

Purchasing Tropical Timber

Environmental guidelines - Background material

MILJØMINISTERIET

MINISTRY OF
THE ENVIRONMENT



Danish Forest and Nature Agency

Ministry of the Environment

Danish Environmental Protection Agency

Danish Ministry of the Environment



Table of Contents

1 Preface	2
1.1 Specific conditions related to purchase according to the EU-directives on public procurement	3
2 The market for tropical wood	3
2.1 What is tropical wood?	3
2.2 Danish import and use of tropical wood	5
2.3 The market for certified tropical wood	6
2.4 The role and the possibilities of the purchaser	8
2.5 Wood for harbour construction	8
3 Legal wood	9
3.1 Legally produced wood	9
3.2 Endangered species (CITES) and the redlist of IUCN	10
4 Sustainable forest management	11
4.1 Definition and background	11
4.2 Development of criteria for sustainable forest management	12
4.3 Application of criteria for sustainable forest management	13
5 Documentation of legality, sustainability and origin	16
5.1 Documentation of legality and sustainability	16
5.2 Documentation on origin – Chain of Custody	18
6 Certification schemes	20
6.1 Requirements to certification schemes	20
6.2 The individual certification schemes	21
6.3 Comparative summaries	29
6.4 A stepwise approach to sustainable forest management	32
6.5 Conclusion	33
7 Environmental and health impacts in life cycles of tropical wood	34
7.1 Environmental impacts	35
7.2 Health impacts	36
8 References	38
	1

1 Preface

Tropical forests cover about half of the World's total forest area, contributing however to less than 10 % of the World's total industrial wood production. Legal and sustainable utilization of forests wood production, tropical and non tropical forests alike, can contribute positively to many people's livelihood without deteriorating the conditions of wildlife animals and plants.

Therefore purchasing wood, including tropical wood, can be a contribution to the long term preservation of forests. Possessing no value forests are in danger of being transformed into other land uses e.g. agriculture, mining, cultivation of tobacco, production of coffee, oil palms etc.

Unfortunately the management in many forests is neither legal nor sustainable. This in turn can lead to the destruction of forests and deterioration of living conditions for the local inhabitants and destruction of the habitats for flora and fauna. At the same time the public economy is deprived of large sums from lost yields of taxes and duties. These problems, noticeable in the tropics, are placing timber traders and consumers in a dilemma in as much as purchase and consumption of wood in some instances is good and acceptable, and in other it is not. It can be difficult to establish what the actual situation is.

With the decision B197/2001 the Danish Parliament has resolved that a special attention is to be focused on public



purchase of tropical wood (see for instance www.folketinget.dk).

The purpose of the present guide is to assist public purchasers in ensuring that the tropical timber they buy is legally and sustainably produced. The recommendations of this guide as to legality and sustainability apply to wood from natural forests as well as from plantations.

The present guide includes all tropical wood except pulp and paper. Several independent environmental guides have been prepared on paper products, e.g. writing paper and Xerox paper (see for instance www.mst.dk).

The tropical wood covered by the present guide could for instance be timber used in access balconies, terraces, fences, bridges, waterfronts etc. Plywood and other wooden materials can be manufactured from tropical wood as well. Tropical wood can form part of end products e.g. garden furniture as well as indoor furniture, windows, doors and floors.

The requirement that the timber must be legal sounds simple, but it is not. The forest legislation differs

from country to country and it can be difficult to make an exact delimitation of which regulations to employ. Regulations from different authorities are even conflicting in some places.

The requirement of sustainable wood production is not straightforward either. There are no unambiguous globally accepted standards on sustainable forest management.

Other environmental aspects in the process of manufacturing, including the work environment, are also relevant in an overall environmental assessment, but delimitation and assessment of these aspects is not simple either.

Additional information on definitions and the demarcation of concepts are given in the following sections as well as the background to the selected recommendations. The brief guide is the intended proper tool to the purchaser. Apart from the present background document and the brief guide three specific minutes have been prepared, one on sustainable forest management, one on

guidelines for the assessment of certification schemes and one on evaluation of existing certification schemes.

The guide and the background document are mainly focusing on legality and sustainability whereas other lifecycle based environmental considerations are treated less thorough. Lifecycle assessments and other environmental considerations are treated more carefully in other environmental guides. In terms of wood products see for instance specific environmental guides for respectively tables, shelves, filing cabinets, upholstered furniture /16/, /17/, /18/, /19/.

The guide consists of the following documents:

- A brief guide for purchasers
- A background document (this document).

Apart from this, and as a foundation of work, four technical worksheets have been elaborated respectively on guidelines for certification /1/, evaluation of certification schemes /2/, sustainable forest management /2a/ and the Danish import of tropical wood /2b/ (available in Danish only).

1.1 Specific conditions related to purchase according to the EU-directives on public procurement

The amount of the purchase is crucial to whether the procurement is to follow the specific EU-rules on public procurement. Various threshold values indicate

when a purchase needs to follow the rules of public procurement (see www.ks.dk). In 2004 and 2005 the threshold values of the purchase of goods amounts to DKK. 1.144.617 in State contracts and DKK. 1.760.949 in county and municipal contracts. Additional threshold values exist within works contracts and within public service contracts.

The following conditions require special attention in considering purchase of legally and sustainably produced wood:

- Authorities cannot demand timber from wood grown in specific areas, whereas authorities can demand specific tree species or wood with specific properties.
- Authorities can specify in what way trees are to be grown and harvested.
- Authorities can define demands to and criteria for sustainable forest management and indicate certifications providing acceptable documentation for the criteria. However one or more certain certification schemes cannot be demanded. Other sorts of documentation for the criteria must be accepted as well.
- A technical specification may be that the product complies with certain criteria of environmental labels, but no demand can be made for one particular label. Nor can demands be made for a particular certification scheme,

but certification schemes may be recognized as documentation for the compliance with the criteria/specifications.

- Authorities may state criteria for the evaluation of alternative forms of documentation, for instance that it is subjected to independent verification by third party.
- Authorities may refuse to accept suppliers that have violated legislation concerning commerce in and production of wood.

The Danish Competition Authority and Danish Environmental Protection Agency have drawn up a guide on environmental considerations by procurement: "Offentlige grønne indkøb – en vejledning i mulighederne for at varetage miljøhensyn i forbindelse med afholdelse af udbud" /20/. www.ks.dk. (Available in Danish only).

2 The market for tropical wood

2.1 What is tropical wood?

Tropical wood is in the present guide perceived as wood from tree species growing in the tropical belt along the Equator. The wood may originate from natural forests e.g. rain forests or from plantations.

More than 95 % of the tropical forests are natural forests and the majority of the commercially used tropical tree species arise from such forests. A few species like for instance teak and different species

of eucalyptus are grown in plantations as well.

Statistics Denmark defines the following tree species as “tropical tree species” in the trade statistics: abura, afrikansk mahogni, afrormosia, ako, alan, andiroba, aningré, avodiré, azobé, balau, balsa, bossé clair, bossé foncé, cativo, cedro, dabema, mørkerød meranti, dibétou, dossié, fremiré, freijo, fromager, fuma, geronggang, ilomba, imbuia, ipé, iroko, jaboty, jelutong, jequitiba, jongkong, kapur, kempas, keruing, kosipo, kotibé, koto, lyserød meranti, limba, louro, macaranduba, mahogni, makoré, mandioqueira, mansonia, mengkulan, meranti, bakau, merawan, merbau, merpauh, mersawa, moabi, niangon, nyatoh, obeche, okumé, onzabili, orey, ovengkol, ozigo, padauk, paldao, guatemalansk palisander, para-palisander, rio-palisander, rosenpalisander, pau amerelo, pau marfin, pulai, punah, quaruba, ramin, sapelli, saqui-saqui, sepetir, sipu, sucupira, suren, tauari, teak, tiama, tola, virola, hvid lauan, hvid

meranti, hvid seraya og gul meranti.

The list contains a mixture of commercial names for specific species and groups of species which are traded under the same name. In practice a number of different names are used in trade to designate the same species, just as some species in trade originating from tropical forests are not covered by the list. However the list is assumed to cover most of the species traded in Denmark.

Several tropical tree species are similar in respect of visual appearance and technical properties, and often these properties are determining the name in trade. This holds for instance for a number of species within the genera Shorea, Parashorea and Pentacme, which all may be traded as “Meranti”, e.g. yellow or pink Meranti, but the same species may also be traded under different names. Similarly “Mahogany” may represent a number of different species within the genus Swietenia, which is originating from South

America, but it may also represent species within the genus Khaya, which is originating from Africa. In addition “Mahogany” may be used for completely different genera, e.g. “Philippine Mahogany”, which is a Shorea species also traded as Lauan – or Meranti. Lophira alata is often traded as Azobé, but also under the names of e.g. Aba, Bakandu, Bankile, Bongossi etc. The examples of confusion are countless.

Appendix 1 gives an overview of often appearing names of tropical wood and its origin etc.

The appendix may serve as a guideline in determining if the wood is tropical, but the list is not exhaustive.

Very often tropical wood possesses particular qualities making it suitable and preferred for a number of different purposes. Thus a lot of tropical wood is often selected due to qualities such as long natural durability, resistance to fungi and pests and great wearing qualities. A lot of tropical wood is long-term durable

Table 1 Danish import of tropical wood in 2001 – exporting countries (tons).

Exporting country	Total	Wood	Furniture
Indonesia	28.500	14.800	13.700
Malaysia	20.600	18.200	2.400
Brazil	8.600	8.500	100
Vietnam	5.600	300	5.300
Burma	4.200	4.200	0
Thailand	3.800	3.100	700
Cameroon	2.200	2.200	0
The Ivory Coast	2.000	2.000	0
Ghana	1.800	1.800	0
Singapore	1.700	1.600	100
Taiwan	1.000	200	800
Other tropical countries	4.000	2.500	1.500
Total from tropical countries	84.000	59.400	24.600
Re-export from non-tropical countries	26.000		
Total	110.000		

without impregnation even in a harsh outdoor environment and often require less maintenance in comparison with tree species like pine, spruce, beech and oak. In addition tropical wood is preferred for a number of purposes for aesthetic reasons.

In the following sections some brief information is rendered on different typical applications of tropical wood in Denmark.

More detailed information about the qualities, possibilities of application as well as durability in aquatic and outdoor environments of different tropical tree species is available in /22/, /28/ and /29/ or at www.trae.dk /6/ and www.teknologisk.dk /31/.

2.2 Danish import and use of tropical wood

Danish importers buy tropical wood directly from the tropics and through middlemen in other non tropical countries

It is not possible to make exact estimates on the size of the total import as the tropical wood in the statistics is not sorted out in detail. Plywood may for instance be composed of both tropical wood and non tropical wood, and the share of tropical wood is not registered for all species. However it is possible to perform educated estimates.

Table 2 Import of tropical wood in 2001 distributed on product groups (tons)

Sawn products	36.100
Furniture and parts hereof	29.600
Plywood and laminated boards	25.700
Blocks for parquet, flooring planks etc.	9.600
Logs and timber	4.300
Veneer, etc.	3.300
Frames, windows, doors	900
Other	500
Total	110.000

The 2001 Danish import of tropical wood is for instance estimated to app. 110.000 tons /32/, of which 84.000 tons are imported directly from the tropics and the remaining 26.000 tons are imported through other, mainly European countries. In comparison the import of wood not originating from the tropics amounts to 2-3 million tons /33/.

The direct imports are split up in 80 % originating from Asia, 10 % from Africa

and 10 % from South and Central America, see table 1.

The origin of the 26.000 tons of tropical wood imported through middlemen is not made up in the present guide. Almost half (12.200 tons) of the wood was imported via Germany and some was imported via Finland (3.300 tons), The Netherlands (2.600 tons) and Belgium (2.500 tons).

Tropical wood forms part of numerous products e.g.:

Table 3 Distribution of the 8,4 mio hectares of certified forests in the tropics as of 1 April 2003 (mio hectares) /27/.

	Asia	America	Africa	Total
FSC	0,3	3,8	1,3	5,4
MTCC	2,3	-	-	2,3
LEI	0,1	-	-	0,1
Keurhout ¹	0,0	-	-	0,6
Total	2,7	3,8	1,9	8,4

¹ Certificates accepted by Keurhout – in excess of the above mentioned.

Table 4 Certified forest areas and number of certificates in the tropics

Country	Import to Denmark tons/yr 2001	Certification scheme	Certified area (ha)	Number of certificates
Indonesia	28.496	LEI	106.000	2
		FSC	157.641	3
Malaysia	20.610	MTCC	2.300.000	3
		FSC	77.242	3
Thailand	3.836	FSC	6.349	2
Brazil	8.601	FSC	1.281.869	29
China	-	FSC	940	1
India	-	FSC	175	1
Chile	-	FSC	353.577	11
Philippines	392	FSC	14.800	1
Gabon	289	Keurhout	615.000	1
Papua New Guinea	277	FSC	4.310	1
Nicaragua	57	FSC	3.500	1
Sri Lanka	54	FSC	9.790	2
Uganda	38	FSC	35.000	2
Ecuador	30	FSC	21.341	2
Zimbabwe	20	FSC	127.285	4
Argentina	17	FSC	28.656	4
Costa Rica	8	FSC	64.405	15
Bolivia	0	FSC	970.214	9
South Africa (subtropical)	0	FSC	952.285	16
Mexico	0	FSC	622.555	31
Guatemala	0	FSC	348.122	13
Belize	0	FSC	95.800	1
Uruguay	0	FSC	75.063	4
Namibia	0	FSC	61.130	1
Solomon Islands	0	FSC	39.402	1
Colombia	0	FSC	20.056	0
Swaziland (subtropical)	0	FSC	17.018	1
Honduras	0	FSC	13.398	2
Panama	0	FSC	8.383	3
Total	54.125		8.431.306	170

No existing statistics specifically estimate the public consumption of tropical wood. An enquiry among suppliers, public purchasers and advisors indicates that the largest consumption is for harbour purposes and after that for flooring. It is expected that there is a larger public consumption of tropical

wood in plywood, e.g. in internal fittings in building.

