



A Strategic Overview of the Forest Sector in Ghana

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A Brief Description of Ghana

Geography

Ghana is located on the west coast of Africa, bordered by Togo in the east, Côte d'Ivoire in the west, Burkina Faso in the north and the Atlantic Ocean in the south. Ecologically, the country is divided into a high-forest zone in the south, accounting for about a third of the land area (8 million hectares), a savanna zone (14.7 million hectares) mostly in the north, and a transition zone (1.1 million hectares). Estimates of total forest area in the country range from 2.72 million hectares to 6.34 million hectares. It has a total land area of 23.9 million hectares (FAO 2005). The land use types are arable lands 17.54%, permanent crops 9.22% and others 73.24%. It has irrigated land of 310sq km (in 2003). The terrain is mostly low plain with dissected plateau in South-central area, with a climate which is tropical, warm and comparatively dry along southeast coast, hot and humid in southwest; hot and dry in the north.

The manmade Volta Lake extends from the Akosombo Dam in southeastern Ghana to the town of Yapei, 520 kilometers (325 mi.) to the north. The lake generates electricity, provides inland transportation, and is a potentially valuable resource for irrigation and fish farming. (World Factbook, 2006)



Figure 1: Map of Ghana Showing the Regional Capitals, Railroads, Roads

Source: www.lib.utexas.edu/map/ghana.html

People

Ghana's population is about 20.5 million people (2005 est.) with female: male ratio of 51%:49%. The population growth rate is 1.25% and a population density of 78.9 persons /sq.km. The birth rate is 23.97 births/1,000 and the death rate is 10.84 death/1,000. The literacy rate and life expectancy are 75% and 56%, respectively.

The major ethnic groups in Ghana are Akan 49.1%; Mole-Dagomba 16.5%; Ewes 12.7%; Ga-Damgme 8% and non-Ghanaians 3.9%. The people of Ghana are about 92.1% Black Africans. (World Fact book, 2006)

Economy

Ghana's continual relying on international financial assistance although it is richly endowed with natural resources is an issue that continuously baffles economists. The country depends mainly on gold, timber and cocoa as foreign exchange earners. Ghana's Gross Domestic Product (GDP) is \$5.9 billion with GDP Growth rate of 5.2% The Gross National Income is estimated at \$6.6 billion. The current IMF economic growth rate projection is 4.5 %. The total export of commodities in 2003 was \$2.4 billion and imports in 2002 accounted for \$2.8 billion.

The labor force is estimated at 9 million in 2000 and the main occupations are: Agriculture 60%; Industry 15% and; Services 25%. Official figures suggest that forestry contributes 4% of national tax revenue; however, the wider contribution of forestry to the national economy includes the provision of livelihood in rural areas and environmental services.

Politics

Ghana gained Independence on March 6th, 1957 and became a Republic on July 1st, 1960. It is a member of Commonwealth of Nations. Its President is John Agyekum Kuffuor, the ninth leader of the country. The government type is constitutional democracy. The Parliament of Ghana is unicameral i.e., having a single legislative chamber, and is dominated by two main parties, the New Patriotic Party (NPP) and National Democratic Congress (NDC). Ghana is signatory to host of International Conventions and Treaties.

The country has 10 administrative regions; Ashanti, Brong-Ahafo, Central, Eastern, Greater Accra, Northern, Upper East, Upper West and Volta. The national capital is Accra. It has a suffrage of 18 years of age (World Fact book, 2006).

Communication and Transport

Ghana's communication systems have been assessed to be fair as there has been tremendous improvement in its communications. The major communication means are telephone, radio, television and the Internet. Many of the rural communications are on the threshold of being connected to the telephone grid. Internationally, the satellite earth stations - 4 Intelsat (Atlantic Ocean) are used; microwave radio relay link to Panaftel system connects Ghana to its neighbors; fiber optic submarine cable (SAT-3/WASC) provides connectivity to Europe and Asia. It uses microwave radio relay as wireless local loop has been installed for domestic communications. There has been proliferation of FM stations and Television in recent times which is good for the economy as well. (World Fact book, 2006) The transportation sector has been doing well in recent times with many road and port improvements.

