ProForest

Research on marine timber for the Heritage Lottery Fund (HLF)

Final report

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1. Introduction

The Heritage Lottery Fund (HLF) introduced a sustainable timber procurement policy in 2005. The policy requires all timber used on HLF projects to come from verifiable legal sources and sustainably managed forests. The methodology to demonstrate and verify that timber has been sourced legally and sustainably is used by the government's Central Point of Expertise on Timber Procurement (CPET).

HLF provides grants to maritime projects which usually require timber for marine applications. On the one hand HLF understands that in many cases only selected tropical hardwoods meet the technical specifications in maritime environment because they are more durable in water. On the other hand, HLF is aware that tropical hardwood originates from countries where there are often concerns of illegality and other issues related to unsustainable forest management. HLF would like to gain a better understanding of the situation on marine timber and therefore asked ProForest to carry out research. This research looked at species availability and countries of origin of marine timber, industry information including UK companies trading marine timber, any issues related to the species or countries concerned, and availability of any alternative species.

2. Methodology

This research was undertaken through a combination of desk review of information in the public domain and survey with timber companies who trade timber for marine applications. The research covers the two aspects described below:

2.1. Species information

The desk study of species information looked at species suitable for marine application, their country of origin and their production and growth. It also examined the availability of species from certified forests, any lesser known species and any issues related to illegal logging and unsustainable forest management related to the species or countries concerned. Results are presented in section 3.1.

2.2. Industry information

Industry information on marine timber was collected through interviews with UK companies importing marine timber. ProForest identified the main companies in the industry by utilising three sources of information:

- HLF contacts: companies that have supplied marine timber to HLF granted projects in the past, which were obtained through previous ProForest research undertaken for HLF
- TTF contacts: TTF company members which import marine timber
- Public domain: such as website or advertisement in industry journals etc

A questionnaire was developed to gather information, which can be found in Annex 1. Results are illustrated in section 3.2.

3. Findings

3.1. Species information for marine construction

3.1.1. Timber species generally used for marine applications

Timber used in the UK for application in marine environments is characterised by high durability and high wood density. These species also provide for a high level of resistance to extreme weather, sea-water and attacks of marine borers, such as the shipworm (*Teredo navalis*). A prominent example can be found in Eastbourne, where the groynes along the sea front were rebuilt using 12,000m³ of greenheart from Guyana[i].

The majority of marine timbers are tropical hardwood species, with the exception of two eucalyptus species (Jarrah and Karri from Australia), European oak and Douglas fir from Europe and North America.

The table below shows timber species generally used for marine applications.

Trade name	Botanical name	Other trade names	Geographic distribution	Density (g/cm³) 12% MC*	Durability	Resistance to marine borers
Basralocus	*Dicorynia guianensis*	Angelique, Angelica do Para, Singapetou, Tapaiuna	Brazilian Amazon, Guyana, Surinam	~ 0.80	High	High
Bongossi	*Lophira alata*	Azobe, Akoga, Bonkole, Eba, Ekki, Kaku	West and Central Africa	1.05	High	High
Greenheart	*Ocotea/ Chlorocardium rodiei*	Black,- Brown,- Demerara- Greenheart, Beberu, Sipiri	Guyana, Surinam	0.95	High	High
Balau	*Shorea Spp.*	Selangan batu, Yakal, Malayakal Red Selangan Batu, Guijo, Balau Merah, Membatu	Indonesia, Malaysia, Philippines	0.85-1.15	High	High
Dahoma	*Piptadeniastrum africana*	Dabema Mbeli, Dabema, Agboin, Ekhimi, Atui, Bokungu, Mpewere	West-/East Africa	0.70	Moderate	Medium
Jarrah	*Eucalyptus marginata*		Southwest-Australia	~ 0.80	High	High

[i] http://www.unep-wcmc.org/species/tree_study/americas/2-26.html, 19.12.2008

Trade name	Botanical name	Other trade names	Geographic distribution	Density (g/cm^3) 12% MC*	Durability	Resistance to marine borers
Kapur	*Dryobalanops Spp.*	Keladan, Kapur, Kapoer, Borneo camphorwood	Indonesia, Malaysia	0.60 – 0.80	High	High
Karri	*Eucalyptus diversicolor*		Australia	0.90	Medium	Medium
Okan	*Cylicodiscus gabunensis*	Adoum, Denya, Edum, Bokoka, Bouemon	West Africa	0.90	High	High
Opepe	*Nauclea diderrichii*	Bilinga, Badi, Kusia, Bilinga, Akondoc, N'Gulu-maza, Kilingi	West/Central Africa	0.80	High	High
Wallaba	*Eperua falcata*	Palo machete, Walaba, Bijlhout, Wapa, Apa, Apazeiro, Jebaro	South America	Data not available	High	Moderate
Teak	*Tectona grandis*	Teck, Djati, Kyun, Teca, Tiek	Southeast Asia (also as plantations elsewhere)	0.70	High	High
Douglas Fir	*Pseudotsuga menziesii*	Oregon Pine	North America, Europe	0.50 – 0.60	Moderate	Low
Oak	*Quercus ssp.*		Europe, America	0.65 - 0.85	Medium	Medium

Table 1 Timber species commonly used for marine applications (12% MC* = Moisture content of timber)

Natural durability of timber and its application in marine environment

Generally, durable hardwood timber species are found more often in the tropics than in temperate or boreal forests, where softwood dominates. Wood density and the chemical composition of wood extract compounds determines timber durability against pests. Such robust species have been traded for decades because of their high degree of resistance against wood destroying pests, such as marine borers. Due to limited availability, over-exploitation, market demand for certified timber and initiatives to link sustainable forest management in the tropics to consumer markets a range of lesser known timber species are now available as certified marine timber.