2.3 The market for certified tropical wood

There are no statistics showing the quantity of certified wood on the market either on tropical wood or non tropical wood. Numbers exist however on the area of certified forests

indicating the potential supply.

Out of the total area of 1.800 million hectares of tropical forest approximately 8.4 million hectares of tropical forest was certified on April 1, 2003 equivalent of 0.5 % of the total area. Out of these 8.4 million hectares of certified forest 5.8 million hectares was certified in

natural forests and 2.5 million hectares in plantations. Compared with the total forest area under commercial exploitation (123 million hectares estimated by FAO) certified areas including plantations cover 7-8 %. In natural forests alone the certified areas cover about 5 %.

The distribution of certified forests on different countries is specified in table 4

(www.certifiedwood.org, www.fscoax.org, www.stichtingkeurhout.nl, www.lei.or.id and www.mtcc.com.my).

It must be noticed that the FSC certified wood from Brazil mainly is used for paper and the like.

The annual sustainable yield in natural tropical forests is normally in the range of 0.1 m³ and 1 m³/ha/yr depending on the type of forest. An estimated average of 0.3 m³/ha/yr could yield 1.7 million m³ certified wood from the 5.8

Table 5 Estimated logging potential distributed to regions

	Plantations mio. m ³	Natural forests mio. m ³
Asia	0,7	0,6
Africa	8,0	0,2
South & Central America	8,0	0,9
Total	16,7	1,7

million hectares of certified natural forests in the tropics. The annual sustainable yield in plantations is normally in the range of 5 to 15 m³/ha/yr. An estimated average of 7 m³/ha/yr would yield about 17 million m³/yr from certified plantations in the tropics. These 19 million m³ can be compared with the total production of 126 million m³ of tropical logs estimated by ITTO in 2001 /30/.

This is evidently a rough calculation not necessarily reflecting either the actual possibilities of harvesting or the real supply. Nor has the accessibility of the

wood from a logistic point of view been taken into account. It is of course crucial to the purchaser what is actually available on the market.

On the Danish market great supply of certified wood seemingly exist for some types of products. Several suppliers inform that they are able to supply more certified wood than demanded by the market. Garden furniture is one example illustrating this point. However the opposite is the case for other types of products, especially applications with specific

Table 6 Selected tropical tree species internationally supplied by certified retailers.

Trading name	Species	Number of Producers	Area
Balsa	Ochroma spp.	1	Solomon Islands
Rubberwood	Hevea braziliensis	3	Malaysia and Thailand
Jatoba	Hymenaea courbaril	11	Bolivia and Brazil
Keruing (Yang)	Dipterocarpus spp.	1	Malaysia
Laran	Anthocephalus spp.	2	India and Solomon Islands
Laran	Pentacme spp.	3	Malaysia and the Philippines
Mahogany	Swietenia spp.	19	Bolivia, Brazil, Belize, Guatamala, Honduras, Indonesia, Mexico, Solomon Islands
Merbau	Intsia bijuga	1	Malaysia
Meranti	Shorea spp.	3	Malaysia and the Philippines
Nyatoh	Paluquium spp.	1	Indonesia, UK, USA
Ramin	Gonystylus sp.	1	Indonesia
Seraya Red	Parashorea spp.	3	Malaysia and the Philippines
Seraya White	Parashorea spp.	2	Malaysia and the Philippines
Teak	Tectona grandis	19	Costa Rica, Ecuador, Panama, Solomon Islands, Thailand, UK, Zimbabwe

requirements to the composition of tree species.

In such cases there may be a great demand but only a very limited supply. Wood for harbour building may illustrate this point.

It is necessary to make inquiries in order to obtain more accurate information on specific possibilities of supply. Information on possibilities of supply of different species of FSC-certified wood is available from the website of FSC (www.fsc-info.org). For several tropical tree species commonly used in Denmark a summary of the number of suppliers is given in the subsequent table.

2.4 The role and the possibilities of the purchaser

The tropical forests contain far more species than the ones that traditionally have been used commercially. These species are the ones that empirically have proven suitable for particular purposes, and in turn have proven easiest to market because they have become well-known. In many cases however the actual demand may be satisfied just as well, or maybe even better, by similar tree species with the same properties.

Concentrating demand on relatively few tree species brings extra pressure on the tropical forests and certain endangered species. With a more diversified demand forests may be utilized more flexible, better adjusting management to the local conditions. Parts of the certified wood offered on the market originate from tree species not traditionally widespread

commercially, and therefore not very well-known on the Danish market.

Purchasers are thus able to contribute to spare the forests when making demands on a certain delivery. Demands can be made on particular technical properties and appearance, instead of demanding just one or a few particular species.

Relatively little may be known about the technical properties for a number of alternative species, whereas the supplier may possess a founder knowledge. Specific demands on strength and appearance may be verified quite easily as well.

In other situations the lack of knowledge about the technical properties of alternative tree species may be a critical and decisive factor. This may pose a problem when considering for instance harbour building or alternative applications where strict demands are made on strength and durability in a harsh outdoor environment. Long lasting qualities may not be revealed immediately and due consideration must be made when transferring experience from one place to another. More information on harbour construction follows in the subsequent section.

2.5 Wood for harbour construction

Wood used in harbour constructions is exposed to serious stress - climatic, biological and mechanical – making strict demands on wood with particular properties necessary. A few tree species, all tropical, have proven very suitable for this purpose.

The City of Copenhagen and Port of Copenhagen Ltd. have prepared a comprehensive report on the application of environmental certified tropical wood for constructions in marine environments /22/. The report states that the tree species Azobé, Greenhart and Basralocus often are preferred in saltwater, because they are naturally resistant to rot, fungi and – in particular – shipworm and gribble (*Limnoria* sp.). At the same time these tree species are difficult to procure with an environmental certificate. The durability of Azobé and different alternatives carrying a FSC-certificate are assessed. In addition a great deal of useful information is given on other technicalities and on the possibilities of supply from different suppliers. Many of the alternative species are available only in limited quantities and dimensions, and often with a long delivery time.

Among the assessed species holding the FSC-certificate four species are stated to be very resistant to rot, fungi and resistant to marine pests (e.g. shipworm). These species are: Piquia, Angelim Vermelho, Mata Mata and Camaru. In comparison Azobé is stated to be resistant to rot and fungi and resistant to moderately resistant to marine pests. Thus the durability of the above mentioned species was estimated to be equal to or larger than the durability of Azobé, in as much as some qualities of Azobé are prone to attack by shipworm. However several of the tree species in question have inferior strength.

In purchasing wood for harbour constructions it may be a good idea to make exact specifications on durability and strength for different applications (shipworm and gribble for instance are only damaging wood under water) as well as to secure thorough documentation that the offered deliveries comply with the demands made.

As far as shipworms are concerned they only cause problems in water with salinity between 0.9 % and 3.5 %. Thus documented resistance to shipworm in water with a salinity lower than this is not applicable as evidence of durability in water with a higher salinity such as it is often found in Danish harbour environments.

As far as appearance is concerning it has to be noted that different tree species have different patina. In time differences in appearance may arise from different tree species even if these differences may seem insignificant in the fresh timber.

Additional information on tropical wood is available on www.trae.dk, www.top.dk and www.teknologisk.dk.

3 Legal wood

The demand for imported wood to be legal implies two matters: In the first place the wood must be harvested, processed and transported as well as sold and bought in conformity with the national legislation in the producer country. Secondly the wood must be traded in accordance with international trading rules which means that an export permit has to be issued. Some endangered species require additional

special permissions issued by the CITES authorities.

3.1 Legally produced wood

Several countries experience large problems with regard to illegal felling of timber /23/. This concerns especially the tropics where many countries today do not have sufficient capacity to control and enforce the law. In some countries it is estimated that the illegal production is equal to or even exceed the legal production.

The wood may be illegal in several manners. Rules and legislation may for instance be broken by:

- Felling trees outside the permitted forest area/area of concession.
- Harvest exceeding the allowed quantity or dimensions.
- Harvesting species illegal to felling or to trading.
- Erroneous declaration of the shipment.
- Issuing permissions through bribe and corruption.
- The neglect of the rights of forest workers concerning wages and working conditions.
- Not respecting the traditional rights of the local population.
- Not paying the relevant taxes, rates and dues.

In many places the illegal felling of timber is coupled with corruption and organised crime, even within the authorities, complicating the evaluation of legality. An official declaration is not always a sufficient guarantee of legality.

Legal production of wood is not to be confused with sustainable production. Legal harvesting is not necessarily sustainable. On the long way towards sustainability the demand for legality however is a fundamental prerequisite. It is impossible to ensure that for instance the management of the forest is showing due consideration to the rights of indigenous people or for protected areas of land, for fauna and flora and other nature values.

The requirement of legal wood production may sound simple but it is not. The forest legislation differs from country to country and it can be difficult to make an exact delimitation of which sets of regulations that are relevant to employ. In some places the sets of regulations from centralized and decentralized authorities are even conflicting.

A number of national and international initiatives have been taken in recent years in strengthening the enforcement of forest acts and government in countries with weak administrative capacity and widespread corruption. These initiatives are further aiming at encouraging the possibilities of traceability and labelling so that traders are better protected against illegal produced wood.

Denmark have invited the three nations, from which the largest quantities of tropical wood are imported to Denmark (Indonesia, Malaysia and Brazil) to a bilateral co-operation in combating illegal production of timber in the countries in question. A possible consequence of such agreements could be

a Danish ban on the import of timber not documented to be produced in compliance with the national legislation in the countries concerned.

In May 2003 the European Commission issued a motion for an action plan within the EU with the specific aim of combating the illegal felling of forests and the trade related to it. The motion is among other things suggesting the entering of bilateral agreements with interested countries about establishing a system of permission ensuring that only wood documented to be legally produced is able to be exported to the internal market of the EU. Also forming part of the motion is the additional suggestions on assistance to the build up of forest management capacity and legal administration as well as establishing systems of traceability and labelling that can document the legality of the production, in subsequent links of trade as well. Other issues in the motion are focused on public purchases, the private sector, banks and financial institutes. As regards to public purchases the European Commission has announced that it will, in the handbook for environmental public purchases, illustrate how to take the legality of timber production into consideration in preparing contracts on procurement. The motion prepared by the European Commission is a preliminary step and several key issues need to be submitted to further reading and endorsement in the Council and the European Parliament in order to be implemented.

That is for instance the case for bilateral agreements concerning establishing a system for regulation of import /23/.

None of the above mentioned initiatives have yet resulted in specific agreements defining the relevant sets of regulations and the documentation and control required to lay the foundations of a possible regulation of imports.

For the present Danish purchasers are thus obliged to determine their own criteria of legal production just as the purchaser is obliged to evaluate whether the provided documentation sufficiently fulfils the criteria in question.

A possible delimitation, which resembles a corresponding delimitation considered for public timber procurement policies in the United Kingdom, might look as follows:

- The producer have had the necessary rights and permissions to carry out logging of the given tree species, grades and dimensions within the given timeframe and region.
- The producer has fulfilled all relevant national legislation regarding forest management and the effects of forest management on people and the environment in the country in question.
- Any due taxes and duties have been paid.
- All statutory declarations and permits from the authorities have been obtained, including CITES permits if the

tree species is covered by CITES.

3.2 Endangered species (CITES) and the redlist of IUCN

Certain endangered tree species are illegal to import and to trade, unless special permissions are issued by relevant authorities. Such species are embraced by the Convention on International Trade in Endangered Species of Wild Flora and Fauna, also known as The Washington Convention or CITES. Trade against the regulations may result in confiscation and fine. CITES has existed since 1975 and was put into force in Denmark in 1977. On April 1 2003 the convention was adopted by 161 countries throughout the world.

Tree species covered by CITES need to be supported by a CITES export permit in order to be exported. Depending on the legislation of the importing country and according to the CITES status of the tree species in question an import permit may be required in order to carry through a legal import.

The species covered by CITES are listed in three Appendices (Appendix I, II and III) with separate legal effect. In addition there exist an EU-regulation defining specific rules on trade in CITES species - plus a number of species not covered by CITES - within the EU.

CITES Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.

CITES Appendix II includes species that may be traded if the export is in accordance with CITES' perception of sustainable export, which means that trade is not incompatible with the survival of the species. If trade is incompatible with the survival of the species an export permit cannot be issued. EU requires a CITES import permit in advance of importing species covered by the Appendix II.

