995, harvesting did not begin until 2002. Thus, leases were paid starting in 2002, with annual increases afterwards, due to an increasing area of harvested land. The unit land lease fee (regardless of area harvested) is fixed at US$1/ha/year So the calculation of the lease, based on their planting program, will be between US$1,200-1,500 in 2002, increasing each year by the additional amount which has been harvested, up to a maximum total of US$10,000 per year by 2008. These rates are based on the regulations for Vietnamese fruit growers.

QPFL's plantations range in size from 50 ha to 200 ha, all within the borders of Binh Dinh province. Maximum distances involved were 150 km, which meant transportation costs were usually in the range of US $15 per double stere. According to sources, the areas leased by the company had previously been state land, denuded and unsuitable for agriculture. QPFL supervised the plantation management, but subcontracted out

to smaller companies for the actual management of the plantations. Management costs were stated as dependent upon the variable conditions of the specific plantation; however, contracting out the plantation management function for the whole year would usually yield the same unit price. The subcontractor negotiates plantation management fees each year, with the price changing somewhat from year to year, based on whether there is harvesting involved, etc.

An upper forecast for the export production of QPFL plantations in Vietnam – assuming an average productivity of 14 m^3/ha/year, a total of 1,500 hectares of harvestable plantation per year and a conversion ratio of 1 m^3 of green wood: 0.5 BDT – would be in the range of 42,000 BDT woodchips per annum. The estimates for the total price of raw materials and processing for QNWC were given as between US$45-50 per BDT. If the conversion rate from BDT to double stere is assumed to be 1.75:1, this equals US$ 25.7-28.6 per double stere. The selling price was suggested as "the normal Vietnamese price" of $70-80 /BDT (FOB).

The remaining export taxes for woodchip production have been removed. Now that QPFL has begun production however, some taxes are applicable. But since the company is in an overall deficit at this time, there are no taxes on transferring profits from its wood chip sales to its plantation operations.

As far as the Chinese market is concerned, the informant from QPFL suggested that the buying power of both the Japanese and Taiwanese corporations was higher than that of the Chinese. The informant had never heard of Chinese brokers looking for woodchips from this area of Vietnam. The informant guessed that the Chinese would be paying between US$60-65/BDT FOB, while "in this area the prices are $70-$80, which is a $10 difference". The informant, however, did not rule out future increases in the buying prices of the Chinese.

The informant also listed a number of Vietnamese firms that were entering into the chipping business. Quang Ngai province for instance has a Vietnamese-run facility in Dung Quat town with the same capacity as QPFL. A number of others were also mentioned: *Pisico*, *Vyfaco* as well as some plantation companies. These first two Vietnamese companies just started production in 2003. The informant also mentioned the Vijachip Vung An company, established with the same organizational structure as Vijachip Danang, but was unsure about their production data.

In conclusion, the informant suggested that Binh Dinh was not an ideal place for a plantation and woodchip operation. There was not an abundance of land suitable for growing trees and the area was also known for damaging windstorms and typhoons. The suggestion was that more suitable areas for plantations would be found in Ga Lai and Kontum; these are also areas less than 100 km from the coast. There are already 2 chip mills in the Quy Nhon area, which limits any room for expansion. However, logs from Kontum and Ga Lai can be transported to the coast, with Quy Nhon, Dung Quat and Nha Trang as the suitable export ports.

CAT PHU/ C & P PLANT WOOD CHIP COMPANY LTD.

Cat Phu is a small woodchipper established in 2000, located on the outskirts of Nha Trang city in Kanh Hoa province.[10] It is a joint venture between Taiwan (Mihaud Co.), Oji Paper and the Government of Vietnam. The operation includes both the woodchipping facilities and a plantation program, employing 115 people in total. The production of the facility explicitly depends upon the supply of raw materials. With sufficient supplies, Cat Phu can produce 6,000 BDTs of woodchips per month. For the year 2002, however, their actual production was 48,000 BDTs, due to a limited availability of logs. All of their production is for export, with the woodchips being sold to a Singaporean firm and then on to Japan. The informant was not aware of the name of the Singaporean firm involved; it is probably safe to assume that Oji is the end customer.

According to the informant, the raw material is sourced from a radius as far as 600 km. Most supplies are secured from the provinces of Kontum and Dak Lak, but logs also arrive from the provinces of Quang Nam, Ga Lai, Binh Dinh, Phu Yen, Ninh Thuan, Lam Dong and Binh Thuan. The company also initiated a planting program in 2001. The informant stated that the company was planting eucalyptus, although the informant was unsure of the hectarage that had been planted to date. The planting program is focused on areas within Kanh Hoa and Phu Yen provinces. Currently, production is dependent on supplies from both small farmers, planting eucalyptus and acacia, as well as state government plantations. The informant could not provide further details on the nature of these supply sources, only stating that the company had signed supply agreements with various provincial governments.

Prices were suggested to be approximately US$32.30 per double stere at the factory gate. The company provides transportation services for those farmers holding supply contracts with the company. The average price charged for transportation was US$7.75 per double stere. The informant stated that the FOB costs for their facility were in the range of US$58/BDT. No further information about their actual selling price could be provided, as this was set by the head office. Factory floor workers, according to the manager, receive US$1.30 per day for their labour.

At the time of the interview, the company was looking to expand its production, as at the time they were basically able to sell as much as they could produce. Raw material supplies were the limiting factor; and at the time of the visit production had been halted for two weeks due to supply disruptions. The informant suggested that the company was focused on providing materials to their Japanese customers, stating "we do not think about the Chinese."

SANRIMJOHAP VINA CO. LTD.

Sanrimjohap Company started in 1994 as a joint venture agreement between Vietnamese and South Korean parties (involving Korea's National Forestry Cooperatives Federation through a subsidiary --Seyang Cosmo Inc.) and was at that time called the Vietnam-Korea Woodchip Import and Export Co. Ltd. As of 2002, the company was converted to 100 percent foreign ownership and adopted its current name. The company has

[10] Note: Cat Phu may be one of Vitaico's (Vietnam-Taiwan joint venture) group of 3 or 4 mills in Vietnam, although this was not confirmed in the interviews.

been planting acacia in southern Vietnam since 1994, with numerous plantation locations in Vung Tau Barri Province totaling 10,000 ha. The woodchip mill was established in 1996, with all exports targeted to South Korea. Japan is viewed as a potential additional export destination and Sanrimjohap has been speaking with Nissho Iwai concerning this possibility.

The company's 10,000 ha were secured through the Vietnam Forestry Department. According to the informant, in general there are two methods of securing plantation land in Vietnam: the first is to rent the land directly from the Vietnamese government; the second method is form joint contracts with a state-owned forest enterprises (SFE). In the second arrangement, the foreign investor signs a joint plantation contract with a regional SFE. The investor then provides the capital. The SFE provides the land and holds responsibility for planting and plantation management. In this instance, Sanrimjohap arranged the capital financing and supervises the plantation operations. At the time of harvest, the logs are shared according to the terms of the contract.

An inquiry was made concerning why Sanrimjohap chose the second approach to investing in plantations in Vietnam over the first. The informant suggested that companies such as QPFL, who had leased the land directly from the Vietnamese authorities, have faced some difficulties with the sub-contractors they have hired to manage their plantation area. A second rationale is that it requires more up-front capital to lease the land directly. Finally, a third reason is that one would need to have the skilled personnel to manage and oversee the subcontractors in the case of direct leasing. Sanrimjohap has only four people working with them in Vietnam, so it would be impossible for them to manage or completely oversee the management of the plantations directly.

The informant stated that in the case of QPFL, the Vietnamese authorities also tended to recommend poor quality areas for allocation to these external investors. The potential for disputes with local people was provided as another reason to leave the plantation side of the business up to Vietnamese SFE partners. Finally, the interviewee suggested that the costs for South Korean labour were 20 times that of Vietnamese labour, while the Japanese or Koreans could not manage the plantations any better than the Vietnamese engineers.

Plantation Species and Management

In 2000 Sanrimjohap changed their plantation species mix from *Acacia auriculiformis* to acacia hybrid (auriculiformis + mangium). The experience with planting acacia hybrid in south Vietnam has been an MAI of between 25-30 m^3/ha/year. The length of rotation of the plantations depends on the areas under planting: in good condition area rotations are between 4-5 years, and in poorer areas, the rotations are 6 years. The actual areas are between 200 and 300 ha in size, with all of the land being flat farmland, not mountainous as in the central coastal areas.