The Forestry Sector

Forest Types

Hawthorne (1995) found that, Ghana's High Forest Zone covers approximately 82,000 km³. It is categorized into nine vegetation zones, each with distinct association of plant species and corresponding rainfall and soil conditions (Figures 1 & 2). They are grouped as follows:

- WE Wet Evergreen Zone
- ME Moist Evergreen Zone
- MSNW Moist Semi- Deciduous North East
- MSNE Moist Semi- Deciduous South East
- UE Upland Evergreen
- DSIZ Dry Semi-Deciduous Inner Zone
- DSFZ Dry Semi-Deciduous Fire Zone
- SM Southern Marginal
- SO Southern Outlier



Figure 1: Map of Ghana's Forest Regions
Source: UNEP-WCMC 2004

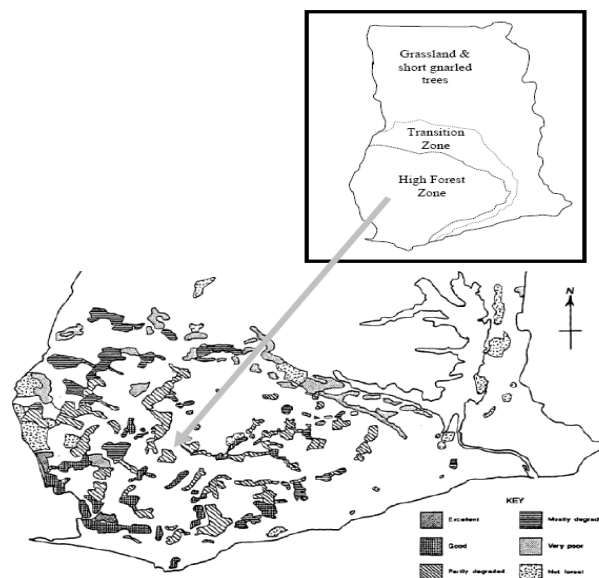


Figure 2: Forest Reserve in High Forest Zone of Ghana
Source: Hawthorne and Abu Juam, 1995

Most of the timber species are obtained from the deciduous and evergreen forests in the southwest. The main species in the deciduous forests are *Triplochiton scleroxylon* (Wawa), *Mansonia altissima* (Mansonia), *Nesogordonia papaverifera* (Danta) and *Khaya ivorensis* (mahogany); and in the evergreen forests *Guarea cedrata* (Guarea), *Tieghemella heckelii* (Makore), *Tarrietia utilis* (Niangan) and *Uapaca spp* (Assam)

According to FAO (2001), lots of factors affect forest resource change and dynamics in Ghana. These factors include: excessive logging, unsustainable agricultural practices, bush burning, mining and quarrying, and settlement and related infrastructure construction. However, increases in population growth coupled with migration, especially in the forest areas, also account for a high rate of deforestation (FAO, 2000). As population density increases and land becomes scarce, its value rises and farmers then find it cost-effective to intensify production. Others resort to clearing virgin forest for additional cultivation. The poor tend to be pushed onto ecologically sensitive areas with low agricultural potential (for example semi-arid savanna, erosion-prone hill-sides and tropical forests). The situation is aggravated where large-scale farmers respond to growing pressure to expand primary commodity export and thus enlarge the areas on which cash crops are grown. There is evidence that large landowners do not protect the quality of their land and soil as much as do small farmers who own their land.

For the past 15 years (1990-2005), Ghana has lost about 1.9 million hectares of forest or 26 percent of its forest cover (mongobay.com). The annual deforestation rate is 2.0%. In 2001, the Government took steps to address the deforestation issue by introducing Ghana National Plantation Project to plant 20,000 ha per annum (IUCN, 2006).

Table 1: Designated function of forest and other wooded land

	Area (1000 hectares)					
	Primary Function			Total Area with function		
	1990	2000	2005	1990	2000	2005
Forest						
Production	1,694	1,386	1,255	1,696	1,386	1,25
Protection of Soil and Water	353	353	353	353	353	353
Conservation of biodiversity	43	43	43	43	43	43
Social Services	89	73	66	89	73	66
No or Unknown function	5,269	4,923	3,800	nd	nd	nd
Total forest	7,448	6,094	3,800	nd	nd	nd

Source: FAO, Global Forest Resources Assessment 2005.

In 2000, forests accounted for 6% of GDP and 11% of export earnings. The formal sector employed about 100,000 people. Many more people (including illegal chainsaw operators, NWFP harvesters, etc) make at least some income from forests (FAO, 2001).

An estimated 2 million people depend on forests for subsistence uses and traditional and customary lifestyles. Major activities in which the fringe forest communities are involved include

wild-meat production, fuel wood and charcoal production, wood-carving and canoe-carving, rattan production, chew stick-gathering, chainsaw lumber production (an illegal activity), and hunting (often also illegal). Alternative livelihood strategies are being tested as part of Ghana's poverty reduction strategy (Lebedys, 2004).