3.1.2. Less common species suitable for marine construction

A few less common species suitable for marine applications have emerged on the market recently, such as other eucalyptus species (Eucalyptus cloeziana). Other species are from South America. The table below summarises these species.

Trade name	Botanical name	Other trade names	Geographic distribution	Density (g/cm^3) 12% MC*	Durability	Resistance to marine borers
Acariqura	*Minuqartia guianensis*	Acaiquara, Acaricoara, Acariguara, Baggie-baggie, Black manwood, Manwood, Mincoa, Mincouart, Palo de piedra, Paramaka, Pechiche	Central and South America	0.84	High	High
Abiurana ferro	*Pouteria caimito*	Abiu	South America	0.91	High	High
Mata mata preto	*Eschweileria ssp.*	Kakaralli, Kwateri, Kwatru, Mata-mata, Baakalaka, Baikaaki, Balibon, Kouanda, Maho, Hoogland barklak, Manbarklak, Black Kakaralli	Amazon basin, Guyana	0.81	High	High
Castanharana	*Holopyxidium sp.*		Amazonia	data not available	High	data not available
Cloeziana	*Eucalyptus cloeziana*		Australia	data not available	data not available	data not available
Angelim vermelho	*Dinizia excelsa*	Gurupa, Angelim falso, Angelim ferro, Angelim pedra, Faveira grande, Faveira preta, Parakwa	South and Central America	1.07	High	data not available

Table 2 Timber species less commonly used for marine construction

3.1.3. Growth rate and production

In the absence of clear distinct seasons, trees show a more balanced volume increment in tropical regions unlike in temperate or boreal zones where growth is very limited during winter months. However, rainy and dry seasons in the tropics also affect timber growth. Productivity of tropical rainforest does differ by region and vegetation zone. Widely accepted are growth rates between 0.5 – 2 m^3/ha/year for most hardwood species in natural tropical forests. Cutting cycles range between 25 and 35 years in designated production forest areas in order to allow sufficient re-growth. Harvesting volumes can vary widely from less than 10 to over 80 m^3 per ha and are site-dependent under controlled sustainable forest management and species-selective extraction methods. With the exception of teak, none of the listed marine tropical hardwood species is grown on a larger scale in plantations. The growth performance in monoculture plantations can be significantly higher, but the timber is considered less durable and dense.

3.1.4. Risk related to countries and species concerned

To gain a reasonable understanding of the level of risk related to the marine timber trade, two aspects should be considered: the extent of illegal logging in the source country and the specific tree species.

The countries of origin for marine timber are often located within the tropical belt, with the exception of three eucalyptus species, European oak and Douglas fir. Illegal logging activities, weak forest governance and law enforcement are common problems in many tropical countries. Currently the tropical forest area certified against internationally recognized sustainability standards in forestry accounts for 5% of the total global certified forest area of about 325 million ha. This 325 million ha certified forest area represents 11% of the global commercial forest resource[ii].

Unsustainable forest management practices and illegal logging activities result in a range of negative impacts including degradation of the forest resource base, damage to residual stands, changed tree species composition, loss of biodiversity, increased carbon emissions, degraded livelihoods of local communities and loss of national revenues from the forest sector.

The extent of illegal logging can be inferred from estimated figures on illegal logging in different countries, which are available from NGOs, research institutes and official documentation. As for marine timber species, all tropical countries, from which these are sourced, do suffer from illegal logging (see table 3 below for details).

Another related risk consideration is reliability of official documents, such as granted harvest permits or transport and export licenses. The Corruption Perception Index (CPI) of Transparency International (TI) is a useful indicator (highest score is 10). With

[ii] http://www.nhlaconvention.com/Presentations/2008/Rupert%20Oliver%20-%20Certificaton%20Seminar%20Presentation.pdf, 19.12.2008

the exception of Malaysia, all the tropical countries listed have scored below 5. While the CPI score is not specific to forestry, a low score on the basis of this index indicates that official documentation is likely to be unreliable. This means that an official document issued by a governmental agency in a country with a low CPI rating may not be sufficient to prove that this timber was harvested legally.

Corruption Perception Index (CPI)

The Corruption Perceptions Index (CPI) is an annual index of countries, ranked according to their perceived level of corruption, and drawn from multiple surveys. The ranking follows a scale from 0 – 10, where 10 signifies the lowest level of perceived corruption. The CPI 2008 is calculated using data from 13 sources originated from 11 independent institutions. All sources measure the overall extent of corruption (frequency and/or size of bribes) in the public and political sectors and all sources provide a ranking of countries, i.e., include an assessment of multiple countries. For details of CPI please visit: http://www.transparency.org/policy_research/surveys_indices/cpi

For risk levels relating to specific timber species, an obvious indicator is listing under CITES regulations. It is possible to extend this to other categorisations of species such as those listed as Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) in the IUCN Redlist. None of the marine timber species are CITES listed. However, a number of them are listed by IUCN. Table 3 below summarises the issues on illegal logging and endangered species.

