CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Nineteenth meeting of the Conference of the Parties
Panama City (Panama), 14 – 25 November 2022

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

To list African populations of the genus Khaya in CITES Appendix II, in accordance with Article II, Paragraph 2 (a) of the Convention and satisfying Criterion B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP17).

Annotation

#17 Designates logs, sawn wood, veneer sheets, plywood and transformed wood.

B. Proponent

Benin, Côte d'Ivoire, European Union, Liberia and Senegal

C. Supporting statement

1. Taxonomy

1.1 Class: Magnoliopsida
1.2 Order: Sapindales
1.3 Family: Meliaceae
1.4 Genus, species or subspecies, including author and year:

The taxonomy of Khaya remains unresolved. This proposal follows the nomenclature outlined in Royal Botanic Gardens Kew’s Plants of the World Online database (POWO, 2022), which recognises five species (K. anthotheca (Welw.) C. DC. (1878), K. grandifoliola C. DC. (1907), K. ivorensis A. Chev. (1907), K. madagascariensis Jum. & Perr. (1906) and K. senegalensis (Desr.) A. Juss. (1830)), with the addition of a sixth species, K. comorensis, as reported by the CITES MA of Comoros (in litt. to European Commission, 2021). However, a recent review of K. anthotheca by Bouka et al. (2022) identified two new undescribed species and supported the rehabilitation to the rank of species of three taxa previously considered to be synonyms of K. anthotheca: K.

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agboensis, K. euryphylla and K. nyasica. A full taxonomic revision of the genus is currently underway (Bouka et al. 2022).

1.5 Scientific synonyms:

**Khaya anthotheca**: Garretia anthotoca Welw. (1859); Khaya agboensis A. Chev. (1928); Khaya euryphylia Harms (1902); Khaya mildbraedii Harms (1917); Khaya nyasica Stapf ex. Baker f. (1911); Khaya wildemani Ghesq. (1926).

**Khaya grandifoliola**: Khaya dawei Stapf ex Broun & R. E. Massey (1929); Khaya grandis Stapf (1908); Khaya kerstingii Harms (1915); Khaya kisssiensis A. Chev. (1920); Khaya punchii Stapf (1908).

**Khaya ivorensis**: Khaya caudata Stapf ex Hutch. & Dalziel (1928); Khaya klainei Pierre ex Pellegr. (1911).

**Khaya madagascariensis**: none

**Khaya senegalensis**: Swietenia senegalensis Desr. (1792).

1.6 Common names:

- English: African mahogany
- French: Acajou, Acajou d’Afrique
- Spanish: Caoba africana, Caoba de Africa

1.7 Code numbers:

2. **Overview**

The genus *Khaya* comprises six species (*K. anthotheca, K. comorensis, K. grandifoliola, K. ivorensis, K. madagascariensis and K. senegalensis*) of medium to large trees in the family Meliaceae, native to tropical and sub-tropical continental Africa, Madagascar and Comoros. *Khaya* spp. are valuable commercial timber trees that are part of the African mahogany species group, and are also used in traditional medicine. Ongoing wild harvest for the international timber market is the primary threat to the genus and is having a detrimental effect on natural populations, which are particularly vulnerable as a result of intrinsic poor regeneration rates and are in decline in several countries. The major *Khaya* spp. exporting range States are Gabon, Cameroon, Congo, Côte d’Ivoire and the Democratic Republic of Congo. During 2015-2019, China imported African mahogany products (which can include other species) equivalent to a total weight of > 23 million kg from *Khaya* spp. range States; the United States of America and the European Union are other key importers of African mahogany.

With the exception of *K. comorensis*, which has not been assessed, all *Khaya* spp. are categorised as globally Vulnerable in the IUCN Red List. The assessments (four of which require updating as they were compiled in 1998, with the exception of *K. madagascariensis* which was updated in 2020) were made on the basis of over-exploitation of the species for timber, loss of mature trees leading to poor natural regeneration, and genetic erosion of wild populations. Thus, five species (*K. anthotheca, K. grandifoliola, K. ivorensis, K. madagascariensis and K. senegalensis*) appear to meet the criteria for inclusion in CITES Appendix II under Annex 2 a Criterion B of Resolution Conf. 9.24 (Rev. CoP17).

*Khaya* spp. are considered to be indistinguishable from one another based on macroscopic features of their wood (that is, using the naked eye or a hand lens up to 10x magnification) (Donkor, 1997), however, Koch (pers. comm. to UNEP-WCMC, 2021) also considered them to be indistinguishable based on microscopic wood characteristics. The wood of *Khaya* spp. is considered to be easily mistaken for that of CITES-listed *Swietenia* spp. (Holtken et al. 2012), particularly if the wood in question originated from a fast-growing plantation (Koch, pers. comm. to UNEP-WCMC, 2021). The criteria for inclusion of the entire genus in Appendix II under Annex 2 b A of the Convention thus also appear to be met.

3. **Species characteristics**

3.1 Distribution

The genus *Khaya* naturally occurs in tropical and sub-tropical Madagascar, the Comoros and continental Africa (Panshin, 1933; Donker, 1997; Nikiema and Pasternak, 2008; Pinheiro et al., 2011). A distribution map based on representative sampling of all *Khaya* spp. (with the exception of *K. comorensis*, and including the synonym *K. nyasica*) in their natural ranges has been produced by Pakull et al. (2019) (see Fig. 1); however, it should be noted that of the total 2222 individuals mapped, 124 were mapped based on herbarium specimens rather than field sampling (Pakull et al., 2019).
Botanic Gardens Conservation International’s “GlobalTreeSearch” database lists 31 range States where Khaya spp. are native (BGCI, 2020), as outlined below.

**Figure 1.** Geographic ranges of Khaya spp. based on representative sampling of >2000 Khaya individuals and including 124 herbarium accessions. Source: Pakull et al. (2019), reproduced with permission. Note that K. *nyasica* is considered here separately rather than as a synonym of K. *anthotheca*.

**K. anthotheca** occurs in Angola, Cameroon, Congo, Côte d’Ivoire, Democratic Republic of the Congo (hereafter DRC), Ghana, Liberia, Malawi, Mozambique, Nigeria, Sierra Leone, Uganda, United Republic of Tanzania (hereafter Tanzania), Zambia and Zimbabwe.

**K. comorensis** is endemic to the Comoros (CITES MA of Comoros in litt. to European Commission, 2021).

**K. grandifoliola** occurs in Benin, Burkina Faso, Congo, Côte d’Ivoire; DRC, Ghana, Guinea, Nigeria, South Sudan, Sudan, Togo and Uganda.

**K. ivorensis** occurs in Angola, Cameroon, Côte d’Ivoire, Gabon, Ghana, Liberia and Nigeria.

**K. madagascariensis** is endemic to Madagascar and the Comoros (islands of Grande Comore, Mohéli and Anjouan; see Fig. 2). It occurs naturally in the northern, central highland and eastern regions of Madagascar including Ambilobe, Analamerana protected area, Antanimihavotra and Bekolosy (Andriamanohera and Rakotoarisona, 2020). As of 2020, the species had an estimated extent of occurrence of 262 803 km² but an estimated area of occupancy of only 56 km² (Andriamanohera and Rakotoarisona, 2020). K. *madagascariensis* was historically more widespread with subpopulations previously recorded in the Madagascan provinces of Antsiranana, Fianarantsoa, Mahajanga, Toamasina and Toliara, and Nioumachoua Island in the Comoros (Andriamanohera and Rakotoarisona, 2020); it is unclear whether the species has been completely extirpated from these locations. K. *madagascariensis* is also planted as an ornamental tree and for reforestation purposes elsewhere in Madagascar (Andriamanohera and Rakotoarisona, 2020).
**K. senegalensis** occurs in Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Côte d’Ivoire, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, Mali, Niger, Nigeria, Senegal, Sierra Leone, South Sudan, Sudan, Togo and Uganda.

![Figure 2. Distribution of Khaya madagascariensis in Madagascar and the Comoros. Source: Kew Madagascar Conservation Centre (2020).](image)

3.2 Habitat

*Khaya* spp. occupy a variety of habitat types from closed forest to savanna (Donkor, 1997), and prefer a range of altitudes and soil types from lowland riparian zones and salt marshes (WCMC, 1998a) to well-drained soils in the foothills of mountains (Naidoo, 2007). The habitat preferences of individual *Khaya* spp. are outlined below.

**K. anthotheca** occurs in areas of low rainfall from Sierra Leone to Uganda (Donkor, 1997). The species inhabits low to medium altitude evergreen forests on well-drained soils, including mountain foothills in Tanzania (Naidoo, 2007). In Malawi, the species grows in riverine fringe forests with deep alluvial soils, and occurs typically at altitudes of 50-1400 m above sea level (CITES MA of Malawi in litt. to European Commission, 2021). In Angola, *K. anthotheca* is found in tropical rainforest (CITES MA of Angola in litt. to European Commission, 2022).

**K. grandifoliola** prefers drier, semi-deciduous forest and rocky areas of moist semi-deciduous forest at the border between savanna and closed forest zones, and is predominant in Côte d’Ivoire, Ghana and Nigeria (Donkor, 1997).

**K. ivorensis** occurs in moist evergreen and semi-deciduous forest types with high rainfall, from Côte d’Ivoire to Gabon (Donkor, 1997). In Angola, the species is found in tropical rainforest (CITES MA of Angola in litt. to European Commission, 2022).

**K. madagascariensis** is found in rainforest, along rivers and salt marshes (WCMC, 1998a), and in dry and humid forest at altitudes of 5-1000 m above sea level (Andriamanohera and Rakotoarisoa, 2020).

**K. senegalensis** is widely distributed across west and central African savanna, occurring from Senegal to Uganda (Donkor, 1997).
3.3 Biological characteristics

Khaya spp. are “non-pioneer light demanders”, able to germinate at low light levels but requiring higher light levels for further growth (Hall, 2011). The speed of growth for Khaya spp. has been reported to vary depending on forest type and plantation type (Lemmens, 2008; Nikiema and Pasternak, 2008). Plumptre (1995) reported that Khaya spp. produced fruit at sizes of 40 cm diameter at breast height (DBH) and larger (although age was not specified). All Khaya species have been noted to strongly resemble one another in flower and fruit morphology, but with inter-specific differences evident in their leaflets (Maroyi, 2008).