Since the second rotation (2000), Sanrimjohap have incorporated agroforestry models to their operations. Mature trees are harvested from April to May; in June corn is planted and harvested after three months. Then beans or peanuts are planted, and before the dry season begins there is a second harvest, followed by the planting of another tree crop rotation. The system also assists in making the forest ground clear and helps

with fertilization. According to the informant, this agroforestry model is a collaboration with local people. Sanrimjohap permits their Vietnamese partners to arrange this with local people. The Vietnamese partners have their own rules for sharing the area, which includes requiring the local people involved to share in management costs.

Production

The informant from Sanrimjohap forecasted company production in 2003 to be between 30 and 35,000 BDTs. At a point in the future this amount would be increased to between 40-50,000 BDTs, according to the supply of logs. Up until the time of the interview, the log supply had been a 50:50 mix in terms of purchasing logs from outside sources versus self-supply. However, by 2004 this will change to 70-80 percent of production coming from their own plantations. The informant could not guess the number of farmers they source from. However, in addition to logs from their own partner-plantations, the company also sources supplies from two other brokers.

Costs and Supply of Raw Materials

Log prices were stated as being approximately US$30 per double stere at factory gate. The informant suggested that to produce 1 BDT of chips, the complete costs came to approximately US$60. The maximum distance for sourcing materials for the company is less than 300 km and averages 200-250 km. Transport costs usually account for between US$10-12 per double stere.

According to this informant, the southern Vietnam woodchip industry is gradually facing increasing difficulties in accessing supplies. This is primarily due to two reasons:

1. Farmers are gradually reducing fast-growing forest areas due to urbanization and industrialization (converting farmland to urban areas) or to change it to other crops (sugar cane, cassava).

2. Vietnam is becoming an exporting nation and thus there is increasing demand for wood pallets. Certain diameter logs are now used to supply the pallet industry, the price for these logs is higher than for woodchips

HCMC has three woodchip mills and according to the informant all are facing difficulties in accessing raw materials. The supply situation will become more serious, unless the company will be able to develop enough plantation area of its own. As a result of the short supply, prices in this area are increasing and quality is dropping; it is now a seller's market. Sources estimated at the time of interviews that compared with 2000, log prices had increased 7-8 percent and because of the smaller diameter of logs on the market, capital costs were 10 percent higher than before. The customary cut-off for diameter was previously 6 cm. Logs with more than a 6 cm diameter now represent average sizes for the industry. Logs of 4-6 cm in diameter are considered smaller in size and their prices are 50-60 percent lower. Any logs of more than 12 cm in diameter are now used for the pallet and packaging industries. Sanrimjohap does not face competition for raw materials from the paper mills in this area (Dong Nai for instance) as the production of these mills is very low and most are using imported pulp.

Exports

All of Sanrimjohap's production is exported to South Korea. The two other woodchip exporters the southern area are an Itochu joint venture (Southern Forest Resources) (with Japanese-Vietnamese ownership) and Vitaico (with Vietnam-Taiwanese ownership). Vitaico exports to both Japan and Taiwan, but the informant was not sure of their export statistics.

Policies and Incentives

In 1999 or 2000, there was an export tax for woodchips in Vietnam. The foreign investors in the woodchip industry appeared in Hanoi to lobby for a reduction. Shortly afterwards the export tax was reduced to zero percent. At the time interviews were conducted, the primary constraint to the woodchipping business was finding more good land to expand plantation activity. In other taxation matters, Vietnam was described as a "cooperative environment."

Impacts of China

The suggestion was made that producers were talking about the potential for growth in the Chinese paper market. However, the informant also noted that for the moment China was still exporting woodchips to both South Korea and Japan. The total exports from Vietnam were suggested by the interviewee to be approximately 500,000 BDTs.[11] This represents a limited quantity of chips for Japan and Korea. "Unless China provides good agreements and unless they can offer higher prices than Japan, Korea and Taiwan, they will not be importing much from Vietnam." As of 2003, the informant suggested that Japanese buyers were paying the most for woodchips FOB, followed by Korea and then Taiwan.

In the past, Japanese and Korean pulp mills were not interested in Vietnam, compared with the available production from Australia, South Africa and North America. However, now that the supply situation is much tighter, buyers have to be more concerned about costs and distances are lower for Southeast Asian suppliers. Thus, East Asian buyers will try and import more from Southeast Asia.

Information on Other Players

According to the interviewee, Vitaico was stated to have 3 or 4 factories, from north to south. These include Haitaico in Haiphong, which is still in existence, albeit with reduced production capacity due to log supply restrictions. Vitaico also had a production facility in Nha Trang, as well as one under construction in Hue near Danang.

[11] Note that estimates in this study are higher.

SFR (VIETNAM) CO. LTD. (ITOCHU, JAPAN)

The *International Woodchip and Pulplog Trade Review* (2002) reported a production capacity of 210,000 BDT/year for SFR and also reported that the company had a very good supply network in place. All wood was said to be secured through water transport at 5 major collection sites on the water. Their export buyer was listed as *Chuetsu Pulp*. Recent shipments were listed as follows:

1997	- 40,000 BDTs
1998	- 40,000 BDTs
1999	- 50,000 BDTs
2000	- 70,000 BDTs
2001 (Est.)	- 100,000 BDTs
2002 (Proj.)	- 100,000 BDTs

SFR (Vietnam) is a joint venture between investors from Hong Kong and Vietnam. The Hong Kong shareholders are themselves a joint venture between Hong Kong and Japan (Itochu Corp.). SFR has been exporting woodchips from Vietnam since 1990. Initially their supplier was a local partner; and SFR was involved only in trading the woodchips. However, 7 to 8 years ago the joint venture decided to invest directly in woodchip production. Thus, SFR has been in the woodchip business for 13 years but is now more fully involved than before.

In 1990-91, SFR's production was approximately 30,000 BDTs of both acacia and eucalyptus chips. In 1998 their production was 60-70,000 BDT. In 2000, their production reached 80,000 BDT and by 2002 their exports were 84,000 BDT. In 1998, the company established a new factory which increased their capacity. Capacity is now at perhaps 120,000 BDT; however, 80-90,000 BDT is the more usual production figure. Their export destination is Japan.

The export operations of SFR are located in Dong Nai province, at the mouth of the river at Vung Tau. All three chip exporters in south Vietnam are located along the riverside at Vung Tau. The first on the river is Sanrimjohap, second is SFR, and third is the Taiwanese company (Vitaico).

Supply Sources

SFR apparently has small areas of their own plantations, which account for approximately 10-15 percent of their export volume. These 3,500 ha are located in Dong Nai, Ba Ria and Vinh Thuan Provinces, in 5 to 6 locations. The other 85-90 percent of their supply comes from small farmers and plantation owners.

Plantation and Land Management

SFR's plantations consist of acacia hybrids, with average yields estimated by the interviewee at 50-60 m^3/ha per 7 year rotations (= .1-8.6 m^3/ha/year). SFR does not hold the land rights to the areas they use as plantation sources. SFR holds a kind of sublease arrangement with the local government and state forest enterprise with the length of this lease depending on the area under question. The sub-leasing arrangement

was described as 'complicated' and the interviewee could not provide any further information on the nature of the contracts involved. The distances to the factory from the plantation areas were estimated as averaging 100 km. The company's subcontractors handled the transportation side of things, with costs usually in the range of US$9.70- 12.90/$m^3$ for transport. In some cases these subcontractors were also responsible for plantation management.

Sourcing from Small Farmers

Raw materials were also supplied through one subcontractor-broker who purchases logs from small farmers. The informant could not provide an estimate of the number of farmers who were involved. The broker sourced logs from a radius of approximately 200 km in an open-market system. To date, this system has worked reasonably well for SFR and the informant stated that the company would just not have the manpower required to establish set contracts with supplying farmers. SFR would usually establish year-to-year contracts with their broker and then the broker would take care of the rest of the supply side.

Prices

The informant was not able to provide factory gate prices; however, he suggested that prices had been rising by 2 percent per year. It was noted by way of explanation that other industries, such as the furniture, pallets and packing boxes were growing in their usage of wood and that these buyers were able to offer higher purchase prices for logs.

FOB prices are usually negotiated with their customer on an annual basis, based broadly on the world market price for that time. The interviewee suggested that prices for Vietnamese woodchips entering the Japanese market would have an approximate US$10 advantage over their Australian competitors, based largely on the lower transportation costs.