Producing country	Timber species	CITES or IUCN listed	Estimated figure of illegal logging	CPI
South America				
Brazil	Basralocus, Acariqura, Abiurana ferro, Mata mata preto, Castanharan, Wallaba, Angelim vermelho	Nil in regards to marine timber species covered in this survey	47% in natural forests[1] (see end note on page 28)	3.5
Surinam	Greenheart, Basralocus, Acariqura, Angelim vermelho	Greenheart is listed as vulnerable by IUCN	Data not available.	3.6

Producing country	Timber species	CITES or IUCN listed	Estimated figure of illegal logging	CPI
Guyana	Greenheart, Basralocus, Acariqura, Mata mata preto, Angelim vermelho	Greenheart is listed as vulnerable by IUCN	Data not available. Allegations by researchers that illegal logging is occurring in Guyana by large companies through "land-lording" or the renting of concessions from other concession holders, which is against forest law. The allegations also include systematic encroachment onto recognized indigenous land and the non-payment of log taxes[2] (see end note on page 28).	2.6
West Africa				
Cameroon	Ekki, Dahoma, Okan, Opepe	Both Ekki and Opepe are listed as vulnerable in IUCN	50%[3] (see end note on page 28)	2.3
Ghana	Ekki, Dahoma, Okan, Opepe	Both Ekki and Opepe are listed as vulnerable in IUCN	60%[4] (see end note on page 28)	3.9
Gabon	Ekki, Dahoma, Okan, Opepe	Both Ekki and Opepe are listed as vulnerable in IUCN	70%[5] (see end note on page 28)	3.1
Ivory Coast	Ekki, Dahoma, Okan, Opepe	Both Ekki and Opepe are listed as vulnerable in IUCN	Data not available. Allegations by an NGO that illegal timber crosses over into Cote d'Ivoire from neighbouring countries, including previously sanctioned Liberia[6] (see end note on page 28).	2
Liberia	Ekki, Dahoma, Okan, Opepe	Both Ekki and Opepe are listed as vulnerable in IUCN	Data not available. The UN Security Council banned exports of Liberian timber in July 2003. The sanction was lifted in 2006, although recommended 10 further mechanisms be put in place to avoid corruption and track revenues – measures which a UN report in March 2008 concluded had been enacted[7] (see end note on page 28).	2.4

Producing country	Timber species	CITES or IUCN listed	Estimated figure of illegal logging	CPI
Southeast Asia				
Burma	Teak	Not assessed by IUCN but represents risk. E.g. teak from Burma	50%[8] (see end note on page 28) Burma is the only country that still exports teak from natural forests. On January 5 2006, the Burmese Forest Minister Aung Thein publicly admitted that "Annually, more than 100,000 tonnes of teak and other precious hardwoods are illegally extracted from Kachin and Shan states in northern Myanmar and smuggled into China[9] (see end note on page 28). With effect of December 2007 the EU Commission imposed new restrictions on the trade with Burma including prohibitions of the import of round logs, timber and timber products[10] (see end note on page 28).	1.3
Indonesia	Balau/ shorea spp Kapur (Dryobalanops Spp.)	Balau is the commercial name given to about 45 species described as the 'heavyweights' of the *Shorea* genus. More than half of the *Shorea* species are listed by IUCN as critically endangered, endangered or vulnerable. Five *Dryobalanops spp.* are listed as either Endangered or Critically Endangered by IUCN	73%[11] (see end note on page 28)	2.6
Malaysia	Balau/ shorea spp	As above for Indonesia.	11.8% through imports[12] (see end note on page 28)	5.1

Producing country	Timber species	CITES or IUCN listed	Estimated figure of illegal logging	CPI
Philippines	Balau/ shorea spp	As above for Indonesia.	46%[13] (see end note on page 28) A report has stated that forest cover loss in the Philippines from 2000 to 2005 was the fastest in South East Asia and the seventh fastest in the world	2.3
Others				
Europe	European oak, Douglas fir	Nil in regards to marine timber species covered in this survey	No data available. In general, illegality is not an issue in many EU member states. However, there are concerns in some new member states such as Estonia, Latvia, Bulgaria and Slovakia.	Highest 9.3; lowest 3.6 (Bulgaria)
North America	Douglas fir	Nil in regards to marine timber species covered in this survey	No data available. Generally there is no concern of illegal logging in North America. The issue is mainly on import of illegally harvested timber and timber products from other countries, especially from South America, where the US imported substantial quantity of timber.	Canada 8.7; US 7.3
Australia	Jarrah, Karri, Cloeziana	Nil in regards to marine timber species covered in this survey	No data available. Generally there is no concern of illegal logging in Australia. The issue is mainly on import of illegally harvested timber and timber products from other countries, especially from Papua New Guinea and Indonesia.	8.7

Table 3 Issues related to marine timber species and their countries of origin

Table 3 shows that most of the timber species suitable for marine construction originate from countries which are subject to significant levels of illegal logging. In addition, some species are listed in the IUCN Redlist - such as ekki, opepe, balau and greenheart, which means there are threats to these particular species. With the exception of European and North America species (i.e. European oak, Douglas fir), and eucalyptus species from Australia, there are significant risks of buying timber from unknown and illegal sources unless it is proved that they come from verified legal or certified sustainable forests.