K. anthotheca individuals are monoecious, flowering from September to December and fruiting from March to September (Naidoo, 2007), with seed dispersal taking place from December to March (Makana and Thomas, 2004). Maroyi (2008) stated that K. anthotheca trees may begin producing fruit at 18 cm bole diameter (assumed to be DBH) but noted that “abundant fruiting” usually begins at a diameter of 70 cm. The age at which individuals attain the fruiting diameter reported by Maroyi (2008) is unclear. However, the species has been reported to take 60-80 years to reach full maturity (CITES MA of Malawi in litt. to European Commission, 2021).

K. ivorensis trees produce seed at 30 years of age and produce large seed crops at intervals of 3-4 years once at reproductive maturity (African Regional Workshop, 1998). The species reportedly produces hermaphroditic flowers from July to January, and fruits from February to May; seeds are wind-dispersed but spread only a short distance from the mother tree (Orwa et al., 2009).

K. senegalensis trees reportedly produce seed after 20-25 years (Nikiema and Pasternak, 2008).

3.4 Morphological characteristics

Khaya individuals are medium to large trees (Panshin, 1933), attaining maximum heights of between 13-24 m (K. madagascariensis; Andriamanohera and Rakotobarisoa, 2020) and 60-65 m (K. anthotheca; Pinheiro et al., 2011). A maximum DBH of 2 m has been reported for K. ivorensis (Orwa et al., 2009). Khaya spp. were noted to be fast-growing, with an annual growth of 2.3 m in height and 2.5 cm in diameter observed in Ivoirian K. ivorensis (Orwa et al., 2009), and an annual growth of <1.5 m in height for K. anthotheca (Naidoo, 2007). In the field, individual Khaya spp. can to an extent be differentiated from one another based on their leaflets, although it is noted that there is often considerable intra-specific variability and hard-to-classify “intermediate” individuals that may be hybrids (Bouka Dipelet, 2019).

Although a study by Donkor (1997) found that the wood of K. anthotheca, K. grandifoliola, K. ivorensis and K. senegalensis could be differentiated based on certain microscopic wood structures (the average fibre lumen/wall ratio, percentage multiseriate rays, and relative density) with 99% confidence, the authors highlighted that similarities in wood colour and anatomy make macroscopic identification (using the naked eye or a hand lens up to 10x magnification) of Khaya logs, lumber and finished products to species level “very difficult even for very experienced wood workers”. Koch (pers. comm. to UNEP-WCMC, 2021) stated that individual Khaya spp. could not be distinguished clearly or with certainty from one another at either the macroscopic or microscopic level. Molecular markers have recently been developed that can be used to differentiate between the wood of K. anthotheca, K. grandifoliola, K. ivorensis and K. senegalensis, but this is an expert process that can only be carried out in a laboratory (Schröder, pers. comm. to UNEP-WCMC, 2021).

3.5 Role of the species in its ecosystem

Khaya spp. act as shade trees for other plant species and have been used in agroforestry for this purpose: specifically, K. ivorensis has been successfully retained as a shade tree in cocoa plantations in Nigeria (Lemmens, 2008). K. grandifoliola has been noted as an important species for stabilisation of riverbanks in Uganda (Opuni-Frimpong, 2008) and K. ivorensis is used in enrichment planting and is noted to act as a soil improver (Orwa et al., 2009).
4. Status and trends

4.1 Habitat trends

Khaya spp. are considered to be threatened by habitat loss and "indiscriminate logging" across their native ranges (Fremlin, 2011 in Dickinson et al., 2011). See Section 4.5 for detail.

4.2 Population size

Hall (2011) noted that overall density of Meliaceae is low across central Africa, with 0.5-2 mature individuals occurring per ha in unlogged forest.

**Khaya anthotheca** is described as being naturally scattered at low densities throughout forest (Maroyi, 2008). Preliminary results from Angola’s 2015 National Forest Inventory estimated standing timber volumes of 0.005 m³/ha and 0.008 m³/ha for *Khaya anthotheca* trees in size classes 20-50 cm DBH and 50-100 cm DBH, respectively (CITES MA of Angola in litt. to European Commission, 2022). A relative frequency of 0.55%, a relative density of 0.05%, a relative dominance of 0.14%, and a basal area of 0.49 m² were also reported for *Khaya anthotheca* in Angola (CITES MA of Angola in litt. to European Commission, 2022). Large *Khaya anthotheca* individuals (>60 cm DBH) were reported to occur at average densities of 0.02 per ha in southern Cameroon and 0.3-0.9 per ha in Liberia (Maroyi, 2008). Smaller individuals (>10 cm DBH) were reported to occur at densities of 2-5 per ha in Côte d’Ivoire (Maroyi, 2008). The species was described as "common" throughout the humid forest region in northern and central DRC (Kiyulu and Rodrigues, 2014).

*Khaya ivorensis* individuals occur scattered or in small groups, typically at low densities (Lemmens, 2008). Large individuals (>60 cm DBH) were reported to occur at average densities of 0.02-0.08 per ha in southern Cameroon. In Côte d’Ivoire, "exploitable" individuals were recorded at an average density of <1 per 10 ha, though in some areas local densities reached 1 “exploitable” tree per 2 ha (Lemmens, 2008). *Khaya ivorensis* in Gabon was reported to occur at an average of 0.27 m³ of wood per ha (assumed to represent stem volume) (Lemmens, 2008). A 2017 study of *Khaya ivorensis* in Ireme and Odigbo local government areas in the south of Ondo State, Nigeria recorded a total of 123 trees representing a total wood volume of 48.05 m³ and a low population density ranging from 0.02-0.03 trees/km² (Chaikaew et al., 2020). The authors reported that DBH ranged from 5-48 cm, with an average of 18.9 cm, and a population structure appearing to show a reverse "J-shaped" curve (Chaikaew et al., 2020).

*Khaya madagascariensis* has an estimated population size of 1400 individuals, in approximately 14 subpopulations (Andriamanohera and Rakotoarisoa, 2020). Subpopulations are shown in Fig.2 (above).

In a study of *Khaya senegalensis* populations in Benin, Gaoue and Ticktin (2007) reported average densities of adult trees (defined by the authors as trees with DBH >5 cm) as 43.16 ± 7.23 per ha and saplings and seedlings as 1255.83 ± 268.23 stems per ha.

4.3 Population structure

Hall (2011) reported that the population of Meliaceae across central Africa shows a greater abundance of individuals in smaller size classes (10 cm DBH) compared to larger trees (20-70 cm DBH). In the absence of more detailed information on abundance of individuals in intermediate size classes, as well as historical figures on the relative proportion of mature individuals that would be expected in healthy populations, it is difficult to determine whether this population structure (high numbers of small individuals and low numbers of large individuals) is indicative of a reverse "J-shaped" curve, which is typically seen for tree populations with good recruitment capacity (Hall and Bawa, 1993), or whether it is indicative of ongoing or past intense harvesting of individuals in larger size classes (Hall and Bawa, 1993). It should also be noted that this pattern was reported for Meliaceae collectively, and *Khaya* spp. have been reported to have poor natural regeneration (Oni and Igboanugo, 2007). However, a study of *Khaya ivorensis* conducted in the south of Ondo State, Nigeria in 2017 reported a population structure for the species resembling a reverse “J-shaped” curve (see Fig. 2 in Chaikaew et al., 2020).

4.4 Population trends

The African mahogany species group (encompassing the four genera *Entandrophragma* spp., *Guarea* spp., *Lovoa* spp. and *Khaya* spp.) is considered to be in decline in west Africa as a result of over-
exploitation for timber, resulting in “serious genetic depletion” (Oni and Igboanugo, 2007). A study (year not provided) of the conservation status and regeneration of the native populations of *K. anthotheca* and *K. ivorensis* across three Nigerian lowland forest ecozones found high genetic depletion, a low density of mature trees (<1 tree per ha), and low natural regeneration for both species (Oni and Igboanugo, 2007). *K. ivorensis* was also stated to be rarely encountered in Côte d’Ivoire, and was not recorded in a census post-1990, with other species of Khaya only being found “once in a while” (CITES MA of Côte d’Ivoire *in litt.* to European Commission, 2020). Although *K. ivorensis* is classed as nationally widespread and common in Ghana, the species was also noted to be “potentially seriously threatened” by overharvest as a commercial timber (CITES MA of Ghana *in litt.* to European Commission, 2020). In Liberia, natural regeneration of *K. anthotheca* and *K. ivorensis* is impacted by destruction of naturally-regenerated seedlings “during the [timber] felling and skidding cycles”; this loss of seedlings also contributes to the species’ genetic erosion in the country (CITES MA of Liberia *in litt.* to European Commission, 2021). While *K. senegalensis* is considered “common” and “widespread” in Togo, *K. anthotheca* was reported to be nationally “very rare”, and *K. grandifoliola* was noted to be “highly endangered” and threatened by logging (CITES MA of Togo *in litt.* to European Commission, 2020). High densities of *K. grandifoliola* in Togo are restricted to agroforestry zones and protected areas and trees of exploitable age can only be found in the latter, although the protected areas themselves are considered to be “badly encroached upon” (CITES MA of Togo *in litt.* to European Commission, 2020). Surveys conducted by Lykke (1998) in the early 1990s in the savanna ecosystem of western Senegal found *K. senegalensis* to be rare, particularly in small size classes, and declining in the study region. More recently, large *K. senegalensis* trees were described as rare in the Sudanian savanna ecozone, particularly in Cameroon (Awé Djongmo et al., 2020). Although *K. grandifoliola* was reported to occur over a wide area in northern DRC (with an estimated national extent of occurrence of 30,000 km²) the species was considered to be nationally rare and overexploited in the northeast of the country (Kiyulu and Rodrigues, 2014).

