AMENDMENTS TO APPENDICES I AND II OF THE CONVENTION

Other Proposals

A. PROPOSAL

Inclusion of Entandrophragma spp. in Appendix II.

B. PROPONENT

The Federal Republic of Germany.

C. SUPPORTING STATEMENT

- 1. <u>Taxonomy</u>
 - 11. <u>Class</u>: Dicotyledoneae
 - 12. Order: Sapindales
 - 13. Family: Meliaceae
 - 14. <u>Genus</u>: Entandrophragma C.DC.
 - 15. <u>Species</u>: Pennington and Styles (1975) recognize 11 species in the genus:
 - E. angolense (Welw.) C.DC.
 - *E. bussei* Harms
 - E. candollei Harms
 - *E. caudatum* (Sprague) Sprague
 - E. congoense (De Wild.) A. Chev.
 - E. cylindricum (Sprague) Sprague
 - E. delevoyi De Wild.
 - E. excelsum (Dawe & Sprague) Sprague
 - E. palustre Staner
 - E. spicatum (C.DC.) Sprague
 - E. utile (Dawe & Sprague) Sprague

16. <u>Common Names/</u> <u>Trade Names</u>:

E. angolense - Edinam (Ghana), Tiama (Côte d'Ivoire, Gabon, Congo), Gedu Nohor (Nigeria), Edoussie (Cameroon), Kalungi, Ipaki, Lifaki and Tschimaie;

E. candollei - Kosipo (Guinea, Congo & Côte d'Ivoire), Atom-Assié (Cameroon), Esaka (Zaire), also Heavy Sapele, Heavy Mahogany and Omu;

E. caudatum - Mbuti;

E. cylindricum - Sapele (Nigeria), Aboudikrou (Côte d'Ivoire), Sapelli (Cameroon), Gold Coast Cedar, Acajou Sapelli (France), Penkwa;

E. utile - African Cedar, Ashanti Cedar, Acajou Assie (Cameroon), Utile, Acajou Sipo (Côte d'Ivoire), Kosi-Kosi (Gabon), Ngoi.

Vernacular names are often indifferently applied to several species and can include other 'mahogany' timber trees belonging to genera of the same family e.g. *Khaya* and *Lovoa*. Species are often named after port of export e.g. Sapele Mahogany (*E. cylindricum*).

17. Code Numbers:

2. <u>Biological Data</u>

Most data is contained in various monographs or part-work floras covering tropical Africa [see Keay (1958), White (1962), White & Styles (1963), Pennington & Styles (1975), Troupin (1983), Styles & White, (1991)].

21. Distribution:

Entandrophragma species are distributed throughout the tropical lowlands of Africa. The distribution of each species is as follows:

E. angolense - Angola, Cameroon, Congo, Côte d'Ivoire, Gabon, Ghana, Guinea, Kenya, Liberia, Nigeria, Sierra Leone, Sudan, Uganda, Zaire;

E. bussei - United Republic of Tanzania;

E. candollei - Angola, Cameroon, Congo, Côte d'Ivoire, Gabon, Ghana, Guinea, Liberia, Nigeria, Zaire;

E. caudatum - Botswana, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe;

E. congoense - Gabon, Zaire;

E. cylindricum - Angola, Cameroon, Central African Republic, Congo, Côte d'Ivoire, Gabon, Ghana, Liberia, Nigeria, Sierra Leone, Togo, Uganda, Zaire;

E. delevoyi - United Republic of Tanzania, Zaire, Zambia;

E. excelsum - Burundi, Kenya, Malawi, Rwanda, United Republic of Tanzania, Uganda, Zaire;

E. palustre - Congo, Zaire;

E. spicatum - Angola, Namibia;

E. utile - Angola, Cameroon, Central African Republic, Congo, Côte d'Ivoire, Gabon, Ghana, Liberia, Nigeria, Sierra Leone, Uganda, Zaire.

22. <u>Population</u>: In 1980 the area of tropical forest (including open and closed forest) remaining in Africa was 7,030,790 km² (Lanly, 1982). Many African countries have experienced a long history of commercial timber exploitation and the African timber trade accounts for around 8% of the total world market by volume (ITTO, 1991). In its 1988 summary report, FAO stated that between 1981-1985 deforestation in Africa had reached an annual average of

36,760 km² (includes open and closed forests). By 1991 annual deforestation in the region for the preceding decade had reached 41,000 km2 (FAO, 1993). It appears that as long as the pressures of commercial exploitation on valuable timber genera such as *Entandrophragma* remain high this group is worthy of particular conservation attention (ITTO, 1991).