Environmental Issues

Ghana has been very active in its effort to develop forest certification. This was initiated by the private sector. A set of draft certification standards were field tested as early as 1996 with support from the UK's Natural Resource Institute. This resulted in a "Draft of a Field Standard and Checklist for Forest Certification in Ghana" which had over a hundred indicators of good forest practices (Ghana Gazette 2000a, 2000b). There was further discussion in Ghana on development of certification which has become closely tied to implementation of the Validation of Legal Timber Programme.

In another development, during early 2005, the WWF and Friends of Earth (FoE) signed an agreement with Samartex Timber and Plywood Ltd. to promote eventual FSC certification of forest concessions managed by the company. Samartex has agreed to implement a moratorium on logging in primary forests; develop plans for providing benefits to the communities that own Samartex-managed concessions; and achieve certification to FSC standards by the end of 2007. Samartex is vertically-integrated company with timber harvesting and sawmill operations and which manages 159,000 hectares in western Ghana.

The agreement makes Samartex the inaugural participant of the Ghana Forest & Trade Network, a partner of WWF's Global Forest & Trade Network (GFTN). The Global Network is managed by FoE in partnership with WWF and was established with, and receives support from DFID and USAID. A number of Ghanaian companies in addition to Samartex have applied to join (SFM, 2006)

Government Policy and Legislation Impacting the Industry

In July 2002, the legislature/cabinet approved the following policy reforms in order to ensure sustainable management and improved utilization of the country's forest and wood resources (Forestry Commission, 2005).

Increase in Off-Reserve Annual Allowable Cut

In order to salvage valuable timber from being destroyed, the annual allowable cut (AAC) in off-reserve areas was increased from 0.5 million m³ to 1.5 million m³. The AAC for forest reserves was maintained at 0.5 million m³ to ensure sustainable forest management in the country. The total AAC thus increased from 1.0 million m³ to 2.0 million m³.

Competitive Bidding for Timber Rights

The resource allocation procedure is now done through competitive bidding to ensure the transparent and efficient allocation of the timber resources and control of over-cutting of timber.

Reconciling Policy Reform with Forest Legislation

The legal backing for the competitive bidding process is provided by the Timber Resources Management (Amendment) Act, 2002 (Act 617) and the Timber Resources Management (Amendment) Regulations, 2003 (LI 1721). The prequalification criteria include companies' payment of statutory liabilities such as income tax, social security contributions, stumpage and rent. The competitive pricing of timber has improved realization of resource economic rent through the payment of timber rights fees (TRF). For example, the value of standing timber attributed to competitive bidding is estimated to range between US\$100/m³ to US\$145/ m³ for plantation timber which is significantly higher than the previously administered price of US\$45/m³ to address the problem of under pricing forest resources.

Increase Stumpage Fees for Timber

All forest fees including stumpage, rent and levies are now reviewed from time to time to reflect the true and economic rent value/stumpage of the resource, foreign exchange and market fluctuations.

Rationalization of Timber Industry Taxation and other Forest Fiscal/Incentive Regimes

There is a rationalization of the forest fiscal and taxation regimes in order to achieve realistic revenue for the FC and the national economy. Market based incentives have been put in place to improve the efficiency of the timber industry and encourage downstream processing or value-added processing of wood products. This will increase the current level of timber export revenue earning for the country. The fiscal incentives include:

- Export levy on air-dried lumber (according to species) that is paid into the Plantation Development Fund
- National Reconstruction Export Levy (7% on lumber FOB, 3% on plywood FOB) – now waived to free additional resources for timber businesses to grow
- Value-added tax (VAT) for domestic sales
- Removal of import taxes on logs and lumber

The levies and taxes in the forestry sector tend to impact the industry and there has been call by the forest products industry to relax the various levies as they make their products uncompetitive in the international markets (Table 2). According to the Timber and Workers Union (TWU), the many charges and levies associated to stumpage fees, ECOWAS and export levies in the timber production were killing the industry. The group has a matter of urgency; revive the industry to save more workers from being fired. According to the report, about 7,000 workers lost their jobs during the last quarter of 2006. Further, some analysts presume the fiscal scheme may have contributed to the 7.6% decline in Ghana's timber products exports in 2006 (ITTO, 2007)

Moreover, different species have been allocated different levies (Table 3) to minimize the exploitation of some of the endangered tree species but the industry sees it from different perspective as they believe the government to be unrealistic and lack resource pricing and review mechanism(ITTO, 2006). The table shows the different species being allocated different levies to minimize the exploitation of some endangered tree species. Due to excessive exploitation of selected

tree species, the government's introduced its forest fiscal policies such as EXPORT LEVIES on selected species which resulted in reduction of production volumes of those species as it can be seen from the 1998 and 2000 log production. However, the industry has a different perspective as they believe the government is being unrealistic and lacks reasonable resource pricing and review mechanisms.