Both *K. senegalensis* and *K. grandifoliola* were reported to be under “immense logging pressure” in South Sudan, with large trees selectively targeted for harvest; the rate of Khaya spp. harvest in the country “exceeds their natural regeneration by several orders of magnitude”, and there is a risk of local extirpation (South Sudan Ministry of Wildlife Conservation and Tourism, *in litt.* to European Commission, 2021). *K. anthotheca* populations in Malawi have declined over the past 30 years, and are currently more threatened due to high demand for the species’ timber and timber products (CITES MA of Malawi *in litt.* to European Commission, 2021). Previously a “conspicuous” species along riverbanks, *K. anthotheca* can now “hardly be found” in Malawi and the national Department of Forestry considers populations to have rapidly declined (CITES MA of Malawi *in litt.* to European Commission, 2021). In Angola, *K. anthotheca* and *K. ivorensis* are considered “still in relative ecological balance, considering the volumes licensed annually [for harvest]” (CITES MA of Angola *in litt.* to European Commission, 2022).

In Madagascar and the Comoros, the population trend for *K. madagascariensis* was considered “stable” in the 2020 IUCN Red List assessment (Andriamanohera and Rakotoarisoa, 2020). However, the assessors noted that the species had suffered population declines of over 30% over three generations as a result of harvest for timber, with many subpopulations having disappeared in Madagascar, mainly in the north western province of Mahajanga (Andriamanohera and Rakotoarisoa, 2020). *K. madagascariensis* was previously reported to be “under high pressure” from habitat loss and selective logging (Maroey, 2008).

### 4.5 Geographic trends

High rates of deforestation were found to be severely impacting Khaya spp. in southwest Nigeria (Alamu and Agbeja, 2011), and habitat degradation was noted to threaten remaining *K. madagascariensis* populations in Madagascar and the Comoros (Andriamanohera and Rakotoarisoa, 2020). In Côte d’Ivoire, forest loss due to uncontrolled encroachment of agricultural land and rural development has caused a recent decline in Khaya spp. production in natural forests (CITES MA of Côte d’Ivoire, *in litt.* to European Commission, 2020). Similarly, *K. anthotheca* in DRC was considered at risk from expansion of agriculture and urbanisation into forested areas (Kiyulu and Rodrigues, 2014).

Several Khaya range States have experienced high rates of deforestation in recent years (FAO, 2020a; Vancutsem et al., 2021). In the Global Forest Resources Assessment (FRA) for 2020, the ten countries with highest average annual net loss of forest area over the period 2010-2020 included Angola (annual net forest change of -0.85%), DRC (-0.83%), Mozambique (-0.56%) and Tanzania (-0.88%) (FAO, 2020a). The FRA also reported that DRC and Nigeria each contributed 2% of total global wood
removals (that is, removal of roundwood and fuelwood from forests, other wooded land and areas of trees outside forests) in 2018 (FAO, 2020a). A long-term assessment of tropical moist forest cover change 1990–2019 noted that the African countries showing the greatest reduction in area of undisturbed moist forest (that is, forest unaffected by deforestation or degradation) over this time period were Côte d’Ivoire (reduction of 81.5%), Ghana (70.8%), Angola (67%), Madagascar (67%), Nigeria (46.7%) and Liberia (36%) (Vancutsem et al., 2021). Although in comparison Cameroon (12.7%) and Gabon (2.9%) showed much lower levels of reduction in undisturbed moist forest, the authors noted that these two countries, alongside DRC, contain the largest areas of forest converted into tree plantations within Africa, at 0.07 million ha, 0.04 million ha, and 0.08 million ha respectively (Vancutsem et al., 2021).

5. Threats

All Khaya spp. with the exception of K. comorensis were considered to be globally threatened in the IUCN Red List in 1998 as a result of heavy exploitation for timber (African Regional Workshop, 1998; Hawthorne, 1998a; Hawthorne, 1998b; WCMC, 1998a; WCMC, 1998b); the four continental African species were categorised as Vulnerable, although these assessments are currently annotated as needing updating (African Regional Workshop, 1998; Hawthorne, 1998a; Hawthorne, 1998b; WCMC, 1998b). Re-assessment of the four continental species is currently ongoing (Bouka Dipelet pers. comm. to UNEP-WCMC, 2021), although no further information was available at the time of submission (June 2022). K. madagascariensis was categorised as Endangered in 1998 (WCMC, 1998a), but re-assessed as Vulnerable in 2020 on the basis that the species has undergone a significant population decline (30%) as a result of timber harvest (Andriamanohera and Rakotoarisoa, 2020).

Poor regeneration after the extraction of mature trees was highlighted in the Red List assessments for K. anthotheca, K. grandifoliola, K. ivorensis and K. senegalensis (African Regional Workshop, 1998; Hawthorne, 1998a; Hawthorne, 1998b; WCMC, 1998b), and K. anthotheca and K. senegalensis were additionally noted to be suffering from genetic erosion (Hawthorne, 1998a; WCMC, 1998b).

K. anthotheca, K. grandifoliola and K. senegalensis were categorised as nationally endangered in Uganda’s 2016 list of threatened species (WCS, 2016). The CITES Management Authority (MA) of Ghana (in litt. to European Commission, 2020) reported that K. ivorensis was rated as a “scarlet star” species nationally, meaning that the species is common, widespread and commercial, but “potentially seriously threatened by overexploitation”. K. anthotheca and K. grandifoliola were both categorised as nationally vulnerable in DRC’s 2014 red list of exploitable timber species (Kiyulu and Rodrigues, 2014). In Togo, K. grandifoliola was considered to be threatened with extinction according to the country’s National Forest Action Plan 2011–2019 (MERF, 2011a).

K. senegalensis was noted to be threatened in Sudan by illegal exploitation, and expansion of urban areas, agriculture and desertification (CITES MA of Sudan in litt. to European Commission, 2021). Harvest for traditional medicine was also noted to pose a “serious threat” to natural K. senegalensis populations across the species’ global range (Pinheiro et al., 2011). An assessment of the impact of bark harvest for traditional medicine on K. senegalensis populations in Benin found that harvesters preferentially targeted larger trees (>35 cm DBH), with a greater proportion of harvested trees with increasing size class (Gaoue and Ticktin, 2007). The authors observed the same harvest preferences for K. senegalensis trees where branches had been pruned for livestock fodder in Benin and reported that trees in the largest size classes were no longer present in intensely harvested populations (Gaoue and Ticktin, 2007). Debarking typically constituted removal of <25 % of stem bark and “in most cases, less than half” of each debarking wound recovered through regrowth (Gaoue and Ticktin, 2007). Ringbarking1, though rare, resulted in tree death (Gaoue and Ticktin, 2007). Pruning for fodder typically resulted in total crown removal and, although re-sprouting was observed after pruning, trees subjected to intensive and frequent pruning sometimes failed to develop new branches and died (Gaoue and Ticktin, 2007). The authors noted that in Benin’s Sudano-Guinean ecoregion, intensive bark and foliage harvest resulted in “significant decreases” in density of K. senegalensis seedlings and saplings due to reduced fruiting of harvested trees (Gaoue and Ticktin, 2007).

High rates of deforestation threaten natural Khaya spp. populations in Nigeria (Alamu and Agbeja, 2011), and the wild population of K. madagascariensis in Madagascar and Comoros remains threatened by habitat degradation from uncontrolled fires and encroaching agriculture, despite conservation measures including protection by local communities (Andriamanohera and Rakotoarisoa, 2020). In DRC, K. anthotheca is at risk from habitat loss due to encroaching farmland and urbanisation (Kiyulu and

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1 Ringbarking involves removing bark in a continuous strip around the entire circumference of the tree (Gaoue and Ticktin, 2007)
Rodrigues, 2014). In Côte d’Ivoire, *Khaya* spp. timber production was noted to have declined in recent years as a result of large-scale replacement of woodlands by uncontrolled agricultural and rural development, rather than as a result of reduced demand or improved species protection (CITES MA of Côte d’Ivoire, *in litt.* to European Commission, 2020).

In addition to anthropogenic pressures, *Khaya* spp. have been noted to be affected by natural barriers to regeneration including short-term seed viability (Oni and Igboanugo, 2007; Orwa et al., 2009) and high seedling mortality (Hall, 2011; CITES MA of Côte d’Ivoire *in litt.* to European Commission, 2020). The poor natural regeneration of *K. anthotheca* and *K. ivorensis* has been suggested by Oni and Igboanugo (2007) to result from the height of mother trees meaning that seeds often fall onto understory vegetation where they lose viability before they can reach the forest floor. *K. anthotheca* seeds are also commonly predated by rodents and beetles (Makana and T. Rodrigues, 2014), with the bark being susceptible to the shoot borer *Tragocephala variagata* (Naidoo, 2007). The poor seed dispersal capacity of *Khaya* spp. has also been noted to negatively affect natural regeneration (Pinheiro et al., 2011). Furthermore, logging has been reported to act synergistically with these intrinsic pressures on natural regeneration by reducing the number of large fruiting trees within populations (Pinheiro et al., 2011).

6. Utilization and trade

6.1 National utilization

**Benin: K. senegalensis** is an important multipurpose non-timber forest product tree, with the stem bark harvested for traditional medicine to treat diseases in both humans and livestock, and the branches pruned for livestock fodder in the dry season (Gaoue and Ticktin, 2007). Although establishment of *K. senegalensis* plantations in the south of the country appeared to reduce debarking pressure on wild populations, the same was not true for pruning pressure (Gaoue and Ticktin, 2007).

**Burkina Faso:** *K. senegalensis* is reportedly used as an intercrop species in groundnut agriculture (Nikiema and Pasternak, 2008).

**Central African Republic:** *Khaya* spp. bark is harvested for the fermentation of palm wine (Le Ministre des Eaux Forêts Chasses et Pêches du République Centrafricaine, 2009).