About 30 species have been described most of which have been reduced to synonymy with the above.

Entandrophragma species are going through a process of rapid depletion and biological degradation within many of their natural range countries, particularly in West Africa, due mainly to over-exploitation (Ogigirigi, *in litt.* 1993). Styles and Khosla (1976) and Styles (*in litt.* 1993) point out that although considerable quantities of hardwoods, including *Entandrophragma*, still occur in a few forests, the constant removal of the best trees will lead to severe genetic erosion in the remaining populations. It has been suggested that *Entandrophragma* spp. may disappear completely from high secondary forest (FAO, 1981a). Shete (*in litt.* 1993) concludes that this genus has fared no better than other endangered genera in East Africa (e.g. *Khaya*) due to high deforestation rates, selective logging and the lack of comprehensive species conservation programmes.

Current knowledge of species conservation status in their range States is as follows (IUCN Red Data Book categories used; see also Table 1):

E. angolense - Rare (Cameroon), vulnerable (Côte d'Ivoire), endangered (Kenya) and endangered (Liberia). Distinctly threatened in some parts of West Africa. Creaming of forests in commercial exploitation of this species has completely wiped it out in many parts of West Africa (FAO 1986). Severe genetic erosion noted in Nigeria with few large trees left (FAO, 1986). FAO (1986; 1990) considers this species a priority for *in situ* conservation. In Ghana *E. angolense* has an estimated resource life of 18 years (Alder, 1989) and is fairly common in parts of East Africa, for example in the lake-side forests in Uganda (FAO, 1986). Odera (1984) draws attention to the heavy exploitation of the species and its poor regeneration. Hawthorne (1989) suggests that dispersal of seeds is a serious limiting factor in regeneration of the species.

E. candollei - Rare (Cameroon), vulnerable (Côte d'Ivoire), endangered (Liberia). It is recorded as the rarest of the *Entandrophragma* species in Liberia where it is confined to moist semideciduous forest (Voorhoeve, 1979). In Ghana it is rarer than other species of the genus, with individual trees scattered throughout the forests (Hawthorne, 1989).

E. caudatum - Not common in Zimbabwe, with only small and localised populations. The best specimens of this species are currently being removed from some areas in an uncontrolled fashion. Good specimens are likely to be endangered, principally by man, but also by elephant in some national park areas (Forestry Commission, Zimbabwe, *in litt.* to the Wildlife Trade Monitoring Unit, 1991). The species is threatened in Mozambique due to heavy exploitation for export (Direcçao Nacional de Florestas e Fauna Bravia, Maputo, Mozambique, *in litt.* to the Wildlife Trade Monitoring Unit, 1991). This species appears to have suffered in the recent drought in Zambia with many of the mature trees having died (Bingham, *in litt.* 1993).

E. cylindricum - Vulnerable (Cameroon & Côte d'Ivoire) and threatened in Uganda where it is widely exploited. In Liberia the tree is very rare in the evergreen forests; it grows more commonly in the moist semi-deciduous forest (Voorhoeve, 1979). In parts of northern Congo, there are also indications of over-exploitation of the species. Genetic erosion may be possible, too (Fickinger 1992). In Ghana this species has been estimated to have a

resource life of 25 years (Alder, 1989). Within Cameroon the species is heavily exploited. It does, however, appear to benefit from shifting cultivation within the country, regenerating more readily in abandoned swiddens than in primary forest (Wyatt-Smith, 1987). *In situ* conservation is considered a priority for this species by FAO (1990).

E. delevoyi - This species is considered to be threatened in Zaire because of threats to its habitat (Hedberg, 1979) and, in Zambia, through the loss of its dry-evergreen forest habitat which has been cleared for cultivation (Bingham, *in litt.* 1993).

