



TIMBER FLOWS AND THEIR CONTROL IN THAILAND

July 2012



Regional Support Programme for the EU FLEGT Action Plan in Asia

Background

The European Commission (EC) published a Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan in 2003. FLEGT aims not simply to reduce illegal deforestation, but in promoting good forest governance, aims to contribute to poverty eradication and sustainable management of natural resources.

The European Forest Institute (EFI), an international research organisation with its headquarters in Finland, conducts, advocates and facilitates forest research networking at the pan-European level. Under its Policy & Governance programme, the EFI assists in the EU's implementation of the FLEGT Action Plan. In 2007, the EU FLEGT Facility was established, hosted and managed by the EFI. The Facility supports the bilateral process between the EU and tropical producing countries towards signing and implementing —Voluntary Partnership Agreements (VPAs) under the FLEGT Action Plan.

In November 2008, the EFI signed a contribution agreement with the EC on a —Regional Support Programme for the EU FLEGT Action Plan in Asia. The FLEGT Asia programme is part of EU FLEGT Facility and is executed by the Facility. A FLEGT Asia Regional Office (FLEGT Asia) of the EFI's EU FLEGT Facility was formally established in October 2009. FLEGT Asia seeks to collaborate and build synergies with existing regional initiatives and partners in Asia.

The EU FLEGT Facility is managed and implemented by the EFI in close collaboration with the EU.

Goal of FLEGT Asia

The goal of the FLEGT Asia Regional Programme is the promotion of good forest governance, contributing to poverty eradication and sustainable management of natural resources in Asia, through direct support of the implementation of the EU's FLEGT Action Plan.

Strategy

The strategy to achieve this goal focuses on promoting and facilitating international trade in verified legal timber – both within Asia and exported from Asia to other consumer markets. In particular, it aims to enhance understanding of emerging demands in key timber-consuming markets and promote use of systems that assist buyers and sellers of Asian timber and timber products to meet these demands.

Work Programme

The work programme to achieve the Programme's goal has three phases:

1. Information Collection

Baseline information (trade statistics, product flows, future scenarios, stakeholder identification and engagement strategies), applied to countries in the region. Information on producers, processors, consumers, and to major consumers of exports from this region will be collected and collated. It will then be used to develop training and communication materials; to further define the nature of the capacity building to be undertaken (who are the target beneficiaries and what the training needs are) and form the baseline for monitoring the progress of the programme over the 3 years duration of the programme.

2. Capacity Building

The second phase is the strengthening of key institutions (companies, trade associations, NGOs, government agencies, customs etc.) for improved forest governance in each country and across the region to meet the identified market needs. This will consist of training (at individual level, training of trainers, workshops, pilot studies e.g. on individual supply chains and for Timber Legality Assurance); information dissemination and communications (road shows, seminars, communication materials, website, etc).

3. Customs & Regional Collaboration

The work to support trade regionally and to invest in customs capacity in accordance with market requirements will be undertaken in collaboration with other programmes in the region.

FLEGT Asia financed this report because it is part of phase 1 and 2 activities. The objective of the final report is to present all major public outputs. The final report has a summary of the work including an overview of trade, trends and forecasts (using graphics with supporting data in an annex) and key findings and proposed next steps.

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LTS

for FLEGT Asia regional funding
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ABBREVIATIONS

ASEAN	Association of South East Asian Nations
CITES	The Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoC	Chain of Custody
CoO	Certificate of Origin
Cm	Centimetre
Dbh	Diameter at breast height
EU	European Union
FAO	Food and Agricultural Organisation
FLEGT	Forest Law Enforcement Governance and Trade
FIO	Forest Industry Organisation
FOB	Free On Board
FSC	Forest Stewardship Council
FY	Fiscal year
GDP	Gross Domestic Product
GoT	Government of Thailand
ha	hectare
HS	Harmonised System
ITTO	International Tropical Timber Organization
kg	kilogram
LAS	Legality Assurance System
m ³	cubic metre
MDF	Medium Density Fibreboard
MONRE	Ministry of Natural Resources and Environment
NSW	National Single Window
ORRAF	Office of Rubber Replanting Aid Fund
PDR	Peoples' Democratic Republic
RFD	Royal Forest Department
RWE	Round Wood Equivalent
SCG	Siam Cement Group
SFM	Sustainable Forest Management
SPK	Sor Por Kor
Spp	Species
TPPIA	Thai Pulp and Paper Industries Association
USA	United States of America
US\$	United States Dollar
VPA	Voluntary Partnership Agreement
WCO	World Customs Organisation

1. EXECUTIVE SUMMARY

1.1 Background

This study has been undertaken to provide an understanding of the domestic, imported and exported timber flows in Thailand, and their control through the Royal Forestry Department (RFD) and other government agencies. The study aims to inform preparation for the Government of Thailand's potential negotiations with the European Union (EU) on a Voluntary Partnership Agreement (VPA), as part of the EU's Forest Law Enforcement, Governance and Trade (FLEGT) action plan. A VPA aims to ensure that wood exported to the EU is from legal sources and supports partner countries to improve their governance of the forestry sector. This is particularly important in advance of the new EU Timber Regulation which, starting March 2013, will require EU producers and importers of wood and wooden products into the EU to undertake due diligence with regards to legality of their products. Due diligence will involve asking for details of species and documentation confirming the origin of the wood. Signing of a VPA should lead to a country being able to issue FLEGT legality licences, which will fulfil the requirements of the EU Timber Regulation and ease the marketing of a country's produce. The study is funded by the EU FLEGT Facility which is managed by the European Forest Institute (EFI). The study was conducted from September 2011 to February 2012, through examination of records, regulations and publications as well as interactions and interviews with key stakeholders in Thailand, including a range of stakeholders (including RFD and Customs staff, private sector operators) in Bangkok and in field sites and factories. A stakeholder workshop was held at the Rama Gardens Hotel in Bangkok on March 16th, 2012.

1.2 Thailand's trade in forest products

Thailand's trade in forest products is diverse and large. Imports amounted to almost 100 billion baht in 2010 (2% of total imports, by value) whilst exports totalled over 160 billion baht (2.7% of total exports, by value). More specifically, rough/round wood was imported from at least 23 countries, categorised in 16 Harmonised System (HS) customs codes, whilst sawn wood was imported from at least 52 countries, categorised using 59 HS codes. The diversity of species and origins of wood, along with the range of products made, makes it challenging to document the origin of any forest product being exported from Thailand.

1.3 The Thai system of control of timber flows

The laws and regulations governing the growing, harvesting, transport and use of most timber species in Thailand (particularly from natural forests) are quite stringent. The laws and regulations are primarily in place to protect natural forest and prevent the over-exploitation of species derived from natural forests. Similar regulations cover the importation and transport of imported timber. For imported timber, Thailand relies on a series of documentary evidence at the point of entry as the means of verifying the legality of entry, followed by a system of checks on transport that ensure the timber arrives at its correct destination. These transport checks are also designed as a means of preventing illegally harvested timber from being transported and sold to processors.

However, the commercial timber species grown and used in Thailand in large volumes are exempt from the main laws and regulations, including plantation-grown eucalyptus and rubber wood. This

means that the ability to monitor these supply chains and restrict entry or movement of illegal wood (from whatever source) is severely limited. Although there appears to be limited reasons for such plantation wood to be illegal, possibilities do exist and current control and monitoring systems make it difficult to document the origin of the material and its legality.

The RFD has a voluntary procedure which allows operators who wish to document species and timber origin to purchasers abroad, through a Certificate of Origin (CoO). This can cover imported timber as well as domestically produced timber. However, the timber in individual mills is often from mixed sources and there is no simple way that RFD staff or purchasers can then confidently relate any one batch of produce to any one source of timber. In addition, few players in the industry have yet adopted a Chain of Custody system which permits consistent traceability of wood whilst passing through their mills or factories.

1.4 Main gaps and areas of risk in the system, in relation to legality assurance

Data availability, timeliness and inconsistency: Whilst customs data on value of imports and exports is available in a timely manner in great detail, customs data on quantities traded appears to have occasional discrepancies with RFD data records. Data on domestic plantation resources and production has major gaps and is not sufficiently detailed to permit these gaps to be fully explained or resolved. There are inconsistencies between records of different parts of Government which makes reconciliation of gaps difficult. The resulting picture from these data issues is one of opaqueness of sources for Thailand's forest products industry, and statistics recorded by international organisations such as ITTO and FAO reflect this situation.

Leading institutional role: The role of the RFD in generating and collating data within the overall forest products sector is limited and there is no collated or published national level data on domestic production or wood utilisation in factories.

Species exemptions from regulations: The exemption of some of the main commercial timber species (in particular eucalyptus and rubber wood) from the main laws and regulations is a key issue. Under current regulations, there is no simple means of users of these species to document legality unless a voluntary Certificate of Origin is sought from the RFD.

Complex domestic processing industry with limited use of chain of custody systems: Thailand's wood processing industry is large, with many products, and the mixing of wood and wood products from different species and sources in individual factories is common. The current RFD control systems for monitoring wood balances at factory level through an annual check of input/output record books cannot link products to specific sources. The low level of uptake of Chain of Custody systems so far indicates that it is difficult for a significant part of Thai wood using industry to provide detailed information on timber sources to purchasers.

Voluntary certification scheme: Thailand's voluntary certification scheme is a means to give Thai industry a method to show to purchasers the origin of wood used. However, the complexity of the industry, with use of multiple species and sources, and few chain of custody systems installed, makes the task of confirming origin by the RFD a risky one, with real potential to endorse products incorrectly.

Legality of timber imports: Not all countries exporting to Thailand provide a Certificate of Origin as an indication of the legality of the exported timber, and imports are often dispersed through the supply chain and spread through various factories soon after entry into Thailand.