3.2. Industry information on marine timber

In total 28 companies were contacted, which included 2 contacts from HLF projects, 21 companies from TTF member companies and 5 from public domain. A list of companies can be found in Annex 2[iii].

The survey indicated that there is limited number of companies trading timber species which are suitable for marine application. Out of the 28 companies, 10 of them completed and returned the questionnaire. They were Aitken & Howard, Robbins Timber, MH Southern & Co, C. Leary & Co Ltd (a Timbmet group company), Precious Woods (formerly Ecotimber), Ecochoice, Wijma UK, Anderson Sawmills, Intermarine and T Brewer[iv]. 7 companies responded that they do not trade any timber species suitable for marine application. The rest of them did not respond at all.

3.2.1. Species and country of origins

The most commercially available timber species supplied by UK companies are greenheart from Guyana, oak from Europe, Douglas fir from North America and Ekki from West Africa (such as Cameroon). These species are available from more than three companies. Angelim from Brazil, purpleheart from Guyana and teak from Southeast Asia are also popular. There are also other 17 species suitable for marine construction but each of the species is currently only available from one company. The table below summarises species and country of origin of marine timber supplied by these UK companies. Details are listed in table 4 below.

Species	Country of origin	Company
Hardwood species		
Abiurana ferro	Brazil	Precious Woods
Acariquara	Brazil	Precious Woods
Angelim	Brazil	Ecochoice, Anderson Sawmills
Balau	Malaysia, Indonesia	Aitken & Howard, Intermarine
Basralocus	Guyana	Wijma UK
Cloeziana	South Africa	Ecochoice
Ekki	Cameroon/ Gabon	Ecochoice, Wijma UK, Anderson Sawmills

[iii] Please note that this is a report for HLF rather than an exhaustive market survey for public consumption. There might be other companies supply marine timbers which were not included in this survey.

[iv] T Brewer is a timber merchant which does not actually sell on much marine timber, though they promote themselves as having the ability to supply. Therefore species and country information is not available from T Brewer.

Species	Country of origin	Company
Greenheart	Guyana	Aitken & Howard, MH Southern, Ecochoice, Wijma UK, Anderson Sawmills
Iroko	West Africa	Robbins Timber
Karri	South Africa	Ecochoice
Massaranduba	Brazil, Bolivia, Surinam	Anderson Sawmills, Intermarine
Mata mata preto	Brazil	Precious Woods
Niove	Cameroon	Ecochoice
Oak, European	Europe	Robbins Timber, C Leary, Ecochoice, Anderson Sawmills
Okan	Cameroon	Ecochoice
Opepe	West Africa	Aitken & Howard, Anderson Sawmills
Purpleheart	Guyana	Aitken & Howard, Wijma UK
Robinia	Europe	Ecochoice
Tali	Cameroon	Ecochoice
Tatajuba	Brazil	Ecochoice
Teak	Burma	Robbins Timber, C. Leary
Utile	West Africa	Robbins Timber
Ash	North America	Robbins Timber
Softwood species		
Douglas fir	North America	Robbins Timber, MH Southern, Anderson Sawmill
Cedar	North America	Robbins Timber

Table 4 List of marine timber species available in the UK market

Marine construction project

Precious Woods supplied marine timber for the restoration of Southend Pier for Southend Borough Council. The following timber species were used in this project:

Sub Structure: Reclaimed Timber (Ekki, Basralocus, Greenheart)
Decking: FSC-Certified Timber (Red Angelim, Massaranduba)

Source: Precious Woods website: http://www.ecotimber.co.uk

3.2.2. Volume

Aitken & Howard, MH Southern, C. Leary and Anderson Sawmills buy timber directly from suppliers in the country of origin, while Robbins Timber buys from UK importers and shipping agents. The annual total volume of purchase of marine timber varies greatly amongst these companies. Aitken & Howard was the largest importer by volume. It purchased 2000-2500 m³ annually. Followed by Anderson Sawmills, which bought 500 to 600 m³. Robbins Timber and MH Southern purchased approximately 300 m³ and 60 m³ respectively. All of them, except Anderson Sawmills, expected a decreasing trend for the next few years.

Wijma UK purchased timber from their parent company Wijma B.V. Kampen in the Netherlands. Wjima B.V. Kampen is a forestry company who owns concessions and sawmills in Cameroon. They purchased approximately 4,000 m³ annually.

Intermarine purchased hardwoods from importers in the UK. They then manufactured pontoons for leisure and commercial use in the UK and for export to European countries. They bought approximately 300 m annually, and they expected that the trend would decrease with increasing availability of substitutes.

No data was available on the volume of marine timber purchased by C. Leary. They stated that the volumes for the marine industry had been getting stronger over the last few years and have now stabilised. Precious Woods did not have data on the volume, and they expected a similar situation on the volume of purchase. Data was unavailable from Precious Woods.

3.2.3. Availability of legally verified or sustainably certified timber

The survey showed that a number of marine timber species originate from legally verified/ certified forests.