E. excelsum - Too scarce in Malawi to be of commercial importance (White & Styles, 1963).

E. spicatum - This species is rare and scattered in Namibia and is believed to be not commercially exploited at present.

E. utile - Vulnerable (Cameroon & Côte d'Ivoire), endangered (Liberia). In Liberia it is the commonest *Entandrophragma* species in the moist semi-deciduous forest, but regeneration appears to be scarce (Voorhoeve, 1979), and it is generally accepted that there has been over-exploitation for export markets (Momo, *in litt.* 1993). According to FAO (1984) this species is considered to be threatened with extinction in its areas of natural distribution in Ghana and Nigeria because of massive exploitation. In Ghana this species is less widespread than other species of the genus. It appears to regenerate successfully in logged forest within the country, but regeneration is poor in burnt dry zone forests (Hawthorne, 1989). In Ghana this species has an estimated resource life of 20 years (Alder, 1989). Lamprecht (1989) points out that the species has also been extensively exploited in the Central African Republic. On the international market, timber from *E. utile* occurring in Congo is considered to be particularly sought after. The Chaillu Forest in the South of the country, where this species occurs, has been locally overcut and is increasingly encroached upon by farmers. FAO (1990) considers this species a priority for *in situ* conservation, especially in Nigeria.

23. <u>Habitat</u>: *Entandrophragma* species are tall, emergent trees found in a range of habitats including moderately wet parts of moist lowland rain forest, montane rain forest, drier forest types such as semi-deciduous forests and transitional forest formations.

More detailed habitat and range information is available for the following species:

E. angolense - In Ghana this species occurs throughout the moist semi-deciduous forest zone particularly in better-drained sites. In Liberia it also prefers well-drained soils.

E. bussei - An emergent tree from *Commiphora* thickets often associated with *Cordyla densiflora* and *Adansonia digitata*. Also in deciduous woodland and bushland.

E. caudatum - This species is found on unconsolidated sands as a constituent of dry forests or woodland thicket in North and West Zimbabwe. It also occurs in South Zimbabwe, including on rocky outcrops. In Mozambique it occurs in the sub-hygrophilous forest zone, particularly on clay-sandy soils and predominantly in the southern part of the country.

E. cylindricum - In evergreen, deciduous and transitional forest formations from Côte d'Ivoire to Cameroon and East to Uganda.

E. delevoyi - This species is an emergent species occurring in evergreen forest and thicket on well-drained soils; it sometimes persists in "chipya" vegetation after the destruction of thicket but is easily killed by fierce fires.

E. excelsum - In Rwanda this species occurs in mountainous forest from 1800-2100 m. The sub-montane seasonal rain forests where the species occurs in Malawi are described in detail in Chapman and White (1970).

E. utile - Primarily a lowland tree species (0-500 m above sea level) of moist deciduous forests. It favours well-drained soils.

3. International and National Trade Data

The EC is a main importer of tropical hardwoods, including logs and all types of processed timber (Table 2). By value the EC is the largest importer of tropical hardwoods in the world (Rice & Counsell 1993).

Africa is the major source for raw logs, whereas Asia exports the largest proportion of sawn timber and further processed timber goods (Table 3). The export trade in African timbers involves mainly West and Central African countries (Sayer *et al.* 1992). The EC is the recipient of 90 % of the African tropical timber exports (Table 4). Africa is the main source of EC log imports.

As Table 5 shows, Central Africa's share of the trade has increased. This is because most of West Africa's natural forests are being exploited. The West African subregion shows an advanced phase of forest depletion: the closed forest is split into several islands in a "sea" of mixed agriculture/forest fallow (FAO 1990 b).

Another reason for the growing commercial interests in Central Africa is that there are still unlogged forests in remote areas and that in Africa many tree species, including most of the commercially important timbers, cover wider ranges than in SE Asia and Latin America (Sayer *et al.* 1992). In comparison to SE Asia, where a large number of species (mainly Dipterocarps) have economic importance, West and Central Africa rely on relatively few high value species. Few species in Africa are threatened throughout their natural geographical range, but various timbers are threatened with extinction within certain countries because of over-exploitation (ITTO 1991).

31. <u>Timber</u>: Entandrophragma species are important timber species, especially from West Africa. There are great similarities in colour and texture between the species and another commercially important timber group, the 'true' mahoganies (Swietenia spp.). This results in Entandrophragma species often being traded under the blanket heading of 'mahogany' which makes it difficult to ascertain which individual species are actually in trade. Apart from questions of supply and fashion, the softer, less expensive mahoganies of West Africa are preferred for modern high-speed production methods over South and Central American mahoganies, which, however, are often considered superior in many other respects (Farmer, 1972). Entandrophragma species form considerable proportions of the timber exports of countries like Cameroon, Congo, Ghana and Liberia (Schippmann & Schmitz-Kretschmer, 1994). For U.K. imports see Table 6. At present, the following four species are prevalent in trade in the greatest volumes:

E. angolense - Mahogany-type timber similar to Sapele (*E. cylindricum*), but of plainer appearance and used for similar purposes in furniture manufacturing. In 1988 Congo exported 9,219 m³ of logs, 2.1 % of total log exports (ITTO 1991). Also used for interior and exterior joinery, shop and office fitting, flooring, plywood manufacture and coffins.