Table 2: Summary of Forest Charges and Mode of Determination

Royalties/Fees	Level of Fees Charged	Determination of Charges	Adjustment Mechanism
Stumpage	12% (FOB)	LI ²	Market Based
Concession Rent	\$ 0.13/ha	LI	Administrative
Property Mark Renewal fee	\$11.1 p.a. ¹	LI	Administrative
Export levies	10-30%	LI	Administrative
FC levy	3% (FOB)	LI	Administrative
National Reconstruction Levy ³	7 % (FOB)	LI	Administrative

¹p.a.: Per Annum i.e. Property Mark Renewal fee is paid on yearly basis

² LI - Its Ghana's Legislative Instrument

³FC Levy is Forestry Commission's Levy. It's charged by the Forestry Commission to fund its administrative works

Table 3: Effect of Levies on Selected Species on Log Production

Species	Levies (%)	Log Production/Cubic Meter (1998)	Log Production/Cubic Meter (2000)
Afromosia	30%	919	19
Odum	10%	66,720	24,857
Mahogany	10%	20,814	7,011
Wawa	10%	435,788	288,846

Source: Forestry Commission 2002

The Forest Products Industry

Major Product Groups

There are over 100 companies exporting kiln-dried wood materials with some companies exporting more than one product (Ghana Gazette, 2006). The wood industry presently turns out a host of wood products for both domestic consumption and for export (Figure 4). Over the years there has been expansion in scope of wood products for exports while the domestic market has also shown an increase in wood products utilization. The wood industry is largely made of sawmills but the informal sector is thought to account for 6,000 tertiary enterprises (Ghana Gazette, 2006). Wood processing companies that have integrated wood processing with logging activities account for about 95% of the logs harvested in Ghana. Around 30% of wood processing companies also harvests logs. There are some 70 small-scale processing facilities that account for the remaining 5% of the domestic log market.

Wood trade is heavily concentrated in 20 leading companies which account for about 60% of the total export earnings. Their average export earnings amount US \$6,000,000 compared with the average of the next tier of about 200 exporters of US \$680,000 (Ghana Gazette, 2005).