Potential weaknesses in the proposed digital-based system: The digital system outlined (the National Single Window – NSW) does not yet explain how it will remedy the key weaknesses identified by RFD of the existing system, in particular: human error; fake documentation; duplications; and lost data and documentation. There is no current intention to replace the paper system with the NSW, only to use the NSW to feed information into the Customs e-system. The proposed NSW system does not yet make clear precisely what information from plantations will be input to the digital system, but unless additional data (for example production and chain of custody information) is included then the digital system will suffer the same difficulties as the existing paper-based system, in terms of documenting legality of sources.

The need for a truly comprehensive system for Supply Chain Monitoring, Control and Legality Verification: Experience gained under other national systems has shown that the critical components are comprehensive data acquisition and consistent data analysis and reconciliation. The amounts of data to be handled in short timeframes means that these systems need to be computer-based, but they will only provide meaningful results if they are fed with relevant, accurate and constantly updated data. This is a significant commitment for the Thai authorities. However, without these components it is not possible to make reliable statements about legality in the supply chain.

1.5 Main recommendations

Monitoring and reporting on Thailand's forest products industry:

- To underpin a transparent forest sector in Thailand, and ensure effectiveness of the NSW, there is a need for more thorough and systematic data collection and sectoral statistics showing annual domestic production of wood by species and the location of sources of supply. It needs to consider including data on 'exempt' species. Such data needs to be regularly updated and available on a timely basis. A reliable and robust legality assurance system will rely on improved data collection and statistics.
- A single Government agency should ideally lead on collating and publishing appropriate data.

Proof of legality:

Thailand's timber industry needs to prepare for EU purchasers applying the Due Diligence regime in 2013. Accurate information will be requested on species of wood, sources and legality. To achieve this, a number of measures should be discussed:

- Wood and wood products that are imported into Thailand would benefit from having a Certificate of Origin (CoO) and other documentation that confirms legality of harvest in the country of origin. This will require coordination with countries exporting wood and timber to Thailand.
- One possible approach for batches of wood where a CoO is not available is that within the mill such wood should be kept separate from wood of known origin (physical segregation). The RFD may want to consider restricting its voluntary certification system to wood with an authentic CoO.
- The private sector will need to develop and install chain of custody systems in their factories and mills.

- Thailand has indicated its interest to negotiate a FLEGT Voluntary Partnership Agreement with the EU which would allow for the licensing of products from Thailand documenting timber legality. In this context, the Government will need to develop, with active stakeholder involvement, a definition of legality with regards to all or selected types of wood product, and develop a legality assurance system (LAS). The government will also need to develop a means of verifying compliance with this definition and LAS, including development of standard procedures for issuance of FLEGT-compliant legality licences. Depending on the types of wood products considered, this may need to cover exempt species such as rubber and eucalypt as well as any more tightly controlled species.
- The capacity of the RFD (and other Government agencies identified as playing a key role) will need to be assessed in relation to the needs of the proposed verification and licensing system.

Broader market demand for information on wood sources:

- Thailand's forest products industry needs to be made aware that the burden of proof of legality will become considerably harder when the EU Timber Regulation comes into force in March 2013.
- All exporters (including those not exporting directly to the EU) need to consider this, as they may be exporting to countries (e.g. China, Vietnam) which may subsequently export to the EU (or the US which implements similar timber legality regulation) and therefore require documentation of legality.
- The time available for development of appropriate legality assurance systems is short and a sense of urgency is required.

2. INTRODUCTION

2.1 BACKGROUND

The European Union's Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan sets out a range of measures to tackle illegal logging in the world's forests. One of these is the Voluntary Partnership Agreements (VPA), which is a bilateral agreement between the European Union and an individual timber exporting country. A VPA aims to ensure that the wood exported to the EU is from legal sources and supports partner countries to improve their own regulation and governance of the forestry sector. In preparation for the Government of Thailand's (GoT) potential VPA negotiations with the European Union (EU), this study has been undertaken to inform both the GoT and the EU about the tracking of timber flows in Thailand, and the quality of control by the GoT.

2.1.1 Objective of the study

The study has been undertaken to provide a thorough understanding of the domestic and imported timber flows within Thailand, and their control through the Royal Forest Department (RFD) and other government agencies.

The main objectives are:

1. To identify and map out the principal timber supply chains of domestic and imported timber in Thailand for key timber product types and all significant sources¹. Mapping of the principal timber supply chains for products sold on the domestic and export markets.
2. To describe Thailand's current and new timber tracking system controls documenting the timber flows along the identified principal timber supply chains from source or point of import to the point of export/final domestic sale. Inclusion of all points of processing where mixing of timber products from different sources occurs, points of change of ownership, and identification of transportation routes. Identification of potential gaps in the current system and recommendations for improvements.
3. Describe the verification tasks and roles of the relevant government agencies with authority over the supply chains, in particular their monitoring, physical data collection, and control tasks. The study shall identify potential gaps (i.e. where control is weak and fraud could occur) and make recommendations for improvements. A particular focus shall be put on imports.
4. Based on the analysis above, to document the extent to which RFD's new paperless timber tracking system fulfils the requirements of the EU Timber Regulation, and give, where appropriate, recommendations for improvements of the system. In particular consider requirements for imports and verification of timber flows back to the harvesting site.

¹ Note: the field work for this study was started immediately prior to the large scale flooding that occurred in northern and central Thailand in October and November 2011. The field work was interrupted as a result of the flooding and resumed once flood waters had receded. The delay in finalisation of the report allowed trade data for the full year 2011 to be used although detailed analysis focused initially on 2010 data.

3. METHODOLOGY

3.1 Approach

The EU's timber regulation defines the classes of wood and wooden products that are covered. These are classified by the World Customs Organisation's (WCO) Harmonized System (HS) (see Appendix 1 for relevant codes used by Thailand). This study focused initially on those product classes included in the timber regulation but broadened its coverage as the scope of Thailand's forest products industry became clear².

The study team initially examined records of timber movements within Thailand captured and held by the RFD. In order to understand and interpret these statistics it was necessary to understand the RFD's legal remit, operational regulations and working methods. As data collected by the RFD is not comprehensive and some aspects are not collated on a national basis there was a need to consider what alternative sources of data were available and how these might be used to fill the obvious gaps. In addition, apparent data errors were questioned.

Data from the Customs Department provided details of imports by quantity, value and origin over the last 3 years. Customs points on both the Laos border and Bangkok port were visited to examine procedures followed and identify problems encountered, such as information provided. More detailed data were requested from the Customs Department.

A simple model of wood and product flows was generated, reflecting the principal timber supply chains in Thailand. The model was developed as far as detailed data and its quality allowed.

Visits were made to several factories, along with visits to RFD checkpoints to see procedures used for monitoring wood use and transport. The methods used, documentation generated and control tasks of the RFD and Customs department were examined.

As defined within the terms of reference of the study focus was made on:

- a. production of final products from domestically produced rubber timber;
- b. production of final product from domestically produced plantation or conversion area;
- c. production of the final product from imported timber from a non-VPA regional country (e.g. Lao PDR, Cambodia, Myanmar);
- d. production of the final product from imported timber from another country or a mixture of domestic and imported timber.

The chosen supply chains were used to highlight issues where it was considered that there was a high risk of unverified timber entering the supply chain.

² In particular trade data includes HS categories 4402 charcoal, 4404, 4417, 4419 (kitchenware), 4421 (other)& 4420 (statuettes) which are not listed in the Timber Regulation

The study also was briefed by the RFD on the state of development of the “paperless” system that is being developed in Thailand for both customs clearance and monitoring the movement of wood within Thailand.

Taking all the evidence into account the gap between current procedures and what is likely to be needed by European purchasers in 2013 and beyond was assessed, with a view to making recommendations for compliance.

3.2 Sources of data

3.2.1 International trade

Data used in this study has come from a variety of sources; comprehensive data on international trade, readily available in a timely manner, is available from a number of related government websites. Raw customs data categorised by the Harmonised System (HS) is available from the website of the Royal Thai Customs Department (www.customs.or.th). The website only provides data on quantities for detailed categories, necessitating manual aggregation to collate data on quantities for more general product categories. In addition, data is only available for individual years or parts of years from this website, again necessitating manual aggregation of data to establish trends for quantities traded.

The Ministry of Commerce provides access to the same customs data mostly by value alone, using categories with some differences to the Harmonised System (<http://www.ops3.moc.go.th/infor/MenuComen/default.asp>). A closely related site provides good access to aggregated statistics over the last 3 years (<http://www.ops3.moc.go.th/hs/>) with some access to aggregated quantity data. The tables at the rear of this report provide in their headings a means of comparing the Ministry of Commerce categorisations with those of the HS.

Unfortunately although the HS categories provide a means of recording trade in specific wood species the common use of categories labelled “Other” undermines and devalues this potential.

3.2.2 Land Use

Previous studies on land use in Thailand have commented on the lack of authoritative data on specific uses such as eucalyptus plantations (Barney (2005), ITTO (2006), FAO (2009)). Data on rubber plantations is more readily available from the Rubber Research Institute of Thailand and other agricultural agencies although the specific data available focuses on issues related to the potential for latex rather than wood production. Data on plantations owned by government are available primarily from the government owned Forest Industry Organisation (FIO).

The RFD collects data associated with its licensing activities (see Section 3 below). This data is collected at the RFD’s 19 provincial offices and in 56 MONRE provincial natural resource and environment offices. Data collected at the provincial level that is then collated at the national level is not comprehensive, due to the lack of effective collecting and storage data systems and incomplete submissions of data from the provincial offices. Thus data collated at the national level suffers from gaps that are due to missing provincial submissions or incomplete time series data.

3.2.3 Domestic Production

Previous studies on wood production in Thailand have commented on gaps in production data (Barney (2005), ITTO (2006), FAO (2009)). The RFD's Annual Forest Statistics book (RFD 2010) contains no data on domestic wood production.

Some data is available from individual mills and trade bodies covering particular products but they typically focus on outputs of products rather than inputs of raw material. In many cases the only data available is of a mill's installed capacity.