E. candollei - Used for similar purposes to Sapele (*E. angolense*) and Utile (*E. utile*), although being darker and heavier and not as attractive as Sapele, and not as durable as Utile. Used in high-class joinery, boat-building, general utility work, and domestic flooring. Selected logs used for decorative veneers. Good wood for carpentry and cabinet making.

E. cylindricum - Much sought after as it resembles Honduras Mahogany (*Swietenia mahagoni*). Together with *Triplochiton scleroxylon* and *Lophira alata*, this species accounts for more than 50% of the total volume logged in Cameroon (ITTO, 1991) and is one of the few species extracted commercially from the remote eastern part of this country (Rietbergen, 1988). In 1988 Congo exported 224,680 m³ of logs, 50.7 % of the total log exports (ITTO 1991). Used for quality furniture and cabinet making, joinery, musical instruments and extensively used as a constructional veneer for plywood. The exploitation of this species amounts to approximately 80 % of all commercial logging operations in northern Congo (Fickinger 1992).

E. utile - General appearance and properties of Sapele and the two species are often marketed and traded as the same product. Lighter than Sapele, it finds a wide application as a replacement for *Khaya* species. In 1988 Congo exported 27,115 m³ of logs, 6.1 % of total log exports (ITTO 1991). Used for furniture and cabinet making, exterior and interior joinery, flooring, musical instruments, sport goods and general construction work. Selected material used for plywood manufacture and sliced for decorative veneers.

32. Legal International Trade: The timber of Entandrophragma is of major importance in international trade. E. angolense, E. candollei, E. cylindricum and E. utile are presently the four species of greatest commercial importance. For data on production and trade for each species see accompanying trade data in Table 6. The main source of trade data is Customs records and timber trade statistics. The decline in exports of Entandrophragma spp. has been noted from various countries, for example Côte d'Ivoire (Arnaud and Sournia, 1980). Bingham (*in litt.* 1993) states that there is no significant trade of this genus in Zambia since all the readily exploitable timber was removed in the early decades of this century.

The main EC countries importing African mahogany include Germany, Greece, Portugal, France (from countries such as Côte d'Ivoire, Gabon, Congo, Liberia and Cameroon), Ireland, Italy, Spain, and the UK.

- 33. <u>Illegal Trade</u>: No detailed information available.
- 4. Protection Status
 - 41. <u>Species Protection</u>: None of the species are protected by international law, although various measures have been made nationally in an attempt to protect species from over-exploitation:

E. angolense - Legally protected in Côte d'Ivoire where it is included in a list of protected species given by Decree No. 66, 31 March 1966. This law prohibits uprooting and damage but felling is allowed where sites are being developed for industrial plantations. It is given some degree of protection within Permanent Protection Forests in the Congo under Law No. 004/74. Felling limits are defined by law in various countries. The minimum exploitable diameter for *E. angolense* is 0.8 m in Cameroon, 0.8 m in Gabon, and 1.1 m in Ghana. Minimum girth limit in Sierra Leone is 10 feet (3m). Ghana bans the export of this species in log form and a ban on the export of logs of this species was proposed to come into force in Liberia on 1 October 1990 (FDA Regulation 17). This species occurs in a number of protected areas including Bia National Park, Ghana, Kakamega Forest, Kenya, and Sapoba Forest Reserve, Nigeria.

E. candollei - Included in a list of protected species in Côte d'Ivoire given by Decree No. 66, 31 March 1966. In Congo, it is given protection against felling, burning or damage by Law 32/82. Felling limits are defined by law in various countries. The minimum exploitable diameter for this species is 0.8 m in Cameroon, 0.8 m in Congo, and 0.8 m in Gabon. Ghana bans the export of *E. candollei* in log form and a ban on the export of logs of this species

was proposed to come into force in Liberia on 1 October 1990 (FDA Regulation 17). This species occurs in a number of protected areas including Odzala National Park, Congo and Tai National Park, Côte d'Ivoire.