CITES Appendix III contains species that are protected locally. Proper documentation ensuring that the specimen is acquired in compliance with the legislation of the country in question is required for species covered by Appendix III in advance of issuing an export permit. EU requires an import permit in advance of importing species covered by the Appendix III.

An overview of the CITES Appendices is available at www.sns.dk/cites or by addressing the Danish Forest and Nature Agency, CITES division. All tree species covered by the three CITES Appendices are listed in appendix 2.

The EU have listed the species in 4 Appendices comprising the species of the Convention and a number of non-CITES species. The members of the EU have in collaboration made the regulations on these species more rigorous. This means that Denmark is following rules more stringent than the ones that are within the CITES programme.

Appendix A primarily covers species listed in

Appendix I. Trade is subjected to the conditions applying to CITES Appendix I. In addition there are restrictions regarding trade within the borderlines of the EU.

Appendix B primarily covers species listed in Appendix II. Trade is allowed according to guidelines made more rigorous than the rules applying to the species of Appendix II.

Appendix C covers species listed in Appendix III. Trade is allowed in compliance with the guidelines of Appendix III with an additional import notification when importing into the EU.

Appendix D covers the species listed in Appendix III, for which the member states have presented a reservation and non-CITES species, for which monitoring of the imported quantity is required. When importing into the EU an import notification is required. At present no timber species is listed in Appendix D.

Internal trade within the EU in specimens covered by Appendix A requires a so-called CITES certificate in order to guarantee the legality of the trade. This certificate must accompany the specimen and must be exchanged in the case of substantial changes compared to the description on the certificate.

Internal trade in species covered by Appendices B, C and D is allowed without any certificate. However any specimen covered by Appendix B must carry the appropriate documentation of legal acquisition on demand by the relevant authorities (in Denmark: the Danish

Forest and Nature Agency). Concerning tropical timber this means that appropriate documentation need to be provided in order to guarantee that the import of timber is in compliance with the existing rules.

At present (April 2003) a more rigorous control has been made in the EU of *Swietenia macrophylla* from Brazil. This procedure has been introduced after the validity of export permits issued in Brazil was questioned.

In trading in tropical tree species covered by CITES it must be ensured that export and import as well as internal trade within the EU is in compliance with the existing rules of CITES.

Apart from CITES species another list of species need to be taken into consideration. A number of tree species can be listed as endangered species according to the so-called redlist of The World Conservation Union (IUCN). Species covered by the redlist require special watchfulness. Further information on the categories and species of the redlist of IUCN is available at www.redlist.org.

4 Sustainable forest management

4.1 Definition and background

There are no unambiguous and globally accepted standards for the concept of "sustainable forest management". The perception of sustainability is determined by social as well as cultural sets of value. They may vary from nation to nation as well as with time. There is however

Definitions of sustainable forest management

UNCED – forest principles (/13/,§2b):

Forest resources and forest lands should be sustainable managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. These needs are for forest products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, carbon sinks and reservoirs, and for other forest products. Appropriate measures should be taken to protect forests against harmful effects of pollution, including air-borne pollution, fires, pests and diseases, in order to maintain their full multiple value.

International Timber Trade Organization – ITTO Policy Development Series 7 (/26/):

Sustainable forest management is the process of managing forest to achieve one or more clearly specified objectives of management with regard to the production of a continuous flow of desired forest products and services without undue reduction of its inherent values and future productivity and without undue undesirable effects on the physical and social environment.

globally agreement on the overall principles and criteria and a broad definition was adopted during the United Nations Conference on Environment and Development (UNCED) that was held in Rio de Janeiro in 1992. The International Tropical Timber Organisation (ITTO) introduced a similar definition.

A number of additional principles on sustainable forest management are accentuated in the forest principles of UNCED, among these the sovereign right of each country to utilize, manage and develop its own forests (see for instance www.un.org/esa/susdev/iff-iffpd.html).

4.2 Development of criteria for sustainable forest management

After the UNCED Summit in Rio in 1992 elaboration on the development of criteria and indicators for sustainable forest management have taken place in different regional fora within the framework of the UN. The subject has been treated in a number of other fora e.g. the International Timber Trade Organization (ITTO) and the Centre for International

Forestry Research (CIFOR). Finally a number of private initiatives have dealt with criteria and indicators particularly concerning the development of certification schemes. The principles and criteria for sustainable forest management of FSC is an example of such initiatives.

The criteria of ITTO introduced in 1992 (revised in 1998) were formulated in an intergovernmental process involving the 55 largest tropical timber producing and importing countries. The criteria of ITTO outline the framework of sustainable forest management in the producing countries and are aiming at forming the basis of specific national standards.

The criteria of CIFOR were introduced in 1999. CIFOR is intended to form the basis of and support the development of national and local standards for sustainable forest management. CIFOR have generated criteria and indicators specifically aiming at developing certification schemes in Africa, cf. chapter 6.

The FSC principles and criteria for responsible forest management are developed in a non-governmental global forum

of economic, social and environmental organisations.

Comparisons show that the above mentioned fora are more or less agreeing upon 7 overall criteria for sustainable forest management /24/, /27/.

These criteria are:

- Legislative and institutional framework
- The size of the forest resource
- The condition of health and vitality of the forests
- The production function of the forests
- The protection function of forests
- Biodiversity
- Socio-economic, cultural and spiritual commodities.

It is important to notice that in spite of the fact that more or less agreement has been reached upon the overall criteria, differences may - and do - exist in the perception of which standards that must apply to sustainable forest management and which process the standard originates from. The development of standards has not gone very far on the intergovernmental level, whereas the certification schemes have gone a few steps further.

Standards may be a matter of whether it is acceptable to perform clearcutting in natural forests replacing it with plantations – and under these circumstances a matter of determining the size of the clearcutting area. More specific details in the standards of the certification schemes are often laid down at a national or regional level. In that way standards are adjusted to the specific conditions and sets of value that exist in the nations and regions in question. At the same time it means that the standards underlying a particular certification scheme in reality may be different – in spite of the fact that all wood from the certification scheme concerned is labelled with the same certificate in the end. The FSC has listed 10 overall principles and criteria to be respected in elaborating all national and regional FSC standards. They provide the framework of more detailed standards, that are laid down nationally.

4.3 Application of criteria for sustainable forest management

The content of the above-mentioned 7 criteria is elaborated in the following. At the same time it is described how the criteria are applied to more specific standards for sustainability. A parliamentary resolution in Denmark is aiming at the recognition of the FSC as an example of guarantee that timber carrying this certificate is legally and sustainably produced. In the explanatory notes of the resolution it is at the same time noted that if other global certification

schemes are generated with similar high standards for economical, environmental and social sustainability and are based upon independent third party certification and subsequent control, then timber products carrying these certificates may be considered sustainably produced as well.

In order to compare different standards the examination below takes the principles of sustainability of the FSC as the starting point. Examples are rendered on how the 7 generally acknowledged criteria may be implemented at the ownership level. FSC's principles and criteria for forest management are available in full at www.fscoax.org.

4.3.1 Legislative and institutional framework

Primarily this criterion makes demands on the national institutions and authorities in the producing country to ensure conditions in order to promote sustainable forest management on the individual forest property.

Nations with a strong and distinct forest legislation, capacity and will to ensure an effective control and enforcement of the regulations as well as a tradition to perform decision making processes in a democratic and consultative way are better qualified to ensure legal and sustainable forest management than other

nations.

At the ownership level the criterion may be used in making demands that:

- Forest management must be in compliance with international, national and local legislation
 - Documentation need to be provided in order to ensure that management is carried out according to long-term agreements on property rights or use rights to perform forest management
 - All liable taxes and dues are paid
- Forest areas within the boundaries of the forest property are protected against illegal logging and other illegal activities.

4.3.2 The extent of the forest resource

The criterion may be used in assessing whether different forest areas and forest types are protected from decline and whether there are any incentives to increase such areas if it is found necessary to do so. It can be assessed whether for instance areas of natural forests are sufficiently protected against larger or smaller clearcuttings/clearings.

At the ownership level the criterion may be used in making demands that:

- Requirements described in section 4.3.1 are obeyed
 - Management is performed on the basis of a management plan specifying annual harvest and ensuring regeneration of harvested areas
 - Harvest and growth rates are monitored to provide the basis for the dynamic adjustment of harvest
 - Natural forest areas as a principal rule are not converted into plantations or other land uses
- Forest management ensures the employment etc. for the population in and around the forest.

4.3.3 The health and vitality of the forests

The health and the vitality of a forest is defined as the forest's ability to resist factors of stress, e.g. storms, fires, attacks by insects, air pollution etc. That includes thus the forest's ability of regeneration.

The vitality of the forest is influenced by a number of conditions in the surroundings of the forest and the forest management itself. Important external factors are climate changes and air pollution induced by global and/or national activities.

The forest management can affect the health and the vitality of forests by the selection of tree species and the selection of silvicultural system. Stands consisting of a diversity of species and age classes are typically more stable than stands consisting of one tree species of the same age. Native and locally adapted tree

species are often more stable than exotic species.

At the ownership level the criterion may be implemented in making demands that:

- Natural forest areas are maintained and managed according to nature-based silviculture
- nature-based silviculture must ensure that the natural structure of the forest including different tree species of different ages is maintained
- Genetic and structural diversity is established in plantation management
- The use of exotic tree species is limited to a minimum.

4.3.4 The production function of the forests

The production function of the forests is the short and long term ability to produce wood and other forest products. Protection of the production function is primarily conditioned by maintaining or improving the basis for cultivation and the management of forests is performed in a way where the rate of harvest of forest products does not exceed the current growth.

The basis for cultivation is among other things dependent on the water balance and the overall pool of nutrients in the ecosystem i.e. in biomass, in decaying wood, foliage and in the soil. Water as well as nutrients need be in supply. Clearcutting larger areas may deteriorate the basis for cultivation, as a consequence of the possible leaching of nutrients and erosion. Tropical forests in particular are vulnerable to leaching following clearcuttings because the majority of their natural

pool of nutrients is tied up in the biomass, and because the soil in tropical forests normally hold a very low capacity to tie the nutrients. If biomass is cleared a great deal of nutrient will literally wash away. In many instances intensive exploitation of biomass may cause deterioration of the basis for cultivation.

At the ownership level the criterion may be used in making demands on:

- Cautious forest management, avoiding erosion
- Nature-based silviculture without larger clearcuttings and as far as possible the maintenance of a permanent forest cover
- Harvest adapted to the forest's production capacity ensuring the sustainability of the

4.3.5 The protection function of forests

Forests are contributing substantially to the environmental protection locally as well as globally. In the mountains forests are protecting against e.g. avalanches, erosion and land slides. In the catchment areas of rivers forests serve as buffers for water supply, delaying and limiting the impacts of heavy rain. In addition forests are protecting drinking water and air quality. As regards global environmental conditions, forests ability to store CO₂ is of special significance.

A number of these regional and global environmental protective functions are safeguarded by conservation of the forest resource (criterion 2) and by ensuring the conditions of health and vitality of the forests (criterion 3). The local and

regional environmental impact is however influenced significantly by the silvicultural system applied in the individual forest.

At the ownership level the criterion may be implemented in making demands that:

- The environmental impact of forest management must be assessed (at landscape level by large scale operations) prior to commencement of forestry operations
- The assessments of the environmental impact are used to adjust management plans and silvicultural techniques as to avoid or minimise negative impacts on the environment
- The forest management may not deteriorate the quality of water in rivers and lakes
- Forest management need to be adjusted to the ecological conditions, not being based upon the systematic application of pesticides
- The use of chemicals is minimised and is in compliance with national and international legislation.

4.3.6 Biodiversity

Forests are important habitats for wild fauna and flora all across the world and the diversity of the tropical forests is unique. The tropical forests contain an enormous diversity of species, genetic resources and habitats. Conservation and enhancement of this so-called biological diversity is an essential element of sustainable forest management. Conversion of natural forest to plantation leads to serious deterioration of the biological diversity, but

plantations can and must be managed in due consideration of the biological diversity.

An important tool in protecting the biological diversity of the forests is mapping of the composition of the biological functions and values of the forest. The involvement of the knowledge of local people is crucial in this respect.

At the ownership level the criterion may be implemented in making demands that:

- The environmental impact of forest management must be assessed both prior to commencement of forestry operations as well as on a permanent basis during operation. Registration of high conservation value forest areas must be carried out and specific measures need to be taken in the planning and management of these areas
- Specific measures towards rare or endangered species need to be included in the management plan, e.g. laying out appropriate areas for protection
- Parts of representative forest types must be set aside to untouched forest and marked appropriately on forest maps
- The biological diversity

4.3.7 Socio-economic, cultural and spiritual commodities

Sustainable forest management requires that due consideration is taken to the local population, indigenous peoples, employees and other people affected by the forest management. Many local and indigenous people are completely dependent on their surrounding forests. It is essential to the

conservation of the forests that these people also benefit from the values of the forests. Otherwise there is the risk that over time the forests will be converted to other uses. That could for instance be agriculture, which is the only possible vocation for many poor communities if the forests do not offer sufficient possibilities. In addition forests have essential cultural and religious significance to many local and indigenous people.

Thus a positive interaction with the local and indigenous peoples is of vital importance in order to both fight poverty and to preserve the forests.