To some degree, geography and value separate the components of Thailand's wood production. Eucalyptus plantations are primarily in the areas to the northeast (Khon Kaen), east (Chachoengsao) and west (Kanchanburi) of Bangkok. Mature rubber plantations are located in the south and east of the country, whilst younger plantations are being developed in the north east and north of the country. Plantations of teak and other hard woods, especially those managed by the state owned FIO, are primarily in the north of the country. This separation assists in understanding the location of wood processing industries and some wood flows.

The RFD, through its forest checkpoints, maintains records of permits issued and log and timber movements throughout the country (see Section 3.3.2 below). This data has been accessed for both individual forest checkpoints and on a collated basis for estimates of imports from Myanmar and Laos. These data were compared to those recorded by the Customs Department although significant differences were obvious.

3.2.4 Forest Stewardship Council (FSC)

The FSC certification process in Thailand has led to 112 valid certificates being available for inspection by February 2012. Around half of these were combined Forest Management/Chain of Custody certificates, with the other half being just for Chain of Custody. A large proportion of the Forest Management certificates are related to the activities of one company - Siam Forestry, part of the Siam Cement Group (SCG). However, other companies also hold certificates for a proportion of their production including FIO, Metro and Vannachai. The majority of the certificates cover eucalyptus plantations whilst FIO's covers only Teak plantations. The background publicly available information provided by the FSC as part of the certification process was used in this study.

3.3 Data quality and reliability

One component of the study was to consider data quality issues. Data sources came from two categories of data:

- Thai Government statistics including forest area and Customs data recording international trade,
- Private sector data aggregated by trade associations from individual companies, from FSC reports and from trade magazines.

3.3.1 Government Data

The RFD's remit is to protect natural forests and thus, with a logging ban applying to natural forest since 1989 (B.E. 2532), its focus is on ensuring that logs and wood moved within Thailand

are not derived from natural forest and thus illegally sourced. Its role is not to monitor the whole forest products industry, only that within its remit. Since imported wood could be confused with domestically produced wood the procedures for monitoring domestically produced wood ³ also apply to imported timber. Once “wood” is processed, to some degree the structures directly under the control of RFD for licensing, monitoring and reporting no longer apply and thus the wood is “lost” and not covered in the annual returns by individual factories to the RFD. Since factories processing wood may be involved in the use of both raw material (e.g. sawn timber) and semi processed wood, comparison on inputs and outputs of “wood” from official sources for individual mills becomes a task of little value. For example, one mill visited used both sawn rubber wood (which was included on the annual return to the RFD) and Thai produced MDF (which was not). Waste from the mill was not recorded (other than as a financial transaction) but had the potential to become raw material for the board industry (but was not recorded).

A small number of prior studies (FAO, ITTO, Forest Trends) have been used to compare results but have not been used as primary sources. All these studies have commented on difficulties in identifying sound and comprehensive sources of data on Thailand’s wood use and forest products industries. The resulting reports have typically been dependent on out of date data, often with significant gaps, and from a diverse range of sources.

This current study has not overcome these problems but has had reasonable access to RFD statistics and with internet access to Customs and trade data this report is able to provide up to date analysis of Thailand’s international trade.

Examination of detailed trade statistics has identified a number of data for individual country trades in individual months where their size in relation to the total year suggests that data entry errors may occur and remain uncorrected and unexplained in historic and current data. The frequency of such outliers in customs data is not known. Table 1 provides some more details of specific examples.

³ Sawmills using 14 domestically produced species/wood types are exempt from some of these regulations, including those with the highest harvest levels - rubber and eucalyptus. As a result RFD check point procedures do not cover these species and are excluded from any resulting statistics. See Appendix 2 for more details.

Table 1: Examples of extraordinarily large trades for individual months recorded in the Customs statistics database. Each of these are significantly larger than the total trade in that product for the entire previous year.

Date	Product	Recorded Entry	Annual total without entry
March 2007	Rough wood - import 4403.9910.001	Guyana: 5,000,000 m ³	Guyana 40 m ³
June 2010	Sawn wood - imports 4407.2600.090	Malaysia: 68,837,125 m ³	Malaysia 12,451 m ³
August 2010	Rough wood - import 4403.9990.090	Congo: 5,000,000 m ³	Congo 500 m ³
July 2011	Paper - export	China: Almost 22 billion Baht	China 1.5 billion Baht
December 2011	Paper - export	Hong Kong: Almost 25 billion Baht	Hong Kong 1.5 billion Baht

This study has only identified possible errors that came to the team’s attention and has not attempted to systematically check the data used.

More systemic problems have been observed:

i) In the Import statistics Thailand is recorded as a source of imports to Thailand in 17 of the 4 digit HS codes within HS Code 44: Wooden Articles amounting to almost 86 million Baht in 2010. Similarly in HS code 93, part of which is covered by the Timber Regulation, Thailand is recorded as a source of imports to Thailand amounting to around 79 million Baht in 2010. Overall this problem accounts for less than 1% of imports of HS Code 44 or 93 recorded items in 2010; however in specific Codes such as 4415 the problem is more significant as Thailand is recorded as the source of almost 9% of 4415.1000 (cases, boxes and drums) and 17% of 4415.2000 (pallets). No related problem has been found with Export statistics ⁴.

ii) The study was also asked to report on the value of wood and timber. Considering the wide range of goods and end-products covered within the forest products sector it is not surprising that a range of values were found. As Customs data on quantities traded are only available at the detailed 11 digit HS code level comparisons of values have thus only been considered at this detailed level.

iii) Thailand’s wood processing industry manufactures a wide range of goods. The more processed and complex the product is the less likely it is to be recorded in terms of wood volume or weight. Thus musical instruments with a wooden component and wooden toys may have lost any reference to wood volume or weight. Trade statistics are likely to be in terms of “unit” rather than “kg” and due to the variety of products any attempt to convert production data for these products into raw material such as by the use of units such as Round Wood Equivalent (RWE) is prone to error.

⁴ i.e. Thailand is not recorded as being a country that Thailand exports to.

3.3.2 Private Sector statistics

Various trade bodies within Thailand collate information on their relevant sector. This can involve a list of members and their locations and also data on industry outputs and markets.

International trade magazines such as Wood Based Panels International and Pulp and Paper International cover the larger factories in Thailand and provide some basic information on locations, capacity and sometimes production data.

3.3.3 Value statistics

Thailand produces and trades in forest products with a range of unit values. Whilst trade statistics include both value and volume/weight, in theory they could be used to give an indication of value and trends. However, the great range of values seen within some trade categories suggest either that the categories contain produce with a wide range of values or that mistakes are being made in the recording and collation of data, or both of these things.

For example 2011 data for sawn wood imports under HS code 4407.2999.090 shows just over 231,000 m³ being imported at an average rate of 945 Baht per m³. However around half of this volume (116,035 m³) was imported from Indonesia at a unit cost of 93 Baht per m³, whilst smaller volumes came from other countries at higher rates, some considerably so - China (103 Baht per m³), Laos (5,473 Baht per m³), Malaysia (14,984 Baht per m³), Myanmar (18,234 Baht per m³) and Taiwan (28,656 Baht per m³). The simple message is that the diversity of Thailand's trade in wooden products is such that establishment of any trends in price have to be determined from individual products and specific markets. Average rates across HS codes are provided in Appendix 3.

4. GOVERNMENT REGULATIONS COVERING WOOD PRODUCTION, USE AND TRADE

4.1 Legislation

A variety of Thai laws and regulations exist to control and monitor actions within forests and the forestry sector. Some of these are of direct relevance to FLEGT goals e.g. Forest Act 1941 (B.E.2484), Forest Reserve Act 1964 (B.E.2507), Forest Plantation Act 1992 (B.E.2535) whilst others (i.e. of an administrative nature) are less so. Not surprisingly, all laws and regulations are written in Thai and very few, if any, appear to be available in other languages. The RFD has produced a number of handbooks and booklets in Thai which describe the procedures covering wood processing and plantation administration (e.g. see Appendix 4).

The laws of principal importance are those administered by the Royal Forest Department (RFD) within the Ministry of Natural Resources and Environment (MONRE).

This report does not provide a definitive assessment of Thai law pertaining to forests and forest products, nor of the history of the development of policy and relevant institutions within Thailand. The brief description below has been compiled from a number of sources - translations of statutes and regulations, explanations from RFD officials and secondary sources, mostly in English.

This study has also not considered in depth the issue of community use of forests and/or forest land, nor the outcome of previous efforts at resolving the issue of community rights in and on forest land. Bearing in mind the history and complexity of this issue and rights such as *Sor Por Kor* (SPK) which were issued between 1981 to 1994 this study has not been able to consider the significance of both earlier and current uncertainty over land tenure on volumes of wood entering the industrial supply chain. The reader is directed to Hirsch (1990) for background and more details on these issues along with Pye (2005) and Usher (2009).

Laws to protect forests and govern forest use have a long tradition in Thailand. Thus Forest laws enacted in 1897 - the Forest Preservation Act and the Teak Preservation Act criminalised people's use of teak by making it illegal to cut teak less than 2.1 metres girth (equivalent to a dbh of 66 cm) and requiring permission for the cutting of trees larger than this size.

Further control measures were introduced to reserved species in the Forest Conservation Law 1913 introducing Category 1 (species for domestic trade and consumption) and Category 2 (rare and important species). By 1955 hundreds of forest products were reserved under regulations.

The Forest Act 1941 (B.E. 2484⁵) contains many of the control provisions in force today. The Act is reproduced in Appendix 5. The Forest Reserve Act 1964 (B.E.2507) emphasised conservation whilst the National Forest Policy 1985 (B.E.2528) was modified following the national logging ban introduced in 1989 (B.E.2532). A Forest Plantation Act was enacted in 1992 (B.E.2535).

⁵ Thailand's calendar is 543 years ahead of the Western/Gregorian calendar. To convert a Thai date to the western calendar deduct 543.