**Côte d’Ivoire:** *Khaya* spp. are used in-country for woodworking, carpentry and medicinal purposes (CITES MA of Côte d’Ivoire *in litt.* to European Commission, 2020).

**DRC:** *K. anthotheca* and *K. grandifoliola* are used for furniture and joinery, and parts are used in traditional medicine and handicrafts (Kiyulu and Rodrigues, 2014). *K. anthotheca* is additionally used in the manufacture of musical instruments and traditional canoes, and for charcoal and firewood (Kiyulu and Rodrigues, 2014). *K. grandifoliola* trees are planted along roads and in cities for shade (Kiyulu and Rodrigues, 2014).

**Madagascar:** *K. madagascariensis* timber is used in joinery, carvings and traditional canoes (Maroyi, 2008), with the bark being used for traditional medicine (Andriamanohera and Rakotoarisoa, 2020). *K. madagascariensis* seeds are reportedly sold nationally for ornamental planting, for which it is widely used across Madagascar, and for reforestation purposes (Andriamanohera and Rakotoarisoa, 2020).

**Malawi:** *K. anthotheca* wood is used for boat building, construction, carpentry and interior fittings such as panelling and flooring, as well as for furniture, veneer and plywood (CITES MA of Malawi *in litt.* to European Commission, 2021). The species’ bark and oil are used in traditional medicine, and the seeds are used in dye production (CITES MA of Malawi *in litt.* to European Commission, 2021). *K. anthotheca* trees are also planted as ornamentals and for water conservation (CITES MA of Malawi *in litt.* to European Commission, 2021).

**Sudan:** *K. senegalensis* is used for timber, firewood, carvings, medicinal purposes, and to source honey (CITES MA of Sudan *in litt.* to European Commission, 2021).

**Togo:** *K. senegalensis* was considered one of the most frequently used commercial medicinal plant species nationally (MERF, 2011a).
6.2 Legal trade

Commercial exploitation of *Khaya* and *Entandrophragma* spp. has “sustained much of the timber industry in Central Africa for several decades”, with Meliaceae (including *Khaya* spp.) being the focus of “low levels of high-grade logging” in the region (Hall, 2011). *K. anthotheca* is also reported to be one of several timber species that “dominate the domestic markets” in east and southern Africa (Lukumbuzya and Sianga, 2017).

The United States of America (USA), the European Union, and China are three key international importers of the genus. Imports of *Khaya* spp. into the USA were noted to have increased as the species became a substitute for declining American mahogany, *Swietenia* spp. (Lemmens, 2008), which had become more expensive (Robbins, 2000). Imports of *Khaya* spp. from Cameroon and Ghana have also been reported to enter the USA via Europe (Robbins, 2000). According to figures recorded by value in USD from the International Trade Centre’s “Trade Map” tool, over the period 2010-2019 the USA imported African mahogany products (under Harmonised System (HS) code 4407290106) equivalent to a total value of USD 214 359, of which USD 210 193 was imported from *Khaya* spp. range States (see Table 1), USD 2654 was imported from the European Union, and USD 1511 was imported from other countries (Trade Map, 2021). It should be noted that the trade names “African mahogany” and “Acajou d’Afrique” are also used to refer to other taxa, for example, “African mahogany” is also used to refer to *Afzelia* spp. (Balima et al., 2018); therefore, it cannot be assumed that all of this trade is in *Khaya* spp.

| Table 1 Imports of African mahogany (HS code 4407290106) by value in USD from range States to the United States of America over the period 2010-2019. Blank cells in the table indicate that trade was not reported for that exporter/year combination. Source: Trade Map, 2021. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ghana | 9395 | 7221 | 9034 | 9031 | 8954 | 8966 | 4915 | 5767 | 8081 | 6067 | 77 431 |
| Cameroon | 4141 | 7570 | 8165 | 7695 | 6775 | 10 584 | 6569 | 6286 | 4155 | 5267 | 67 207 |
| Côte d’Ivoire | 5476 | 5596 | 4759 | 5602 | 3202 | 3128 | 926 | 750 | 490 | 139 | 30 688 |
| Congo | 1746 | 1853 | 2650 | 3365 | 2675 | 3813 | 2505 | 2128 | 1153 | 1901 | 23 789 |
| DRC | 404 | 294 | 212 | 293 | 740 | 604 | 1492 | 1583 | 303 | 26 | 5951 |
| Gabon | 31 | 163 | 471 | 1255 | 1327 | 854 | 364 | 124 | 164 | 344 | 5097 |
| Guinea | 230 | 28 | 16 | 155 | 77 | | | | | | 506 |
| Central African Republic | 24 | 33 | 3 | 68 | | | | | | | 128 |
| Gambia | 9 | 7 | | | | | | | | | 16 |

A “high percentage of the wood sold in Europe as ‘mahogany’” was reported to be *K. ivorensis* (Orwa et al., 2009). A report on timber trade in the DRC noted a timber concession near Beni that produced *K. anthotheca* parquet flooring for the European market (WWF, 2012). In ITTO’s 2017-2018 biennial review of the world timber situation, European consumer countries reporting imports of *Khaya* spp. included Cyprus, Czech Republic, Estonia, France, Latvia and Malta (ITTO, 2019).

According to figures recorded by weight in kilograms (kg) from the International Trade Centre’s “Trade Map” tool, over the period 2015-2019 China imported Acajou products (HS code 44072920) equivalent to a total weight of 25 435 347 kg, of which 23 646 533 kg was imported from *Khaya* spp. range States (see Table 2), 47 968 kg was imported from the European Union (EU28), and 1 740 846 kg was imported from other countries (Trade Map, 2021).

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2 Trade Map is available at: https://www.trademap.org/Index.aspx

3 Harmonised System (HS) code 4407290106: Acajou d’Afrique aka African Mahogany, sawn or chipped lengthwise, sliced or peeled, of a thickness exceeding 6 mm.

4 HS code 44072920: Acajou wood, sawn lengthwise, of a thickness exceeding 6 mm.
Table 2: Imports of Acajou (HS code 44072920) by weight in kg from range States to China over the period 2015-2019. Blank cells in the table indicate that trade was not reported for that exporter/year combination. Source: Trade Map, 2021.

<table>
<thead>
<tr>
<th>Exporter</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabon</td>
<td>4 207 240</td>
<td>3 243 592</td>
<td>3 907 526</td>
<td>2 278 681</td>
<td>3 390 703</td>
<td>17 027 742</td>
</tr>
<tr>
<td>Cameroon</td>
<td>1 448 232</td>
<td>191 076</td>
<td>240 791</td>
<td>787 813</td>
<td>875 878</td>
<td>3 543 790</td>
</tr>
<tr>
<td>Congo</td>
<td>20 412</td>
<td>921 189</td>
<td>7395</td>
<td>94 153</td>
<td>1 759 360</td>
<td>3 403 965</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>108 058</td>
<td>70 798</td>
<td>124 561</td>
<td>7395</td>
<td>94 153</td>
<td>404 965</td>
</tr>
<tr>
<td>DRC</td>
<td>42 000</td>
<td>83 149</td>
<td>149 290</td>
<td>92 110</td>
<td>342 855</td>
<td>5 845 355</td>
</tr>
<tr>
<td>Angola</td>
<td>1 400 50</td>
<td>10 767</td>
<td>10 767</td>
<td>10 400</td>
<td>34 315</td>
<td>10 400</td>
</tr>
<tr>
<td>Gambia</td>
<td>195 000</td>
<td>26 000</td>
<td>23 000</td>
<td>23 000</td>
<td>50 000</td>
<td>5 260 000</td>
</tr>
<tr>
<td>Benin</td>
<td>4 000</td>
<td>5 800</td>
<td>7 415</td>
<td>25 065</td>
<td>99 210</td>
<td>104 000</td>
</tr>
<tr>
<td>Nigeria</td>
<td>24 000</td>
<td>23 000</td>
<td>23 000</td>
<td>23 000</td>
<td>47 000</td>
<td>94 000</td>
</tr>
<tr>
<td>Tanzania</td>
<td>35 570</td>
<td>35 570</td>
<td>35 570</td>
<td>35 570</td>
<td>35 570</td>
<td>177 285</td>
</tr>
<tr>
<td>Ghana</td>
<td>34 315</td>
<td>34 315</td>
<td>34 315</td>
<td>34 315</td>
<td>34 315</td>
<td>1 71 575</td>
</tr>
</tbody>
</table>

Angola: Forest licensing volumes for Khaya spp. are established annually (CITES MA of Angola in litt. to European Commission, 2022). Licensed harvest volumes for *K. anthotheca* were 8950 m³ in 2019, 8775 m³ in 2020, and 16 075 m³ in 2021; and 50 m³ of *K. ivorensis* was licensed for harvest in 2019 (harvest volume for *K. ivorensis* was set to zero in 2020 and 2021) (CITES MA of Angola in litt. to European Commission, 2022).

Cameroon: According to figures recorded by weight in kg from the International Trade Centre’s Trade Map tool, over the period 2007-2014 Cameroon exported approximately 130 million kg of African mahogany to other Khaya range States, the European Union, and other countries (Trade Map, 2021; see Annex 2).

Congo: According to figures recorded by weight in kg from the International Trade Centre’s Trade Map tool, over the period 2008-2017 Congo exported 7 897 262 kg of rough Khaya wood and 6 060 570 kg of Acajou wood to other Khaya range States, the European Union, and other countries (Trade Map, 2021; see Annex 2).

Côte d'Ivoire: The CITES MA of Côte d'Ivoire (in litt. to European Commission, 2020) reported that Khaya (species unspecified) was regularly exported from the country but noted that the volumes of timber exported over the past decade showed a regular decrease in line with a dwindling of wood resources in the country (see Annex 2).