Douglas fir from MH Southern was sourced from PEFC certified forests.

Abiurana ferro, acariquara, mata mata preto from Brazil supplied by Precious Woods come from FSC certified forests.

Wijma UK is able to supply FSC certified greenheart, purpleheart and basralocus from Guyana, and ekki from Cameroon.

Balau from Malaysia and Indonesia, massuranduba from Brazil, Bolivia and Surinam can be supplied as FSC certified by Intermarine.

Ecochoice is able to supply a number of species from FSC certified forests. Those are: angelim, ekki, okan, greenheart, tali, niove, tatajuba, karri, cloeziana, robinia, oak.

Anderson Sawmills have several species available from FSC certified forests such as ekki, greenheart and massaranduba. They also supply PEFC certified European oak. In addition, they are able to provide ekki and opepe from legally verified schemes.

They are Timber Legality and Traceability Verification (TLTV) programme offered by SGS, and Origin and Legality of timber (OLB Origine et Legalité des Bois) from BV.

Robbins Timber stated that all of their marine timber species are legally verified, with limited availability of certified sources. They can offer FSC or PEFC certified oak from Europe, and PEFC certified ash from North America. They also have residual stock of Burmese teak, but they stated that FSC certified teak would be available from Sudan soon.

C. Leary stated that they buy teak from various sources. Some of them are FSC certified, some of them are from plantations but not certified. In addition, one source falls outside of existing certification schemes, but is 100% traceable, and was audited by BM Trada. Oak are FSC certified from Northern Europe. For other hardwoods, they source from FSC certified forests, and they mentioned that hardwoods coming through from the SmartWood Rediscovered Program will be available shortly.

Aitken & Howard supplied greenheart to the Environment Agency and was being assessed under CPET Category B evidence. The Agency has obtained sufficient evidence that legality and chain of custody requirements are being met in relation to greenheart timber sourced from Guyana.

Schemes	Species	Region/ country	Suppliers
Proof of sustainability			
FSC	Abiurana ferro	Brazil	Precious Woods
FSC	Acariquara	Brazil	Precious Woods
FSC	Angelim	Brazil	Anderson Sawmills, Ecochoice
FSC	Balau	Malaysia, Indonesia	Intermarine
FSC	Basralocus	Guyana	Wijma UK
FSC	Cloeziana	Brazil	Ecochoice
FSC	Douglas fir	Europe	Anderson Sawmills
PEFC	Douglas fir	Europe	MH Southern
FSC	Ekki	West Africa	Anderson Sawmills, Ecochoice, Wijma UK
FSC	Greenheart	Guyana	Anderson Sawmills, Ecochoice, Wijma UK
FSC	Karri	South Africa	Ecochoice
FSC	Massaranduba	Brazil, Bolivia, Surinam	Anderson Sawmills, Intermarine

Schemes	Species	Region/ country	Suppliers
FSC	Mata mata preto	Brazil	Precious Woods
FSC	Niove	Cameroon	Ecochoice
FSC	Oak, European	Europe	Anderson Sawmills, C. Leary, Robbins Timber
PEFC	Oak, European	Europe	Anderson Sawmills, Ecochoice, Robbins Timber
FSC	Okan	Cameroon	Ecochoice
FSC	Purpleheart	Guyana	Wijma UK
FSC	Robinia	Europe	Ecochoice
FSC	Tali	Cameroon	Ecochoice
FSC	Tatajuba	Brazil	Ecochoice
FSC	Teak	Unknown	C. Leary
Proof of legality[v]			
TLTV	Ekki	West Africa	Anderson Sawmills
OLB	Ekki	West Africa	Anderson Sawmills
TLTV	Opepe	West Africa	Anderson Sawmills
Other type of evidence			
CPET Category B evidence for legality for Environment Agency	Greenheart	Guyana	Aikten & Howard

Table 5 List of legally verified and sustainably certified marine timber species available from UK suppliers

[v] Note that there is a change in the public procurement from April 2009. From April 2009 the policy will demand, that all timber and wood-derived products must be from independently verifiable legal and sustainable sources or FLEGT-licensed timber only. Timber which only meets the legality criteria will be accepted in very special cases only. http://www.proforest.net/cpet/uk-government-timber-procurement-policy/change/

3.2.4. Alternative species

The result showed that the main obstacles of using alternative species are market resistance, available information of timber properties and reliable supply.

Precious Woods commented that people have doubt about the performance of alternative species. Ecochoice stated that market is too addicted to specifying and using traditional and 'safe' species: greenheart and ekki. Ecochoice also commented that they have FSC certified species suitable for marine works available which are not yet accepted in the UK for fear of the unknown. They have successfully introduced FSC angelim vermelho after many years of campaigning. Anderson Sawmills has dealt with lesser known species from Brazil (angelim vermelho, angelim pedra) and was a success because they originated from FSC certified forests. Intermarine commented that some customers have concerns regarding proven suitability of purpose and the perception of their clients. Robbin Timbers mentioned that restoration work required timber as originally used, therefore, there was no room to change to an alternative species. There is also resistance to change to new species, primarily because there are few good alternatives. Aitken & Howard stated that obstacles to lesser known species tend to be reliable information on properties of the timbers, acceptance within the market place and ensuring reliable supply. C. Leary also has experience in lesser known species, but these have proved problematic in all but finished products. Wijma UK commented that available volumes of alternatives and reliability to supply are main obstacles.