The impact of these various laws on domestic production is as follows:

i) the volume of legally produced logs from natural forest in Thailand is remarkably small; so small in fact that the RFD publish no production figures from natural forest,

ii) there is a significant human population, primarily rural villagers, within areas designated as “conservation forest”, “national park”, “Class 1 Watershed”, “wildlife sanctuary” and “national forest reserve area”. There is thus potential for produce arising from their activities to be declared illegal. However, this is a complex issue with considerable uncertainty as is typical with land claims and land use of this nature.

In both respects this study has found no evidence to indicate that either of these potential problems are of significance relative to the large volumes of rubber and eucalypt wood harvested in Thailand; it seems possible that individual cases of potential illegality may arise as a result of land tenure uncertainty and disputes but there is no evidence of this being a systematic threat of widespread illegality.

However, the potential impact on the “status” of timber under any future licensing programme is less certain, and this is a subject that will require careful examination in order to resolve the underlying issue of legality and the identification and labelling of any timber coming from land that may be associated with such uncertainties or possible disputes.

The other important effect of the legislation is to create different regulations for different species of timber. Thus Teak (*Tectona grandis*) and Yang (*Dipterocarpus* spp) were the originally reserved species in 1941 (B.E.2484). Now regulations cover all species, other than 14 planted species (including rubber and eucalypt) which are exempt. The Plantation Act 1992 (B.E.2535) provides a different categorisation of species, necessitating the registration of plantations of 158 species and even greater control of 13 rare species (see Appendix 6 for a list of these species).

In 1998 (B.E.2541) the Royal Forest Department started implementing a regulation to license the import of chainsaws (as defined by Harmonised System Codes 8467.81, 8467.91, 8508.20, 8508.90).

The RFD also has the responsibility for monitoring wood use in wood processing factories. The Forest Act 1941 (B.E.2484) Section 48 mandates the licensing of wood processing factories. Issuance of annual licences allows the RFD to keep records of all types of such factories and to monitor them accordingly.

Item 6 of Ministerial Regulation No. 25, 1976 (B.E. 2519) mandates that all wood processing sawmills and stores have to maintain complete accounts of wood stocks, available for inspection by a RFD member of staff.

Similarly Item 5 of Ministerial Regulation No. 27, 1987 (B.E. 2530) mandates similar wood accounting rules for wood furniture factory and stores.

Section 14 item 43 of the RFD regulation 1998 (B.E. 2541) covers controls on wood processing. All permitted wood processing facilities and wood-based stores have to be inspected by an RFD officer.

The practical implications of these regulations are spelt out below.

4.2 Regulations of other Ministries

Regulations of other Ministries also impact on the activities of the forestry sector in a variety of ways. In particular, the Department of Foreign Trade of the Ministry of Commerce has provided details of a number of regulations which are relevant:

In 1992 (B.E. 2535) the Ministry of Commerce passed regulation 92 which “restrains” the import of log, wood and wooden products and provides criteria for imports - this study has not identified the practical effect of this regulation, but the reason given for its creation was to prevent illegal logging. Some regulations are made on a provincial basis, for example the import of logs and sawn wood of Teak, Yang and 158 other species, but not products made of these species, has been prohibited since 2005 (B.E. 2548) in the border areas of Tak and Kanchanaburi provinces. In 2006 (B.E. 2549) the Ministry of Commerce served a regulation which required the licensing of exports in wood, sawn wood and charcoal (amongst other items).

The study was made aware of regulations requiring land owners to register tree plantations with local offices of either the RFD or MONRE. Compulsory registration is restricted to a list of 158 species that might be confused, once felled, with species that could have originated from natural forest. More significant restrictions apply to a further 13 rare species (see Appendix 6 for the two lists). Registration of the most commonly planted species is optional and it appears that incentives to register are limited as, once registered, RFD approval is required to allow legal felling under the Forest Plantation Act 1992 (B.E. 2535).

Registration provides benefits including long term security of tenure for the plantation owner but there also appear to be hurdles to and disincentives from registration, full investigation of which was beyond the scope of this study. In addition, when registered plantations are felled there is no guarantee that, if land use changes, the registration record reflects this change. As a result, if data were available from the registration of plantations it would be of little use for estimating the total area of plantations in Thailand.

The Ministry of Agriculture and Cooperatives is responsible for rubber trees as an agricultural plantation crop and are involved in encouraging farmers to replace existing rubber plantations with newer improved varieties. The production of rubber wood is a side product of the replacement process, and sales of wood provide an income to farmers, which assists them with the cost of replanting. The production of a raw material for the forest industry from an agricultural crop is an administrative challenge to the Thai government as responsibility for monitoring and control is handed on from the Agriculture Ministry to the RFD.

The Plant Quarantine Act 1964 (B.E. 2507) covers plant health issues.

4.3 Practical implications of laws and regulations on timber production, processing, transport and trade

The principal rules that govern timber use are those used and enforced by the RFD. However, since the international trade in forest products is significant, it is best to consider the role that Customs plays first.

4.3.1 Imports

Customs controls are limited to a small number of entry points – ports and land crossings to Myanmar, Laos, Cambodia and Peninsula Malaysia (see Section 5.3 below for a list). It is physically possible to import timber from Myanmar at one river point but no timber has been imported legally in recent years.

Customs Notification 38/2543 describes the documentation required to import into Thailand. This documentation is for all imports and not specific to wood or other forest products. An import declaration has to be filed along with a bill of lading, an invoice, a packing list, and insurance invoice and a release form. An import licence and a certificate of origin may be needed, if appropriate. The primary function of this procedure is to ensure the correct HS code is established, along with the value on which customs duty is paid. Details with regards to establishing that a consignment has been legally produced in an exporting country are limited. An invoice showing the seller's contact details and a packing list showing the size make-up of the sawn timber are common documents. In addition, Myanmar and Cambodia have requested Thailand to insist on production of a Certificate of Origin (CoO) for imports from their respective countries. "Problems" with CoO of timber coming from Cambodia has discouraged the import of timber from Cambodia into Thailand. Laos does not insist that Thailand asks for a CoO for timber coming from Laos. From interviews and reviews of relevant regulations, the study found no clarity on whether there is a regulatory basis for identifying the countries for which CoO are required.

In the documents seen there was variation in the level of detail given with regards to the species and origin provided in the invoice - typically a local name for species and the exporting country. Where a timber trading company is involved, the country from which the timber is exported to Thailand may differ from that of the trading company, making the identification of the original source even more difficult. Significant trades of forest products are recorded with both Singapore and Hong Kong, neither of which have any domestic harvesting.

At the port in Bangkok (Khlong Toei) the RFD checkpoint is immediately adjacent to the port exit; at the entry point from Laos at Nong Khai imported timber is transferred to one of 14 privately owned sheds where timber is transferred from Lao onto Thai registered transport. Timber may remain in the sheds rather than being transferred immediately. The normal procedure is for whole loads to be transferred but it is possible that loads are split or bulked depending on customers and demand. RFD staff are responsible for issuing transport permits for further onward travel within Thailand and for transit shipments across Thailand, particularly to the port in Bangkok. Where a load is split RFD staff have to give greater attention to ensuring the packing list is accurate, but the number of RFD staff stationed based at Nong Khai (<10) makes it impossible to monitor all 14 sheds 24 hours a day. However, the task is made slightly easier as the border crossing is only open during daylight hours. There clearly is a risk that small part loads may not be accompanied by copies of all the original documentation and may only be covered by the RFD issued transport permit. The data that the RFD collects is recorded on the form shown in Appendix 7.

Two companies importing timber for manufacturing doors, windows, framing and flooring were visited to examine the type and consistency of documentation accompanying imported timber. The documents seen confirm that for shipments by sea the conventional shipping documents provide a measure of additional information that is useful in corroborating the authenticity of

the shipment and its legality. The Bill of Lading, Packing list and Ship's Manifest all accompany the shipment and provide a means of confirming the identification of the timber comprising the shipment. A sales invoice usually accompanies each consignment and from this the seller and purchaser (or agent) can be identified.

However, there is no single unique identifier which enables the timber to be tied unequivocally to the documentation, though inspections and a comparison of the various documents does usually enable the consignment to be identified with confidence. However, on their own, none of these documents, individually or collectively, provide proof of the legality or origin of the timber in the consignment.

A CoO sometimes accompanies the shipping documentation. Shipments from Malaysia and Myanmar appeared to consistently have a CoO but for shipments from other countries the presence of a CoO was more erratic. The CoO is important because it is the principal documentary evidence relating to the origin of the timber and by implication its legality. However, on its own a CoO cannot be taken as a guarantee of the legality of the timber, only the legality of the shipment.

Other documentation which may or may not accompany imported timber is the Phytosanitary Certificate. In some cases this was present but in others it was absent.

The most important documents related to imports appear to be the copy of the license (operator's license) that demonstrates the importing company's legitimacy and authority to trade, and the supporting custom's documentation which shows that import fees have been paid and that the timber has been formally cleared by customs to enter the country. It is this combination of documents that means the timber has entered the country legally.

The second processor visited was frequently importing timber overland from Laos and here the accompanying shipping documents were less comprehensive as there was no Bill of Lading and no manifest. A packing list detailed the timber comprising the shipment. CoOs sometimes accompanied these imports but no phytosanitary certificates were evident.

Customs entry documentation is, once again, the principal proof of legitimate entry of the timber into Thailand.

Where there is uncertainty concerning the species of type of wood, the RFD can provide an officer to corroborate the species shipped.

4.3.2 Travel permits

The Forest Act (1941) (B.E. 2484) ⁶ defines the control of logging operations and non-wood forest product (NWFP) collection, including transportation of timber and non-timber products and sawn wood production. Section 4(2) of the Act defines wood broadly to include bamboo, rattan and palm. The Act defines that legally-produced timber comes from i) Forest Tree Plantations, ii) Agricultural Tree Plantations or iii) Rubber Tree Plantations. All of these must be planted on land on which there is legal tenure either on private or permitted degraded forest

⁶ The Act has been amended/updated in 1948, 1951 and 1960 but details have not been found in English and the original Act still provides core principles

land. In addition timber imported legally into the country is also covered by the provisions of the Act.