China

The informant stated that SFR primarily respects their current buyer in Japan, Itochu, and that this customer purchases as much as SFR can supply in woodchips. "Maximizing the production for Japan is the key" he stated. He added:

> "That said, most players in the industry recognize opportunities in China. In two to three years, the market may tighten up because of China. China also has many pulp mills planned. Of course, these pulp mills will try to secure resources within China first, but next they must seek resources in other countries. If we assume the global woodchip market is relatively balanced, then the question becomes which countries can increase their production to export to China."

The interviewee stated that he was unsure of the differential in prices that Chinese buyers offered in comparison to Japanese, Korean or Taiwanese, however he would expect that Chinese would be offering lower prices. The key question for China would therefore be how to secure the required volume.

Vietnamese Production

The frank opinion of the informant was that there was likely to be very limited opportunities for an expansion in their raw material supplies in the southern Vietnam area. He also suggested that Vietnam may be reaching the threshold in expansion of woodchip operations up and down the coastline.

> "Many foreign investors have set up chip mills, and now local people are hearing of this - that this business makes money. So local guys are also trying to establish chip mills in the area. The situation will change in a short period of time here in Vietnam. I frankly do not see much room for expanding the business in this location [southern Vietnam]."

SOUTH RAW MATERIAL COMPANY

Previous to 2001, the name for the state-owned enterprise South Raw Material Company (SRMC) was the Dong Nai Raw Material Co. They are charged with supplying forest raw materials to all of the southern provinces. The organization plants two species: pine (approximately 2/3rd of plantation area) and acacia (about 1/3rd). As of 2002, the company had planted approximately 21,000 ha of pine and 10,000 ha of acacia hybrid. The yields were provided a 150-200 m^3/ha/7 years for acacia hybrid [21.4 m^3/ha/year to 28.6 m^3/ha/year]. Pine yields were given at 250-300 m^3/ha/15-20 years [between 12.5 to 20 m^3/ha/year]. South Raw Material Company has plantations located in the provinces of Kontum, Dak Lak, Lam Dong, Dong Nai and Binh Thuan.

None of the plantation pine or acacia was ready for harvesting at the time of interviews, as the plantings were only established in 1996. The plan for SRMC is to supply raw materials for the Kontum Mill Project as well as to another pulp project in Lam Dong. The Lam Dong Project is a project of Vinapimex, designated for 100,000 tonnes per year of production, to be increased to 260,000 tonnes by 2010. "In principle we will supply 100 percent of this mill's requirements."

For the Kontum project, the interviewee suggested that the government would be meeting in September of 2003 to discuss the pulp mill project.[12] Pulp capacity was expected to be initially 135,000 tonnes/year and to double to 260,000 tonnes at a future date. The informant stated:

> "Perhaps 100 percent of their supply will come from this company. If we do not have enough, the company may have to buy from other sources. So yes, they will probably have to buy from others- there are many enterprises [SFEs] and private growers."

The land areas of the SRMC Company were provided through the government, based on a 49 year cycle. The plantation areas were stated to have belonged to the provincial authorities or various SFEs before the company was formed in 1996. SRMC was at the time also positioning itself to expand its plantation area, both in Lam Dong and Kontum. The informant stated that in Lam Dong their company would expand to 135,000 ha, and in Kontum up to 60,000 ha. SRMC would also invest with SFEs in both Lam Dong and Kontum, if they planted trees for them. Apparently, in Lam Dong 11,500 ha were secured in 2003 through

[12] The Kontum project has been shelved since the time of this interview.

such cooperation, with an additional 1,000 ha secured in Kontum. Other agreements with SFEs included 300 ha in Ca Mau, 700 ha in Bin Thuan, 200 ha in Dak Lak, and 700 ha in Dong Nai.

In the opinion of the informant, the smaller pulp and paper mills being planned by the state government would not be competitive. SRMC is also considering other end uses for their own plantations. For instance they are considering thinning their pine plantations and using them for supplying the pulp and furniture industries. The suggestion was made that the company may move towards an emphasis on "2 parts pulp and 1 part furniture" in the future. In general price terms, pine was stated as selling at approximately US$29/$m^3$, while acacia hybrid fetched prices in the range of approximately US$24.50/$m^3$. Nursery capacity for SRMC was said to be between 15 and 20 million seedlings/year. In poor soil areas, the productivity of acacia hybrid was usually around 27 m^3/ha/year, while in very good soils it reaches 35 m^3.

SUMMARY OF MAJOR CHALLENGES TO FORESTS AND FOREST-BASED LIVELIHOODS IN VIETNAM

A first conclusion from this report is that the links between growing Chinese imports of wood products and impacts on 'producer countries' in Southeast Asia can be overstated. In general, from the available information, Chinese demand does not appear to play a leading role in impacting Vietnam's forestry situation, although information on the illegal trade in logs and sawntimber, either originating in Vietnam or transiting through Vietnam from Laos and Cambodia, remains sparse. Currently, China does not appear to be a major destination for Vietnam's rapidly expanding furniture exporters (who may be sourcing substantial supplies of wood from Cambodia and Laos), although securing good information on this trade was difficult.

Vietnam is however viewed by many observers and industry players to represent one of the primary opportunities for expanding the area of fast-growing tree plantations in mainland Southeast Asia, and China may play a key role in reshaped plantation product trade networks. Jakko Poyeary has completed a favourable assessment of Vietnam's export-based woodchip industry and these results have been incorporated into a current World Bank smallholder plantation project focused on the coastal provinces. From interviews with woodchip operators, log supply is generally considered the primary constraining issue for efforts to increase production. Vietnam is especially favourable in comparison to exporters such as Australia in terms of shipping costs to major buyers in Japan (e.g. Oji).

Interviewees did typically state that there was a hierarchy of 'willingness to pay' among woodchip importing companies, with Japan at the highest rung, followed by Korea/Taiwan, and with companies China offering the lowest buying prices (although increases in Chinese bidding prices were thought to be possible). However, the fact that woodchip operators in Vietnam typically represent foreign direct investments with major Japanese, Korean or Taiwanese firms also calls into question the notion of a 'free buying market' in woodchip production. The real potential of Chinese firms to attract supplies from the Vietnamese woodchip operators (i.e. the extent of the price premium Chinese would have to pay to divert woodchips from their usual buyers) represents an interesting question to pursue. With Japanese companies such as Oji establishing large

operations in China, however, this hierarchy of relative purchasing prices by country becomes clouded further.

In the pulp and paper sector, Vietnam has proposed large-scale expansions planned at a number of sites, including Bai Bang, Kontum and Lam Dong. At the time of interviews, relevant supply strategy plans for these projects were unavailable. Indeed, this likely reflected a degree of poor planning by the project proponents projects themselves, as the Kontum project and possibly the Lam Dong project have subsequently been placed on hold. More detailed follow-up interviews with representatives from these companies and their corresponding state raw material companies as well as Vinapimex/Vinafor would be required to evaluate related issues concerning natural forest sustainability and the implications for nearby rural communities.

When this unclear supply situation (and indeed the overall financial uncertainty associated with some of these state pulp and paper enterprises) is combined with the sharp reductions in tariffs arriving with the Asian Free Trade Agreement (AFTA) and the generally small scale of the proposed mills, the general conclusion must be that, with the exception of Bai Bang, most of the proposed expansions will not be proceeding, at least in their current form. The ADB (2000a) report states:

> "Even assuming that they succeed in remaining competitive and that local pulp production is also economically efficient, the aim of expanding pulp production from the present 60,000 tonnes a year to over 1 million tonnes in 2010 is ambitious. It may be difficult to obtain the necessary funds and there are also doubts as to whether the planned mill sizes (Bai Bang, for example, is to be expanded from 50,000 to 200,000 ton capacity in two stages) are large enough to achieve economies of scale. Maximum economies of scale in modern mills are apparently achieved at outputs of at least a million tonnes of paper a year."

It should be kept in mind, however, that the largest of the Thai producers (Advance Agro) is currently operating at a very respectable capacity and production level of 430,000 tonnes of pulp and 475,000 tonnes of paper, with the other Thai mills producing pulp at half this rate. Although *maximum* economies of scale may indeed emerge at one million tonnes of production, there may be room for a targeted subset of Vietnamese-based pulp firms to compete in the ASEAN market. With Vietnam set to become a full member of the World Trade Organization by January 2006, both the opportunities and the challenges for Vietnam's pulp and paper sector will become even more apparent. Reports from 2004 stating that key subsidiaries of Vinapimex, including Viet Tri and Bai Bang, were in danger of bankruptcy add a further layer of complexity upon this situation.