Ghana: The CITES MA of Ghana (in litt. to European Commission, 2020) provided trade levels for “mahogany” (assumed to refer to either Khaya spp. or specifically *K. ivorensis*) over the period 2017-2019, with products including lumber, veneer, plywood and mouldings. The total volume of mahogany produced was ~6131 m³ in 2017, ~7617 m³ in 2018, and ~7552 m³ in 2019, valued at ~6.5 million USD, ~9.3 million USD, and ~8.9 million USD, respectively (CITES MA of Ghana in litt. to European Commission, 2020). In March of 2000, the international retail price per cubic metre of Ghanaian Khaya spp. sawn wood was reported to be 750 USD (Robbins, 2000).

Tanzania: *K. anthotheca* was reported to be “heavily used” for furniture in Tanzania, and to have been exported “in large quantities” from east Africa (Naidoo, 2007).

6.3 Parts and derivatives in trade

*Khaya* spp. are valuable commercial timber trees, harvested for the manufacture of a range of wood products including furniture, boats, musical instruments, panelling and joinery, flooring, veneer, and carvings (Donkor, 1997; Onwa et al., 2009; Pinheiro et al., 2011). Naidoo (2007) stated that *K. anthotheca* timber was durable and resistant to termites and borers, as well as moderately resistant to fungi. *K. ivorensis* has been characterised as “the most important Khaya spp. for providing African mahogany” (African Regional Workshop, 1998). The wood, bark, and roots of *Khaya* spp. are also used...
in traditional medicine (Maroyi, 2008; Pinheiro et al., 2011). *K. anthonethaca* (Naidoo, 2007) and *K. senegalensis* are used as shade trees and ornamentals (Danthu et al., 2003).

Although sawn wood appears to be the dominant *Khaya* spp. product type in international trade (Trade Map, 2021), the genus enters the international market in the form of numerous products including lumber, sawn wood, veneer, plywood, machined wood and mouldings (CITES MA of Côte d’Ivoire *in litt.* to European Commission, 2020; CITES MA of Ghana *in litt.* to European Commission, 2020; Trade Map, 2021) (see Section 6.2). For this reason, it is proposed that *Khaya* spp. be included in Appendix II with Annotation #17 designating logs, sawn wood, veneer sheets, plywood and transformed wood.

### 6.4 Illegal trade

Illegal exploitation of *Khaya* spp. has been documented in several countries, both for domestic use (CITES MA of Côte d’Ivoire, *in litt.* to European Commission, 2020) and for export (Global Witness, 2019).

**Cameroon:** An independent forest monitoring mission conducted by the environmental organisation Forêts et Développement Rurale (FODER) in January 2018 documented illegal logging carried out by companies operating beyond their demarcated harvest boundaries in Mbam-et-Kim Division, Cameroon Central Region (FODER, 2018). In total, 162.8 m$^3$ of illegally harvested timber was recorded from nine species including *K. ivorensis* (FODER, 2018).

**Côte d’Ivoire:** Illegal logging was noted to occur in Côte d’Ivoire, primarily for domestic needs (CITES MA of Côte d’Ivoire, *in litt.* to European Commission, 2020).

**DRC:** A company operating in the DRC was found to have illegally logged trees from several species, including 358 m$^3$ of *Khaya* spp. logs exported to the European Union during June-October 2018 (Global Witness, 2019). Previously, a report on the timber trade in DRC noted that although national *Khaya* stocks were harvested mainly by artisanal loggers, the national forest code lacked “clear procedures” for such artisanal and small-scale operations, meaning that loggers were unable to obtain local harvesting rights using official government channels and instead relied on “informal procedures” (WWF, 2012). DRC’s artisanal logging sector was previously described by Brown and Makana (2010) as largely illegal and unsustainable, as well as lacking in clear forestry regulations and “reliable statistics” on the level of exploitation taking place. According to Lukumbuya and Sianga (2017), artisanal logging of *Khaya* and *Entandophragma* spp. comprised ~70% of DRC’s timber trade.

**Nigeria:** Oni and Igboanugo (2007) stated that relative abundance of *K. anthonethaca* and *K. ivorensis* across Nigerian lowland forest ecozones was negatively impacted by illegal and uncontrolled logging, noting that both species were observed at greater frequency in the forest reserves, national parks and strict nature reserves where logging was somewhat regulated. In addition, the authors noted that anthropogenic forest disturbance and illegal logging contributed to the poor regeneration rates of both species (Oni and Igboanugo, 2007).

**Sudan:** Illegal harvest of *K. senegalensis* for wood and firewood has resulted in rapid population decline (CITES MA of Sudan *in litt.* to European Commission, 2021).

### 6.5 Actual or potential trade impacts

Commercial exploitation of wild populations of *Khaya* spp. for the international timber market is considered an ongoing, primary threat to the genus. All *Khaya* spp. with the exception of *K. comoresis* were assessed as globally threatened in the IUCN Red List in 1998 on the basis of unsustainable harvest for timber (African Regional Workshop, 1998; Hawthorne, 1998a; Hawthorne, 1998b; WCMC, 1998a; WCMC, 1998b), and a recent reassessment of *K. madagascarensis* categorised the species as Vulnerable based on past population declines of over 30% in three generations as a result of exploitation for timber (Andriamanohera and Rakotoarisoa, 2020) (see Section 5).
7. **Legal instruments**

7.1 National

Legislative measures to protect national populations of *Khaya* spp. are in place in a number of range States – these are outlined in Annex 3. No relevant national legal instruments could be located for Angola, DRC, Madagascar, Niger, Sudan, Uganda or Zimbabwe.

7.2 International

Cameroon, Central African Republic, Congo, Côte d’Ivoire, DRC, Gabon, Ghana and Liberia have signed FLEGT Voluntary Partnership Agreements with the EU, which are legally binding agreements to ensure that timber and timber products exported to the EU are legally-sourced (European Forest Institute, 2020).

8. **Species management**

8.1 Management measures

Note that, unless otherwise stated, management measures in this section refer to harvest of timber rather than to non-timber forest products (NTFPs).

Onana *et al.* (2011) reported that *K. ivorensis*, among other key African timber species, is the focus of cultivation and planting in forest reserves by government forestry departments “in most countries” within its native range. The authors concluded that for this reason the species is unlikely to become extinct, despite exploitation for timber driving large trees to become “increasingly rare” (Onana *et al.*, 2011). Research on the effects of selective logging of *K. anthotheca* in Uganda found that removal of large individuals (defined as 45-50 cm DBH) led to reduced fruit production, as fruiting in *Khaya* spp. required a DBH of ≥40 cm (Plumptre, 1995). For *Khaya* spp. in natural forest, longer harvest rotations have been recommended by several authors (Lemmens, 2008; Maroyi, 2008; Nikiema and Pasternak, 2008), with 60-80 years considered “realistic” for *K. anthotheca* (Maroyi, 2008) and *K. ivorensis* (Lemmens, 2008), and 80-100 years recommended for *K. senegalensis* (Nikiema and Pasternak, 2008). Conversely, a shorter cutting rotation of ~30 years and a density of 80 trees per ha before harvest has been recommended for *K. ivorensis* grown in mixed plantations (Orwa *et al.*, 2009). It is not known whether these recommended cutting rotation timescales are applied in practice in any range States.

**Angola:** Presidential Decree No. 171/18 of 23rd July 2018, which approves the Forestry Regulation, lists *K. anthotheca* and *K. ivorensis* as wood-producing species with minimum exploitable diameters (MED) of 90 cm (Órgão oficial da República de Angola, 2018).

**Cameroon:** MEDs at breast height of 80 cm have been reported for *K. ivorensis* (Lemmens, 2008) and *K. grandifoliola* (Opuni-Frimpong, 2008).

**Central African Republic:** A MED of 80 cm has been reported for harvest of *K. grandifoliola* timber (Opuni-Frimpong, 2008). Article 49 of Order No. 09.021 of 2009 defines the bark of *Khaya* spp. (for the fermentation of palm wine) as a NTFP; Article 42 states that companies exploiting NTFPs require an exploitation permit from the Ministry of Forests and an operator’s card from the Ministry of Commerce (Le Ministre des Eaux Forêts Chasses et Pêches du République Centrafricaine, 2009).

**Côte d’Ivoire:** *Khaya* spp. are subject to the provisions of the national forestry code, with all principal species having a MED of 60-80 cm (CITES MA of Côte d’Ivoire, in litt. to European Commission, 2020). It was noted that consultations are underway with the private forestry sector with the aim of ensuring a sustainable domestic market and reduction in fraudulent exploitation of wood (CITES MA of Côte d’Ivoire, in litt. to European Commission, 2020). Nationally, *Khaya* plantations cover approximately 3000 ha in pure stands, and 3400 ha in mixed stands with other species (CITES MA of Côte d’Ivoire, in litt. to European Commission, 2020).

**DRC:** A MED of 80 cm has been reported for *K. grandifoliola* (Opuni-Frimpong, 2008).

**Gabon:** Order No. 000117/PR/MEFEP EPN of 1st March 2004 set a MED of 80 cm for *K. anthotheca* and *K. ivorensis* (République gabonaise, 2004).
Gambia: In 2017, a project proposal to develop non-detriment findings for *K. senegalensis*, *Cordyla pinnata* and *Pterocarpus erinaceus* was submitted to the CITES Tree Species Programme by the University of The Gambia and the National Agriculture Research Institute; however, the proposal was not selected for support (CITES Secretariat pers. comm. to UNEP-WCMC, 2020).

Ghana: In the 1970s, *K. ivorensis* was used for enrichment planting in three forest reserves, with the aim of augmenting Ghana's standing stock of valuable commercial timber (CITES MA of Ghana in litt. to European Commission, 2020). More recently, Ghana reported planting almost three million *K. ivorensis* seedlings in plantations and enrichment planting areas, 2016-2019 (CITES MA of Ghana in litt. to European Commission, 2020). A MED of 110 cm was reported for *K. ivorensis* (Lemmens, 2008) and *K. grandifoliola* (Opuni-Frimpong, 2008). The Forest Research Institute of Ghana has conducted studies into shoot borer resistance and vegetative propagation of *K. ivorensis*, as well as establishing gene banks of the species for ex situ conservation (CITES MA of Ghana in litt. to European Commission, 2020).