Section 39 of the Act mandates that logs and sawn timber that are moved within Thailand need a travel permit. However, 14 species of wood (see Appendix 2) are exempt. The travel permit system still operates for exempt species if the wood is imported. Since rubber and eucalyptus appear to make up a large proportion of the wood transported in Thailand it can be seen that far more wood and timber is exempt from the travel permit procedure than is covered by it.

The RFD has 38 checkpoints which are open 24 hours and located around the country - 7 in the south of the country, 6 in the north, 8 in the north east and the remainder in the Central province and around Bangkok.

In addition the RFD maintains checkpoints at a further 249 locations which are labelled "Type 2" and only open during office hours 08:30-16:30. Typically there is a Type 1 checkpoint near the major border points where international trade in logs and/or timber could take place; in addition there are a number of Type 1 checkpoints within Thailand along the major highways and around Bangkok.

The effectiveness of the checkpoint system is dependent on timber transport stopping at the checkpoints to request issuance of the appropriate permit or recording of attendance in accordance with an already issued permit. The checkpoints are not physical barriers to the movement of timber or other forest products and since material can be hidden by covers on a vehicle or included in containers it is difficult to see how illegal timber could be identified, other than by random stops/searches by transport police.

Travel permits are issued on well designed and defined forms (see Appendix 8); the permit is produced in triplicate using a standard book held at individual factories registered with the RFD; the book can be printed by any printer but each book has to be validated by the RFD. As a result the individual factory issues the travel permit. One copy of the permit remains with the book at the factory, one permit travels with the wood consignment whilst the third is submitted to the RFD or MONRE provincial office. Some of the specific details of how check points operate are described in the Act (see Appendix 5).

The travel permit indicates the place to which the timber is to be transported along with a packing list. A limited time frame (24-48 hours) is given for the timber to be transported and, depending on the distance to be travelled, intermediate check points may be listed at which the vehicle has to stop and be checked by RFD staff. Staff have hammers with which they mark the ends of a proportion of sawn timber in any one load (see Figure 1).

This procedure is not followed for processed wood such as furniture, boards, pulp and paper so its primary role is for sawn timber and round wood. Companies issue their own documentation for transport of finished product.

There is potential for (controlled) higher value wood to be mixed with (exempt) sawn rubber wood. To allow police to distinguish transport carrying exempt species, transport carriers can use, on a voluntary basis, a document distinguished because it is on yellow paper. The RFD do not keep a record of the permits issued.

Checkpoints typically cover movement in both directions on a road or at a port (i.e. imports and exports). Accumulated data recorded at any one checkpoint thus may give little indication of which direction recorded loads are travelling.

Regulations state that all sawn wood and logs should be marked with a hammer as seen in Figure 1. In practice only a proportion/sample is marked.

Figure 1. RFD staff marking hammers for logs and sawn timber.



4.3.3 Plantation timber of non exempt species

Owners of plantations of non exempt species have to provide details of their timber once felled as shown in Appendix 9.

4.3.4 Monitoring of industry

The RFD also monitors and inspects wood-using industries and timber utilisation, primarily with regards to the volumes of timber utilised. Each timber-using factory maintains a record book of timber purchases/deliveries and outputs. The design of the book in which timber flows are recorded is defined by the RFD, but privately printed without restriction. A factory purchasing a new recording book has to have it authorised and marked by the RFD so that RFD staff are aware of all authorised timber record books. Each book is checked at least once annually by RFD staff to ensure product volumes leaving each factory are less than timber entering the factory. An annual return is made to the RFD local office describing wood inputs and product outputs but this data is held at local offices and not collated nationally. The record includes ALL timber inputs including those of species exempted from the travel permit system. It does not, however, include semi processed wood (such as mouldings) and board; pulp and paper mills are included with regards to inputs of wood chips and logs but not pulp or recycled paper.

Such monitoring and returns have the potential to identify poor record keeping and gross violations of the control and monitoring system; it is difficult to see, however, how less significant violations can be identified with no reporting of stocks or processing efficiency.

4.3.5 Exports

Whilst Thailand exports a considerable volume of sawn wood, a large proportion of exports of forest product are of processed goods such as board, pulp, paper and furniture. These are not subject to the scrutiny of the RFD with regards to legality, origin or other parameters.

To assist exporters the RFD operates a voluntary certification process⁷. This allows exporters to provide with their shipment the equivalent of a Certificate of Origin (in English) with the RFD's approval (see Appendix 10 for a blank example). Exporters complete an application form including photographs of the product and documents describing the source of the wood (including invoices); the application form is submitted to the nearest RFD office for issuance of the certificate. RFD staff examine both the documentation and the shipment before issuing the certificate. Less than 150 certificates were issued in 2010.

Based on a small sample of files examined it is unclear how RFD staff can be certain that the documentation matches the consignment. In one case a large pile of eucalyptus chips was certified, but it unclear how the RFD could be certain that it contained only eucalypt wood material.

In a second example a brochure from a manufacturing company accompanied the application and was included in the file; it was clear that the company used a variety of high value tropical woods from around the world (the brochure stated so clearly); by matching items in the consignment list with the brochure (which both showed and described the woods used) it was clear that the consignment contained a variety of woods. However the certificate issued merely reflected the application, which included an invoice for a single batch of North American Ash.

The issuing of such certificates seems to be a risk to the RFD's reputation from this process as, due to the complexity of Thailand's trade in forest products, exports of more complex products may contain multiple sources of wood, which may not always be declared to the RFD.

Exporters also need to comply with customs procedures, which may involve paying a tariff (if appropriate).

4.3.6 CITES

The genus *Aquilaria* (agarwood) is listed in Appendix II of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora). Thailand has three species of agarwood that are thus affected - *Aquilaria crassna* Pierre ex Lecomte, *Aquilaria malaccensis* Lamk. And *Aquilaria subintegra* Ding Hou. Appendix II includes species that are not necessarily threatened with extinction, but in which trade is controlled in order to avoid utilization incompatible with their survival. An example of a Thai CITES permit is shown in Appendix 11 to this report.

The volume and complexity of Thailand's international trade in forest products means that volumes of CITES listed species of wood may be imported either directly or indirectly from third countries. This poses a risk to wider markets which may decide to reduce the risk to their supply chains by not purchasing from Thailand.

⁷ RFD regulation 2008 (B.E 2551) Certification of wood based product

4.4 Paperless system

The RFD's current system is paper-based. Such a system limits the amount of checking that can be done and slows the transfer of data within the RFD. The benefits of moving to electronic records and transfers are obvious.

The driving force for electronic data transfer is the National Single Window (NSW), which reflects Thailand's commitment to integrate Thai procedures to the ASEAN Single Window agreed by ASEAN Economic Ministers in December 2005. The NSW is an electronic system that enables secured, safe and efficient electronic exchange of trade-related documents through a single point of entry in order to fulfil all import, export and transit-related regulatory requirements and to expedite the smooth flow of information of goods either for import, export or transit. In addition, it is a single submission of data and information, synchronous processing of data and information and decision-making for standardized and integrated environment of Customs release and cargo clearance.

The Customs Department has connected relevant government agencies using an e-Customs system ("Paperless Customs"). This will provide an e-Licensing / e-Certificate system that will develop to become the National Single Window (NSW). The RFD is thus one of many government agencies that have to develop and implement systems to facilitate integration with the national procedures.

The RFD has been in the process of setting up such a system, training staff and installing computers at checkpoints around the country. At the time of fieldwork for this study (mid October 2011) the software systems were still being developed and, whilst staff had been trained, the system was not operational. Based on the plans seen it should be possible for the RFD paperless system to transfer information about wood produced within Thailand from forest to factory. However, there is no intention for the system to replace the existing paper-based system, merely to allow incorporation of data into the Customs e-system.

In addition, as the species most commonly used are exempt from the travel permit system the majority of wood transferred in Thailand will not be covered. A second gap in knowledge relates to imported timber for which only limited information may be available such as the country exporting the timber to Thailand.

Considering the current state of the system within the Customs department it is possible for trade agents to submit documentation via a portal to the Customs department. However, the Customs department themselves still use a paper-based system so the submitted documents are printed out, reducing the "paperless" aspects of the system.

Currently imports into Thailand are accompanied by original documents such as an Invoice, a packing list and a certificate of origin, if one had been issued by the exporting country. The original documents are used by the RFD in issuing travel permits and might be available (depending on the size of the imported batch) with the consignment as it travels to its end point.

The usefulness of such a system for data collection should be obvious. Its robustness for integrity will, however, only be as good as its weakest link and the system is not complete in its design, nor documented to allow an assessment to be made of these features. Bearing in mind

the issues found when comparing Customs data with Checkpoint data, it is unlikely that computerisation will solve all the sources of difference in data.

Study in the field has found that the original documentation relating to the import of the wood – and which enables the origin and legality to be traced through the supply chain – are not passed on from processor to processor or manufacturer to customer. The reason this is not done is because the documentation will provide downstream processors with commercial intelligence which may allow them to go direct to source, cutting out suppliers or enabling a reduction in price. Though understandable, this does mean that tracing the legality and origin of timber within a supply chain is extremely difficult, even for legal and legitimate wood.

5. DOMESTIC RESOURCES AND PRODUCTION

5.1 Resources

5.1.1 Natural Forest

Forest area can be analysed both by land use and legal designation. In 2009 Thailand was reported to have around 17,218,400 ha of forest (34% of the total area of the country). Of this 2.7 million ha is designated to be National Forest under the control of the Royal Forest Department. As logging is banned, no part of the forest estate is designated as production forest.

Thailand reported to FAO for the Global Forest Resources Assessment 2010 that the forest area was 15.8 million ha in 2006. Plantations especially those in agricultural areas are additional to this figure.