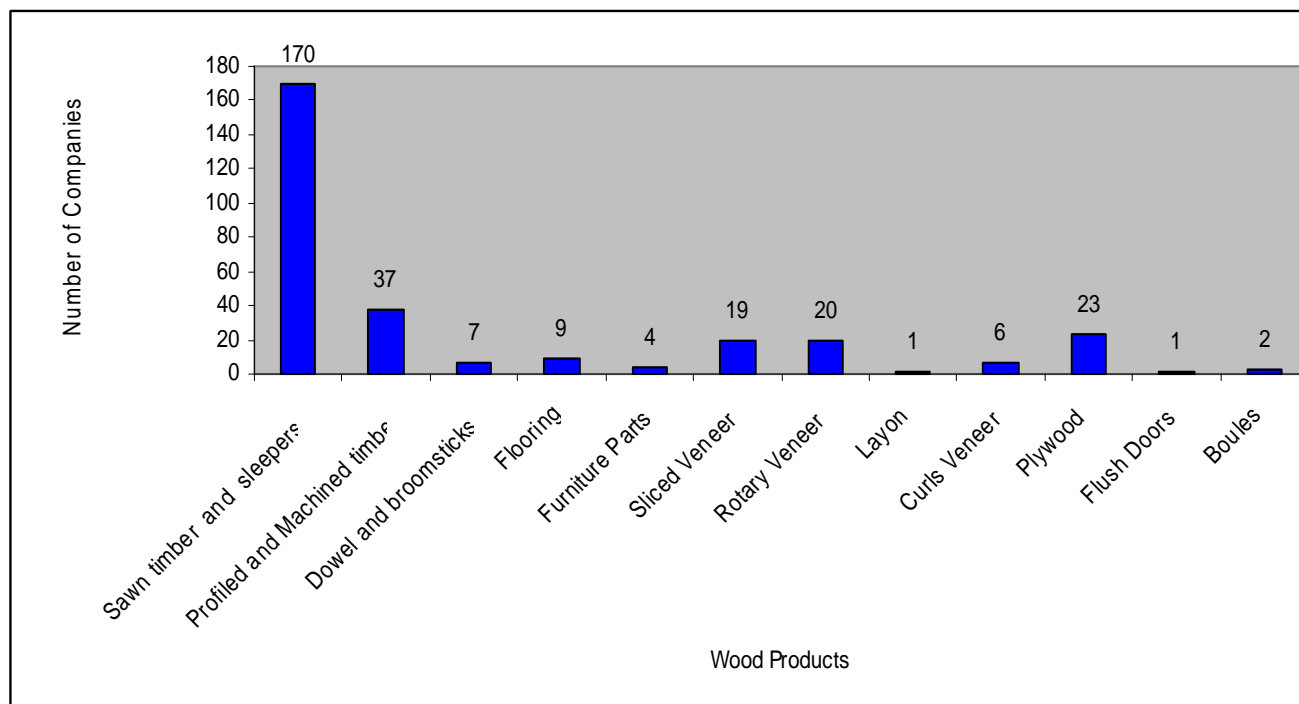


Figure 3: Structure of Ghana Wood Exports in 2004-Number of Companies
 Source: Ghana Gazette (2006)

The “Informal” Wood Products Sector

The informal sector in the Ghanaian economy has been described as a diversion of economic transactions beyond the reach or boundaries of state and formal economic structures. Given the apparent lack of the formal sector to meet the local demand of lumber, the informal sector has become dominant in meeting the needs of the local market (Birikorang et al., 2001). The informal timber and wood products traders and allied operators i.e. saw millers, carpenters and illegal chainsaw operators became pronounced in the parallel economy that emerged in Ghana in the early seventies due to a crisis which hit the economy. The timber and wood products informal sector is growing and is dispersed throughout the country. Primary markets are in the regional capitals, especially Accra and Kumasi, the capital and the country’s second largest city, respectively.

Lumber Production & Consumption

Ghana’s lumber mills have very low recovery rates. The lumber recovery factor is 20-40% of the log input (FAO, 2005). The total annual log requirement of sawmills in the country is about 1.3 million m³. This figure excludes the volume of logs for other primary wood processing activities such as veneer and plywood. The volume of logs for domestic use exceeds the allowable annual cut (AAC) of 1.0 million m³. Investors use all possible means to secure logs for their mills which often contribute to illegal harvesting of trees. The total volume of lumber available for domestic use is only 152,660 m³ per year, yet the annual demand is about 384,730 m³. The difference of 230,070 m³ is fulfilled by the informal sector.

Sawmill Capacity

According to ITTO (2006a), the sawmill industry in Ghana is characterized by an over-capacity of out-dated and inefficient equipment. There is evidence that this over-capacity is increasing, due largely to new investments to take advantage of the relatively cheap raw material and the existing loopholes in investment incentive provisions. At the same time, some of the larger companies have invested in downstream processing and are successfully finding markets for lesser-known “Pink-species” that have been converted to finished products. More recently, kiln drying capacity has increased substantially in response to the export levy on air-dried lumber. This positive trend sets the stage for growth in further value-added production and marketing. The industry has traditionally concentrated on exports, to the neglect of the local market. The output of processed products increased significantly. At the same time, supplies to the local market (estimated at a demand of 0.7 million m³ per year) were supplemented by illegal logging and chainsaw operations. The domestic demand is likely to rise or to keep pace with the expanding building construction industry and the growth of the economy (currently 3.8%; targeted at 5% per year).

Wood Products Exports

Primary wood product exports are air- and kiln-dried lumber (Figure 5). According to ITTO (2006a) Ghana’s wood products exports dropped from 352,167 m³ valued at about €138 million between January and September 2005 to 328,613 m³ valued at about €126 million for the same period in 2006. Primary wood products (lumber, veneer, boules, poles, pegs, plywood and billet) and processed wood products accounted for 88.7% and 11.3% of the exports, respectively. The Forestry Commission attributed the export decline to structural constraints, including deficient processing equipments, unskilled labor and low-level production techniques. Price instability, which affected exports during the last quarter of 2005, had spilled over to the first two quarters of 2006.