Sierra Leone: Article 9 of the Forestry Regulation of 1989 defines non-species-specific “minimum girth limits” for harvest as 1.83 m in selective felling areas and 1.22 m in clear-felling areas, unless otherwise specified in a management plan, concession agreement or timber license (Government of Sierra Leone, 1990).

Tanzania: A minimum harvest DBH of 55 cm (minimum girth of 165 cm) was set for *K. anthotheca* under the Forest Regulations of the 1st January 2004 (Government of Tanzania, 2004).

8.2 Population monitoring

No information on specific population monitoring schemes was found, however, several plantations of *K. ivorensis* established in Ghana are used as research plots to explore the effects of different silvicultural systems on success of the species in plantation, investigate outcomes of different rooting media on vegetative propagation, and explore methods of increasing *K. ivorensis* resistance to shoot borers (CITES MA of Ghana in litt. to European Commission, 2020). Similarly, the ongoing FORESTINOV project “Promoting mixed plantations to secure the production of timber wood and to maintain ecosystem services” in Côte d’Ivoire aims to identify the most effective strategies for growth of *K. ivorensis* in national reforestation and plantation schemes (CITES MA of Côte d’Ivoire in litt. to European Commission, 2020).

8.3 Control measures

8.3.1 International

Lukumbuzya and Sianga (2017) examined timber trade within east and southern Africa, in which *K. anthotheca* was highlighted as a key timber species in trade. The authors noted that the regional timber industry was not well-monitored, with harvest and processing “largely unregulated” and records of companies, target species, harvest volumes and import and export volumes “largely unavailable” (Lukumbuzya and Sianga, 2017).

8.3.2 Domestic

No control measures were identified.

8.4 Captive breeding and artificial propagation

Although *Khaya* spp. are considered to be “largely undomesticated throughout their natural range”, and exploitation of African mahoganies has largely focussed on natural populations rather than plantations (Oni and Igboanugo, 2007), some plantations have been reported from Benin (Gaoue and Ticktin, 2007), Burkina Faso (Nikiema and Pasternak, 2008), Côte d’Ivoire (Nikiema and Pasternak, 2008; CITES MA of Côte d’Ivoire in litt. to European Commission, 2020), Ghana (CITES MA of Ghana in litt. to European Commission, 2020), Mali (Nikiema and Pasternak, 2008), Nigeria (Lemmens, 2008) and Togo (Nikiema and Pasternak, 2008; FAO, 2020b). *K. ivorensis* in particular has been reported to grow
It has been noted that Khaya spp. grown in mixed plantations rather than monoculture are more resilient to pests (CITES MA of Ghana (in litt. to European Commission, 2020). K. anthotheca and K. ivorensis seedlings in plantations were reported to be highly susceptible to attack from the shoot borer Hypsipyla robusta (Oni and Igboanugo, 2007), resulting in mortality or growth defects that affect their timber market value (Atuahene, 1997 in Oni and Igboanugo, 2007). Enrichment planting trials conducted 2009-2014 in a logging concession in south-eastern Cameroon found that growing K. anthotheca in slightly shaded conditions rather than in open areas improved growth and reduced H. robusta-induced mortality (Doucet et al., 2016). In Malawi, the caterpillar Heteromygma dissimilis was also noted to attack the leaves of K. anthotheca (CITES MA of Malawi in litt. to European Commission, 2021). Germination success of K. anthotheca in plantation was reported to be “high but sporadic”, with 90% of seeds germinating within three weeks of being sown (CITES MA of Malawi in litt. to European Commission, 2021). Plantation trials of K. anthotheca and K. ivorensis in Côte d’Ivoire found that the germination potential of harvested seeds rapidly declined with storage time, with germination success decreasing by approximately 50% for both species 1-2 months post-harvest; this was suggested to result from the seeds’ high oil content (CITES MA of Côte d’Ivoire in litt. to European Commission, 2020).

Khaya plantations have also been established in parts of Australia (Dickinson et al., 2011), Sri Lanka (Nikiema and Pasternak, 2008), Southeast Asia (Orwa et al., 2009) and South and Central America (Naidoo, 2007; Lemmens, 2008; Ferraz Filho et al., 2021). K. senegalensis has been described as the “most widely planted high value timber species in northern Australia” (Dickinson et al., 2011) and “a priority species for timber plantation establishment in Sri Lanka” (Nikiema and Pasternak, 2008). In Brazil, plantations of K. grandifoliola and K. senegalensis were reported to constitute ~50 000 ha as of 2020 (Ferraz Filho et al., 2021), resulting in small amounts of Brazilian plantation Khaya wood entering the international market (Ribeiro et al., 2019). Research carried out in 2016 by Santos et al. (2021) in south-eastern Bahia, Brazil found that both K. grandifoliola and K. ivorensis were most successful in mixed plantations with herbicide application to control competitive understory vegetation. The study also found that, under the same plantation conditions, K. grandifoliola trees grew more rapidly than K. ivorensis trees, although as a result the former were more prone to developing bends in their trunks that made them less commercially useable for producing sawn timber; moderation in fertiliser use was recommended to minimise growth spurts and thus control trunk stability (Santos et al., 2021). Trial plantations of K. grandifoliola have additionally been established in Indonesia (Opuni-Frimpong, 2008). K. anthotheca is grown in plantations in Cuba, Puerto Rico and South Africa (Naidoo, 2007), and K. ivorensis is grown in plantations in Fiji, Indonesia and Malaysia (Orwa et al., 2009) and has been used in reforestation in Brazil (Lemmens, 2008).

Khaya spp. timber resembles that of CITES-listed Swietenia spp. (see Section 9 for detail) that are native to Brazil and Cuba, where, as noted previously, some Khaya spp. plantations have been established (Naidoo, 2007; Lemmens, 2008; Ferraz Filho et al., 2021). However, given the relatively small scale of these plantations at present, as well as the broad distribution of Khaya plantations around the world, it is considered that any modest conservation gains of a global CITES listing for the genus would currently not match the administrative burden of enforcement. Plantations established outside of Khaya spp. African range States are thus excluded from this proposal.

8.5 Habitat conservation

K. ivorensis, K. madagascariensis, and K. senegalensis have been reported to be the focus of forest restoration and reforestation efforts in Ghana (CITES MA of Ghana in litt. to European Commission, 2020), Madagascar (Andriamanohera and Rakotoarisoa, 2020), and Togo (CITES MA of Togo in litt. to European Commission, 2020) respectively. The CITES MA of Ghana (in litt. to European Commission, 2020) noted that over 1 million K. ivorensis seedlings had been planted in total from 2016 to 2019 as part of the country’s Forest Investment Program to enhance natural forest and combat deforestation and forest degradation. In Burkina Faso, “conservation stands” of K. senegalensis are reportedly managed for seed production by local communities in partnership with Centre National de Semences Forestières (Nikiema and Pasternak, 2008). In Yapo-Abbé, Côte d’Ivoire, reforestation schemes in 2014 and 2019 included the planting of 714 ha and 605 ha of Khaya spp. respectively (CITES MA of Côte d’Ivoire in litt. to European Commission, 2020).
8.6 Safeguards

Protected species status has been mandated for *K. anthotheca* in Malawi, *K. grandifoliola* in Benin and Togo, *K. madagascariensis* in Comoros, and *K. senegalensis* in Benin, Burkina Faso, Gambia and Togo. National legislation is in place to restrict harvest of all Khaya spp. in Tanzania, *K. ivorensis* in Ghana, and *K. senegalensis* in Mali and Senegal. Additionally, log export bans are in place for *K. anthotheca* and *K. ivorensis* in Liberia and for Acajou (*Khaya* spp.) in Cameroon, and in Zambia the import and export of *K. anthotheca* logs is controlled by ministerial order (see section 7.1).

9. Information on similar species

*Khaya, Entandrophragma* and *Swietenia* all yield very similar reddish-brown wood (Gasson, 2011). In particular, *Khaya ivorensis* and *Entandrophragma angolense*, as well as *Carapa guianensis*, are described as being easily mistaken for CITES-listed *Swietenia* spp. (Holtken et al. 2012). Koch (pers. comm. to UNEP-WCMC, 2021) noted that “there is a risk” of mistaking *Khaya* for *Swietenia*, especially if the timber originates from fast-growing plantations. However, *Khaya* was considered “clearly” distinguishable from *Entandrophragma* based on macroscopic and microscopic wood characteristics (Koch pers. comm. to UNEP-WCMC, 2021). *Khaya* is also reportedly “occasionally” mistaken for *Aucoumea klaineana* at the macroscopic level, though the taxa can be clearly distinguished from one another with microscopic analysis (Koch pers. comm. to UNEP-WCMC, 2021). In a study of wood identification of Meliaceae timbers using mass spectrometry analysis, Deklerck et al. (2019) noted that the chemical fingerprint of *Khaya anthotheca* was difficult to differentiate from that of *Entandrophragma angolense*, *E. candollei* and “several Swietenia species”. Holtken et al. (2012) reported that species identification via DNA sequence analysis of wood samples was often challenging due to the difficulty in extracting sufficient DNA from processed and/or dried heartwood. However, the authors noted that a genetic marker system had been developed to successfully differentiate *Swietenia* wood samples from *Carapa, Entandrophragma* and *Khaya* (Holtken et al. 2012).

Although there appears less difficulty in identification between the two genera *Khaya* spp. and *Afzelia* spp., both are referred to in trade as “African mahogany” (Oni and Igboanugo, 2007; Balima et al., 2018).

10. Consultations

A consultation was distributed by the European Union to all range States in April 2021 and in October 2021 (see Annex 1).

11. Additional remarks

12. References


Atuahene, S. K. N. 1997. The forest resources in Ghana and future direction of research on *Hypsipha robusta* (Lepidoptera: Pyralidae) control in mahogany plantations.


CITES Management Authority (MA) of Angola 2022. CITES Management Authority of Angola in *litt.* to European Commission, 3 March 2022.

CITES Management Authority (MA) of Benin 2021. CITES Management Authority of Benin in *litt.* to European Commission, 11 October 2021.