5.1.2 Eucalyptus Plantations

Eucalyptus species have been planted both in traditional forest blocks and along the edge of farmers' fields. As previous studies have noted there is no reliable data on the extent of eucalyptus⁸, but according to the major mills using these plantations (SCG and Double A) a relatively small proportion are under the direct control of the mills and a large proportion is planted and managed by farmers using outgrowers' schemes⁹. They are managed on coppice rotations as short as 4 years and thus a significant area at any one time has either just been felled or is in an early state of growth. This presents an inventory and monitoring challenge. Any reasonable estimate will need to reflect the significant plantings on the edges of fields which are not accurately stated as an area.

FAO's estimate in 2001 of the area of Eucalyptus was 443,000 ha (FAO 2001). Barney (2005) summarises a wide range of estimates found in the early 2000s but indicated that details of data reliability were variable.

5.1.3 Rubber Plantations

A Ministry of Agriculture survey reported that in 2008 Thailand had around 2.7 million ha of rubber plantations almost all of which is owned by small holders. Over 80% of the trees over 6 years old are in the south of the country towards the Malaysian border. However, only one third of the trees less than 6 years old are in the south, as a result of large scale planting in the north east of the country.

⁸ Demonstrated by the range of estimates included in documents reviewed (FAO, 2001; Barney, 2005)

⁹ A variety of arrangements are in place allowing mills to be flexible with their requirements according to production needs and market demand. The mills will contract long term with some growers and purchase at market prices with others including third party traders/intermediaries.

Six provinces in the south of the country each have more than 1,000,000 rai (160,000 ha) of rubber plantations - Surat Thani, Trang, Nakhon Si Thammarat, Songkhla, Yala and Narathiwat. The province with the largest area of rubber in the north east is Nong Khai.

Not all plantations can be considered to be a potential source of logs for processing purposes as some may be remote from roads suitable for log transport. In addition, data from 2007 suggests that there is potential for significant misinterpretation of the actual stock of rubber trees from area data due to the nature of growing patterns of small holders (Kainulainen, 2007). A land use survey may classify an area as “rubber” but this may not be fully stocked with rubber trees.

5.1.4 Forest Industry Organisation

The government owned enterprise the Forestry Industry Organisation (FIO) has 244 plantations in all parts of Thailand. Detailed data on the land managed and actual area of plantations varies between data sources but it is believed that the area under FIO control is between 160,000 and 190,000 ha with around half the plantations (possibly 75,000 ha) planted to teak. Rubber (10,000 ha) and Eucalypts (32,000 ha) are the next most important species but possibly as much as 20% of the plantation area is made up of various other mixed species.

Some FIO plantations are registered under the Forest Plantation Act 1992, giving the organisation long term secure tenure, whilst other plantations, such as exotic species planted on land designated as forest land, are not eligible for registration.

The FIO has entered into a Joint Venture with Siam Forestry for eucalyptus plantations, some of which is FSC certified.

5.2 Domestic Production

5.2.1 Natural Forest

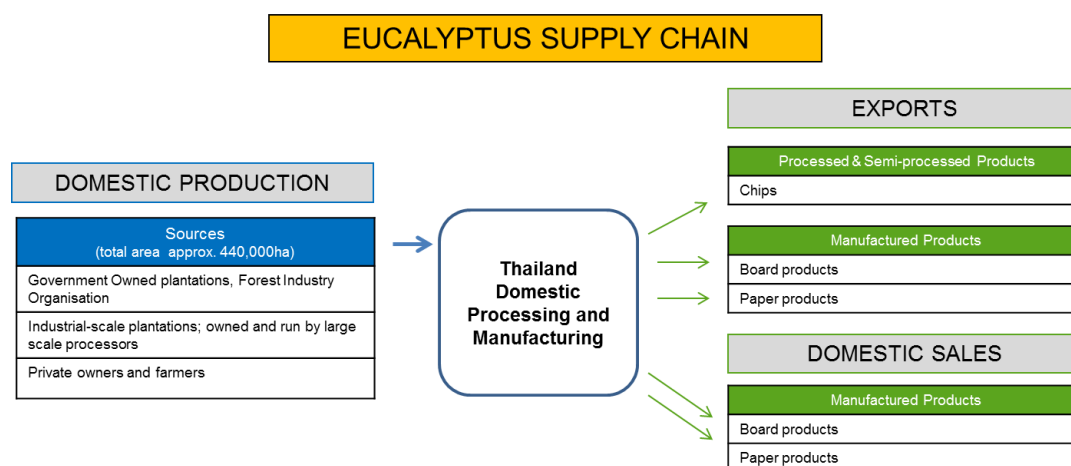
Official statistics record no timber production from natural forest areas. It is believed that small volumes may become available from legal conversion. Confiscated illegal timber is used within government operations and not placed on the market or sold. However frequent reports in Thai national newspapers indicate that illegal felling from natural forests is still occurring and remains a persistent problem, especially in those forest areas close to adjacent countries.

5.2.2 Eucalyptus Plantations

No official statistics exist on the production of wood from eucalyptus plantations. The most recent studies show estimates from 2003 (Forest Trends 2011, FAO 2009). These were derived from estimates of production from paper mills and export statistics of wood chips, converting these estimates into estimates of round wood production.

The supply chain for eucalyptus is straightforward, as eucalypt is either used domestically in board and paper factories or exported. It can be transported either as logs or as chips; however, most exports are as chips.

Figure 2. Supply chain in Thailand for eucalyptus



5.2.3 Rubber Plantations

No official figures exist documenting the national level of timber extracted from rubber plantations. As a consequence of the distribution of mature rubber plantations most significant production of rubber wood is in the south of the country and, due to staining effects, sawmills using rubber wood need to be close to the plantations. Figure 3 provides an overview of the supply chains identified for rubber wood in Thailand.

Sawn rubber wood is transported to furniture and other processing factories in the central and Bangkok regions mostly by road but is also exported from ports in the south part of the country.

In individual processing factories rubber wood may be mixed with other forest products (e.g. MDF) creating some difficulties for external auditing of wood volumes without detailed data on processing methods, recovery rates etc.

The Office of Rubber Replanting Aid Fund (www.rubber.co.th) collects some data on rubber planting and restocking.

An analysis from 2007 reports on the split of use of rubber wood between end uses (Monge, 2007). Equal percentages went to fuel/charcoal and furniture (c 35%) whilst smaller percentages went to construction and “commodity crates”. Conversion rates from round wood to sawn wood of between 30 and 40% were reported.

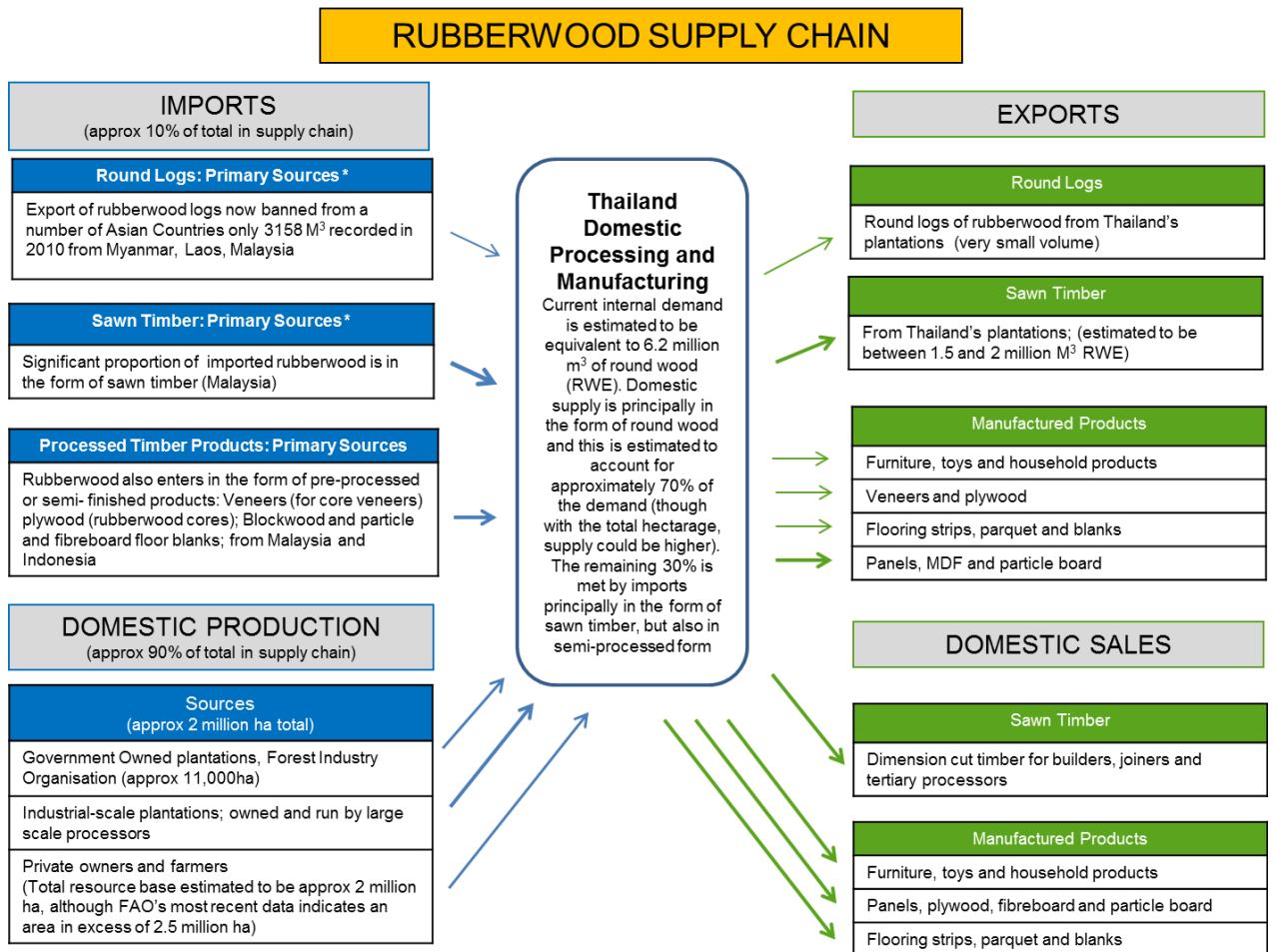
Farmers owning rubber plantations are free to sell their trees as and when they see fit. The income from sales of rubber trees for timber purposes assists farmers to replant with newer higher yielding varieties. There is no government control over felling of rubber; transport to mills using rubber wood is also not controlled or monitored by government.