The potential for negative outcomes for local people in terms of loss of land or resources due to plantation expansion in relation to changing domestic and regional markets is always present. Much will depend on the actual implementation of the land and forest allocation process associated with the awarding of Red Books to rural tillers. The signals appear to support the notion that thus far, the decentralization and titling process has not been accomplished through genuine local participation (Dupar and Badenoch 2002). The key sites to be focusing on in terms of potential impacts on livelihood security from plantation forest programs (both large-scale and smallholder focused) will be the upland forested zones, particularly involving ethnic minority farmers maintaining common property systems. Expansions in the woodchip sector could have similar

displacement impacts. However, much of the raw material for these exporters is secured from coastal provinces, where tenure security is likely to be somewhat higher than in the more remote uplands. In coastal regions, the promotion of fast-growing tree plantations through smallholder development would need to be handled with a high degree of caution. Development programs which promote the fuller integration of rural farmers into capitalist markets inherently involve an increased exposure to new risks. This is true under the best of circumstances, not least in national contexts where market-oriented institutions are just being developed and where the state is less than responsive to local needs. The consequences of forestry market failure, in a situation without functioning safety nets, would be severe for local farmers situated at, or just above, the poverty level. At the same time, the current situation carries its own risks with widespread illegal logging and a steady decline in the natural resource base upon which most rural people depend. In January 2005, it was announced that international donors would be supporting Vietnam's Forestry Development Strategy and the 5MHRP with US$200 million in funding between 2006 and 2010 (Forests.org 2005). Such a program will need to be responsive to the issues outlines in this report: illegal logging and unregulated forest trade flows; plantation development, common property and local resource tenure; market risks and livelihood security; decentralization and state forestry sector reform; and finally the role of new forestry market opportunities and challenges involving China and the region.

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TABLES

Table 1: Distribution of Forest Types in Vietnam

Region	Area	Forest Area (ha)							% Cover
		Total	Natural Forest					Plantation Forest	
			Total	Timber	Bamboo	Mixed	Mangrove	Rock	
Nation	32,894,398	10,915,592	9,444,198	7,779,647	789,221	702,871	71,020	101,439	1,471,394	33.2
North Mountainous	10,318,658	3,332,423	2,775,004	2,246,402	233,667	182,7334	22,969	89,232	557,419	32.3
NE	6,746,293	2,368,982	1,890,595	1,528,448	176,449	132,745	22,969	29,984	478,387	35.1
NW	3,572,365	963,441	884,409	717,954	57,218	49,989	0	59,248	79,032	27.0
Red River	1,266,254	83,638	45,333	28,117	80	0	4,929	12,207	38,305	6.6
N Central	5,130,454	2,135,649	1,835,633	1,563,000	172,999	99,110	524	0	300,016	41.6
Central Coast	3,301,624	1,139,291	969,316	939,096	27,519	2,517	184	0	169,975	34.5
C. Highlands	4,464,472	2,373,116	2,339,167	1,990,191	210,343	138,633	0	0	33,949	53.2
E. South	4,447,622	1,581,000	1,416,643	977,563	144,613	279,877	14,590	0	164,357	35.5
Mekong Delta	3,965,314	270,475	63,102	35,278	0	0	27,824	0	207,373	6.8

Source: MARD (2000).

Table 2: Area of Natural Forests and Plantations by Province

Region/Territory/ Province	Area (ha)	Forested Areas			Forest Cover Rate (%)
		Total (ha)	Natural Area (ha)	Planted Area (ha)	
Whole Country	**32,894,398**	**10,915,592**	**9,444,198**	**1,471,394**	**33.2**
North	**16,715,366**	**5,551,710**	**4,655,970**	**895,740**	**33.2**
Red River Delta	**1,481,446**	**110,372**	**54,938**	**55,434**	**7.5**
Hanoi	91,846	4,166		4,166	4.5
Hai Phong	151,369	8,580	6,493	2,087	5.7
Vinh Phuc	135,220	26,167	9,605	16,562	19.4
Ha Tay	219,296	14,104	4,393	9,711	6.4
Bac Ninh	79,972	567		567	0.7
Hai Duong	166,078	9,867	3,104	6,763	5.9
Hung Yen	89,084	0			0
Ha Nam	84,238	8,012	6,652	1,360	9.5
Nam Dinh	167,800	5,541	1,125	4,416	3.3
Thai Binh	153,780	6,515		6,515	4.2
Ninh Binh	142,763	26,853	23,566	3,287	18.8
North East	**6,531,101**	**2,342,248**	**1,880,990**	**461,258**	**35.9**
Ha Giang	788,437	284,537	262,957	21,580	36.1
Cao Bang	669,072	208,586	199,673	8,913	31.2
Lao Cai	804,400	240,184	202,589	37,595	29.9
Bac Can	479,554	235,247	224,114	11,133	49.1
Lang Son	818,725	243,331	184,017	59,314	29.7
Tuyen Quang	582,002	297,128	235,635	61,493	51.1
Yen Bai	688,292	258,918	180,430	78,488	37.6
Thai Nguyen	356,639	139,421	99,796	39,625	39.1
Phu Tho	350,634	115,106	56,511	58,595	32.8
Bac Giang	382,265	97,975	64,441	33,534	25.6
Quang Ninh	611,081	221,815	170,827	50,988	36.3
North West	**3,572,365**	**963,441**	**884,409**	**79,032**	**27.0**
Lai Chau	1,691,923	485,986	473,845	12,141	27.0
Son La	1,405,500	310,135	287,161	22,974	22.1
Hoa Binh	474,942	167,320	123,403	43,917	35.2
North Central Coast	**5,130,454**	**2,135,649**	**1.835,633**	**300,016**	**41.6**
Thanh Hoa	1,116,833	405,713	322,003	83,710	36.3
Nghe An	1,638,233	684,398	623,086	61,312	41.8
Ha Tinh	605,574	206,505	169,367	37,138	34.1
Quang Binh	803,760	486,688	447,837	38,851	60.6
Quang Tri	465,134	138,161	103,097	35,064	29.7
Thua Thien Hue	500,920	214,184	170,243	43,941	42.8

South	**16,054,195**	**5,363,882**	**4,788,228**	**575,654**	**33.4**
South Central Coast	**3,176,787**	**1,139,291**	**969,316**	**169,975**	**35.9**
Da Nang	124,837	52.132	37,066	15,066	41.8
Quang Nam	1,040,514	425,921	388,803	37,118	40.9
Quang Ngai	511,534	126,605	91,933	34,672	24.8
Binh Dinh	602,555	196,067	151,760	44,307	32.5
Phu Yen	503,512	156,776	135,813	20,963	31.1
Khanh Hoa	518,672	181,790	163,941	17,849	35.0
Central Highlands	**5,440,622**	**2,991,653**	**2,930,377**	**61,276**	**55.0**
Kon Tum	961,440	612,489	602,530	9,959	63.7
Gia Lai	1,549,571	742,672	728,372	14,300	47.9
Dac Lac	1,953,461	1,017,955	1,008,265	9,690	52.1
Lam Dong	976,150	618,537	591,210	27,327	63.4
Northeast South	**3,471,472**	**962,463**	**825,433**	**137,030**	**27.7**
TP Ho Chi Minh	209,199	35,296	11,852	23,444	16.9
Ninh Thuan	335,227	157,415	151,838	5,577	47.0
Binh Phuoc	685,393	164,959	153,986	10,973	24.1
Tay Ninh	402,783	40,215	34,463	5,752	10.0
Binh Duong	271,744	11,304	4,101	7,203	4.2
Dong Nai	586,035	150,353	110,678	39,675	25.7
Binh Thuan	784,859	367,469	342,489	24,980	46.8
Ba Ria- Vung Tau	196,232	35,452	16,026	19,426	18.1
Mekong River Delta	**3,965,314**	**270,475**	**63,102**	**207,373**	**6.8**
Long An	444,866	35,925	1,554	34,371	8.1
Dong Thap	323,530	9,059		9,059	2.8
An Giang	340,623	9,186	583	8,603	2.7
Tien Giang	232,609	4,282	368	3,914	1.8
Vinh Long	1147,374	0			0
Ben Tre	228,715	3,414	1,009	2,405	1.5
Kien Giang	624,565	86,753	44,064	42,689	13.9
Can Tho	296,423	1,908		1,908	0.6
Tra Vinh	236,585	8,019	1,794	6,225	3.4
Soc Trang	320,027	8,476	1,686	6,790	2.6
Bac Lieu	248,927	4,149	2,291	1,858	1.7
Ca Mau	521,070	99,304	9,753	89,551	19.1

Source: Department of Planning and Projection, MARD (2002). Data as of December 1999.