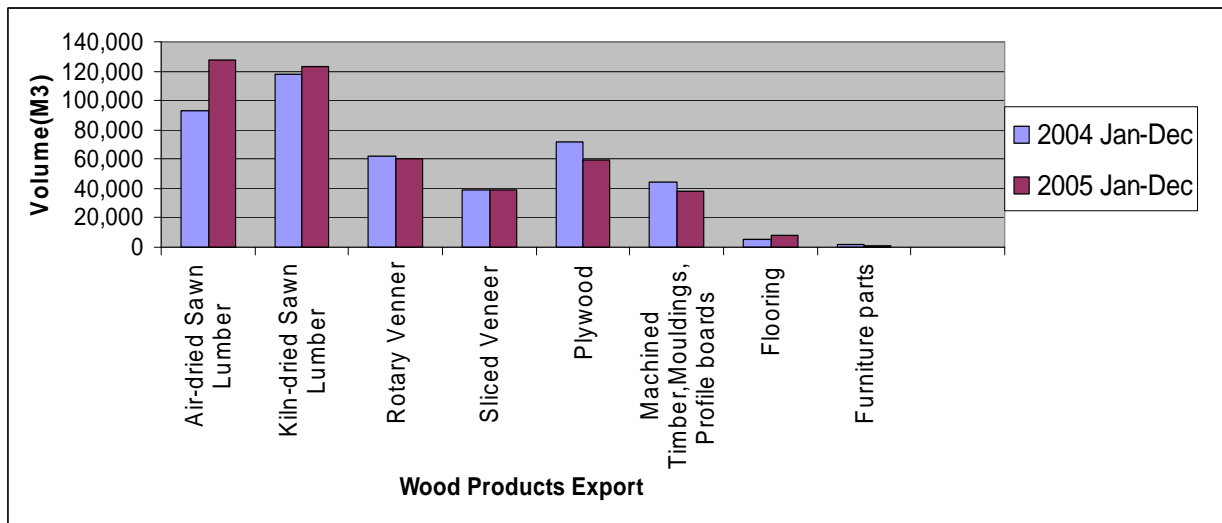


Figure 4: Total volume of wood products exported (January 2004-December, 2005)

Source: Ghana Gazette, 2006

In 2006, the secondary processed wood products (SPWP-furniture parts, moldings, flooring, etc.) accounted for 14% of the total export volume in the period, but 28% of the export value. SPWP exports reached €35.6 million, up 35% from 2005, while primary products (lumber, veneer, plywood, etc.) totaled €90.21 million (287,470 m³), down 19% from 2005. Exports of other processed wood products offset the decline in exports of furniture parts, moldings and other SPWP (ITTO, 2006b).

The United States, India and Italy were among the 10 major destinations for the country’s wood products that imported about € 98 million worth of wood products or 78% of total wood exports (Figure 6). ITTO reports said wood exports to the Economic Community of West African States (ECOWAS) market registered significant increase by 113% from about € 9 million in January to September 2005 to more than € 19 million during the same period in 2006.