CITES Management Authority (MA) of Chad. 2021. CITES Management Authority of Chad in *litt.* to European Commission, 28 May 2021.

CITES Management Authority (MA) of Comoros 2021. CITES Management Authority of Comoros in *litt.* to European Commission, 19 May 2021 and 7 October 2021.


CITES Management Authority (MA) of Liberia 2021. CITES Management Authority of Liberia in *litt.* to European Commission, 19 November 2021.

CITES Management Authority (MA) of Malawi 2021. CITES Management Authority of Malawi in *litt.* to European Commission, 8 November 2021.

CITES Management Authority (MA) of Senegal 2021. CITES Management Authority of Senegal in *litt.* to European Commission, 28 October 2021.

CITES Management Authority (MA) of Sudan 2021. CITES Management Authority of Sudan in *litt.* to European Commission, 20 May 2021.

CITES Management Authority (MA) of Togo 2020. CITES Management Authority of Togo in *litt.* to European Commission, 17 September 2020.


European Forest Institute 2020. EU FLEGT Facility: Voluntary Partnership Agreements. Available at: https://www.euflegt.efi.int/vpa [Accessed: 08/03/2021].


FDA 1990. Regulation banning export of selected species as logs (FDA Regulation No. 18). Forest Development Authority of Liberia.


Schröder 2021. Schröder, H. (Thünen Institute of Forest Genetics, Grosshansdorf, Germany) pers. comm. to UNEP-WCMC, 10 February 2021.


South Sudan Ministry of Wildlife and Tourism, 2021. in litt. to European Commission, 18 November 2021.


### Summary of range State responses

<table>
<thead>
<tr>
<th>Range State</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>Unclear, noting that <em>Khaya</em> spp. in Angola are in “relative ecological balance”, and that a forest inventory would be beneficial.</td>
</tr>
<tr>
<td>Benin</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Central African Republic</td>
<td></td>
</tr>
<tr>
<td>Chad</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Comoros</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Congo</td>
<td></td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>Supports listing of the genus in Appendix II, but with the exclusion of reforested populations</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td></td>
</tr>
<tr>
<td>Gabon</td>
<td></td>
</tr>
<tr>
<td>Gambia</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Ghana</td>
<td>Under consideration</td>
</tr>
<tr>
<td>Guinea</td>
<td></td>
</tr>
<tr>
<td>Guinea Bissau</td>
<td></td>
</tr>
<tr>
<td>Liberia</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Madagascar</td>
<td></td>
</tr>
<tr>
<td>Malawi</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Mali</td>
<td></td>
</tr>
<tr>
<td>Mozambique</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Senegal</td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>South Sudan (non-Party)</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Sudan</td>
<td>Supports listing in Appendix II (specifically referred to <em>K. senegalensis</em>).</td>
</tr>
<tr>
<td>Togo</td>
<td>Supports listing of <em>K. grandifoliola</em> in Appendix II</td>
</tr>
<tr>
<td>Uganda</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td></td>
</tr>
<tr>
<td>Zambia</td>
<td>Supports listing in Appendix II</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>Status in Zimbabwe does not warrant CITES listing.</td>
</tr>
</tbody>
</table>
Exports of African Mahogany, Acajou and Khaya spp. from Khaya spp. range States

Cameroon: According to figures recorded by weight in kg from the International Trade Centre’s Trade Map tool, over the period 2007-2014 Cameroon exported Khaya spp. to other Khaya range States, the European Union, and other countries (Trade Map, 2021). The products were traded under three HS codes: 44072900000, 44072902000 and 44083902000, comprising totals of 115 511 702 kg, 15 138 730 kg, and 69 793 kg respectively (see Table 3) (Trade Map, 2021).

Table 3 Exports of Khaya spp. (HS codes 44072900000, 44072902000 and 44083902000) by weight in kg from Cameroon over the period 2007-2014. No exports were reported for the year 2013. Source: Trade Map, 2021.

<table>
<thead>
<tr>
<th>HS code</th>
<th>Importer</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>44072900000</td>
<td>Range States</td>
<td>1 940 734</td>
<td>10 288</td>
<td>5609</td>
<td>30 000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 986 631</td>
</tr>
<tr>
<td></td>
<td>European Union</td>
<td>89 220 466</td>
<td>49 042</td>
<td>189 293</td>
<td>105 030</td>
<td>244 907</td>
<td>109 752</td>
<td></td>
<td></td>
<td>89 918 490</td>
</tr>
<tr>
<td></td>
<td>Rest of World</td>
<td>21 315 140</td>
<td>652 584</td>
<td>150 114</td>
<td>188 305</td>
<td>932 396</td>
<td>368 042</td>
<td></td>
<td></td>
<td>22 606 581</td>
</tr>
<tr>
<td>44072902000</td>
<td>Range States</td>
<td></td>
<td>229 049</td>
<td>108 247</td>
<td>57 530</td>
<td>39 851</td>
<td></td>
<td></td>
<td></td>
<td>434 677</td>
</tr>
<tr>
<td></td>
<td>European Union</td>
<td></td>
<td>756 400</td>
<td>280 741</td>
<td>687 128</td>
<td>651 003</td>
<td></td>
<td></td>
<td></td>
<td>2 375 272</td>
</tr>
<tr>
<td></td>
<td>Rest of World</td>
<td></td>
<td>1 503 651</td>
<td>2 643 849</td>
<td>1 901 662</td>
<td>6 279 619</td>
<td></td>
<td></td>
<td></td>
<td>12 328 781</td>
</tr>
<tr>
<td>44083902000</td>
<td>Range States</td>
<td></td>
<td>4899</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4899</td>
</tr>
<tr>
<td></td>
<td>European Union</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31 457</td>
</tr>
<tr>
<td></td>
<td>Rest of World</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33 437</td>
</tr>
</tbody>
</table>

Congo: According to figures recorded by weight in kg from the International Trade Centre’s Trade Map tool, over the period 2008-2017 Congo exported Khaya spp. under HS codes 44034902000 and 44072902000 comprising totals of 7 897 262 kg and 6 060 570 kg respectively (see Table 4) (Trade Map, 2021).

Table 4 Exports of Khaya spp. (HS codes 44034902000 and 44072902000) by weight in kg from Congo over the period 2008-2017. No exports were reported for 2015-2016. Source: Trade Map, 2021.

<table>
<thead>
<tr>
<th>HS code</th>
<th>Importer</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2017</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>44034902000</td>
<td>Range States</td>
<td>9574</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>253 756</td>
<td>263 330</td>
</tr>
<tr>
<td></td>
<td>European Union</td>
<td>1 321 147</td>
<td>93 060</td>
<td>185 696</td>
<td>108 551</td>
<td>26 772</td>
<td>275 829</td>
<td>606 576</td>
<td>19 992</td>
<td>2 637 623</td>
</tr>
<tr>
<td></td>
<td>Rest of World</td>
<td>1 455 066</td>
<td>35 398</td>
<td>70 634</td>
<td>465 686</td>
<td>215 779</td>
<td>765 365</td>
<td>1 547 396</td>
<td>440 985</td>
<td>4 996 309</td>
</tr>
<tr>
<td>44072902000</td>
<td>Range States</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>237 214</td>
<td>237 214</td>
</tr>
<tr>
<td></td>
<td>European Union</td>
<td>94 238</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>176 966</td>
<td>271 204</td>
</tr>
<tr>
<td></td>
<td>Rest of World</td>
<td>3 553 493</td>
<td>62 729</td>
<td>69 312</td>
<td></td>
<td></td>
<td>1 866 618</td>
<td></td>
<td>5 552 152</td>
<td></td>
</tr>
</tbody>
</table>

Côte d’Ivoire: The CITES MA of Côte d’Ivoire (in litt. to European Commission, 2020) reported that Khaya [species unspecified] was regularly exported from the country but noted that the volumes of timber exported over the past decade showed a regular decrease in line with a dwindling of wood resources in the country (see Table 5).

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6 HS code 44072900000: African mahogany wood, sawn (Khaya).
7 HS code 44072902000 (Cameroon): African mahogany or Ngollon or Ndola or Deke timber, sawn.
8 HS code 44083902000: African mahogany wood in sheets of veneer, of plywood, not exceeding 6 mm in thickness.
9 HS code 44034902000: Rough Khaya (mahogany) wood, unsquared.
10 HS code 44072902000 (Congo): Acajou wood, sawn, with a thickness exceeding 6mm.

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume <em>acajou</em> (<em>Khaya</em> spp). exploited within logging perimeter (m³)</th>
<th>Volume <em>acajou</em> (<em>Khaya</em> spp). machined and exported (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>24 015 588</td>
<td>14 352 041</td>
</tr>
<tr>
<td>2010</td>
<td>27 386 300</td>
<td>18 800 340</td>
</tr>
<tr>
<td>2011</td>
<td>23 206 463</td>
<td>6 765 011</td>
</tr>
<tr>
<td>2012</td>
<td>42 419 864</td>
<td>13 629 934</td>
</tr>
<tr>
<td>2013</td>
<td>34 877 369</td>
<td>10 359 414</td>
</tr>
<tr>
<td>2014</td>
<td>22 759 825</td>
<td>8 139 377</td>
</tr>
<tr>
<td>2015</td>
<td>20 180 322</td>
<td>6 706 061</td>
</tr>
<tr>
<td>2016</td>
<td>15 952 835</td>
<td>4 753 947</td>
</tr>
<tr>
<td>2017</td>
<td>9 061 650</td>
<td>3 358 881</td>
</tr>
<tr>
<td>2018</td>
<td>7 977 822</td>
<td>2 373 276</td>
</tr>
<tr>
<td>2019</td>
<td>3 433 286</td>
<td>2 544 984</td>
</tr>
</tbody>
</table>
### National legal instruments