E. caudatum - Protected by legislation in Mozambique, under Decree No. 12/81 whereby felling and exports are regulated.

E. cylindricum - Included in a list of protected species in Côte d'Ivoire given by Decree No. 66, 31 March 1966. In Congo this species is given protection against felling, burning or damage within Permanent Protection Forests under Law No. 004/74. Felling limits are defined by law in various countries. The minimum exploitable diameter for this species is 1 m in Cameroon, 0.8 m in Gabon and 1.1 m in Ghana. Minimum girth limit in Sierra Leone is 10 feet (3m). Low taxes on timber volume harvested have encouraged loggers to harvest Sapele below the minimum girth limit (Rietbergen, 1988). Ghana bans the export of this species in log form and a ban on the export of logs of this species was proposed to come into force in Liberia on 1 October 1990 (FDA Regulation 17).

E. cylindricum occurs in a number of protected areas including Nki Forest, Boumba Bek Forest, Cameroon, Odzala National Park, Congo, Bia National Park, Krokosua Forest Reserve, Ghana, and Okomu Forest Reserve and Sapoba Forest Reserve, Nigeria.

E. excelsum - In Burundi, some of the finest emergent *E. excelsum* forest occurs in the Bururi Natural Forest Reserve. This species also occurs within the Rwanda Arboretum, and is being used within the afforestation activities of this country. Protected in Zambia in forests on the Nyika Plateau (Bingham, *in litt.* 1993).

E. palustre - Occurs in a number of protected areas including Odzala National Park in Congo; and Salonga National Park and Yangambi Biosphere Reserve Zaire.

E. utile - Included in a list of protected species in Côte d'Ivoire given by Decree No. 66, 31 March 1966. In Congo, it is given protection against felling, burning or damage within Permanent Protection Forests under Law No. 004/74. Felling limits are defined by law in several countries. The minimum exploitable diameter for *E. utile* is 0.8 m in Cameroon, 0.8 m in Congo, 0.8 m in Gabon and 1.1 m in Ghana. Minimum girth limit in Sierra Leone is 10 feet (3m). Ghana bans the export of this species in log form and a ban on the export of logs was proposed to come into force in Liberia on 1 October 1990 (FDA Regulation 17). This species occurs within Tai National Park, Côte d'Ivoire.

Entandrophragma species are also found in the Akure (average of 8 trees per hectare in 1974), Idanre (average of 70 trees per hectare in 1984), Iguobazuwa (average of 4 trees per hectare in 1961), Usonigbe (average of 20 trees per hectare in 1978) and Sapoba (average of 354 trees per hectare in 1957) Forest Reserves in Nigeria. Records also indicate the presence of *Entandrophragma* species in Ologbo, Obaretin and Okomu Forest Reserves and Ubiaja farmlands of the Edo State (Ogigirigi, *in litt.* 1993).

42. <u>Plantation Developments</u>: Concern has been noted on the lack of new initiatives to develop plantations for these species (Styles, *in litt.* 1993).

E. angolense - Attempts are being made to get more trees (in mixture with others) grown in plantations. Enrichment line planting has not proved successful despite germination often being prolific (FAO, 1986). This species has shown signs of being a successful tree crop for Taungya sequential cropping plans.

E. candollei - This species is the best candidate for plantations and is a fast grower, but owing to its less desirable qualities its cultivation is unlikely to be undertaken (Voorhoeve, 1979).

E. cylindricum - Plantations begun in Cameroon in the 1930's included the use of this species (ITTO, 1991). Planting has been restricted by the availability of seedlings (ITTO, 1991).

E. excelsum - Cultivated in Kenya (Styles & White, 1991). *E. utile* - Shows signs of being a successful tree crop for Taungya sequential cropping plans.

Natural regeneration is often sparse and slow growing following selective harvesting. Attempts to improve the stocking of young desirable species by some form of enrichment planting have been carried out in the South Mengo forests of Uganda by line-group plantings of 2 year old striplings of *Entandrophragma* spp. (groups of 3-5 plants at spacings of 9×45 mm). The promotion of growth rates of either natural advance growth or of planted seedlings depended on sufficient light levels which often proved too low due to low intensity selective fellings or lack of severe disruption to the forest canopy. Seedlings are able to withstand some shade when young (natural regeneration can be stimulated by the Tropical Shelterwood System). There are also patches of plantation establishments found within the southern humid zone of Nigeria at the Kennedy Plots at Sapoba Forest Reserve, Edo State (Ogigirigi, *in litt.* 1993).