It is worth noting that research testing the technical properties of lesser known marine timber species is being carried out by HR Wallingford and BM Trada, commissioned by the Environment Agency. The results of this research will be available in autumn 2009[vi].

3.2.5. Market demand for timber for marine applications

Aitken & Howard commented that the demand for marine timber has remained steady over the last 3 to 5 years but it expects a slight down turn in 2009-2010. Precious Woods has a similar prediction that market demand will remain the same for coming years. Robbins Timber predicted that the overall demand has decreased. Ecochoice commented that the demand for marine timber is small but constant, but they felt that major competitor in this area is rock groynes and steel sheetpiling. Intermarine stated that the total demand has increased in recent years, but they expected a decreasing trend due to increasing availability of substitutes. On the other hand, Anderson Sawmills predicted that the demand will increase.

[vi] See details 'New research project to shed light on lesser known timbers': http://www.hrwallingford.co.uk/Press/PR08-0802%20%20SWD%20EA%20Research%20on%20Timber.pdf

3.2.6. Demand for legally verified and sustainably certified timber

There was a mixed response regarding the demand of legally verified or certified timber for marine applications.

Aitken & Howard, Ecochoice, Wijima UK, Intermarine and Anderson Sawmills stated that their customers have requested certified or legally verified marine timber. Aitken & Howard provided customers field reports, and audits of system carried out by third party as evidence to ensure legality. Ecochoice, Intermarine and Wijma UK used certificates to demonstrate sustainability. Anderson Sawmills used legally verified schemes (OLB and TLTV) to demonstrate legality and FSC, PEFC certificates to demonstrate sustainability.

Precious Woods and C. Leary commented that sometimes they did receive customer requests for legal or certified timber. Precious Woods supplied FSC certified marine timber from Brazil to meet customers' need. C. Leary provided different types of evidence to demonstrate legality or sustainability. This ranges from forest certification schemes to bespoke schemes, and verbal explanations with supporting evidence where a recognised scheme is not available.

Robbins Timber revealed that very few customers requested legal or certified marine timber. MH Southern and T Brewer stated that none of their customers had asked for legal or sustainable timber for marine applications, though both of them are able to supply.

4. Conclusions and recommendations

4.1. Conclusion

Most of the timber species suitable for marine construction originate from tropical forests many of which are subject to threats including illegal logging, conversion and unsustainable forest management. Some species are listed in the IUCN Redlist, such as ekki, opepe, balau and greenheart, which means there are threats to these particular species. With the exception of European and North America species (i.e. European oak, Douglas fir), and eucalyptus species from Australia, there are risks of buying timber from unknown and illegal sources unless it is proved that they come from verified legal or certified sustainable forests. Currently there are 17 million ha of forests in the tropics certified so there is limited supply of certified tropical hardwood suitable for marine construction[vii].

In the UK and within the limits of this specialised market, there are limited numbers of companies trading in timber which is suitable for marine applications. These companies supply timber species which are traditionally used for marine applications, such as greenheart, ekki and teak. Some of them have tried to use alternative species but all faced obstacles. In general, there is resistance to use new/alternative species because the industry tends to use traditional and safe species. It is also due to lack of information on technical properties, and reliable supply of alternative species. However, a few companies have started to offer lesser known species for marine construction such as angelim.

There are a few companies in the UK supplying FSC certified timber suitable for marine applications. These include a number of species from Brazil (e.g. angelim, acariquara, tatajuba), Cameroon (e.g. ekki, tali, okan), and Guyana (e.g. greenheart, purpleheart and basralocus).

All of these imply that it is possible to obtain marine timber species that can meet the HLF timber policy. However, it is also important to note that this will be restricted by the limited number of species coming from certified forests, which are supplied by small number of companies in the UK.

4.2. Recommendations to HLF

This section provides recommendations on how HLF guidance can be further developed in the area of marine timber.

[vii] Currently there is no PEFC certification in tropical countries so statistics were compiled from FSC and MTCC websites: http://www.fsc.org and http://mtcc.com.my 22nd January 2009

4.2.1. Consideration of technical specification

The industry survey showed that traditional marine timber species are usually preferred. There is resistance to use alternative species because of the lack of information on the technical properties and the uncertainty on sufficient supply of such timber species. Therefore, in developing the technical specifications for HLF projects which require the use of timber for marine or waterways construction, **it is suggested to provide details of the technical properties and strength required for a certain marine project, rather than specifying a particular timber species. Or when a particular species is named, consider adding the word 'or equivalent'.**

It is realised that in some marine timber projects, such as restoration of historic ships, it is required to replace the timber with the same species that was originally used. That may usually mean traditional marine timber species such as greenheart and teak. Thus, there is little room to change to other species. However, it may not always be necessary to replace the timber with the same species as originally used. For example, a British Rail viaduct at Barmouth, Gwynedd in Wales, was originally built in pitch pine and was repaired using greenheart[viii]. **It is recommended to consider whether alternative species with similar visual characteristics (e.g. colour, grain, texture) and comparable technical properties (e.g. natural durability, strength) and performance can be used.**

Technical properties and equivalent species

Balau may be able to substitute with massaranduba because they have comparable technical properties and visual characteristics. Balau and massaranduba have similar colour (reddish brown) and both are durable. The grain of massaranduba is usually straight but sometimes interlocked, and the texture is fine and uniform, while balau has interlocked grain, and a moderately fine and even texture.