<table>
<thead>
<tr>
<th>Range State</th>
<th>Legal protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>In January 2018, the Ministry of Agriculture reportedly banned the exploitation of forest resources, including felling, movement and transportation of logs (Macauhub, 2018). However, it is unclear if this legislation is still in place, as the CITES MA of Angola reported harvest of <em>Khaya</em> spp. in 2019, 2020 and 2021 (CITES MA of Angola <em>in litt.</em> to the European Commission, 2022).</td>
</tr>
<tr>
<td>Benin</td>
<td><em>K. grandifolia</em> and <em>K. senegalensis</em> were both listed as protected species by Decree No. 96-271 of 2nd July 1996, Article 25, which implements Benin’s Forest Code (Republic of Benin, 1996). Article 36 of the Forest Code states that the cutting, felling, delimbing and uprooting of such protected species is prohibited, except when authorised by the Forest Administration (Republic of Benin, 1993). In addition, Articles 3 and 5 of Inter-ministerial Decree 2007/0053/MEPN/MIC/DC/SGM/DGFRN/DGCE, lay out provisions for importing and exporting timber products and prohibit export of raw timber, and Article 8 prohibits both the national transit and re-export of raw and unprocessed timber (Republic of Benin, 2007). In March 2017, the government issued a decree authorising the export of wood products from 2015 and 2016 until 31st December 2017 (General Directorate of Water, Forests and Hunting Benin, 2019). Since January 2018, national authorities were reported to have taken steps to prohibit exploitation of <em>K. senegalensis</em> including for local use (CITES MA of Benin <em>in litt.</em> to the European Commission, 2021).</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>Order No. 2004-019/MECV of 7th July 2004 listed <em>K. senegalensis</em> as a protected species that cannot be cut, felled, uprooted or burnt unless authorised by the competent forest authority (Government of Burkina Faso, 2004). However, it is unclear whether this protection remains in place as the Order was associated with implementation of the country’s 1997 Forest Code (Law No. 006/97/ADP), which was repealed in 2011 by a new Forest Code (Government of Burkina Faso, 2011). As of 2016, it appeared that no implementing decree concerning species protection under the new Forest Code had been published (CoP17 Prop. 57). National-level exploitation and trade in timber was suspended by Decree No. 2005 – 003/MECV/MCPEA of 9th March 2005 (Government of Burkina Faso, 2005); the suspension was reported to be ongoing as of 2018 (Environmental Investigation Agency, 2018). However, two sawmills in Banfora were temporarily exempt from the suspension, and as of 2016 it was unclear whether they were still in operation (Portail du Service d’Information du Gouvernement burkinabe, 2016).</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Acajou logs [<em>Khaya</em> spp.] were listed in Annex I-B of Cameroon’s Forest Law Enforcement, Governance and Trade (FLEGT) Voluntary Partnership Agreement with the European Union as products prohibited from export (The European Union and The Republic of Cameroon, 2011). Note that this does not apply to sawn timber and processed logs.</td>
</tr>
<tr>
<td>Central African Republic</td>
<td><em>Khaya</em> spp. are not included in the list of protected timber species under Forest Code implementing decree Order No. 09.021 of 2009 (Le Ministre des Eaux Forêts Chasses et Pêches du République Centrafricaine, 2009). However, a 2003 Decision from the Minister of Water, Forestry, Hunting and Fishing suspended all timber logging and export until specific authorisation was granted to resume these activities on a case-by-case basis (Le Ministre des Eaux Forêts Chasses et Pêches du République Centrafricaine, 2003); it is unclear whether this Decision is still in operation.</td>
</tr>
<tr>
<td>Chad</td>
<td>The export of wood and charcoal, and their use by companies within Chad, was reportedly prohibited by Order No. 025/MEERH/SECHVP/SG/DFLCD/2008 of 6th August 2008 (OFAC, 2013); however, this legislation could not be accessed for verification.</td>
</tr>
<tr>
<td>Comoros</td>
<td><em>K. comorensis</em> was classed as a fully protected species by Order No. 01/031/MPE/CAB of the 14th May 2001 (Republique Federale Islamique des Comoros, 2001). Articles 4 and 7 of the Order state that the cutting, uprooting, destruction, transport, purchase, sale and export or re-export of such species, including their derivatives, is strictly prohibited unless authorised on a case-by-case basis by the Minister of the Environment for scientific research purposes only (Republique Federale Islamique des Comoros, 2001).</td>
</tr>
<tr>
<td>Country</td>
<td>Information</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Congo</td>
<td>Article 48 of the Forest Code (Law No. 16-2000 of 20th November 2000) prohibited export of raw logs and mandated that wood products could only be exported in finished or semi-finished form (Government of Congo, 2000). As of 2018, this legislation was reportedly still in place (EIA, 2018).</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>Decree 2013-816 of 26th November 2013 banned the exploitation, transport, processing and export of timber and woodworking species from forests located above the 8th parallel of latitude (CITES MA of Côte d’Ivoire in litt. to European Commission, 2020).</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>A ban on export of unprocessed logs was reportedly put in place in May 2010 (Mongabay, 2010). The ban was reportedly still in place in 2018 (EIA, 2018).</td>
</tr>
<tr>
<td>Gabon</td>
<td>K. senegalensis was listed as a protected species under the Second Schedule of The Forest Regulations of 1998, implementing the 1998 Forest Act (Government of Gabon, 1998). However, it is unclear if this protection is still in place as a new Forest Act was reportedly adopted in 2018 (EIA, 2020); the 2018 Forest Act could not be accessed for verification. The import, transport and export of logs was reportedly suspended by the Ministry of Environment in 2017, although the suspension was temporarily lifted on several occasions to allow some re-exports (EIA, 2020).</td>
</tr>
<tr>
<td>Gambia</td>
<td>K. ivorensis is classed as a restricted species, excluding it from normal yield allocation and requiring a permit from the Ministry of Lands and Natural Resources for its logging or other harvesting (CITES MA of Ghana in litt. to European Commission, 2020).</td>
</tr>
<tr>
<td>Guinea-Bissau</td>
<td>In 2015, a moratorium on logging and log exports was reportedly put in place (Reuters, 2015). However, in January 2021 it was reported that a decree had been drafted to lift the moratorium (Mongabay, 2021).</td>
</tr>
<tr>
<td>Liberia</td>
<td>Export of K. anthotheca and K. ivorensis logs is prohibited under Forestry Development Authority Regulation No. 18 of 1st October 1990 (FDA, 1990).</td>
</tr>
<tr>
<td>Madagascar</td>
<td>K. anthotheca, under the synonym K. nyasica, was classed as a protected species by Government Notice No. 89 of 30th March 1994 (Government of Malawi, 1994).</td>
</tr>
<tr>
<td>Malawi</td>
<td>K. senegalensis was classed as a partially protected species by Decree No. 10-387/PR-RM of 26th July 2010 (Republic of Mali, 2010a). Under Article 22 of Law No. 10/028 of 12th July 2010, an exploitation title is needed in order to cut partially protected species; titles are only granted after payment of a royalty per tree, and minimum harvest diameters are set by law (Republic of Mali, 2010b). Additionally, Interministerial Decree No. 2015-1536/CI/MEF-SG of 5th June 2015 banned the export of unprocessed wood products and charcoal (Republic of Mali, 2015), and Decision No. 0016/MEADD-SG DU of 27th May 2020 suspended all exploitation of timber and sawn timber in Mali until further notice (Republic of Mali, 2020).</td>
</tr>
<tr>
<td>Mozambique</td>
<td>An export ban on raw logs was put in place in 2007 (CIFOR, 2014) and was reported to still in place as of 2018 (EIA, 2018).</td>
</tr>
<tr>
<td>Niger</td>
<td>The export of rough or sawn timber is prohibited (Nigeria Customs Service, 2021).</td>
</tr>
<tr>
<td>Nigeria</td>
<td>K. senegalensis was classed as a partially protected species by Decree No. 2019-110 of 16th January 2019, which implements the 2018 Forest Code (Republic of Senegal, 2019). Under Articles 50-51 of the Decree, felling, cutting and uprooting of partially protected species is prohibited unless authorised by the Directorate of Water, Forestry, Hunting and Soil Conservation (Republic of Senegal, 2019).</td>
</tr>
<tr>
<td>Country</td>
<td>Regulations and Actions</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>A log export ban was reportedly put in place in 2007 (Munro and Hiemstra-van der Horst, 2012) and although the ban has been temporarily lifted on several occasions to allow exports of stockpiled logs, it was reportedly reinstated in April 2018 (Sewa News Stream, 2018).</td>
</tr>
<tr>
<td>South Sudan</td>
<td>A wood and charcoal export ban was reportedly put in place in July 2018 (Sudan Tribune, 2018).</td>
</tr>
<tr>
<td>Togo</td>
<td><strong>K. grandifoliola</strong> and <strong>K. senegalensis</strong> were both reportedly listed as protected species by Decision No. 233/AE of the 18th April 1947, which implemented the 1938 Forest Code, according to Togo’s National Forest Action Plan 2011-2019 (MERF, 2011a). The felling, uprooting and mutilation of such species is reportedly prohibited (MERF, 2011b). However, the 1938 Forest Code was repealed and replaced with a new Forest Code on 19th June 2008 (Government of Togo, 2008). Although the 2008 Forest Code designates certain species as fully protected from harvest unless for scientific purposes, no implementing decree for plant species had been adopted as of 2016 (CoP17 Inf. Doc. 79) and it appears that this is still the case.</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td>All Khaya spp. of any size were classed as reserved trees by Government Notice No. 506 of the 3rd August 1995 (Government of Tanzania, 1995). Under the 2002 Forest Act, the unlicensed felling, cutting, damage, removal of or sale of produce from a reserved tree on general land is prohibited (Government of Tanzania, 2002). Furthermore, a log export ban was reportedly put in place in 2004 (Lukumbuzya and Sianga, 2017).</td>
</tr>
<tr>
<td>Zambia</td>
<td><strong>K. anthotheca</strong> logs were classed as controlled goods under Statutory Instrument No. 27 of the 24th March 2017; such goods may be subject to import and export restrictions or bans by ministerial order (Government of Zambia, 2017).</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td></td>
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