Growth of species is slow leading to a long rotation of 85-100 years and there is a tendency to abandon plantations of *Entandrophragma* spp. due to this factor (FAO, 1981a). The genus is also susceptible to attack from *Hypsipyla* (shoot-borers) and seed is often hard to obtain as it is wind dispersed and soon attacked by insects. Seed viability in some species is also often short. The West African Hardwoods Improvement Project, the Tree Crop Production Division and the Entomology Division of the Forest Research Institute in Nigeria are co-operating to develop shoot-borer resistance in species of *Entandrophragma*.

43. <u>Additional Protection Needs</u>: Additional measures are needed to protect populations of *Entandrophragma* within existing protected areas. The Bururi Natural Forest Reserve in Burundi, for example, needs upgraded legal status and appropriate management to ensure the protection of this species (Stuart & Adams, 1990). *In situ* conservation is considered a priority for *E. angolense, E. cylindricum* and *E. utile* by FAO (1990). As the spcies is not able to regenerate itself adequately. Fickinger (1992) recommends that a sufficient number of mature tree specimens capable of producing seeds be maintained. In addition, he supports measures to regenerate this species artificially.

5. Information on Similar Species

51. *Khaya*: This African genus of the family Meliaceae is sometimes exported alongside *Entandrophragma* under the blanket heading of African Mahogany due to similarities between the timbers.

6. Comments from Countries of Origin

Comments from the range States Botswana, Burundi, Liberia, Malawi have signalized the German Scientific Authority to CITES to support the listing of *Entandrophragma* at the next COP. Liberia, for example, refers to the threat of the species by logging activities and emphasizes the necessity and the advantages of including these species in the CITES appendices (Momo, 1993).

The Republic of Congo claims that the population is sufficiently large in this area; therefore, it would not seem necessary in their opinion, to add this species to the CITES appendices (Tsila, 1994).

- 7. Additional Remarks
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Table 1: Dis Spe	stribu ecies.	tion an	ıd I	UCN T	hrea	t Ass	sessmen	ts for	Entandro	ophragma	and K	haya		
IUCN Threat Categ	;ories: E	= Endang	ered,	V = V(lnerb	ale, R	= Rare, C	= T = ge	fährdet, Zuo	ordnung zu E	, V oder	R noc	h unl	dar.
Country Abbreviat AO = Angola BF = Burkina Faso BJ = Benin BI = Burundi BW = Botswana CF = Central Afr.	ions: C C C C C C C C C C C C C C C C C C C	G = Congo II = Cote W = Camer A = Gabon H = Ghana W = Gambi	d'Ivo oon a	oire .	GN = GW = GQ = KE = LR = NG =	Guinea Guinea- Equat. Kenya Liberia Wadagas	Bissau Guinea Iskar	ML = Ma MW = Ma MZ = Mc NA = Na NE = Ni NG = Nj	lli llawi zzambique mibia ger geria	RW = Rwand SD = Sudan SL = Sierr SN = Seneg TD = Chad TG = Togo	a a Leone al	TZ UG ZA ZW ZR ZW	= Ta = Ug; = S. = Za = Za = Zi	nzar and Africa bia ire ababwe
KHAYA														
anthotheca	A 0	C	F CG	C1 CM *V*	GH	GN	LR ‡E‡		NG	SL	T2	UG *T*		ZR
grandifoliola	A0?	BJ *V*		CI	GB	GN			NG	SD	TG	UG * E *		ZR
ivorensis	AO			C1 CN (*V**V*	GA GB *C*		LR *E*		NG					
dagascariensis							1	IG					<u></u>	
nyasica							с с _{уль} и	¥¥ I	1Z		T	!	ZX	ZR ZW
senegalensis	BF	BJ *V*		CI CW		GM GN (<u>G</u> W	ML	NE NG	SD SL SK	TD TG	UG *E*		
ENTANDROPHRAGWA														
angolense	AO		CG	CI CN #V##R#	GA GB *C*	GN	KE LR *E**E*		NG	SD SL		ŪG		ZR
bussei						<u></u>					T	!		
candollei	A 0		CG	CI CH #¥**R*	GA GE	GN	LR *E*		NG		<u></u>			ZR
caudatum		BW						N #	NZ NA			2.	A ZW	ZW
congoense					GA									ZR
cylindricum	A 0	(CF CG	CI CM *V**V*	GA GH *C4	•	LR		NG	SL	TG	UG *C*		ZR
delevoyi											T	2	Z¥	ZR
excelsum	1	81					KE	R.A.		RV	T	Z UG		ZR
palustre		-	CG											ZR
spicatum	A0			•					ŇA					
otile	A0	(CF CG	C1 CM *V**V*	GA GB		LR *E*		NG	SL	·	ŪG		ZR
References: FFPS (1993): CITES Proposal. Inclusion of the genus Entandrophragma spp. in Appendix II of the Convention (draft). FFPS (1993): CITES Proposal. Inclusion of the genus Khaya spp. in Appendix II of the Convention (draft). Oldfield (1991): Provision of Data on Rare and Threatened Tropical Timber Species - Preliminary Report 70 S., Cambridge. ITTO (1991): Pre-Project Study on the Conservation Status of Tropical Timbers in Trade 307 S., Cambridge. VDH (1979): Tiama Informationsdienst Holz. Merkblattreihe Holzarten. Blatt 40: 2. Hamburg. WTMU (1991): CITES Proposal. Inclusion of Khaya spp. on Appendix II of the Convention (draft). WTMU (1991): CITES Proposal: Inclusion of the genus Entandrophragma on Appendix II of the Convention (draft).														