At the ownership level the criterion may be used in making demands on:

- Local and indigenous peoples are participating in relevant decision making processes and that their use and property rights are respected
- Indigenous peoples' traditional right to collect products from the forest need to be respected and the forest is managed without destroying resources normally used by local communities
- Appropriate mechanisms for resolving disputes over property rights and use rights are laid down
- Local communities benefit from the forest management, e.g. by employees in the forests and in sawmills are recruited from the local communities
- Employees must be able to organise freely and negotiate wages in accordance with the conventions of the International Labour Organisation.

5 Documentation of legality, sustainability and origin

Two preconditions need to be fulfilled in order to assess whether a consignment of wood is produced legally and sustainably: it needs to be in control how the wood originally is produced. It also needs to be in control whether wood legally and sustainably produced is kept separated from other wood, from the origin in the forest to the end use, i.e. through every link in the chain of processing and trade.

To obtain appropriate documentation ensuring these aspects is not always straightforward – in spite of the fact that the wood might be both legally and sustainably produced.

The best sort of documentation is a “stamp of recognition” made by an independent third party which

has been accredited to control and to accept that a delivery of wood meet certain specifications. The “stamp of recognition” may originate from an acknowledged certification body implying that the wood is allowed to carry the logo of the respective certification scheme, e.g. FSC.

However less than 0.5 % of the world’s tropical forest area is currently certified and the majority of the timber on the market originates from non-certified forests. This timber may be both legally and sustainably produced but the purchaser might have difficulties ensuring that this is the case.

Impartial third-party control of planned

deliveries of wood originating from non-certified forests as well, may be arranged through independent control bodies. However that may be expensive and may take a long time or it may not even be possible because of lack of local administrative capacity, or because the necessary systems of control are not yet fully developed.

Thus in some instances purchasers desiring tropical wood either have to rely on alternative documentation or have to select an alternative material.

In the following sections it is examined how one could relate to different kinds of documentation of legality, sustainability and origin.

5.1 Documentation of legality and sustainability

Chapter 3 sets out the elements that need to be taken into consideration when assessing whether a wood product is legally produced and traded.

Declarations of the legal trade of a consignment of wood need to be substantiated by information confirming these aspects including the section on CITES.

Chapter 4 sets out 7 overall criteria that need to be examined in assessing whether forest management is considered sustainable. At the same time it is described how the criteria are applied to more specific standards for sustainability, taking the standards of the FSC as the starting point.

Declarations of a consignment of wood originating from a sustainable managed forest need to be substantiated by

information on the management, covering all 7 criteria. It ought to be set out which standards management needs to follow. If the standard is claimed to be levelling the standard of the FSC in essence it must be able to match the requirements given in the boxes of the individual criteria in chapter 4. Full conformity with the standards of the FSC requires that all of FSC’s 10 principles and criteria are respected and that the more detailed local standards was formulated in a consultative process with the participation of relevant interests covering environmental, economic as well as social interests.

The easiest and most reliable form of documentation that the purchaser can relate to is a “stamp of recognition” or a certificate, preferably issued by an impartial third party, which has been accredited to carry out the certification. If it is impossible to obtain such a certificate the purchaser is obliged to relate to supplier’s declarations possibly supplemented with different declarations from authorities, sub-contractor, producers and other actors.

5.1.1 “Stamp of recognition”/certificate from impartial third party

For tropical forests three certification schemes are currently established, ensuring that wood carrying these labels is sustainably produced, according to specific standards that differ from scheme to scheme. The certification schemes are: FSC, MTCC and LEI. In addition a system of approval, the Dutch Keurhout, is established,

which on the basis of a number of overall criteria recognizes certificates and declarations of forest management being in accordance with the minimum standards of sustainable forest management set out by Keurhout. These schemes are described in the following chapter 6 along with the mention of other certification schemes that are not yet established in the tropics, including the PEFC.

Being widely distributed in Europe the eco-labels The Nordic Swan Eco-label and the EU flower are not yet known to include any products based on tropical wood. However criteria have been developed for certain wooden products that may be used with tropical wood /9/, /10/, /11/, /12/. These labels may require that certain minimum shares of wood in the wooden product are sustainable produces – according to some overall criteria. These minimum shares may vary from product to product. Moreover the eco-labels require that a number of other environmental minimum standards are met. Currently these labels are not guaranteeing legal and sustainable forest management in the tropics.

Impartial third party control of legal and sustainable forest management can be provided in other ways than through the specific forest certification schemes. This procedure requires that a set of standards of the forest management is laid down and that a firm is employed to control and to approve whether the standards are met.

In order for a third party certification or control to come up to international guidelines, the certification body needs to be accredited to carry out this function. This means that an impartial and acknowledged agency must ensure that procedures of control etc. are in agreement with international guidelines, e.g. ISO Guide 65. As regards to third party verification it is important to enclose the standards that have been used as a reference as well as information on who accredited the body of certification. Société Générale de Surveillance (SGS), Rainforest Alliance/Smartwood, Det Norske Veritas (DNV), Scientific Certification System (SCS) and Soil Association are organisations accredited carrying out independent inspections in order to verify legal and/or sustainable forest management. Additional examples of accredited organisations are available at <http://www.forestworld.com>

The demand for legal production is the standard element in the forest certification schemes of FSC and MTCC as well as in the Keurhout system of approval. These schemes make different delimitation as to which elements they include, cf. chapter 6. The demand for legality of the LEI scheme does not appear directly from their criteria, but forms part of their indicators.

No established certification scheme is yet certifying forests with the purpose of control and approval only of legal production without a similar

demand on sustainability, however several schemes are under preparation. This is happening in recognition of the fact that forestry in many places is having difficulties meeting the demands on sustainable forest management in short term, whereas it may comply with the sole demand of legal production.

For the present impartial third party statements on legal production are only obtained through specific orders from assignment to assignment which is possible of course, but may be both costly and time consuming.

5.1.2 Declarations from suppliers and authorities

With a personal declaration a supplier can guarantee that certain conditions are met in the production, processing, trading etc. of a wooden product. For instance it may be declared that the wood is legally and sustainably produced according to certain principles and standards and that the wood originates from a specific forest area in a given nation.

If the timber producer embraces an Environmental Management System the standards on sustainable forest management must be included in the stipulated objectives and action plans. Appropriate documentation of such standards can be demanded. In addition it may be relevant to ask for appropriate documentation ensuring that the standards are obeyed, e.g. management plans (if such are required by the standards), harvest data etc.

Export permits are issued by different authorities in different countries and on different premises. Thus an export permit is not necessarily a “stamp of recognition” that the production is being in compliance with all relevant legislation. However several countries are currently making comprehensive demands on documentation as regards to the origin of the timber.

The export permits may be supplemented by declarations from authorities stating that agreements on concessions as well as existing legislation is respected, that liable taxes and dues are paid, that forest management is sustainable etc.

The ISO 14001 system guarantees that existing legislation in the country of the supplier is adhered to. However the system does not hold any guarantee that the traded wood is legally produced in the country of production. Registered environmental management systems, that are systems verified by external parties e.g. Danish Standards Association, Det Norske Veritas (DNV) and SGS, are more credible than mere internal documentation.

In conclusion declarations from suppliers, guaranteeing legal and sustainable forest management may be substantiated by:

- Other certification schemes or systems of approval than the FSC or the MTCC, for instance LEI or Keurhout
- Export permits, certificates of origin, other authorities'

declarations as well as declarations from suppliers and lower tier suppliers

- Concession agreements
- Documented environmental management systems according to the ISO 14001, EMAS II or other environmental management documented in writing
- Specification of employed standards and guidelines of forest management, including information on whether they have been developed in consultative processes with the participation of economic, social and environmental interests
- Specification of the overall principles and criteria for the forest management, including information on who developed them
- Specification of the procedure of control of the observance of the standard and who is managing the control
- Documentation on legally produced tropical wood according to the bilateral agreement between Denmark or the EU and the supplier country (such agreements were not yet developed on June 1th 2003).

The credibility of the documentation represented by declarations from authorities is particularly dependent on the systems of control and the administrative capacity at hand in the individual nation – as well as the extent of corruption.

It may be difficult to assess the relevance and credibility of the different types of documentation presented, but in public purchases covered by the EU-directives on public procurement the purchaser is not entitled to refuse an offer, referring to the lack of a particular form of documentation in the shape of certificates or the like. However it may be demanded that the documentation provided by the supplier be submitted to a scrutiny by an impartial third party.

Tree species covered by CITES must be followed by special export and import documents issued only by specifically approved authorities, cf. section 3.2.

5.2 Documentation on origin – Chain of Custody

Normally no physical characteristics of wood enable it to be traced back to its original place of growth. Certainly the specific tree species and type often indicates the approximate origin of the wood, but it is usually not sufficiently precise to determine if the wood originates from a forest which is legally and sustainably managed.

Perhaps DNA-analyses might afford new possibilities in the future, but no such system, which can work in practice, has yet been developed.

Thus tracing the origin of the wood back to an area or a group of areas that are managed legally and sustainably is only possible if the wood is produced, processed and traded in a chain ensuring that the wood in question is kept separated from other wood. Often wood is not produced

or traded in this way. Sawmills often mix wood from different places at the timber yard) and when sawn it is no longer possible to trace the wood back to distinct areas of origin. Similarly middlemen are often mixing wood from different suppliers and selling it in mixed shipments, unable to trace the individual piece of wood back to one or more distinct areas of origin.

It is increasingly more difficult to document the traceability the more phases of processing the wood is going through. Thus the control of traceability, other things being equal, is easier to carry through for primary products and semi-finished products than for finished products.

For a purchaser of wood the easiest and most credible documentation to relate to is a so-called Chain of Custody certificate, cf. the sections below. If such a certificate is not available the purchaser is obliged to relate to declarations from authorities and suppliers, possibly substantiated by various written declarations from producers and lower tier suppliers.

5.2.1 “Stamp of recognition”/ certificate from an impartial third party – Chain of Custody

A certificate on origin is internationally termed Chain of Custody or merely CoC.

A certificate on traceability must ensure that all wood in a given product is legally and sustainably produced and requires that certified and non-certified products have been kept separated through every link of

processing and trade. In addition verification and labelling procedures are required to ensure documentation on the flow of wood internally within the company and between different companies.

Other systems of traceability, based on the so-called input-output system, exist. This approach is based on periodic inventory control of the share of certified raw material entering a given company. The system then allows the company to register the same percentage of the production as certified, or alternatively to label the products with a minimum threshold value according to the amount of certified wood in the product, e.g. in particle boards. Thus the input-output system does not ensure that products carrying the CoC certificate are in fact originating from legally and sustainably managed forests.

CoC systems with individual standards are attached to all the established schemes of forest certification. These standards are basically following somewhat homogenous principles /27/ but in practice the different systems are working individually, such that the FSC is employing its procedure for traceability and CoC system, whereas other schemes are employing other approaches.

As Chain of Custody certification is both costly and time consuming, it may be expensive to traders who wish to stock different sorts of certified wood. Mutual recognition of different certification schemes has appeared but is yet the exception to the

rule. Perhaps this will change over time. Chain of Custody certification is – compared to certification of legal and sustainable forest management – mainly a technical exercise.

The Chain of Custody systems of the individual certification schemes are elaborated in section 6.2.

Apart from these schemes it is possible to employ an accredited body of certification, for instance SGS or SCS, to document traceability in accordance with standards, that are independent of the schemes mentioned above. This is employed by for instance Keurhout.

5.2.2 Declarations of suppliers and authorities

Declarations of suppliers on the origin of the product should as far as possible be followed by documentation of the contents of the declaration, including declarations from producers, sub contractors, as well as information on which procedures of control that are employed by the supplier to ensure traceability.

As regards products composed of different wooden components, it should be stated which components that are covered by the declaration.

Declarations from authorities might possibly be used as well to substantiate declarations of suppliers. Some countries thus make demands on documentation on the origin of the wood prior to the issuance of export permits. An export permit may in this way indicate that track have been kept on the wood from the forest to the border.

However the credibility of the documentation, in the shape of supplier declarations etc., as is the case of the documentation on legal and sustainable forest management, is particularly dependent on the systems of control and the administrative capacity at hand in the individual nation – as well as the extent of corruption. Thus in this case too it could be relevant to a purchaser to demand an impartial third party evaluation of the presented documentation.

6 Certification schemes

Certification is a well-known tool to document the observance of various ISO guidelines and standards. However certification of forest management and wood products, which was initiated only some 10 years ago, is hardly as well-known. Certification of forests has increased rapidly during the last 10 years, except in the tropical forests. Forest certification has predominantly taken place in non tropical forests.

The standards of forest certification and the processes, by which these standards are determined, are subjects to discussions between different certification schemes and other interested parties /2/. There are numerous actors in the market. Some of these, including the PEFC, are striving towards mutual recognition of different certification schemes.

In this section the individual schemes are presented as systematic as possible in order to enable comparisons between them. Only schemes appearing relevant to tropical wood are covered,

consequently schemes only operating in North America are ignored. Similarly the EU flower and The Nordic Swan Eco-label are ignored. None of these schemes are currently employed to products composed of tropical wood.