5.2.4 Other Plantations

The FIO’s plantations produce predominantly teak with a variety of other species including rubber and eucalypt. Part of the FIO plantations are FSC certified. Production of teak is

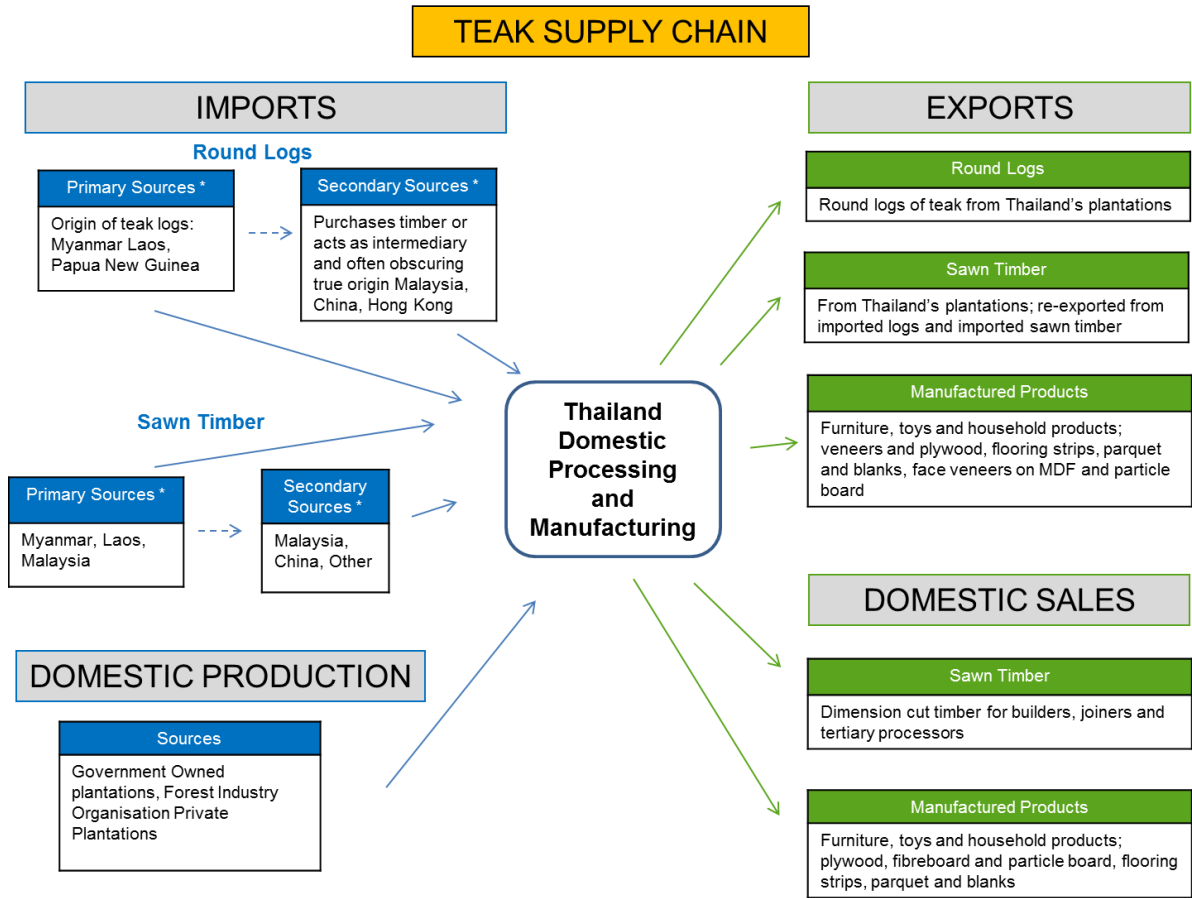
estimated to be around 80,000 m³ per year, dependent on demand. Uses for teak in Thailand are shown in Figure 4.

Figure 3: Supply Chains for rubber wood in Thailand



*Primary and Secondary sources extracted from RFD Forestry Statistics data 2010

Figure 4: Supply chains in Thailand for teak wood



*Primary and Secondary sources extracted from RFD Forestry Statistics data 2010

5.3 Thailand's Forest Industries

The RFD issues annual licences for factories processing and/or selling wood. In 2010 a total of 17,724 mills were recorded of which 10,394 were labelled as “shops” (either for sawn timber or wood products). Just over 1,000 of the total mills were recorded as “man-powered” rather than powered by machinery, suggesting they are small and represent a relatively small proportion of total throughput. The remaining mills were categorised as sawmills (828), wood working by machinery (5,492) and pulp and paper mills (3).

The region with the highest proportion of sawmills is the South (41%), followed by the Central region (24%) and the North East (12%).

The Central region has the highest proportion of wood working mills (38%), followed by Bangkok (20%) and the North East (13%).

5.3.1 Wood chip, pulp and paper

Thailand's eucalyptus plantations are the prime source of raw material, complemented by small volumes of acacia and bamboo. However, paper mills also use domestic waste paper and corrugated board as well as imported wood chips, waste paper and pulp (particularly long fibre). As individual mills can mix all sources of fibre into one product, comparison of inputs of domestically produced wood with outputs of finished product is not a useful exercise. There are 44 paper mills of which 6 are integrated pulp and paper mills, mostly in the central region of Thailand. Clearly some paper mills are dependent on domestically collected waste paper and/or imported waste paper and pulp rather than domestically produced wood.

The RFD monitors domestically produced wood inputs at the mill gate but since eucalyptus is an exempt species no travel permit is required to transport eucalyptus wood chips or logs.

In 2008 Thailand imported 0.37 million tonnes of pulp and produced domestically 1.1 million tonnes; of this 1.3 million tonnes was used domestically and 0.19 million tonnes were exported¹⁰. Figures available for 2010 suggest a similar pattern with Thailand importing 1.6 million tonnes and exporting 0.16 million tonnes of pulp and waste paper.

In 2010 Thailand imported 208,000 tonnes of wood recorded under HS Code 4401 (Fuel wood including woodchips and sawdust), whilst exporting 2.26 million tonnes under the same category.

In 2010 Thailand imported just over 1.0 million tonnes and exported 1.16 million tonnes of paper and paperboard. Production of paper in 2008 was 4.2 million tonnes.

In 2010 the largest paper group (SCG) produced 3,191,000 tonnes of paper and paperboard, whilst the second largest (DoubleA) produced 510,000 tonnes of paper and 75,000 tonnes of market pulp¹¹. If the output of both SCG and DoubleA was produced only from eucalyptus over 12 million tonnes of green wood would have been required. However, since both recycled paper

¹⁰ Production figures from The Thai Pulp and Paper Industries Association (TPPIA) 2009; trade data for 2010 from Customs

¹¹ Pulp and Paper International September 2011

and imported pulp is used in some production lines significantly less was likely to be used, but the extent of recycled paper use in production is not published information.

The in-house company - Siam Forestry - providing some of the wood supply to the SCG mills has achieved FSC certification over some 6,400 ha of eucalypt plantations.

5.3.2 Board industries

Thailand was reported in 2011 to have 24 board production lines owned by 17 different companies¹². The installed capacity of these factories was estimated as 3.36 million m³ per year. Products include MDF, hardboard, particleboard and fibreboard.

The Board industries used primarily rubber wood but some MDF lines used only eucalyptus and some were mixed. Details of the volumes and particular uses by mill are not known. Waste from wood working mills were also used in some cases, although some mills use waste to generate electricity.

5.3.3 Sawn timber

Data on the quantity of sawn timber imported into Thailand varies with source. Aggregating data available on the Customs Department website for the 59 HS codes within HS 4407 shows that in 2010 72,708,873 m³ was imported. The RFD's Forestry statistics book for 2010 quotes a figure of 1,323,796 m³.

A single data entry in June 2010 for the import of sawn timber from Malaysia under HS code 4407.2600.090 is stated as 68,837,125 m³. Removing this apparent error, without replacement, reduces the Customs data total to 3,859,297 m³. There is a smaller peak of imports recorded under 4407.9900.090 in February 2010 where a single month's imports from Malaysia of 600,000 m³ was ten times greater than "normal" month's trade. It is not known whether this is an error or just an unusually large but valid record. Understanding wood flows into, within and out of Thailand when official data contains potential large errors poses a number of challenges.

This report uses an import figure of 3.3 million m³ of sawn wood, but without further analysis it would be unwise to rely on this. Exports were around 2.8 million m³ of sawn wood in 2010. The imports came primarily from Malaysia and Laos, whilst New Zealand and Canada provided softwood timber. USA and Myanmar were also significant providers.

Thailand's exports of sawn wood were to a very large extent of rubber wood to China. Thailand's wood working industries thus had at its disposal imported wood and sawn rubber wood that was not exported.

¹² Wood Based Panels International 2011 www.wbpionline.com

5.3.4 Furniture

Thailand's furniture industry exported between 17-18 billion Baht in each year 2008-2010 (around 0.25% of Thailand's exports); sales in 2011 were slightly reduced to just below 16 billion Baht, possibly as a result of the flooding. Primary markets are USA and Japan, with 9 European countries being in the top 20 markets for Thai furniture. As far as is known no study has been done on the volumes of wood used and all trade data is measured in units of furniture, with no reference to its wood content.