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Country	Volume (millions of m3 roundwood equiv.)	Value (millions of ECU)	
Japan	21,31	2.912	
EC	13,36	2.959	
USA	5,74	1.671	
S-Korea	6,75	661	
Taiwan	5,49	519	

Table 2: Comparison of volume and value of tropical hardwoods by most important countries (1990).

Source: Rice & Coursell (1993), Forests Foregone. The European Community's Trade in Tropical Timbers and the Destruction of the Rainforests.

Table 3: Volume of tropical timber exports into EC by regions of origin in 1990 (m3).

Region	Import of logs	Import of Processed Wood (roundwood equivalent)	
Africa	3.321.954	2.313.117	
SE-Asia	31.766	6.717.189	
Latin-America	16.757	735.069	

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Source: Rice & Counsell (1993), Forests Foregone. The European Community's Trade in Tropical Timbers and the Destruction of the Rainforests.

Country	1	ogs	Proc (roundwo	cessed wood ood equivalent)	Total (roundwood equivivalent)			
	EC	EC Germany (%)		Germany (%)	EC Germa		ny (%)	
Cot d'lv. Ghana Liberia Nigeria Cameroon Eq Guinea Congo Gabon CAR	401.827 143.169 514.853 666.459 125.264 569.641 763.875 26 138	6.550 (1, 115.878 (81, 67.049 (13, 51.986 (7, 12.457 (10, 35.574 (6, 20.422 (2, 3) 23 (1)	i) 1.010.673 364.961 364.961 i) 21.270 31.996 328.659 i) 20.810 i) 115.503 i) 57.847 i) 27.847	93.015 (9,2) 83.803 (23,0) 4.257 (20,0) 10.784 (33,7) 8.432 (2,6) 519 (2,5) 28.911 (25,0) 483 (0,8) 378 (1,2)	1.412.500 508.150 536.123 31.996 995.118 146.074 685.144 821.722	99.565 199.681 71.306 10.784 60.418 13.006 64.485 20.905 3.360	(7,0) (39,3) (13,3) (33,7) (6,1) (8,9) (9,4) (2,5)	
Zaire Others	94.212	11.013 (11, 1.517 (11,0	20.020) 57.195) 83.969	4.057 (7.1) 8.936 (10.6)	151.407	15.070 10.753	(0,4) (9,9) (10,7)	
Africa	3.321.954	325.508 (9,8) 2.118.923	243.525 (11,5)	5.440.877	569.333	(10,5)	

Table 4: Volume of timber imports into the EC and Germany by African countries of origin in 1990 (m3).

Source: Rice & Counsell (1993), Forests Foregone. The European Community's Trade in Tropical Timbers and the Destruction of the Rainforests.

Table 5: Volume of tropical timber imports from West and Central Africa into the EC in 1990 (m3).

Region	Logs	Processed Wood	Processed Wood (in r`wood equiv.)	
West Africa ¹	1.059.849	776.894	1.633.000	
Central Africa ²	2.245.589	322.710	678.000	

¹ Includes only exporting countries: Cote d'Ivoire, Ghana, Liberia, Nigeria ² Includes exporting countries: Cameroon, Eq Guinea, Congo, CAR, Gabon, Zaire

Source: Rice & Counsell (1993), Forests Foregone. The European Community's Trade in Tropical Timbers and the Destruction of the Painforests.