6.1 Requirements to certification schemes

Some general, internationally widespread guidelines for the creation of certification schemes exist, e.g. ISO Guide 61, 62 and 65. These guidelines may be used as the starting point for the evaluation of forest certification schemes, and in this respect and particularly whether they are worked out in a way that ensures credibility. The ISO guidelines per se are not defining what can be considered legal and sustainable.

The ISO Guide 61 is covering guidelines for accreditation schemes. The ISO Guide 62 contains guidelines for companies certifying quality management systems and the ISO Guide 65 contains guidelines for companies carrying out product certification.

The international discussions and recommendations on forest political issues put forward by the International Panel of Forests (IPF under the aegis of UN) give directions to elements that should form part of certification schemes of sustainable forest management. In the parliamentary decision B197/2001 the Danish Parliament underscores FSC as an example of guaranteeing that timber is legally and sustainably produced.

The reference /1/ sets out which implications such demands and recommendations along with the parliamentary decision may have on the assessment of forest certification schemes. This reference forms the background of the following description and comparison of the schemes, that were in operation in tropical forests by April 1 2003. It must be stressed that such comparisons always contain some degree of subjectivity, as it will always be due to judgement which elements are most relevant to highlight in a given contexts. Several international comparisons of different forest certification schemes have been made, each with its own weighing of different elements /1/, /27/.

6.1.1 Contents, directions etc.

As a starting point, the following elements should be covered by a certification scheme for sustainable forest management.

1. Standards:

The standard must contain the requirements to be met and against which the assessment of the forest management is made. In order to carry out a credible certification it is essential that the standards are clearly formulated and adapted to the specific activities that need to be fulfilled by sustainable forest management. The certification standards for sustainable forest management should be developed in accordance with internationally recognized criteria for sustainable forest

management, cf. section 4.3. In addition it is recommended that the standards have been developed in a consultative process, open to participation by all affected parties, including indigenous and local peoples, Unions, forest owners and other relevant parties, and that the standards as far as possible are determined in unity in this group.

2. Certification:

The certification includes the examination and control of data or the management which is to be carried out in order to determine whether the standard is met.

3. Accreditation:

Accreditation is a control and an approval of the organisations that carry out certification. Thereby it is ensured that the certifying company is competent of carrying out certification. This is done by ensuring that the certifying company is independent and that procedures are systematic and meticulous in order to make correct decisions on certification. Accreditation should be performed by an authorized body.

When products are marketed and declared as certified, the certification scheme is supplemented by a control system covering:

4. Chain of Custody:

Chain of Custody covers the documentation of the wood flow from the origin in a certified forest through processing and trade and

5. Labelling:

i.e. regulations on exact and credible labelling of and information on the

product towards the consumer.

6.1.2 Standards for legal and sustainable forest management

As mentioned in section 4 there is internationally more or less agreement on the overall principles and criteria for sustainable forest management. On the regional and national level however the determination of specific standards has not reached that far. It is up to the individual certification schemes to determine these standards.

6.2 The individual certification schemes

Since the beginning of the 1990s the number of certification schemes has increased steadily and by April 2003 approximately 84 million hectares of forest were certified worldwide, which is approximately the double of the preceding year. About 8.4 million hectares or 10 % of the certified forest area is in countries with tropical forests /1/. A number of initiatives have been taken to develop national certification schemes, whereas only one certification scheme is constantly operating in a greater number of countries in the tropics: FSC. Table 7 is an overview of certification schemes, operating in the tropics by April 1. 2003. In addition the overview contains the Pan European Forest Certification (PEFC), not currently (April 2003) operating in the tropics, as well as the Dutch Keurhout, which is not an individual certification scheme, but a system assessing and approving other schemes.

In time other certification schemes for tropical wood may arise just as mutual recognition may occur between some of the schemes.

6.2.1 Global and regional certification schemes

Forest Stewardship Council – FSC

The Forest Stewardship Council (FSC) is an international and independent non-profit organisation, which was established in 1993 to promote sustainable forest management through certification of forest management and the subsequent links of processing and trade. FSC was established on the initiative of the private sector and the members represent forest owners, timber traders, environmental organisations, indigenous peoples, Unions and other groups and interests from around the world. The general assembly is held every third year with the election of the board of directors. The board is made up of an equal number of representatives from a) socially and b) environmental organisations (NGO's) and c) economically interested parties. Industrialized and developing countries are represented equally on the board of directors.

The scheme encompasses:

- Global principles and criteria for the management of natural forests and plantations
- Procedures for developing regional

and national criteria and indicators¹

- A system of accreditation, managed by FCS's Business and Accreditation Unit
- Appropriate procedures for certification, auditing, handling complaints etc.
- Procedures for Chain of Custody certification
- Procedures for labelling and usage of logo.

490 forests covering a total area of 34 million hectares are currently being FSC certified worldwide. 15 % of this area equivalent of 5.4 million hectares is situated in the tropics (March 2003).

Standards

The global principles and criteria of FSC have been elaborated in an open and consultative process with the participation of relevant interested parties and the general assembly as the decision-making body. They provide a binding framework for the elaboration of more specific national and regional standards. These standards in turn are assumed to be based on social, economical and environmental interests in equal balance. These processes are conducted in national working groups.

By April 1 2003 such working groups were established in 31 countries, 8 of which had developed

local or national standards, including the tropics in Bolivia, Peru and parts of Brazil. In areas where local/national standards have not been elaborated, but where certification is desirable, accredited certification bodies need to go through a consultative process, with the FSC's global and perhaps sketches for local standards as the starting point, in order to develop regional standards that at least comply with FSC approved Generic Guidelines of the certification body.

The standards of the FSC contain the criteria for sustainable forest management mentioned in section 4. The standards cover both performance and principles of the system. FSC's board of directors may approve regional and local guidelines by examining the process by which the guidelines are determined and by assessing whether they meet the overall principles and criteria of the FSC.

The standards of FSC include requirements on observance of national and local legislation and administrative regulations as well as international agreements signed by the respective producer countries.

Certification

FSC's procedures for certification, auditing, handling complaints etc. ensure that certification is carried out on the basis of internationally recognized procedures and requirements etc., cf. the ISO Guide 65.

Accreditation

FCS's Business and Accreditation Unit is carrying out the accreditation of companies, performing certification according to the principles of FSC. The circumstance that FSC is functioning both as the body of standardisation and the body of accreditation does not follow the ordinary procedures for certification schemes, in as much as these two functions are normally separated. The reasons for this structure of the FSC is the desire to ensure a sufficient professional competence within the accreditation bodies as well as the certification bodies in order to employ and interpret the standards uniformly all over the world. FSC is striving towards admission to the International Accreditation Forum (IAF) but has not yet been admitted. There are currently 13 FSC accredited certification companies. A full list is available at <http://www.fscoax.org>.

Chain of Custody and labelling

FSC's programme for Chain of Custody certification ensures a global third party control and Chain of Custody certification of all wood products originating from FSC-certified forest.

FSC's procedures for labelling and usage of logo prescribe that the FSC logo only is allowed on solid wood products containing minimum 70 % (by volume) of wood from FSC-certified forests and on particle boards and fibre products containing at least 30 % (by weight) of the virgin fibres and at least 17.5 % (by weight) of the fibres in total. The minimum

¹ Regional and national criteria and indicators exist for a number of countries. They must be in compliance with the global criteria and indicators, which are invariable.

percentage must be stated on the label, if the product contains less than 100 % wood from FSC-certified forest. Regarding such products the remainder of the wood content must obligatorily originate from “non-controversial sources”. “Non-controversial sources” means among other things that the wood needs to be legally produced, but no Chain of Custody system, controlling this aspect has been established. Thus the FSC label is only guaranteeing that the control and verification of legal production has been carried out for products labelled to be made of 100 % FSC-certified wood. However FSC demands that the Chain of Custody companies must have systems, which ensure that only non-controversial sources are used in their assembled products.

A complete list of companies processing FSC-certified products is available at <http://www.fsc-info.org>. Company names are found on the basis of FSC’s certification codes. All FSC-certified products may carry the FSC logo on the product or on the packing. There are 38 FSC Chain of Custody- certified companies in Denmark (April 2002).

Pan African Certification (ATO/CIFOR)

At the request of The African Timber Organization (ATO) CIFOR initiated in 1994 the development of principles, criteria and indicators for sustainable management of natural forests in 12 African nations². The

² Angola, Cameroon, Central African Republic, Congo, The

development was carried out on the basis of testing of principles, criteria and indicators in 6 pilot projects in Cameroon, Congo, Gabon, Ghana, The Ivory Coast and Zaire.

In 1999 14 members of the European Foundation for the Preservation of African Forest Reserves decided to establish a certification scheme based on the standards of ATO/CIFOR. It has not yet been clarified whether the certification scheme is to be established as an individual scheme in the respective countries, as a regional scheme or with reference to PEFC, FSC, Keurhout or other schemes.

A preliminary standard in the shape of 3 principles, 15 criteria, 57 indicators and 139 verifiers for sustainable management of natural forest, that is adapted to the standards of ITTO, has been developed at national and forest owner level. A number of indicators and verifiers are currently subject to discussion.

By April 1 2003 no certifications of commercial forests had yet been performed according to this scheme.

Pan European Forest Certification – PEFC

Pan European Forest Certification – PEFC is a voluntary certification scheme launched in 1999 on the initiative of private-sector forest owners in a number of European countries. The aim of the PEFC was to establish an internationally credible

Ivory Coast, Equatorial Guinea, Gabon, Ghana, Liberia, Nigeria, Sao Tomé and Principe and Zaire.

framework for forest certification schemes and initiatives in European countries, in order to promote mutual recognition between the certification schemes. Thus PEFC is an umbrella organisation for national certification schemes, which meet specific procedures and standards.

The certification scheme comprises:

- European principles, criteria and indicators for sustainable management of natural forests and plantations
- Framework for the elaboration of regional and national criteria and indicators³
- Accreditation which is undertaken by national accreditation bodies
- Framework for certification schemes which can be recognized by PEFC
- Procedures for Chain of Custody certification
- Procedures for labelling and usage of logo.

By April 1 2003 certification according to the PEFC scheme has been carried out in 10 European countries. Of the total area of 46.7 million hectares approximately 45 % are Finnish forests. The PEFC has issued 527 Chain of Custody certificates. In Malaysia (MTCC), Brazil (CERFLOR) and Chile, steps have been taken in order to achieve mutual recognition with national certification schemes, which have been

³ The international criteria and indicators are non-binding for national schemes.

established or currently are under development.

Standards

PEFC's umbrella organisation, the PEFC, has determined an overall framework for the elaboration of national standards, in principle very similar to the scheme of FSC. However the overall criteria and indicators are non-binding for the national schemes. This leaves a greater scope for national variations in the determination of standards. The national standards must be endorsed centrally by the PEFC, which again is similar to the FSC programme. A minimum requirement for endorsement is that the standards require and perform control of the observance of national legislation.

Through endorsement by PEFC mutual recognition is achieved between national certification schemes, which are in appliance with the regional standards of the PEFC.

PEFC's overall framework for international standards is based on the Pan European guidelines for sustainable forest management and covers the 7 criteria for sustainable forest management listed in section 4.3. The framework is adapted to the development of criteria and indicators for sustainable forest management in Europe /13/.

National standards of certification must be determined by national fora on the initiative of the forest owners. It is mandatory to invite all stakeholders to participate and to evaluate their viewpoints in an open process. The national

bodies must set up requirements on decision making in the elaboration of standards and procedures for decisions. Thus the stakeholders' degree of influence in decision making is dependent on the elaboration of the individual national scheme.

Certification

PEFC's procedures for certification, auditing, handling complaints etc. ensure that certification is carried out on the basis of internationally recognized procedures and requirements etc.

Accreditation

The accreditation procedures of PEFC ensure that only bodies, which have been accredited by the respective national accreditation organisations, are entitled to certify in accordance with the standards of the PEFC. The procedure fully meets ISO's international guidelines for accreditation. In order to ensure that competent certification organisations are available under various specific circumstances it is possible to grant an exemption, so that other but the national certification companies may carry out certification.

Chain of Custody and labelling

PEFC's procedures for Chain of Custody certification and procedures for labelling and usage of logo ensure that the PEFC logo and the claim "From sustainable managed forests" only is used on wood originating from PEFC-certified forests, and wood has been kept separated from

other wood all along the line of processing and trade. Wood carrying the PEFC logo and the claim "Promoting Sustainable Forest Management" may be wood fulfilling PEFC's conditions for labelling in accordance with the input-output approach. For companies, which have an intake of raw material between 0 and 70 % of PEFC-certified wood, this implies that an equal percentage of the company output is allowed to be labelled with the PEFC logo. Companies with an intake of raw material exceeding 70 % of PEFC-certified wood are allowed to use the logo "PEFC-Promoting Sustainable Forest Management" on all their products. In contrast to FSC the PEFC has not made specific requirements on the remainder, for instance that the remainder should originate from "non-controversial sources". Thus the labelling "PEFC-Promoting Sustainable Forest Management" is not guaranteeing that wood carrying this logo is legally or sustainably produced. Up to 30 % of the wood sold by a given company under this logo may be of unknown origin.