Table 3: Government of Vietnam's Plans for Expansion of the Pulp and Paper Industry by Existing/Planned Mill (as of 2000)

Mill	Capacity (tonnes/year) 2001-2005	2006-2010	Targeted Start-up
Mill expansion: Bai Bang	55,000	100,000	Current
Mill expansion: Viet Tri	10,000	30,000	Current
Mill expansion Tan Mai	50,000	120,000	Current
Mill expansion: Dong Nai	15,000	100,000	Current
New paper mill: Kon Tum	130,000	260,000	2004
New paper mill: Thanh Hoa	50,000	200,000	2004
New paper mill: Hoa Binh	200,000	300,000	2005
New paper mill: Bac Kan	50,000	100,000	2005
New paper mill: Bac Giang	100,000	200,000	2005
New paper mill: Bac Nghe An	100,000	200,000	2005
New pulp and paper mill: Lam Dong	100,000	300,000	2005
New paper mill: Lai Chau	--	150,000	2007
New paper mill: Son La	--	150,000	2007
New paper mill: Yen Bai-Lao Cai	--	200,000	2006
New paper mill: Lang Son	--	150,000	2006
New pulp and paper mill Nam Na	--	150,000	2007
New paper mill Quang Tri	--	100,000	2007
New paper mill Tay Quang Nam	--	100,000	2008
New paper mill Binh Dinh	--	150,000	2007
New paper mill TN Dac Lac	--	200,000	2006
New paper mill Can Tho	--	200,000	2008
New pulp and paper mill Binh Thuan	--	150,000	2007
Other small and medium mills	340,000	1,390,000	All are expansion investments
Total	1,200,000	5,000,000	

*Source: MARD (2000). *Note: many if not most of these plans will not come to fruition, and some have already been shelved (e.g. Kontum)*

Table 4: List of Existing Plywood Factories in Vietnam

No	Mill	Designed Capacity (m^3 wood input/year)	Note
1	Factory Cau Duong (Ha Noi)	6,000	Export product
2	Factory Dong Ha (Quang Tri)	40,000	Export product
3	Factory Tan Mai (Dong Nai)	10,000	Export product
4	Factory Dong Nai	5,000	Export product
5	Factory Khanh Nguyen (Binh Phuoc)	20,000	Export product
6	Factory Kon Tum	10,000	Export product
7	Factory Thanh Hoa	2,000	Export product
8	Factory Gia Lai	7,000	Export product
9	Other units: Son La, Yen Bai, Ha Noi, Thanh Hoa, Nghe An, HaTinh, Thua Thien-Hue, Khanh Hoa, Lam Dong, Dac Lac, Ho chi Minh City	50,000	For domestic demand
	Total	**150,000**	**Existing production reaching 36,000m^3 product output/year**

Source: MARD (2000).

Table 5: List of Existing Chip Board, Fiberboard and Dendrocalamus Factories

No	Factories	Designed capacity (m^3 roundwood input / year)	Notes
1	Chip board and fibre board factory Viet Tri	8,000	Equipment from Nam Tu, China
2	Sugarcane residue board factory Hiep Hoa (Long An)	5,000	German equipment
3	Chip board factory Tan Mai (Dong Nai)	10,000	American equipment, being constructed
4	Chip board factory Binh Thuan	10,000	
5	Slat board factory Satimex Sai Gon	4,000	Japanese
6	Slat board factory Nam Hong (Ha Tinh)	4,000	Korean
7	Slat board factory Lam Dong	4,000	Japanese
8	Slat board factory Dak Lak	4,000	Taiwanese
9	Slat board factory Gia Lai	4,000	Taiwanese
10	Slat board factory Binh Phuoc	1,000	Taiwanese
11	Slat board factory Quy Nhon	1,000	Formach
12	Slat board factory Long Binh Tan	2,000	Formach
13	Slat board factory Central Highlands	2,000	Formach
14	Dendrocalamus Bamboo board factory Hoa Binh	1,000	Chinese
15	Dendrocalamus Bamboo board factory Lang Son	1,000	Chinese
16	Dendrocalamus Bamboo board Factory Trung Van	1,000	Chinese
17	Dendrocalamus Bamboo board Factory Thanh Hoa	1,000	Taiwanese
	Total	**64,000**	**Current production reaches 14,000 m^3 product output/year**

Source: MARD (2000).

Table 6: Planning for Construction of Artificial Board Factories 2001- 2010

No	Factories	Capacity (m^3 product/year)	Notes
	I. Period 2001 – 2005	300,000	
1	MDF Factory Luong Son, Hoa Binh	54,000	
2	Chip board factory Thai Nguyen	30,000	
3	Chip board factory Viet Tri	27,000	Factory currently operating with annual capacity of 12,000 m^3 of product
	- chip board (current capacity10,000 m^3 product)	25,000	
	- fiber board (current capacity 2,000 m^3 product)	2,000	
4	Bamboo chip board factory Thanh Hoa	20,000	
5	Chip board factory Hue	20,000	
6	Chip board factory Da Nang	35,000	
7	Chip board factory Binh Thuan	20,000	
8	MDF factory Gia Lai	54,000	
9	Artificial board factory La Nga	30,000	
	- chip board	15,000	
	- MDF	15,000	
10	Chip board factory Tan Mai, Bien Hoa	10,000	
	II. Period 2006 – 2010	1,000,000	
11	Existing artificial board factory	100,000	
12	Artificial board factory Quang Nam	100,000	
13	Artificial board factory Quang Ngai	100,000	
14	Artificial board factory Binh Dinh	100,000	
15	Artificial board factory Phu Yen	100,000	
16	Artificial board factory Dak Lak	50,000	
17	Artificial board factory Khanh Hoa	100,000	
18	Artificial board factory Ben Tre	50,000	
	Artificial board factories	**300,000**	

Source: FSDS MARD (2000).

**Note: No definition of what is included as 'artificial board' is included in the FSDS.*

Table 7: Planning Chip Board and MDF Factories using Material from Plantation Forests 2001-2010, by Region and Province

No	Region/Province	Total capacity (m^3 product)	Period	
			2001-2005	2006-2010
	Total	**913,000**	**336,000**	**577,000**
I	Northern mountainous midland	315,000	127,000	188,000
1	Northwest sub-region	45,000	45,000	
	- Son La	15,000	15,000	
	- Hoa Binh	30,000	30,000	
2	Northeast sub-region	150,500	16,500	134,000
	- Bac Kan	54,000		54,000
	- Thai Nguyen	16,000	16,500	
	- Lang Son	50,000		50,000
	- Bac Giang	30,000		30,000
3	Central sub-region	120,000	66,000	54,000
	- Tuyen Quang	54,000		54,000
	- Lao Cai	30,000	30,000	
	- Yen Bai	15,000	15,000	
	- Viet Tri	21,000	21,000	
II	Northern Central	188,000	63,000	125,000
	- Thanh Hoa	15,000		15,000
	- Nghe An	68,000	18,000	50,000
	- Ha Tinh	30,000	30,000	
	- Quang Binh	30,000		30,000
	- Quang Tri	15,000	15,000	
	- Thua Thien – Hue	30,000		30,000
III	Southern Central	129,000	15,000	114,000
	- Quang Nam	30,000		30,000
	- Quang Ngai	15,000	15,000	
	- Phu Yen	54,000		54,000
	- Binh Dinh	30,000		30,000
IV	Central Highlands	114,000	54,000	60,000
	- Gia Lai	54,000	54,000	
	- Kon Tum	30,000		30,000
	- Dac Lac	30,000		30,000
V	Eastern South	135,000	45,000	90,000
	- Lam Dong	30,000		30,000
	- Ba Ria - Vung Tau	30,000		30,000
	- Binh Phuoc	15,000	15,000	
	- Dong Nai	60,000	30,000	30,000
VI	Mekong River Delta	31,500	31,500	
	- Long An	15,000	15,000	
	- Can Tho	16,500	16,500	

Source: FSDS MARD (2000).