Table 6: TRADE DATA FOR ENTANDROPHRAGMA SPECIES

IXPORTS		_	·• •••			
ENTANDROPHRAGMA SPI-CILS	T XPORTING COUNTRY	Y	1'All	VOLUMI-MI-IGIII	108M	
E, angolonso (Tama)	CONGO	10967	1980	9,219m*	1005	
	GABON	19001	1989	7,013m ³	LOGS	
		1990(1:	i 9 montre) i	6.607m*	LOGS	
	GIIANA		940	600m ³	LUMBER	LOG EXPORTION 1979
			1981	116m'	LUMBER	···- ·
	· · · · · · · · · · · · · · · · · · ·		983	101m*	LUMBER	
	1		1991	44.911	EUMBER	
			1965	2910	I UMBER	
			19810	973m	FUMBLIC	
			1985	N/A	LUMISER	
	• · · · · · · · · · · · · · · · · · · ·		989	5,15tm*	LUMBER	
	LIBERIA		98/	6.443.832m²	LOGS	÷
			1987	350,474m	SAWN TIMBER	**************************************
t: Candolioi	CONGO	1942 (1993	1.623.431kg	1065	
	GUANA		1980	86m ³	LUMBER	100 B/38 1979
			1981	5Surg	LUMBER	
			932	N/A	LUMBIA	······································
·			1983	AIN .	LUMBER	· · · ·
	·		1984	8701	LUMPER	
			930	147m3	LUMBER	·····
			198/	N/A	LONRIG	
			SDV	N/A	LUMBLIC	· · · -
		14	1983	80/m³	LUMBER	TOC COOD INTERNAL
E extracticum (Sancto)	CONCO		980	224 GS0rn*	1005	TOUT PROPERTIES
	COTI- DIVOIRI-	1988(I monite)	8.082.83940	LOGS	· · · ·
	GABON		98/	11,130m ⁴	LOGS	
	<u>.</u>	1090(15	1 9 months;	8.366m*	LOGS	÷
	GILANA ,		1380	62700	LUMBER .	TOCT XICKET IVE 1994
	• • • •		1982	3 069m	LUMBER	· •
	· · · · · · · · · · · · · · · · · · ·		983	1,388m*	LUMBER	
	1	1	984	4,065m3	LUMBER	:
			985	3.842m3	LUMBER	
	·		985	3.359403	LUMBER	
	<u>+</u>		988	N/A	IUMBER	
	!		989	6,749m³	LUMBER	
	LIBERIA	15	86,417	3.090m*	1065	
E. 0110 (0110)	COTL DIVOUU	1080/	1966	1 502 25060	1005	
	GIIANA	13001	1980	18,334m*	LUMBER	LOC 148 1979
]		981	10.3cum*	LUMBER	
			1982	4,766m ³	LUMBER	
			983	7,451m'	LUMBER	
			001	17.375m ³	LUMBER	
		1	986	14,790m ^a	LUMBER	
			987	N/A	LUMBER	·······
· .			1999	N/A	LUMBER	<u> </u>
	LIDEDIA		363 RF.MY	15 /2003	LOGS	LOC LOBORT BAN 1940
UKIMPORTS		'		19,192.00		
ENTANDROPHILAGMA SPI CIES	EXPORTING COUNTRIES	Y	EAR	VOLUME	FORM	: OTHER DATA
E. utilo (Utilo)	CAMEROON	SFP	1 1932	237m²	1005	
		OC	1 1992	169m³	LOGS	
			L 1992	N/A	LOGS	:
	COLLEDIVORI	SLP	11/02	N/A	HOGS	
			1992	N/A	1963	
	· · · · · · · · · · · · · · · · · · ·	11	190	NIA	T (ióds	<u>.</u>
		<u></u> CUI	1. 1832	130m	LOGS	· · · · · · ·
	GALION	SEP	1992	9m²	LOGS	· · ·
			H 199	3(\$*0)		
			1993	84m*	- Tods	÷
	1	FE	1953	N/A	IOGS	
· · · · · · · · · · · · · · · · · · ·		. HA	R. 1953	179m*	LOGS	
	GHANA		H .1993 1	203m*	LUGS	
		00	F 1992	E3m*		
	;	CU	4 1992	416m²	LOGS	
	ZAIRI:	SFF	T 1992	N/A	LOGS	
		00	1 1957	30m³ 180	1000	
	<u> </u>	- CUI	- 1351/. ·	1000	LUGS	<u></u>

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SOURCE: ITTO, 1991; TROPICAL TIMBERS (1992; 1993) (N/A = Not available)

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