If PEFC is expanded to comprise certification schemes for tropical forests, the Chain of Custody of PEFC may be employed to ensure the control of traceability for tropical wood as well. Guaranteeing legal and sustainable forest management requires the approach of separated lines of production mentioned above as well a usage of the label "PEFC-From Sustainable Managed Forests". In addition the forest

certification scheme needs to guarantee legality.

A list of companies manufacturing and dealing with PEFC-certified products along with the PEFC logo is available at http://www.pefc.cz/i_register. As of April 1 2003 no Danish companies were yet PEFC Chain of Custody certified.

By April 1 2003 PEFC did not yet operate in the tropics. However a number of national certification schemes have applied for the mutual recognition with the PEFC, including the MTCC in Malaysia.

6.2.2 National certification schemes

Apart from the certification schemes mentioned preliminary steps have been taken towards establishing national schemes for forest certification in e.g. Peru and Columbia. However these schemes have not been dealt with in the present document because of their interim character.

Malaysian Timber Certification Council – MTCC

Malaysian Timber Certification Council – MTCC is an independent non-profit organisation launched in 1999 (at that time named NTCC). MTCC was established on the initiative of and financially supported by the Malaysian authorities in co-operation with economical, social and environmental stakeholders. The organisation is aiming at developing and carrying out a voluntary national certification scheme for timber originating from natural forests. The Board of Trustees is made up of representatives from

different ministries, forest and timber industry, research institutions and NGO's⁴.

The certification scheme comprises:

- Principles, criteria and indicators for sustainable management of natural forests
- Procedures for certification of natural forests
- Procedures for Chain of Custody certification
- Procedures for labelling and usage of logo.

By April 1 2003 2.3 million hectares of forest have been certified in Malaysia spread over three certifications and 26 Chain of Custody certificates have been issued.

Standards

The standards of MTCC are developed from The Malaysia – The Netherlands co-operation programme in timber certification by inclusion of the criteria and standards of ITTO and Keurhout.

Standards from single states (Sarawak, Sabah and West Malaysia), which have been submitted for public hearings are included as well. From the beginning a number of environmental and social stakeholders participated in the process of developing national standards, but several of these decided to withdraw from the collaboration⁵. Among

other things the stakeholders criticised the process for not being able to comply with the international guidelines for transparency and participation of stakeholders and the standards for being imbalanced by economical considerations at the expense of social and environmental considerations. In particular these organisations have felt that the considerations of the use rights and property rights of the indigenous peoples were ignored too much.

MTCC employs system standards, which mainly focus on registrations and analyses and to a lesser extent on performance requirements. Thus the criteria are tools of assessing a development and they are less suitable of documenting the observance of clear minimum requirements.

The standards require absolute compliance of national legislation, whereas international legislation is not included in the standards.

MTCC is currently participating in a national consultative process in order to create standards of sustainable forest management that are compatible with the global standards of the FSC. Similarly MTCC has joined the PEFC in order to achieve mutual recognition.

Certification and accreditation

MTCC is in charge of the actual certification without being accredited. MTCC selects external and independent companies

⁴ A number of environmental groups have withdrawn their support of MTCC.

⁵ WWF Malaysia left the board of directors in January 2001. WWF has later signalled a positive

assessment of the development of the MTCC.

and persons to perform the control of the forests and companies comprised by the certification scheme, on the basis of the guidelines of MTCC. On the basis of the examinations made by these external parties, MTCC makes its own final decision on the issuance of a MTCC-certificate.

Chain of Custody and labelling

MTCC require from every processing company and dealer, which re-packs certified products, to hold a Chain of Custody certificate in order to deal with certified products (in comparison FSC require that all links in the chain must carry a Chain of Custody certificate irrespective of re-packing, with the sole exception of the retailer). MTCC operates two systems of control of traceability: 1) separate lines of production, ensuring complete segregation of certified and non-certified products and 2) a minimum demand for 30 % or 70 % of certified input, over a period of maximum 60 days, for fibre products and solid products respectively. No requirements are made on the origin of the non-certified wood in composite products. The Chain of Custody control of MTCC comprises companies in Malaysia but does not ensure control after the wood has left Malaysia. Thus in order to ensure an unbroken Chain of Custody control to e.g. Denmark, it is necessary to employ an additional third party verification of the Chain of Custody from Malaysia. In Malaysia 26 companies have a Chain of Custody certificate. A complete list of certificate holders is

available at <http://www.mtcc.com.my>. The labelling indicates whether all or only part of the wood in products carrying the MTCC logo is originating from MTCC-certified forests.

The Indonesian Ecolabelling Institute - LEI

The Indonesian Ecolabelling Institute – LEI is a non-profit organisation, which was founded in 1998 on the basis of several years of debate between authorities, NGO's and companies. LEI is aiming at the promotion of sustainable management of the forests of Indonesia by the establishment and implementation of a certification scheme for wood and other forest products.

LEI certification is performed by certification bodies, which have been accredited by LEI. The certification bodies' role is to evaluate whether the forests and companies, that are covered by the certification scheme, are managed in accordance to the certification standard and to make concrete decisions on certification.

Since 1998 LEI has been endorsed as an accreditation body by the national Indonesian organisation of Standardisation. Within the forestry sector LEI is responsible for environmental labelling of natural forests, plantations, community-based forestry, non-timber forest products as well as Chain of Custody certification.

The certification scheme comprises:

- Criteria and indicators for sustainable

management of plantations and natural forests

- Accreditation programme, attended by LEI
- Procedures for certification, auditing, handling complaints etc.
- Procedures for Chain of Custody certification
- Procedures for labelling and usage of logo.

By April 1 2003 LEI had, in co-operation with FSC, certified 3 forest areas covering approximately 100.000 hectares in Indonesia. In addition LEI is preparing the certification of 10 forest areas covering approximately 2 million hectares. In 2002 LEI performed the first Chain of Custody certification.

Standards

With the criteria of ITTO and FSC as the starting point, the certification standards of LEI have been developed on basis of a consultative process with the participation of a number of national stakeholders and organisations. The standards of LEI cover the majority of aspects included in internationally recognised criteria for sustainable forest management. In particular the standards of LEI are focusing on social conditions, including the development of local communities.

The standards of LEI are mainly performance standards, which have been formulated as criteria, but without distinct description of indicators and minimum requirements.

The demand for legality in the LEI-scheme does not appear directly from their criteria, but is part of the indicators.

Certification and accreditation

Certification is performed on the basis of internationally recognised procedures and requirements. Certification can only be performed by certification companies, which have been accredited by LEI. In that respect the scheme of LEI is similar to the scheme of FSC, in as much as it is operating as both standardisation body and accreditation body. Apart from this the programme for accreditation is following internationally recognised procedures and requirements. There are currently 4 LEI-accredited certification companies. A list is available at <http://www.lei.or.id>.

LEI has entered into a co-operation agreement with FSC, which, in the long run, may lead to mutual recognition between the two accreditation bodies.

Chain of Custody and labelling

The scheme of LEI only covers Chain of Custody certification of Indonesian companies. Thus further control of Chain of Custody is needed with foreign business links in order to globally document the origin of the products. The Chain of Custody control of LEI covers the wood within Indonesia, but does not ensure control after the timber has left Indonesia. No information has been available on the guidelines of LEI's Chain of Custody procedures. In order to

ensure an unbroken Chain of Custody control to Denmark, it is necessary to employ an additional third party verification of the Chain of Custody from Indonesia. In Indonesia 1 company is carrying a Chain of Custody certificate (see <http://www.lei.or.id>).

CERFLOR – Brazil

CERFLOR is a voluntary and independent certification scheme that was launched on the initiative of the association of private Brazilian forest owners (SBS) in the beginning of the 1990's. The scheme only came into operation in 2002, and has for the present only developed standards for the management of plantations. The scheme is aiming at elaborating standards for natural forests.

The scheme comprises:

- Principles, criteria and indicators for the sustainable management of plantations
- Accreditation, which is attended by the national accreditation body
- Procedures for auditing
- Procedures for establishing and control of Chain of Custody
- Procedures for labelling and usage of logo.

No plantations or forests were yet certified by CERFLOR as of April 1 2003. Information on the certification scheme has been difficult to retrieve. Consequently this certification scheme has not been included in the present evaluation of

tropical certification schemes.

Ghana

Since 1992 Ghana has had the intention to develop a national timber certification scheme. A national working group has been appointed, aiming at developing national certification schemes on the basis of the Forest Principles of UNCED, the criteria and indicators of ITTO as well as other relevant international standards. The working group consists of representatives from the government, the wood industry, the forestry sector, research institutions and NGO's.

A draft exists for principles, criteria and indicators for sustainable forest management as well as procedures for Chain of Custody of timber. However the certification scheme is not fully developed and consequently no forest has yet been certified according to this scheme.

6.2.3 Other systems of approval

Keurhout

Keurhout was established in 1996 by private trading and processing industries. The initiative was financially supported by and developed in close co-operation with the Dutch government.

The organisation is aiming at:

1. Controlling whether certificates, that are claiming to document sustainable forest management, are meeting the minimum requirements of the Dutch government determined in 1997,

- and if they do meet these requirements, to
2. Ensure appropriate documentation on the origin of the products from the forest to the end user
 3. Label approved wood, in order to ensure the consumers of sustainability.

Thus Keurhout is not a forest certification scheme, but it is primarily operating as a national Dutch controlling organisation for existing certification schemes. In a few instances however, Keurhout has approved forest concessions with self-made systems for sustainable production.

Standards

Minimum requirements for a procedure of approval have been worked out in 1997 on the basis of ITTO's criteria and indicators for sustainable forest management, the Forest Principles of the UNCED, the Helsinki Resolutions and the principles and criteria of FSC. The procedure of approval was revised in November 2002. An independent panel of experts conducts the control, which has been composed in accordance with Dutch certification legislation.

The system comprises 36 million hectares mainly PEFC-certified forests in Finland, Sweden and Canada. In tropical countries Keurhout formerly approved 4.2 million hectares. However the tropical area has been reduced to approximately 700.000 hectares, of which

615.000 hectares are forest in Gabon.

In the revised procedure of approval Keurhout require that certification schemes need to be worked out in a consultative process. Such requirements were not found in the original procedure from 1997. Keurhout employs standards created by the Dutch government for the evaluation of certified wood. These standards have been developed through participation of the industry and the environmental NGO's.

Keurhout evaluates certification schemes on the basis of the minimum requirements listed in table 8 (based on the procedure of November 2002). Among other things there are requirements for adequate tools for forest management and that forest management is embracing ecological, social and economical considerations.

In addition the procedure of approval requires credible documentation for the observance of national and international legislation.

Chain of Custody and labelling

The Chain of Custody control of Keurhout traces the wood to The Netherlands, but does not guarantee control of wood sold from The Netherlands to other countries. In order to ensure an unbroken Chain of Custody control to Denmark, a third party verification of the Chain of Custody from The Netherlands may possibly be required. A list of forests being approved and

labelled by Keurhout along with companies, which conducted the control is available at www.stichtingkeurhout.nl/english.htm.

Altered procedure of verification

As mentioned above Keurhout altered its procedures of verification by November 2002. The reason for the alteration was an extensive criticism raised by the company KPMG in connection with a revision of the previous procedures.

According to available information by April 1 2003 no steps were taken as to re-evaluate previous certificates issued during the former procedure. In addition no independent assessment was available as to whether the Keurhout system under the new procedures and the practical implementation is meeting the criticism.

The Dutch government is by early 2004 striving towards the establishment of an organ, which is intended to evaluate existing certification schemes on the basis of minimum requirements determined by the government. Keurhout have expressed that they would like to be in charge of this assignment, but it has not yet, as of April 1 2003, been determined whether they are going to. These aspects imply that a number of environmental organisations etc. are doubting the credibility of the Keurhout system.

Post Script: In autumn 2003 it was decided to disband the Keurhout Foundation by 31 December 2003. At the

same time it was decided that The Netherlands Timber Trade Association (NTTA) is to take over the Keurhout logo from the Keurhout Foundation and To make it available to its members (see NTTA press release of November 2003 for further information at www.stichtingkeurhout.nl/liquidation.htm).

6.3 Comparative summaries

The standards of the four forest certification

schemes, which were operating in the tropics by April 1 2003 are compared in table 8.

Table 9 gives an overview of the requirements etc. of the same four schemes, and in addition, for comparison, the similar parameters of the PEFC, in spite of the fact that the latter scheme as not operating in the tropics by April 1 2003. The PEFC scheme has been included in case it should

be operating in the tropics in the future. MTCC has for instance applied for mutual recognition with PEFC, and a process has been initiated, with the aim of developing the system requirements of MTCC so as to match international guidelines for certification schemes more closely.

The comparison is made on the basis of the current schemes.

Table 7 Overview of global, regional and national certification schemes and other systems of verification for tropical forests and forest products together with the PEFC scheme

Certification scheme	Country	Promoter	Standards	Status	Certified area in total mio.ha.	Certified area in the Tropics mio. ha	Number of CoC certificates
FSC	Global ⁶	Retail trade, NGO's and producers	10 principles 56 criteria	Active	34,6	5,3	App. 2.500 ⁷
Pan African Certification	Regional ⁸ Africa	ATO	3 principles 15 criteria 57 indicators	Under development	0	0	0
MTCC	Malaysia	Authorities, industry	6 criteria 29 indicators	Active	2.3	2.3	26
LEI	Indonesia	Authorities, industry, NGO's	10 criteria 56 indicators	Active	0,1	0,1	1
CERFLOR	Brazil	Private forest owners	n.a.	Partially active	0	0	0
Ghanaian	Ghana	Authorities	n.a.	Under development	0	0	0
PEFC	Regional ⁹ , Europe + global under development	Forest and wood industry in Europe (Finland)	6 criteria 27/101 indicators	Active	46,7	0	527
Keurhout	The Netherlands	Dutch wood industry	7 principles 30 criteria 112 indicators	Active	36 ¹⁰	0,6	?