**Note: Sugar cane residue is also planned as a raw material for artificial board production.*

Table 8: Designated Land Area for Paper Material Forests

Region	Paper material area (ha)			Notes
	Total	Natural forest	Planned plantation forest	
1. Northwest	320,000	110,000	210,000	0.15 million ha
Lai Chau	100,000	40,000	60,000	
Son La	120,000	60,000	60,000	
Hoa Binh	100,000	10,000	90,000	
2. Northeast	540,000	140,000	400,000	0.23 million ha
Ham Yen - Bac Quang	120,000	60,000	60,000	
Yen Bai - Lao Cai	100,000	20,000	80,000	
Phu Tho - Vinh Phuc	80,000		80,000	
Bac Kan	80,000	30,000	50,000	
Bac Giang - Lang Son Quang Ninh	100,000	10,000	90,000	
Thai Nguyen	60,000	20,000	40,000	
3. Northern Central	310,000	110,000	200,000	0.12 million ha
Northwestern Thanh Hoa	120,000	50,000	70,000	
Northwestern Nghe An	100,000	40,000	60,000	
Southwestern Nghe An	90,000	20,000	70,000	
4. South Central Coast	220,000	20,000	200,000	0.12 million ha
West Quang Tri	80,000	10,000	70,000	
Central Coast	140,000	10,000	130,000	
5. Central Highlands	600,000	190,000	450,000	0.23 million ha
Kon Tum	260,000	80,000	180,000	
Southwestern Dak Lak	180,000	60,000	120,000	
Lam Dong	160,000	50,000	110,000	
6. Eastern South	230,000	30,000	230,000	0.15 million ha
Binh Duong - Binh Phuoc	50,000	20,000	30,000	
Dong Nai	80,000	5,000	75,000	
Total nationwide	2,200,000	600,000	1,600,000	New plantations of 1 million ha planned

Source: MARD (2000).

** Note: This includes natural forests targeted and plantations planned for pulp supply.*

Table 9: Area of Forest Plantation by Species as of December 1999 based on Government Statistics

Species	***Area (ha)***
Eucalyptus spp.	348,001
Acacia spp.	228,073
Casuarina equisetifolia	43,884
Tectona grandis	11,583
Khaya senegalensis	4,777
Species from Dipterocarpaceae	26,924
Pinus spp.	218,056
Melaleuca cajuputi	114,837
Rhizophora apiculata	80,216
Bamboo	73,852
Styearax tonkinensis	64,734
Manglietia glauca	50,023
Cinnamomum cassia	27,270
Illicium verum	18,085
Cunninghamia lanceolata	13,866
Cassia siameca	10,163
Chukrasia tabularis	9,044
Vernica/Aleurites spp.	9,146
Melia azedarach	8,354
Palms	7,766
Briguiera	5,156
Avicennia	5,107
Sonnertia	4,700
Canarium album	2,502
Afzelia xylocarpa	2.467
Terrietia javanica	972
Camellia oleosa	645
Fokienia hodginsii	335
Erythrophloeum fordii	309
Castanopsis	307
Liquidambar formosana	92
Total	**1,388,781**

Source: Central Board for Forest Statistics (2001); cited in Nguyen (2003).

Table 10: Area of Forest Plantation by Species based on FAO Statistics

Species Group	Area		"Industrial"	"Non-Industrial"
	ha	%	%	%
Acacia spp.	127,000	7.4		
Dalbergia				
Eucalyptus	451,500	26.4	40	60
Gmelina (correct?)				
Mahoganies				
Rubber	299,900	17.5		100
Teak	4,200	0.2	100	
Terminalia				
Other Broadleaved	503,700	29.4	40	60
Casuarina spp.	70,600	4.1		100
Pinus spp.	253,900	14.8	40	60
Other Coniferous				
Unspecified				
Total	**1,710,800**	**100.0**		

Source: FAO (2000).

Table 11: Forest Plantation Area by Ownership for Selected Species

Species group	Purpose	Public (%)	Private (%)
Acacia spp.	Industrial	100	0
	Non-Industrial	100	0
Eucalyptus	Industrial	70	30
	Non-Industrial	97	3
Teak	Industrial	70	30
	Non-Industrial	NA	NA
Other Broadleaved	Industrial	70	30
	Non-Industrial	97	3
Casuarina spp.	Industrial	NA	NA
	Non-Industrial	97	3
Pinus spp.	Industrial	70	30
	Non-Industrial	97	3

Source: FAO (2000).

Table 12: Forest Plantation Area in Vietnam by Species and Region (1,000 ha)

Region	Acacia/Euca	Pine	Rubber	Total
North West	32			32
North East	196	78		274
Red River Delta	20			20
North Central	114	91	5	210
South Central	115			115
Highland	15	13	164	192
South East	55	24	243	322
Mekong Delta	29			29
Total	**576**	**206**	**412**	**1,194**

Source: Jaakko Pöyry (2001).

Table 13: Current Status of Plantation Forest Area by Age Class and Region

Region	Area (ha)						
	Total	Age level*					
		I	II	III	IV	V	VI
Nationwide	**1,471,394**	685,133	541,466	158,257	64,686	21,369	483
Northwest	79,032	33,473	17,497	24,845	3,032	185	
Northeast	478,387	209,146	197,455	47,020	15,910	8,849	7
Red River Delta	38,305	21,021	13,656	2,327	928	373	
Northern Central	300,016	119,622	125,073	29,024	21,785	4,512	
Central Coast	169,975	100,929	62,511	5,226	1,298	11	
Central Highlands	33,949	16,283	9,493	6,613	1,557	3	
Eastern South	164,357	81,351	45,576	20,833	14,854	1,733	10
Mekong River Delta	207,373	103,308	70,205	22,369	5,322	5,703	466

Source: MARD (2000).

**No information is available on what "age level" means in terms of years.*

Table 14: Current Status of Plantation Forest Volume by Age Class and Region

Region	Volume (m^3)					
	Total	Age level*				
		II	III	IV	V	VI
Nationwide	**30,578,172**	13,483,652	9,562,695	5,363,751	2,115,971	32,103
Northwest	11,184,701	5,455,871	3,039,580	1,676,955	1,011,787	508
Northeast	1,606,951	272,691	1,040,677	276,193	16,218	1,172
Red River Delta	602,836	372,571	86,777	82,167	61,321	
Northern Central	5,737,666	1,803,926	1,738,969	1,693,315	501,456	
Central Coast	2,066,120	1,746,920	259,178	60,022		
Central Highlands	1,446,561	547,766	658,515	238,556	1,724	
Eastern South	3,904,578	1,451,424	1,478,114	909,197	65,725	118
Mekong River Delta	4,028,760	1,832,482	1,280,887	427,346	457,740	30,305

Source: MARD (2000).

** There original table provided by MARD had an error in that it did not include data on Age level I. Also, for both, there is no information regarding what "age level" represents in terms of years.*

Table 15: Existing Plantation Holdings of Interviewed Woodchip Exporters and Vinapimex Raw Material Companies

Interviewed Company	**Existing Plantation Data (MAI in m^3/ha/year)**
Private Woodchip Companies	
Vijachip Danang (woodchips)	- 13,000 ha - eucalyptus (40%) and acacia (60%) - eucalyptus MAI*=4-5 - acacia MAI=12
SFR Vietnam (woodchips)	3,500 ha acacia hybrid MAI=7.1-8.6
Sanrimjohap (woodchips)	10,000 ha acacia hybrid MAI=25-30
QPFL (woodchips)	10,000 ha, 70-80% acacia hybrid (moving to 100%) MAI eucalyptus= 5 MAI acacia= 8 MAI acacia hybrid= 12-15
State-Owned Raw Material Companies	
South Raw Material Company (under Vinapimex)	- 21,000 ha Pine MAI= 12.5 to 20 - 10,000 ha acacia hybrid, MAI = 21.4 to 28.6
Vin Phu Raw Material Company (under Vinapimex)	70,000 ha, annual fast-growing log production capacity of 300,000 GMT; this includes 16 junior forest enterprises, each with 2,000 ha

Source: Author Interviews.
**MAI indicates cubic meters/hectare/year.*

Table 16: Summary of Relevant Plantation Supply and Price Data for Pulp and Paper and Woodchip Producers

Company	Location	Plantation Holdings and Supply Sources
Pulp & Paper		
Viet Tri	Phu Tho Province (outside Hanoi)	- Domestic pulp supply comes from a pulp factory in Hoa Binh (3,000 tonnes/year bamboo and wood pulp) - Viet Tri seemed unaware of where Hoa Binh secured their raw materials, although they suggested it was mostly from bamboo, 50:50 between 'natural' and privately held stands - Other domestic sources include pulp mills at Hai Duoung, Bac Kan and Turgen Quang (300-400 tonnes/month) - Total domestic pulp supplies are 6-8,000 tonnes/year - Imports include long fiber pulp (imports): 1,500 tonnes/year - Additional imports include 4-5,000 tonnes of short fiber from foreign sources - Vinapimex Hanoi also suggested that Vin Phu Raw Material Co. was a supplier to Viet Tri
Bai Bang	Vin Phu Province	- According to interview with Vinapimex Hanoi, Bai Bang is supplied primarily through the Vin Phu Raw Material Company - Bai Bang's current pulp capacity of 45,000 tonnes would require approximately 225,000 m^3 of logs, which is within Vinapimex's statement of log supply to Bai Bang of 300,000 tonnes per year from Vin Phu RM Co.
Tan Mai	- Dong Nai Province, outside HCMC	- 6,000 m^3 pine/year (sourced from SFE in Lam Dong) - 30,000 tonnes/year pulp imports - 11,000 tonnes of wastepaper imports/year
Dong Nai	- Dong Nai province, outside HCMC	- South Raw Material Co.; SFE was unclear on the question of whether they supplied logs to Dong Nai