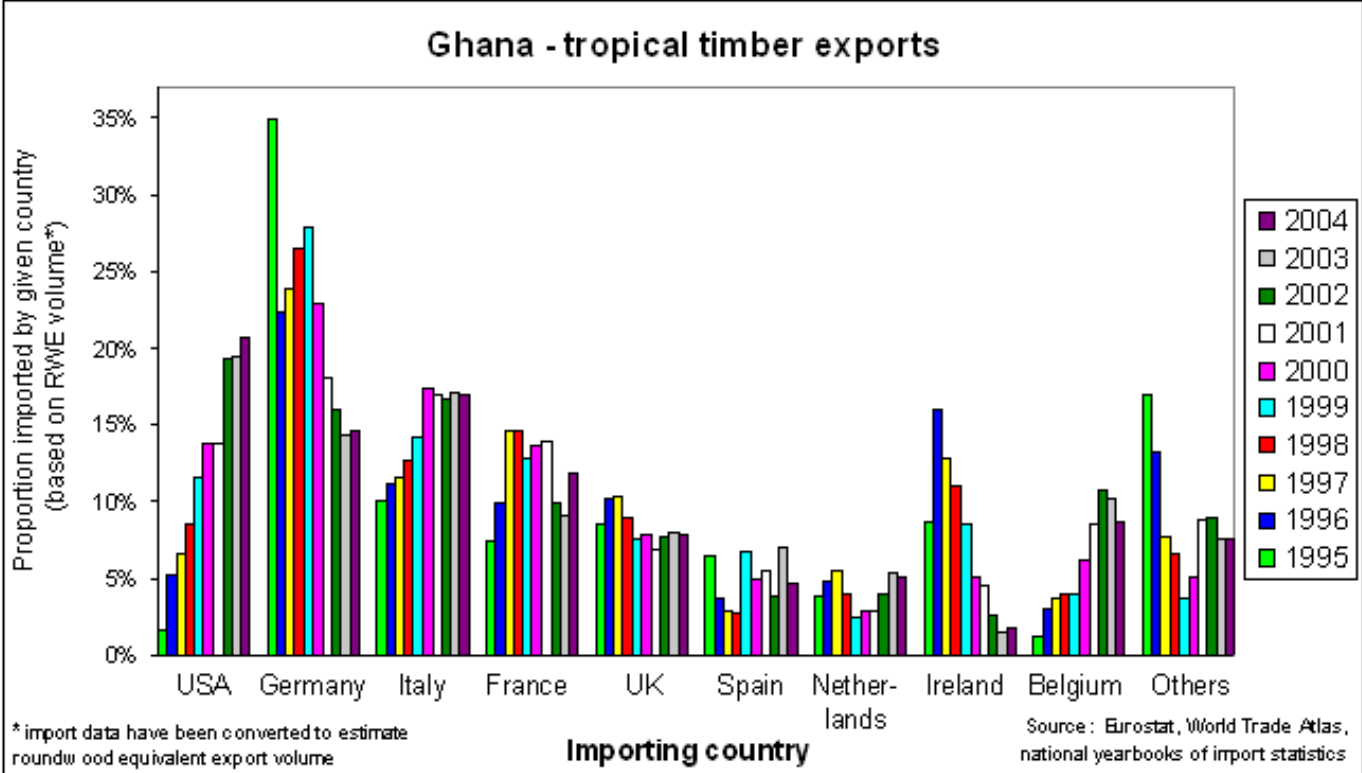


Figure 6: Major Importing Countries of Ghana Wood Products (1995-2004)

Wood Products Imports

Ghana imports only sizable volumes of wood products. According to FAOSTAT 2006, the total import of forestry imports was estimated at US \$ 70 Million. Wood products normally imported are paper products, wood poles (Raw Teak and Pine) from mostly African countries particularly Togo and Benin for Teak (*Tectona grandis*) and South Africa for pine.

Strength, Weakness, Opportunities and Threats in the Forest Products Industry

Strengths

Major institutional changes, which include:

- Introduction of Competitive Bidding
- Increase in stumpage prices to improve sustainable forestry
- Work to develop a new log-tracking system
- Improvement of benefit sharing mechanism
- Establishment of forestry Customer Service Centers in many districts
- There are new good structures to enable dialogue and debate between stakeholders at many levels. Many of the gaps in the system are well known and being addressed ;
- Certification, which is both environmental and marketing tool is well understood in Ghana; Many companies are on the threshold of being certified
- Labor is relatively inexpensive and there is a significant labor pool for industry to utilize
- There are highly diversified hardwood species to select from.
- Positive macro-economic indicators

Weaknesses

Implementation of legality verification and certification includes:

- Presently, TUCs will only apply to proportion of the national forest area. It is anticipated that the government's commitment to convert timber leases to TUCs, which was announced in the 2005 Annual Budget- hopes to overcome this constraint.
- Implementation of the policy and the enforcement in the forest is problematic due in part to insufficient capacity and incentives for staff.
- Population pressure combined with over-capacity in the industry continues to drive deforestation and illegal logging activities. The latter may be in the form of: logs that are supplied illegally to industrial sawmill; or logs cut in the forest with chainsaw, (contrary to the ban on chainsaw operations) and supplied directly to the domestic market for tertiary processing.
- Report of widespread job losses in the wood industry raises questions over the financial capability of large sections of the industry to participate in certification and legality verification.
- Recent energy crises engulfing the country had deepened the problem of the industry. This is due to most companies connected to the national grid. Since the country uses hydro-electric as the means of energy generation, the reduction in volume of the main lake has caused serious energy situation
- Deficient installed processing technology
- Unskilled labor
- Low production techniques
- Raw material supply limitations

- Government policies
- The low involvement of the industry in eBusiness and supply chain management
- High interest rates being charged by banks resulting in low investment in the industry
- Government's high levies and taxes impeding wood products exports
- Unsustainable harvesting practices

Opportunities

There are factors that are driving change in the industry:

- Globalization, which is shifting industrial capacity to countries where cost are lower
- The extensive development of fast growing tree plantations and rapid emergence of low supplies of industrial wood
- The relatively recent and on-going development of wood-based composite products technology
- The rapid emergence of eBusiness which can help the industry to be more efficient
- Huge markets in Asia countries such as China and India. The Middle-East is also becoming an emerging market for Ghana's wood products

Threats

- The emergence of new important players in the wood products manufacturing and consumption – especially China, but also other Asian countries, the Russian Federation, eastern Europe and some countries in Latin America
- Reduction in prices of other substitutes such as plastics
- Emergency of International and national initiatives such as:
 - ❖ FLEGT/AFLEG
 - ❖ Voluntary Partnership Agreement
 - ❖ Government Purchasing Policies especially UK government
- Poverty and hunger still remains an underlying cause of the depletion of forest; without alternatives to fuel wood and any other income generating options, many households rely on forest goods and services and on forestlands for the production of agriculture crops for survival. Population growth, demand for land for infrastructure development and settlement continue to increase, which in turn affect wood industry raw material supply

Recommendations

1. Increase efficiencies within the existing national component of the value chain

These involve mapping the structure of a 'national value chain' and the value contributed by each link in the first step, assessing performance and dynamics between linkages in the next step. Such an analysis helps decision makers to determine what type of trade support services should be provided by which institution and where. A commitment to greater efficiency, using a public-private

sector approach, could attract more foreign buyers and investors interested in sourcing from the country, thereby increasing the overall export performance of the wood sector

2. Effective forest management administration policy review

The current forest management policy needs to be reviewed to purge it of inefficient bureaucracies in the system. Transparency needs to exist in all facets of forest management and administration.

3. Increased investment in natural forest management

The Government has a greater role to play in investing in forest management to ensure a sustainable raw material supply.

4. Effective stakeholder participation in forest management

Involvement of the various stakeholders in forest management will lead to effective collaboration, so as to protect the resource while allowing the wood industry to develop. Involving all stakeholders create harmony in the industry.

5. Incentives for production of value-added processing

Motivate the industry to encourage ventures in secondary and tertiary processed products by lowering taxes and levies. Moreover, special programs should be developed to reduce waste and improve residue utilization. A program to encourage product and species diversification should be launched with emphasis on promoting investment in rotary veneer, plywood moldings and other downstream products made primarily from “Pink Star” lesser used species.

6. Intensive forest plantation development

Forest plantations will contribute to industry survival in the future. The government should motivate companies to develop large scale forest plantations. Also, the national forests should undergo extensive reforestation to sustain this raw material base. Calculations of stumpage should be based on the yield stock maps, using tree diameter as an indicator of volume. Such a system would avoid the use of TIFs altogether. Documentation carried in transit should be accompanied by bar-coded log tags and shipment manifests.

7. Forest policy research and development

Thorough policy research needs to be conducted to assess the impact on the industry on regular basis to make wood Ghana’s wood products very competitive in the international markets

8. Efficient resource utilization

This involves much improvement in harvesting and processing methods and diversifying the species of wood being used. This will call for the use of lesser-used species and a more innovative ways of using wood in production processes. Value addition of wood products will help to make Ghana's wood products more competitive in international markets.

9. Improvement in market structures

There is a need for development and coordination of market-driven strategies. These can be achieved by:

- ❖ Adopting marketing strategies based on value addition and the promotion of lesser-used-species
- ❖ Market analysis, segmentation and targeting of lucrative markets
- ❖ Monitoring and evaluation on a regular basis
- ❖ Adopt information and Internet technologies to improve market-driven supply chain and business processes

10. Improved quality assurance certification

The Ghana wood processing industry is in need of improved processing capabilities. This includes both production technology but also process flow improvements. The resulting products, particularly for exports, should carry third-party quality certification that meets customer standards and quality requirements.

11. Involvement in Environmental Certification

The initial enthusiasm exhibited by the industry to forest certification should be encouraged as it can help Ghana wood products increase market share in the EU and US markets. The introduction of forest certification will add cost to forest management so the private sector will need to be motivated with tax incentives or price premiums.

Conclusion

Ghana's wood products industry can be competitive if changes are implemented collectively and in a coordinated and cooperative fashion by all stakeholders. These changes include improving processes and procedures in wood products value and supply chains and taking a more proactive approach in resource utilization, creating effective market information systems, and generally, removing inefficiencies and roadblocks that thwart success.

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