4.2.2. Choice of species

Tropical hardwood species are often used for marine construction. However, many of these species originate from countries where there are concerns of illegality. Therefore when buying tropical hardwood, **it is important to check if they are from verified legal or certified sustainable sources.** A few companies in the UK supply certified species, so it is worth checking if the species specified are available from certified sources. If suppliers cannot provide verified legal or certified timber, further information is needed to check if the timber was harvested legally.

[viii] Hardwood in construction, chapter 7 Hardwood construction in exterior and adverse environments http://www.trada.co.uk/techinfo/library/view/69F838DC-2D3A-4D7E-8465-3207EF8482A6/Hardwoods+in+construction/ar01s09.html

Non-tropical hardwoods such as European oak may be sufficiently durable for some purposes, hence should not be overlooked. Douglas fir and European oak are also readily available from certified forests.

As mentioned in section 3.1, the Environment Agency has commissioned a study on alternative species, the results will be available in autumn 2009. Once this information is available, the industry will be better informed about the technical properties of lesser known species. This will encourage the industry to use alternative species. **It is suggested that HLF to contact Environment Agency on the progress of this study, and distribute this report to HLF grant officers once it is available. Grant officers should then disseminate to projects which involve the use of marine timber.**

4.2.3. Disseminate report to projects using marine timber

This report contains information on the supply of marine timber in the UK, including timber species and availability from legally verified or certified forests. **It is suggested to disseminate a suitable summarised version of this report to HLF grant officers, monitors, project managers, specifiers and designers of marine and freshwater construction projects so that they are aware of the situations in the industry, and the associated risks of buying timber from unknown sources.** Information on the list of timber species available from legally verified and certified sources is particularly useful. They can make use of this list and contact potentials suppliers to check volume, dimension and certification status of a specified marine timber species.

Annex 1 Questionnaire on timber for marine application supplied by UK timber industry

24th November 2008

The Heritage Lottery Fund (HLF) introduced a sustainable timber procurement policy in 2005. The policy requires all timber used on HLF projects to come from verifiable legal sources and sustainably managed forests**.** The methodology to demonstrate and verify that timber has been sourced legally and sustainably which HLF will accept are those that have been approved by the government's Central Point of Expertise on Timber (CPET).

HLF provides grants to maritime projects which usually require timber for marine applications. On the one hand HLF understands that in many cases only tropical hardwood meets the technical specification in maritime environment because they are more durable in water. On the other hand, HLF is aware that tropical hardwood comes from countries where there are concerns of illegality and other issues related to unsustainable forest management. HLF would like to gain a better understanding of the situation on marine timber and therefore asked ProForest to carry out a research. The research will look at species availability and countries of origin of marine timber, industry information including UK companies who trade marine timber, any issues related to the species or countries concerned, and availability of any alternative species.

We have developed this simple questionnaire to get industry information on timber for marine application. It consists of 10 questions and takes about 20-30 minutes to finish.

We will be grateful if you could complete the questionnaire and return it to ProForest via email at joyce@proforest.net by 16th January 2009. Alternatively, we could talk through the questions with you. Please feel free to contact us at 01865 243 439 if you have any questions. Thank you very much for your help in advance.

Contact details

Name		
Company		
Tel no		
Email		
Certification status	Yes – CSA/ FSC/ MTCC/ PEFC/ SFI Yes – Generic CoC	No
Legality verification status	Yes – SGS's TLTV/ Smartwood's VLO or VLC/ BVQ's OLB	No
Date of interview		

Questions related to timber for marine application

1	Does your company import or sell timber species suitable for marine application? If so, please specify.
2	Where is/are the country(ies) of origin? Do you have any region or country preferences? If so, why?
3	Who is/are your supplier(s)? Do you buy directly from the country of origin? Or do you buy from UK importers?
4a	What is the annual total volume of import/purchase of marine timber? Is there a trend of decreasing/increasing the volume in the next few years?
4b	Do you have experience with regard to market acceptance of suitable substitute timber and lesser known tree species? What are the obstacles for market access?

5	Have they originated from certified or legally verified forests? If so, what are the species and which countries are they from? Please also specify the name of certification/ legality verification schemes.
6a	If you are buying certified/ legally verified timber suitable for marine application, what are the reason(s)?
6b	If you are not buying certified/ legally verified timber suitable for marine application, what are the reason(s)?
7	What is the market demand for marine timber in volumes and species? Has it increased/ decreased in recent years?
8	What types of operation do you sell to? Government, construction company etc?
9	Have your customers requested certified or legally verified marine timber?
10	What types of evidence did you provide to your customers to ensure legality/ sustainability of timber?