Woodchips		
Vijachip Danang	Da Nang	- Secured 13,000 ha in Quang Tri, Quang Nam, Thua-Thien-Hue and Quang Ngai - Euca and acacia - Managed by 5 provincial offices of Vinafor - Vijachip has supply contracts with Vinafor - Euca MAI low, 4-5 m^3/ha/year - Move to acacia hybrid, can get MAI=12 - Now 60% acacia, 40% euca - Moving to 100% acacia - Own plantation areas not enough, 5 partners also source from small farmers - Small farmers represent 50-60% of their supply - Farmers usually plant 1-3 ha, largest plant 50-100 ha - No data for log prices for farmers available
Vijachip Vung An	Vung An	- No information available
QPFL	Quy Nhon City	- Have secured 10,000 ha of plantation, which meets all of their log supply - Euca MAI 5 m^3/ha/year - Acacia 8 m^3/ha/year - Acacia hybrid 12-15 m^3/ha/year - Acacia hybrid now 70-80% of plantation area, increase to 100% in 2-3 years - 7-year rotations - Plots are usually between 50-200 ha in size, planting between 1,200-1,500 ha year since 1995 - Company map shows approximately 44 distinct plantations in Binh Dinh Province - Land is leased from local authorities - They were only promised 10,000 ha by the province and this has been fulfilled - All plantation sites located in Bin Dinh province - 150 km is max. distance between plantations and production facilities - Plantation management is subcontracted
Cat Phu	Nha Trang	- Have plantations in Nha Trang and Phu Yen - Plantations started 2 years ago - Other main supply sources include farmers in Quang Nam, Kontum, Xa Lai, Binh Dinh, Phu Yen, Dak Lak, Kanh Hoa, Ninh Thuan, Lam Dong, Binh Thuan - Areas within 600 km - Average factory gate price is VND 500,000 per double stere* - Average transportation cost is 120,000 VND/double stere - Total raw material costs are approx. US$58/BDT

Sanrimjohap	Ho Chi Ming City	- Has plantations in Vung Tau Ba Ria province - 10,000 ha secured through forest enterprises - Vietnamese side manages plantations and supply arrangements - Korean side provides capital and supervises - In 2000, change to acacia hybrid - 25-30 m^3/ha/year - 20 year land agreement (3 rotations) - Now 50:50 supply from own plantations vs. farmers - This to change to 70-80% from own plantations by 2004, as their plantations mature - Factory gate price is US$30 per double stere - Max. source distance is 250 km - Transport costs are average US$10-12 per double stere
SFR	Vung Tau	- Have own plantation area, but small, represents 10-15% of their supply - 3,500 ha - Located in Dong Nai, Ba Ria & Vinh Thuan province - Acacia hybrid - Yields 50-60 m^3/7 years = 7-8.5 m^3/ha/year - Sublease arrangement with local forestry companies. - Located within 100 km of factory - Transport costs 150-200,000 VND/m^3, all handled through supplier - Also source from small farmers 85-90% of supply - Max. distance radius of abut 200 km

Source: Author Interviews (2003).

** Note: One double stere represents a volume measured at 1m by 1m by 2m. One double stere produces approximately 1.75 bone dried tonnes of woodchips.*

*** Note: Exchange Rate In August 2003: USD1: VND 16,057.*

Table 17: Vietnam: Supply of Wood Products in 1999

Total Roundwood	**3,670**
Large diameter logs	2,270
From natural forest	1570
of which: legal	(300)
illegal	(1,270)
Imported logs	400
of which: rubber	(250)
roundwood	(150)
From plantations and farms	300
Small diameter logs	1400
From plantations and farms	1400

Source: ADB (2000a). Original Sources: MARD and ADB study estimates.

Table 18: Vietnam Timber Supply for Wood Processing Industry: Legal Production, Legal Imports, and Supply from Unknown Sources

Year	Legal Production (million m^3)	Recorded Legal Imports (million m^3)	Supply from Unknown Sources (million m^3)	Total Supply (million m^3)
1998	0.450	0.145	0.355	**0.950**
1999	0.400	0.160	0.640	**1.200**
2000	0.350	0.500	0.500	**1.350**
2001 (estimated)	0.300	0.470	0.300	**1.070**
2002 (estimated)	0.600 (0.300 from natural forests and 0.300 from plantations)	0.600	0.300	**1.500**

Source: USDA (2001) and for 2002 estimates USDA (2003). Original Sources: MARD, Port Authorities, Traders and for 2002 estimates Trade Contact Estimates.

Table 19: Vietnam's 2001-2002 Forestry Product Imports by Country of Origin (US$1,000)

Item	2001	2002
Total Log Wood Imports	**68,656**	**74,567**
Arriving From:		
Laos	30,084	11,193
Indonesia	14,077	2,693
Malaysia	11,329	36,191
Myanmar	1,688	2,872
Solomon Islands	1,756	3,678
USA	1,472	4,701
Total Sawn Wood Imports	**55,527**	**122,345**
Arriving From:		
Cambodia	16,738	27,443
Laos	4,618	24,707
New Zealand	2,464	7,769
Malaysia	3,593	6,969
Taiwan	4,294	4,252
Thailand	3,166	3,281
USA	3,828	11,218
Total Wood Panel Imports	**34,494**	**47,525**
Arriving From:		
Germany	1,929	2,348
Indonesia	6,694	7,788
Malaysia	15,116	16,788
New Zealand	84	1,009
Singapore	1,059	1,724
Taiwan	1,466	2,026
Thailand	2,276	6,014
USA	714	2,391
Total Wood Product Imports	**1,897**	**8,550**
Total Forest Products Imports	**160,574**	**252,987**

Source: USDA (2003). Original Sources: USDA Trade Contacts.

Table 20: Log Imports to Vietnam from Cambodia

Source	Logs	Sawnwood	Total	Year
	– m^3 –	- rwe-		
Official	65,000		65,000	1996
Global Witness	>260,000		>260,000	1997
DAI	497,000	450 000-492 000	947,000-989,000	1997
Forest Research	600,000		600,000	mid-1990's

Source: Castren (1999). Original Sources: MARD (1998), Global Witness (1998a), DAI (1998), Forest Science Institute of Viet Nam. Sub-Forest Science Institute in the Southern of Viet Nam (1998).

Table 21: Manufactured Wood Product Imports into Vietnam by Volume and Port of Arrival

Vietnam Port of Arrival	Volume (m^3)
HCMC / Dong Nai	250,000
Qui Nhon / Binh Dinh	100,000
Da Nang	25,000
My Thoi /An Giang	75,000

Source: USDA (2001).

Table 22: Vietnam Wood Furniture Exports to the EU and Japan, 1995-97 (tonnes)

	1995	1996	1997
Japan	4,996	10,8909	10,890
EU	3,782	8,082	16,624
Subtotal	8,778	18,891	27,433

Source: Castren (1999). Original Sources: EuroStat and Japanese Foreign Trade Statistics.

Table 23: Raw Materials Supplied to Bai Bang Paper Company (BAPACO) by Province in 1999

Province	Wood (1000 m^3)	Bamboo (1000 m^3)	Total (1000 m^3)
Tuyen Quang	30	15	45
Yen Bai	40	5	45
Phu Tho	80	20	100
Vin Phuc	5		5
Hoa Binh		20	20
Total	155	60	215

Source: ADB (2000a).

Table 24: Production Costs at Bai Bang Paper Company (BAPACO) in 1996

Cost Category	Per Ton (USD)	Percent
Raw materials	226	28
logs and bamboo	(123)	(15)
imported pulp	(103)	(13)
Other costs	579	72
Cost per ton of paper	805	100

Source: ADB (2000a).