⁶ Certificates exist in a number of countries for instance Indonesia, Malaysia, Thailand, Brazil, Bolivia, Mexico, Zimbabwe (cf. Table 4).

⁷ One certificate may comprise several companies.

⁸ No certificates had yet been issued by April 1 2003.

⁹ Certificates exist in Finland, Norway, Sweden, United Kingdom, Germany, Austria and Switzerland a.o.

¹⁰ Covers mainly PEFC and FSC-certified areas. Areas not covered by these schemes are totalling 615.000 ha in Gabon.

Table 8 Overview of the contents of the certification schemes of FSC, MTCC and LEI together with the minimum demands employed by Keurhout¹¹.

Criteria for sustainable forest management	FSC	MTCC	LEI	Keurhout ¹²
Technical and economical criteria				
1. Observance of national legislation	X	X	Partial	X
2. Observance of international agreements	X			X
3. Control of illegal logging	X	X	X	X
4. Control of owner rights and user rights	X	X	X	X
5. Ensure and respect user rights	X	X	X	X
6. Economic sustainability	X	X	X	X
7. Promotion of "Non-timber products"	X		X	X
8. Management plan	X	X	X	X
9. Formulated procedures of work	X	X	X	(X)
10. Guidelines for forest management	X	X	X	X
11. Monitoring of forest management	X	X	X	X
12. Education and supervision	X		X	X
13. Ensure sustainable yield	X	X	X	X
Social criteria				
14. Health and safety of the employees	X	X	X	X
15. Recognise the employees' right to organise themselves	X	X	X	X
16. Ensure minimum wage	X		X	(X)
17. Building up capacity among local workers	X		X	X
18. Evaluation of social impacts of forest management	X	X	X	X
19. Promote development of local communities	X		X	X
20. Protect indigenous peoples' rights	X	X	X	X
21. Ensure participation of all stakeholders	X	X	X	X
22. Settlement of complaints and disputes	X		X	X
Ecological/environmental criteria				
23. Evaluation of the environmental impacts of forest management	X	X	X	X
24. Protect the ecological processes of the forest	X	X	X	X
25. Protect soil, water, air	X	X	X	X
26. Protect bio diversity (at all levels)	X			X
27. Protect untouched forest areas	X	X	X	X
28. Protect endangered species	X	X	X	X
29. Protect and re-establish endangered types of nature	X	X	Partial	X
30. Regulation of the use of chemicals etc.	X			X
31. Control of pollution	X			(X)

¹¹ New procedure of approval after November 2002.

¹² Minimum demands in order for Keurhout to approve certifications.

Table 9 Overview with evaluation of certification schemes and compliance with guidelines.

Guidelines	Indicators	FSC	MTCC	LEI	Keurhout	PEFC
The certification scheme in general						
Objective	Objective to document good/ sustainable forest management	+	+	+	+	+
Consensus and participation	Ensures participation of relevant stakeholders in decision making	+	+/-	+	+/-	Depending on national scheme
	Is the scheme free from factual criticism from relevant stakeholders?	-	-	-	-	-
Transparency	Are formulated procedures for elaboration of standards, certification and accreditation publicly available?	+	+	NA	-	+
	Is information on certified forests/companies publicly available?	+	+	+/-	+	+/-
Standards						
Transparency	Are standards publicly available?	+	+	+	+	+
Consensus and participation	Do the procedures for elaboration of standards ensure participation of relevant stakeholders?	+	+/-	+	+/-	Depending on national scheme
	Are the standards free from factual criticism from relevant stakeholders?	-	-	NA	-	Depending on national scheme
Sustainability	Are the standards elaborated on the basis of global, regional or national standards for sustainable forest management?	+	+	+	+	+
Performance standards	Are the standards operational and measurable?	+	+/-	+/-	+	Depending on national scheme
Certification organ						
Transparency	Is information available on whom performed the certification?	+	+	+	+	+
Independent and competent	Is the certification organ accredited?	+	-	+	+	+
Certification process						
Transparency	Is information from certification reports etc. publicly available?	+	+	+/-	+	+
Consensus and participation	Does the procedures of certification ensure the participation of relevant stakeholders?	+	+	+	+/-	Depending on national scheme
Control	Does the certification comprise current control of the forest management?	+	+	+	+/-	Depending on national scheme
Accreditation						
Transparency	Are the procedures of accreditation publicly available?	+	No accreditation	+	+	+

Table 9 Overview with evaluation of certification schemes and compliance with guidelines. Continued.

Guidelines	Indicators	FSC	MTCC	LEI	Keurhout	PEFC
	Is information publicly available as to whom conducted the accreditation of the certification body (forest certification as well as CoC-certification)?	+	No accreditation	+	+/-	+
Independent and competent	Is the accreditation body internationally recognised?	+/-	No accreditation	NA	+	+
Chain of Custody						
Certification	Does the product carry a Chain of Custody certificate?	+	+	+	+	+
	Has the certification been performed by an accredited third party?	+	No accreditation	+	+	+
Verification	Is it possible to confirm the suppliers' certification status by third party?	+	+	NA	+	+
	Is it possible to supply certified and non-certified products that have maintained separated through all links of processing?	+	+	NA	+/-	+/-
	Does the label state whether the product is a composite?	+	+			
Labelling						
Credibility	Is the labelling/declaration clearly formulated?	+	+	NA	+	+
	Is the labelling/declaration credible?	+	+	NA	NA	+

Symbols:

+: Demand is satisfactorily met.

-: Demand is not met.

+/-: Demand may be met, depending on national scheme or other.

NA: Information has not been available.

It is noted that the summary is referring to Keurhout's procedures of approval valid as of November 2002. This means that endorsements prior to November 2002 do not meet all the guidelines listed in table 9.

6.4 A stepwise approach to sustainable forest management

Comprehensive requirements are made on forest management,

system of control as well as documentation in order to qualify for certification of legal and sustainable forest management.

The strict requirements are strengthening the consumers guarantee that what they buy is legally and sustainably produced. However they make it difficult for a number of forest actors to qualify themselves for forest certification. Some of these may be able to comply with some of the requirements

in the short run, but it may take a long time to comply with them all.

If these forests are not given short-term incentives to the required changes in management practices, the strict requirements may act as a barrier to the beginning of a long-term process towards legal and sustainable forest management. This circumstance is an essential explanation of the slow development within forest certification in the

tropics. Less than 10 % of the global forest certification has been taken place in the tropical forests during the last 10 years.

In recent years ITTO and other international fora have focused on the possibilities of rewarding a stepwise approach to certification, in order to encourage the processes towards a long-term re-orientation to legal and sustainable management. Several of the established certification schemes, including FSC have recognised the problem and are now elaborating on models for developing new systems for this purpose.

Among other things these systems must ensure that management is developing in the desired direction. Otherwise the stepwise approach may lead to a general lowering of standards to the bottom step on the ladder. This in turn requires credible control of the development over time. Thus we may already be heading for the creation of a system which may prove administrative heavy to run.

Several actors in the market have during the last years offered wood from forest, which are stated to be on the way towards sustainable forest management. SGS Malaysia Certification Support Programme (CSP), WWF's Global Forest and Trade Network (GFTN) and Tropical Forest Trust (TFT) are such private initiatives.

Purchasers have similarly focused on the formulation of less rigorous requirements, which would enable more producers to comply with them. However it is a problem that the

starting point may be very different from forest to forest and from nation to nation.

In recent years the focus has been on the need to ensure legal and regulated conditions in the forest management – as a first step towards sustainability:

A global work shop on a stepwise approach to certification, arranged by ITTO in 2002, recommended that a suitable first step towards fully sustainable management and certification could be independent verification of legal forest management. The European Commission is preparing an action plan with the specific aim of promoting legal forest management. In the spring 2003 Denmark invited three tropical countries (Indonesia, Malaysia and Brazil) to co-operate specifically in order to obtain legal forest management in the respective countries.

In United Kingdom a policy for public purchase of wood is being prepared, in which requirements are formulated at three levels:

- Level 1: legal and sustainable
- Level 2: legal and progressing towards sustainable
- Level 3: legal

In this particular guideline a basic three-step purchase model similar to the above mentioned UK model has been chosen.

6.5 Conclusion

The parliamentary decision B197 of June 2001 underscores FSC as an example of guaranteeing that timber is legally and sustainably produced. In the explanatory notes of

the resolution it is at the same time noted that if other global certification schemes are generated with similar high standards for economical, environmental and social sustainability, and are based on independent third party certification and subsequent control, then timber products carrying these certificates may be considered sustainable produced as well.

Accordingly, when briefing the Committee of Environment and Planning under the Danish Parliament on the follow up on decision B 197, the Minister of the Environment, Hans Christian Schmidt, stated in May 2002 that the guidelines for public purchase of tropical wood would include FSC as an example of guaranteeing that timber is legally and sustainably produced. At the same time the Minister emphasized that the guidelines also leave room for the recognition of other possible credible certification schemes for tropical wood. Furthermore he emphasized that the guidelines in addition need to consider whether, if the occasion should arise, and how it is possible to act responsibly in the market for non-certified products.

As of April 1 2003 FSC was the only forest certification scheme operating in a larger number of tropical countries. Two further national certification schemes were established – MTCC in Malaysia and LEI in Indonesia. In addition there is the Dutch system of endorsement Keurhout, which by April 1 2003 has endorsed forest certification schemes in a

number of tropical countries, including a certification scheme in Gabon, which was not covered by the above mentioned schemes.

Neither internationally recognised minimum requirements for “legal and sustainable” forest management exist, nor does minimum requirements for certification schemes guaranteeing such management. However a number of ISO-guidelines etc. exist together with recommendations from international discussions on forests, which indicate essential elements, and these are summarized in the present report.

The essential elements of forest certification schemes include that the standards for forest management cover the criteria and indicators for sustainable forest management mentioned in chapter 4, and as well that the standards have been determined with due consideration of social, environmental and economical interests during a consultative process open for participation of all stakeholders. Another precondition for a credible certification scheme is the existence of a system of traceability and labelling, guaranteeing that the wood on the market is originating from such sources. Presently FSC is the only certificate that fully meets these criteria.

MTCC differs from FSC e.g. because MTCC conducts certification themselves without being accredited to do so (FSC accredits other companies to perform certification), the MTCC apparently incorporates social and

environmental regards to a lesser extent than FSC when determining standards. Furthermore MTCC is based on measurable minimum requirements to a lesser extent than FSC and the Chain of Custody of MTCC only comprises companies in Malaysia. Requirements to the observance of national legislation and the control of this matter are included in the standards of MTCC. At the present time the MTCC label provides a credible guarantee of forest management, which is legal and on the way to becoming sustainable. Credible labelling of wood marketed outside Malaysia requires an additional Chain of Custody certificate, covering the path from the exporting MTCC-certified company in Malaysia. MTCC is in a transitional phase, which among other things implies that their standards and requirements to procedures are approaching those of FSC.

LEI differs from FSC e.g. as the standard for forest management does not specifically demand legal forest management and because the Chain of Custody certification of LEI only comprises companies in Indonesia. Thus the label is not evaluated as a credible guarantee of legal forest management. LEI is, like MTCC, in a phase of transition, which implies that their standards and requirements to procedures are approaching those of FSC.

Although a LEI certificate in itself must be considered as an insufficient guarantee of legal forest management, it is evaluated that the certificate in combination

with other indications (cf. chapter 5 on documentation) may provide sufficiently credible documentation for legal and sustainable forest management. Keurhout’s revised procedure of approval (November 2002) indicate that Keurhout currently make requirements to certification schemes, which to a large extent are similar to the scheme of FSC. However currently uncertainty exists on the practical implementation of Keurhout’s procedures and considerable criticism has been raised towards the previous functioning of the system – which still is forming the basis for several existing endorsements. The Chain of Custody system of Keurhout does not cover the wood when exported from The Netherlands. For that reason the system is currently not automatically being considered a credible guarantee of legal or sustainable forest management. However, as was the case of LEI, it is evaluated that the Keurhout certificate in combination with other indications (cf. chapter 5 on documentation) may provide sufficient credible documentation for legal and sustainable forest management.

7 Environmental and health impacts in life cycles of tropical wood

Sustainable management of tropical forests does not in itself guarantee that environmental considerations have been taken in the subsequent phases of the life cycle of

tropical wood. These phases include manufacture of products, usage and disposal. In some instances the end product of tropical wood is imported, e.g. garden furniture, but often the manufacturing process is taking place in Denmark.

The life cycle for tropical wood is sketched in figure 1.

Transport between the separate phases is not shown in the figure.

Table 10 gives an overview of the environmental impacts and impacts of health in the life cycle of tropical wood. Consideration for environment and health

during the whole life cycle means that requirements have to be made on environment, health and work environment in the subsequent phases.