Thank you very much for filling in the questionnaire

Annex 2 Company contacts list

Company name	Contact details	Source	Response
Aitken & Howard	Mr Roderick Aitken roderick@gilmouraitken.com	HLF project	Questionnaire completed
C Leary	Mr Simon Kloos simon.kloos@c-leary.com	HLF project	Questionnaire completed
Anderson Sawmills Ltd	Mr Brian Sparkes andersonsawmills@btconnect.com	TFT members	Questionnaire completed
Arnold Laver & Co Ltd	Mr P M James enquiries@laver.co.uk michaelcraddock@laver.co.uk	TFT members	No response
C Blumsom Ltd	Mr R B Blumsom sales@blumsom.co.uk	TFT members	No response
Brooks Bros (UK) Ltd	Mr H Ng sales@brookstimber.co.uk	TFT members	No response
Brooks Bros (London) Ltd	Mr P Sherriff enquiries@brooksbroslondon.com	TFT members	No response
E O Burton & Co Ltd	Mr N Chilcott timber@eoburton.com	TFT members	No response
CP Timber Ltd	Mr C Powell sales@cptimber.com	TFT members	No response
Danzer UK Ltd	Mr K A Walsh Ken.Walsh@danzer.co.uk	TFT members	Do not supply marine timber
Devon Hardwoods Ltd	Mr J D Marsden 01395 568991	TFT members	No response
DLH UK Ltd	Ms S Hoggarth sales@dlhuk.com	TFT members	No response

Company name	Contact details	Source	Response
International Forest Products (UK)	Mr N Govan NeilG@ifpcorp.com	TFT members	Do not supply marine timber
James Jones & Sons Ltd	Mr I Pirie I.Pirie@JamesJones.co.uk	TFT members	No response
James Latham Hemel Hempstead	Mr Peter Latham panels.hemel@lathams.co.uk	TFT members	No response
John Boddy Timber Ltd	Mr F S Boddy info@john-boddy-timber.ltd.uk	TFT members	Do not supply marine timber
Morgan & Co (Strood) Ltd	Mr R W Morgan info@morgantimber.co.uk	TFT members	No response
Panel Agency Ltd	Mr M Wilson MarkWilson@panelagency.com	TFT members	Do not supply marine timber
Paterson Timber Ltd	Mr R C Paterson info@paterson-timber.com	TFT members	Do not supply marine timber
MH Southern & Co Ltd	Mr J A Southern sales@mhsouthern.co.uk	TFT members	Questionnaire completed
Robbins Timber	Mr R Bagnall timber@robbins.co.uk	TFT members	Questionnaire completed
W L West & Sons Ltd	Mr D West davewest@wlwest.co.uk	TFT members	No response
Woodscape Ltd	Mr S R Nelson sales@woodscape.co.uk	TFT members	No response
Ecotimber (Precious Woods)	Mr Andries van Eckeveld Andries.vanEckeveld@preciouswoods.nl	Web search	Questionnaire completed

Company name	Contact details	Source	Response
T Brewer & CO	Mr Keith Fryer Keith.Fryer@tbrewer.co.uk	Web search	Questionnaire completed
Ecochoice	Mr Mike Bekin m.bekin@ecochoice.co.uk	Web search	Questionnaire completed
Intermarine	Mr Peter Cross on behalf of Intermarine Peter.Cross@rivercopse.co.uk Mr Tim Gregory tim.gregory@intermarine.co.uk	Web search	Questionnaire completed
Wijima UK	Mr Tim Smith t.smith@wijma.co.uk	Web search	Questionnaire completed

Note: This is not an exhaustive list of companies supplying marine timber in the UK

References

[1] Imazon 200, cited in WWF report 'Illegal Wood for the European Market' July 2008

[2] Samling in Guyana, South America, from Credit Suisse asked to pay back profits of Samling listing, with link to full press release, 3 May 2007

[3] OECD 2007: The Economics of Illegal Logging and Associated Trade. Round Table on Sustainable Development, cited in WWF report 'Illegal Wood for the European Market' July 2008

[4] World Bank 2006: Strengthening Forest Law Enforcement and Governance – Addressing a System Constraint to Sustainable Development, cited in WWF report 'Illegal Wood for the European Market' July 2008

[5] Same as 3 above

[6] COTE D IVOIRE: Civil war allows rampant illegal logging, IRIN (UN Office for the Coordination of Humanitarian Affairs). 23 December 2004

[7] Liberia: Logging industry ready to restart http://www.irinnews.org/Report.aspx?ReportId=77781

[8] Bundesforschungsanstalt für Forst-und Holzwirtschaft 2006: Die Tropenholzeinfuhr der Bundesrepublik Deutschland 1960 – 2005 - insgesamt und aus geschätzten illegalen Holzeinschlägen, cited in WWF report 'Illegal Wood for the European Market' July 2008

[9] *Bid to end illegal timber trade'*, The Myanmar Times, (Vol 15, no. 300); 16-22 January 2006 & Yangon Times (Vol 1, no.16); January 19-25 2006, from ReIPAC

[10] http://www.berr.gov.uk/whatwedo/europeandtrade/strategic-export-control/sanctions-embargoes/by-country/burma/page43335.html

[11] Same as 3 above

[12] Schloenhardt, A., Australian Institute of Criminology 2008: The illegal trade in timber and timber products in the Asia-Pacific region, cited in WWF report 'Illegal Wood for the European Market' July 2008

[13] Same as 6 above.