Table 25: Comparison of Farmgate Prices and Transport Costs to Import Parity Prices for Logs Used for Pulp and Paper Production at Bai Bang

Pulp price cif Haiphong (USD/ton)	**USD/ton**	**600**	**700**	**900**
Add: transport to mill (200 km)	USD/ton	14	14	14
Price of pulp at mill	USD/ton	614	714	914
Less: estimated processing cost of pulp excluding raw materials (logs)	USD/ton	579	579	579
Equals: raw materials (logs) cost	USD/ton	35	135	335
Conversion to green logs (x 0.2)	GMT	7	27	67
Transport Costs	GMT			
50 km		3.35	3.35	3.35
100 km		6.7	6.7	6.7
200 km		13.4	13.4	13.4
(theoretical) Farmgate Price	m^3			
50 km	USD	3.7	23.7	63.7
	VND	52,000	332,000	892,000
100 km	USD	0.3	20.3	60.3
	VND	4,000	284,000	844,000
200 km	USD	Negative	13.6	53.6
	VND	Negative	190,000	750,000

Source: ADB (2000a).
Note: Species mix of acacia, styearax and eucalyptus; assumed that 1 ton = 1 m^3.

Table 26: Vietnam Woodchip Production Summary

Company	Production/ Capacity	Export Destination, Foreign Partners	Own plantations, areas, location, species etc.	Other supply sources etc.	Comments
Vijachip Danang	- Target for 2003 was 134,000 BDTs production, 260,000 green tonnes	Japan	- 13,000 ha in 4 provinces (Quang Tri, Quang Nam, Thua-Thien-Hue and Quang Ngai) and Danang port facility - Euca and acacia - Managed by 5 province offices of Vinafor - They supply logs to Vija - Euca MAI low, 4-5 m3/ha/year - Move to acacia hybrid, can get MAI=12 - Now 60% acacia, 40% euca - Moving to 100% acacia	- Own plantation areas not enough, 5 partners also source from small farmers - This represents 50-60% of their supply - Farmers usually plant 1-3 ha, largest are 50-100 ha - Partners manage collection of wood from smallholders - No data for log prices for farmers	- Noted 3 other new chip mills starting in the area; 2 in Quang Ngai and 1 in Hue - Q. Ngai are local Vietnam companies - Hue is Taiwan investor - Each of these produce about 50-60 BDTs/year - Have started to form relationships with farmers through a free seedling program, $40,000 US/year - 2 million seedlings delivered to local farmers
Vijachip Vung An- Ha Tinh province	- Production is approx. the same as Danang, approx. 130,000 BDTs	Japan			- Facility is just getting started
Vijachip QPFL- Quy Nhon port	- Production is about 50% of Danang according to Vijachip - No Vietnamese partners, 100% foreign owned - Started in 2002 - 40-50,000 BDT production - Capacity is 70-90,000 BDTs/year	- Have contract with Oji - QNWco. provides 50,000 BDTs, QPFL provides 20-30,000= total 70,000 to Oji - Selling price is the normal Vietnamese FOB: $US 70-80/tonne	- 10,000 ha - Euca MAI 5 m^3/ha/year - Acacia 8 m^3/ha/year - Acacia hybrid 12-15 m^3/ha/year, Acacia hybrid now 70-80% of plantation area, increase to 100% in 2-3 years - 7-year rotations - Plots usually 50-200 ha, planting 1,200-1,500 ha/year since 1995 - Land leased from local authorities - They were only promised 10,000 ha and this has been fulfilled - All plantation sites located in Bin Dinh province, 150 km is max. distance for sourcing logs -Plantation management is subcontracted -Double stere's cost about $US 15 at factory gate		- Transport costs are about $15/double stere - Price is normal Vietnamese price, $70-$80/BDT FOB - QPFL estimates Chinese buyers would offer $60-$65/tonne - Mentions local Vietnamese chip manufacturers - Dung Quat, Pisico, Vyfaco,

Haiphong (Vitaico)	- Appears to be not currently in operation, lack of logs appears to be the issue				- Suspect this is a Vitaico mill - According to Sanrimjohp, Haitaico is still in business although with very much reduced supply
Thua Thien Hue / Vitaico: - involves Taiwanese investors	- Capacity suggested to be between 50 and 60,000 BDTs		?		- Sanrimjohap mentioned Vitaico has a mill in Hue, confirms Vijachip's mention of a Taiwanese project here - Currently under construction
Cat Phu (Nha Trang)- JV between Oji & Mihaud (Taiwan)	- If enough supply, capacity is more than 6,000 BDT/month - 2002 exported approx. 48,000 BDT	-JV between companies based in Taiwan and Vietnam -100% exported -sells to Singapore, head office sells to Japan	- Have plantations in Nha Trang and Phu Yen - These were started 2 years ago	- Main supply sources incl. Quang Nam, Kontum, Xa Lai, Binh Dinh, Phu Yen, Dak Lak, Kanh Hoa, Ninh Thuan, Lam Dong, Binh Thuan - Areas within 600km - Average factory gate price is VND 500,000 per double stere - Average transportation cost is 120,000 VND/double stere - Their total raw material costs are approx. US$58/BDT	- They were shut down for 2 weeks at time of interview due to lack of supply
2 new mills in Quang Ngai (Vietnamese investors) -named Pisico and Vyfaco	- Capacity suggested to be between 50 and 60,000 BDTs for each of these	- Location in Dung Quat town, Quang Ngai province			-Vijachip mentioned these 2 as being in planning stage - Believe these are the Pisico and Vyfaco Companies that QPFL mentioned

Sanrimjohap (Saigon)	- Started production in 1996 - 30-35,000 BDT in 2002	- Exports 100% to S. Korea - Ship to the Korean Forestry Cooperatives Group (public company)	- Has plantations in Vung Tau Barri province - 10,000 ha secured through forest enterprises - Forest enterprises manage plantations and supply arrangements - S. Korea provides capital and supervises - In 2000 change to acacia hybrid - 25-30 m^3/ha/year - 20-year land agreement (3 rotations)	- Now 50:50 supply from own plantations vs. farmers - This to change to 70-80% from own plantations by 2004, as their plantations mature - Factory gate price is US$30 per double stere - Max. source distance is 250 km - Transport costs are avg. US$10-12 per double stere	- Prices are $30/double stere - Transport costs are $10-12/ double stere - so 1 BDT costs approx. $60 FOB -Direct leasing not chosen because of: 1. higher upfront costs 2. poor quality areas offered 3. possible disputes with local people 4.Vietnamese's ability to manage the plantations as well as S. Koreans 5. lower labor costs with Vietnamese employees - Note increasing competition due to pallets, all 3 HCMC woodchip exporters facing supply issues - Capital costs increased by 10% since 2000, due to increase in log prices and smaller diameter logs available
SFR (HK and Japan JV)	- Port located at Vung Tau - 2002 production @ 84,000 BDT - Capacity 120,000	-JV between HK and Vietnam, HK operation is itself a JV between HK and Itochu -100% production to Japan, Itochu Co.	- Have own plantation area, but small, represents 10-15% of their supply - 3,500 ha - Dong Nai, Ba Ria & Vinh Thuan prov. - Acacia hybrid - Yields 50-60m3/ha/7 years = 7-8.5 m^3/ha/year - Sublease arrangement with local forestry co's. - Located within 100 km of factory - Transport costs 150-200,000 VND/ m^3, all handled through supplier	- Also source from small farmers, 85-90% of supply - Max. distance radius of about 200 km - No information on the number of farmers, yields or farmgate prices	- Noted some tightness in supply due to competing buyers from the pallet and furniture sectors

Vin Hung Co. (@ Ba Ria-Vung Tau)*	- 320,000 m^3= approx. 160,000 BDT				
Totals	- 6 chip mills confirmed operating - 1 no longer operating - 2 in planning stages - 1 under construction - 1 unconfirmed		- Approx. 474,500 BDTs (confirmed in operation) - Approx. 110,000 BDTs (in planning stages) - Approx. 55,000 BD's (under construction) - Approx. 160,000 BDTs (unconfirmed)		

Source: Author Interviews (2003).

Note: Exchange rate in August 2003: USD$1: VND 16,057.

**This company is mentioned in Jaakko Pöyry (2001). No confirmation of the existence of this company or their production levels was uncovered in the research.*

Table 27: Production Parameters for Vijachip in 1999

	Total (USD '000s)	Per Ton (USD)	Percent of Sales Price
Cost of Production	7,071	77.5	88
Raw materials	(4,596)	(50.4)	57
Taxes	479	5.3	6
Export Tax-5% of fob	(400)		
Corporation Tax-15% of profit)	(79)		
Net Profit	450	4.9	6
Sales (fob)	8000	87.7	100

Source: ADB (2000a). Original Source: Study estimate based on Vijachip data.
Author's note: Any remaining export taxes on woodchips have been removed in Vietnam.