Transport of the raw material from far away destinations to Denmark implies energy consumption and emissions from the respective means of transportation. Transport of the tropical timber species is mainly happening in bulk and in containerships. The transport may constitute a considerable part of the environmental impact in the life cycle assessment, if the wood is transported from one part of the world to

another in order to be processed and sold to the end user.

7.1 Environmental impacts

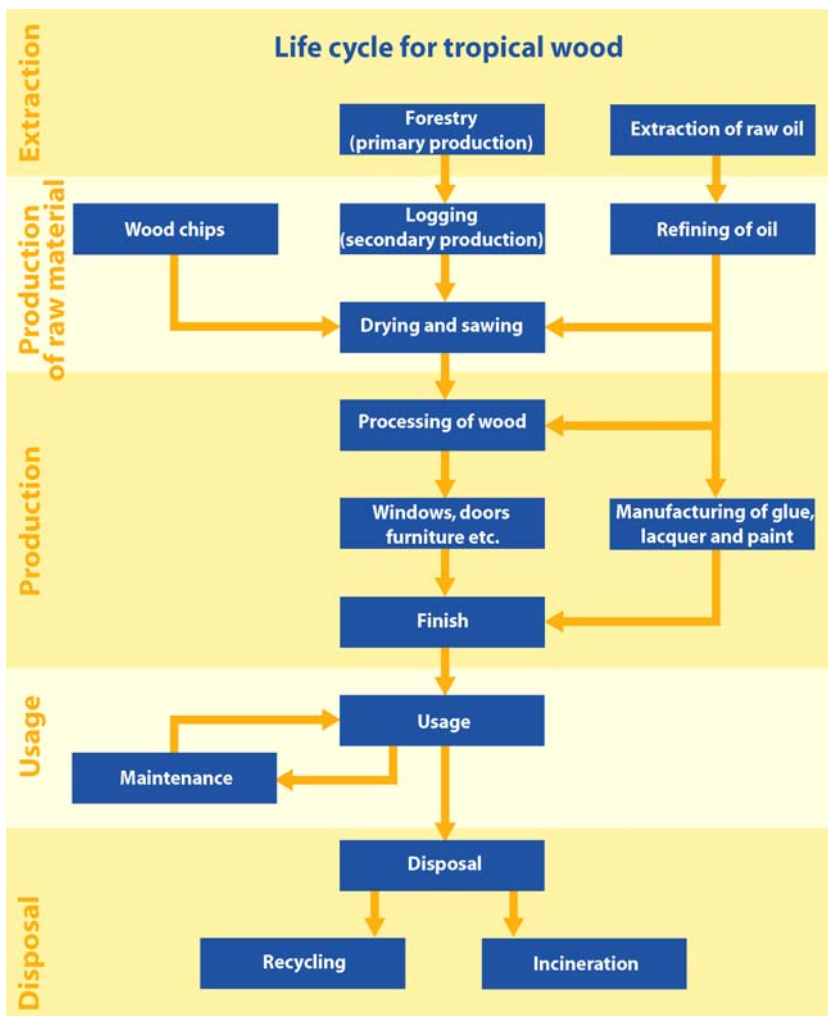
During processing of the tropical wood the same processes takes place as for other wood. This means that the environmental impacts from tropical wood are similar to other wood. There are no considerable environmental impacts from usage or disposal of wood, as wood is typically recycled or incinerated with exploitation of energy.

The most influential environmental impact is caused by emission of carbon dioxide (CO₂) from energy consumption during processing of the wood. Carbon dioxide is a greenhouse gas and constitutes a global environmental impact. Part of the energy consumption may be based on combustion of wood. This part is considered CO₂-neutral, as the tree stores CO₂ during growth. Noise from the processes comprising manufacture often constitutes a local environmental impact. In addition processing often result in the development of wood dust, which may spread to the surroundings.

During manufacture the individual processes are energy consuming, hence leading to emission of greenhouse gas.

A number of tropical wood species (e.g. Teak) does not require treatment, contrary to e.g. Pine, and this saves processing and reduces the need of using chemicals. Teak and other tropical wood species do not require surface treatment, because of a high content of natural oils, protecting the wood from

Figure 1



fungi and pests. However these species cannot resist the sun's bleaching impact or the rain's leaching of dyes from the wood, and therefore they need regular protection in order to maintain the colour of the wood.

Environmental considerations can be ensured by selecting products carrying The Nordic Swan Eco-label or comply with the criteria of eco-labelling. There are criteria for following product categories containing wood:

- Boards for building
- Windows and doors
- Out door furniture
- Furniture
- Paper for printing

For a number of product categories containing wood specific environmental guides have been prepared. They cover shelves, upholstered furniture, tables, filing cabinets and school chairs. The environmental guide on printing paper and Xerox paper contains recommendations regarding paper in general.

7.2 Health impacts

Work environment

During processing wood dust is generated. The main part of the wood dust is immediately aspired by the processing machine. Depending on the system of aspiration, the character of the process, the

construction of the machine and the type of wood being processed etc. a larger or smaller quantity of dust will enter the room of the work shop.

Wood dust is injurious to health by inhalation. Particularly tropical wood species, e.g. Rosewood and Teak may cause eczema by contact and various other allergic reactions. Inhalation of dry, fine wood dust from species like Mahogany, Teak, Iroko, Cedar, Oak, Maple etc. may cause allergic reactions in the respiratory pathways, most often asthma and hay fever /3/. Work that may imply risk of exposure to wood dust from hardwoods as well as work implying risk of long-term exposure of other sorts of wood dust is included on the Danish Labour Inspectorate's list of processes considered to be carcinogenic /4/.

Wood processing with metal may be dangerous. This is due to the fact that this work is performed with noisy, cutting and rotating tools, that heavy objects often are handled manually and that specific movements are repeated monotonously.

The health impacts in the working environment can be reduced by the company taking the necessary precautions to systematise the efforts put in the working environment, among other things on the basis of workplace

assessments. Products without use of organic solvents should be preferred.

Indoor climate

For some period of time after the placement or the build-in of new wooden products in a room, emissions from the wood and the applied coatings will follow. The emissions are primarily consisting of formaldehyde and other aldehydes originating from the employed glue and volatile oils in the wood.

The emission may partly cause odours and partly cause irritation of the mucous membrane /5/. Tropical wood in particular contains numerous volatile compounds with a strong odour. The odour may be pleasant for some individuals and unwanted for others. However it will only rarely cause inconveniences as irritation of the mucous membrane. Indoor climate certification of the product according to the standards of The Danish Indoor Climate Labelling /15/ renders information on the period of emission from the product in question and hence the need for ventilation.

Operations of maintenance may cause emissions for a period of time as for new products. Following indoor maintenance, e.g. of floorings, it is thus recommended to ventilate the room prior to usage.

Selecting products
carrying The Danish Indoor
Climate Label or products

in compliance with these
requirements will ensure
that information on

emissions, cleaning and
maintenance is available.

Abbreviations:

FSC: Forest Stewardship Council.

LEI: Indonesian Ecolabelling Institute.

CERFLOR: Programa de Certificação de Florestas (Brazil).

SGS: Société Générale de Surveillance.

SCS: Scientific Certification System.

MTCC: Malaysian Timber Certification Council.

IUCN: International Union on Conservation and Nature.

PEFC: Pan European Forest Certification.

ATO: African Timber Organization.

ITTO: International Tropical Timber Organization.

CIFOR: Centre for International Forestry Research.

8 References

- /1/ Retningslinier for vurdering af certificeringsordninger for bæredygtigt produceret tropisk træ. Baggrundsnotat til Miljøvejledningen til offentlige indkøbere om tropisk træ, okt. 2002.
- /2/ Vurdering af eksisterende certificeringsordninger for bæredygtigt produceret tropisk træ. Baggrundsnotat til Miljøvejledningen til offentlige indkøbere om tropisk træ, okt. 2002.
- /3/ Træ og sundhed. www.trae.dk
- /4/ »Grænseværdier for stoffer og materialer« At-vejledning C.0.1, okt. 2002
- /5/ Indeklimahåndbogen. SBI anvisning 196. Statens Byggeforskningsinstitut, 2000.
- /6/ Træs naturlige holdbarhed: Levetider. www.trae.dk
- /7/ Procurement of Timber Products from »Legal & Sustainable Sources« by Government & its Agencies: Scoping Study Report. Environmental Resources Management, July 2002.
- /8/ EU Kommissionens Fortolkningsmeddelelse KOM(2001) 274
- /9/ Gulve 029/3.0. Nordisk Miljømærkning, 14. marts 2002
- /10/ Møbler og innredninger 031/2.3. Nordisk miljømerking, 14. december 2001
- /11/ Utemöbler af trä 073/1. Nordisk Miljömärkning, 11. juni 2002
- /12/ Panels for the Building, Decorating and Furniture Industry 010/3.3. Nordic Ecolabelling, 15. March 2002
- /13/ Unced 1992. Non-Legally Binding Authoritative Statement Of Principles For A Global Consensus On The Management, Conservation And Sustainable Development Of All Types Of Forests. Report Of The United Nations Conference On Environment And Development Rio De Janeiro, 3-14 June 1992.
- /14/ Træ er Miljø, De tropiske skove. www.trae.dk
- /15/ Dansk Selskab for Indeklima. (www.dsic.dk)
- /16/ Miljøvejledning: Borde. Miljøstyrelsen, 1997 (www.mst.dk)
- /17/ Miljøvejledning: Reoler. Miljøstyrelsen, 1998 (www.mst.dk)
- /18/ Miljøvejledning: Arkivskabe. Miljøstyrelsen, 1998 (www.mst.dk)
- /19/ Miljøvejledning: Polstermøbler. Miljøstyrelsen, 1998 (www.mst.dk)
- /20/ Offentlige grønne indkøb – en vejledning i mulighederne for at varetage miljøhensyn i forbindelse med afholdelse af udbud. Miljøstyrelsen og Konkurrencestyrelsen, 2002 (www.ks.dk)
- /21/ Gunnar Madsen, Dansk Vindueskontrol (DVC). Personlig kommunikation, dec. 2002
- /22/ Miljøcertificeret tropisk træ til vandbygningskonstruktioner. Vej & Park og Københavns Havn A/S, 2002 (www.vejpark.kk.dk)
- /23/ Controlling Imports of Illegal timber. Options for Europe. Summary., Oct. 2002. www.fern.dk
- /24/ Bæredygtig skovdrift. Baggrundsnotat til Miljøvejledningen til offentlige indkøbere om tropisk træ.
- /25/ MCPFE, 1993. Ministerial Conference on the Protection of Forests in Europe 1993, 16-17 June in Helsinki. Resolution H1. General Guidelines for the Sustainable Management of Forests in Europe.
- /26/ ITTO, 1998. Criteria and indicators for sustainable management of natural tropical forests. ITTO Policy Development Series 7.
- /27/ ITTO, 2002. Forest Certification: Pending Challenges for Tropical Timber. ITTO Technical Series 19.
- /28/ Villy E, Risør. Træhåndbogen. Forlaget Ivar. 1966. (2.udgave 1997)
- /29/ Træ 35. 52 træarter. Træbranchens Oplysningsråd. 1993
- /30/ ITTO. Annual Review and Assessment of the World Timber Situation 2001.
- /31/ Viden om træ. Teknologisk Institut. Udviklingscenter for møbler og træ. www.teknologisk.dk
- /32/ Markedsundersøgelse. Udbud af certificeret tropisk træ. Baggrundsnotat til Miljøvejledningen til offentlige indkøbere om tropisk træ
- /33/ Morten Bjørner, Dansk Træforening. Personlig kommunikation, april 2003.
- /34/ The IUCN Redlist of Threatened Species, 2002 www.redlist.org

Purchasing Tropical Timber – Environmental Guidelines, Background material

This report for the purchase of tropical timber has been edited in 2003 by:

The Danish Environmental Protection Agency
Strandgade 29, 1401 København K
Tel. +45 32 66 01 00 • mst@mst.dk • www.mst.dk and

The Danish Forest and Nature Agency
Haraldsgade 53, 2100 København Ø
Tel. +45 39 47 20 00 • sns@sns.dk • www.skovognatur.dk

2nd revised translation, March 2006.

Project coordinator: Anne Abildgaard, COWI A/S in cooperation with Valør & Tinge, NEPCon and Sall & Sall. An advisory steering committee and a number of external consultation parties have been involved in the process.

The steering committee was made up of representatives from:
The Danish Forest Association, the Danish Timber Trade Federation,
Forbundet Træ-industri-Byg, Foreningen af offentlige indkøbere, Nepenthes,
National Procurement Ltd. – Denmark, Træets Arbejdsgiverforening,
the Danish Ministry of Foreign Affairs, WWF-Denmark
and the Danish Forest and Nature Agency (chairman).

Translation and layout: The Danish Timber Trade Federation

This English translation is available in an electronic version only.
It can be downloaded free of charge from the above mentioned web pages.

A hardcopy of the guidelines in Danish can be obtained by contacting:

Frontlinien, The Danish Ministry of the Environment, Strandgade 29, 1401 København K.
Tel. +45 32 66 02 00 • frontlinien@frontlinien.dk • www.frontlinien.dk