Around 300 factories are involved in the export of furniture from Thailand.

6. INTERNATIONAL TRADE

Customs data is arranged around the Harmonised System classification of products. Available data is voluminous and analysis can consider volumes/weight, value, sources of import and destinations of export, trends over time; each of these can be considered at various levels of detail based on the Harmonised System codes - 2, 4, 8 and 11 digits but raw data that includes volumes/weights is only available at the detailed 11 digit level, necessitating combining data for reporting at the 2, 4 and 8 HS code. Appendix 1 provides details of the HS codes considered in this report.

Ministry of Commerce data is arranged in similar manner to the HS system but using a different coding system. The tables at the end of this report give a mechanism to compare the two coding systems.

6.1 Largest trades

Exports of forest products from Thailand including wooden furniture, wood products, pulp and paper were valued at 165 billion Baht in 2011 or US\$5.5 billion. Just over half this value was in paper, and just under 10% in wooden furniture. Appendix 12 provides details of both relevant imports and exports by value over the last 4 years with measures of trends and the relevant importance of each country trading with Thailand.

The EU is a relatively small trading partner with Thailand in wood and other forest products, as measured by the percentage of value of Thailand's imports and exports involved, which varies with product. The most significant products are paper (from the EU) and furniture (to the EU); the EU provides just over 20% by value (2010) of Thailand's paper imports; and it imports around 20% of Thailand's exports of furniture.

In 2010 the following individual countries were reported to either be the source of or the destination for 1 billion Baht or more of Thai imports or exports of forest products as aggregated at the HS 4 digit level.

6.1.1 Imports to Thailand

Table 2: Wood in the rough (HS Code 4403)

Country of source	Quantity (m ³)	Value (Baht)
Myanmar	98,153 (30%)	1.3 billion (66% of total)
<i>Total (all 23 countries)</i>	325,043 (100%)	2.0 billion (100%)

HS code 4403.1090.000 is reported in kgs, whilst all other classes within 4403 are reported in m³. A conversion of 1,100 kg = 1 m³ has been used; one month's import from Congo from August 2010 has been omitted.

Table 3: Sawn wood (HS Code 4407)

Country of source	Quantity (m ³)	Value (Baht)
Malaysia	1,500,878 (45%)*	6.3 billion (61%)
Lao	671,633 (20%)	1.4 billion (13%)
<i>Total (all 52 countries)</i>	3,310,819 (100%)	10.4 billion (100%)

* corrected customs figure due to anomaly on 4407.2600 June 2010

Table 4: Plywood (HS Code 4412)

Country of source	Quantity (m ³)	Value (Baht)
China	2,890,347 (89%)*	1.8 billion (60%)
<i>Total (all 39 countries)</i>	3,238,101 (100%)*	3.0 billion (100%)

* plywood statistics are reported partly in kgs (HS 4412.9400 and 4412.9900) and partly in cubic metres (HS 4412.1000, 4412.3100, 4412.3200 and 4412.3900). A conversion rate of 680 kg/m³ has been assumed.

6.1.2 Exports from Thailand

Table 5: Fuel wood - primarily Eucalyptus wood chips (HS Code 4401)

Country of destination	Quantity (tonnes)	Value (Baht)
China	851,454 (38%)	2.8 billion (44%)
Japan	833,681 (37%)	2.1 billion (33%)
Taiwan	473,775 (21%)	1.4 billion (22%)
<i>Total (all 6 countries)</i>	2,258,080 (100%)	6.4 billion (100%)

Table 6: Sawn wood (HS Code 4407)

Country of destination	Quantity (m ³)	Value (Baht)
China	2,059,320 (74%)	15.8 billion (92%)
Malaysia	644,905 (23%)	0.95 billion (6%)
<i>Total (all 13 countries)</i>	2,782,546 (100%)	17.1 billion (100%)

94% of the total exported volume was rubber wood; just over 1% was teak. China and Hong Kong combined imported 2,064,709 m³ sawn wood from Thailand in 2010.

Table 7: Particle board (HS Code 4410)

Country of destination	Quantity (tonnes)	Value (Baht)
Malaysia	340,680 (28%)	2.5 billion (29%)
Korea	347,850 (29%)	2.4 billion (28%)
China	142,997 (12%)	1.1 billion (13%)
<i>Total (all 60 countries)</i>	1,209,547 (100%)	8.7 billion (100%)

Table 8: Wooden Furniture. In comparison to the figures above that use 4 digit HS codes, the figures below are aggregates of five 6 digit HS codes. (See tables in Appendices for details)

Country of destination	Value (Baht)
USA	6.6 billion (37%)
Japan	4.4 billion (25%)
United Kingdom	1.0 billion (6%)
Other EU countries (26)	2.2 billion (13%)
<i>Total (all c. 50 countries)</i>	17.5 billion (100%)

6.1.3 Unit values

Forest products vary significantly in their unit value (i.e. price per m³ or per kg). Appendix 3 shows average values achieved for the main categories of Thailand's exports in 2010, based on FOB values as recorded by Customs.

6.2 Trends in trading patterns

Thailand's trade in forest products is dynamic with the potential to change rapidly. The focus of the analysis behind this report was on data covering 2010. Due to delays to the field work caused by flooding during the latter part of 2011, data covering the whole of 2011 became available at a late stage. It is clear that several aspects of Thailand's trade in forest products changed in 2011 in comparison to earlier years. In particular exports to China grew significantly - that recorded under HS Code 44 grew by 36% in value measured in Baht, with the majority of this growth recorded in the export of sawn timber. Some other products included within HS code 44 showed significant export declines to China over the same period.

6.3 Geographic analysis - entry and exit points within Thailand

Data from the Customs Department was not available on an entry point basis. Thai Customs maintain around 50 entry points on Thai borders (apart from Bangkok port and airports). Not all of these have significant trade in forest products. The list in Appendix 13 includes the Customs Department reference number:

The RFD checkpoint system provided a mechanism to compare data flows recorded within the country with that recorded by the Customs Department.

The first comparison was made of the records for 2010 from the checkpoint at Bangkok port (Klong Toei). The checkpoint records 69,296 m³ of logs and 297,981 m³ of sawn timber for the whole of 2010. Klong Toei was the busiest of all checkpoints. A checkpoint in the south of the country (Su Ngai Kolok) recorded 241,370 m³ of sawn timber but no logs. In theory at least these records might include two way flows, depending on the location of the checkpoint on the road.

A second comparison was made where the RFD was asked to estimate the volume of trade in logs and timber coming from Laos and Myanmar.

Table 9: Aggregated data from the RFD's checkpoints showing the amount of logs and timber imported from Laos over a three year period

<i>Year</i>		<i>Number (pieces)</i>	<i>Volume (m³)</i>
2009	Logs	-	-
	Sawn timber	1,858,090	111,539
2010	Logs	9,409	1,018
	Sawn timber	33,690,611	199,942
2011	Logs	4,953	581
	Sawn timber	33,983,988	5,848,226 *

Table 10: Aggregated data from the RFD's checkpoints showing the amount of logs and timber imported from Myanmar over a three year period

<i>Year</i>	<i>Types</i>	<i>Number (pieces)</i>	<i>Volume (m³)</i>
2009	Logs	29,811	45,061
	Sawn timber	9,347,515	1,509,980 *
2010	Logs	104,587	52,441
	Sawn timber	151,491,122 *	45,706
2011	Logs	35,624	66,299
	Sawn timber	10,001,067	12,425

Source : RFD Feb, 2012

* : these data items would need verification and further checking as there are significant differences between customs and RFD check point data

6.4 Data comparison and reconciliation

Comparisons of RFD check point data with the quantities recorded as imported by the Customs Department showed significant differences. It is clear that some individual entries for quantities in the Customs data are erroneous by one if not two orders of magnitude (typically overestimates). Further analysis of Customs data (if available electronically) might clarify the scale and extent of these errors. At this stage it is not clear what data can be relied upon to indicate the quantities of wood imported into and moved around Thailand.

Data on wood use and flow in Thailand is available in different units as wood flows through the supply chain and value is added - m³, kilograms and units. In addition, final products, such as corrugated board and furniture may be only partly made from wood and thus aggregated measurements of final product may give a poor indication of the amount of wood used in their manufacture.

7. SUPPLY CHAIN ANALYSIS

7.1 An overview of the supply chains

The supply chains of wood and timber products within Thailand are complex and extensive. Even though Thailand does not generate timber from its natural forest sources – as a result of the logging ban in 1989 – there are still significant volumes of wood from domestic sources. Some of the timber and wood products are of species, such as teak and dipterocarps, which can also originate from natural forests - so there are issues related to identification of source and traceability.

The bulk of domestic wood supply is in the form of plantation species: this includes timber species, such as teak and eucalyptus but also wood which is derived as a by-product of agricultural process, such as mango and durian wood. By far the largest volume of this type of wood is rubber, as described above.

Thailand is also a major importer of timber from a large number of countries, not only from within the Asia-Pacific region but also from Africa, the EU and the Americas. The range of wood types and sources is broad and includes softwood from New Zealand and South American countries, high quality species from Africa and the Pacific as well as rubberwood and teak from Thailand's immediate neighbour countries. In addition, there is a significant supply chain of fuelwood and charcoal that is not covered by this study.

In short, Thailand's supply chains comprise many species, from many sources, with many processors producing many products for many destinations and customers.

Thailand's principal supply chains are represented graphically in the flow chart below, and an expanded version of this chart is included as Appendix 14.

But for the purposes of analysis Thailand's supply chains can be broadly subdivided into four major flows:

- Teak – including the sources and supply chains related to teak – both for imported timber and timber produced domestically
- Rubberwood – principal production is generated from within Thailand but there are significant imports of rubberwood from other countries, particularly from within SE Asia
- Eucalyptus/acacia – almost all solid wood is produced domestically but chip and fibre that is derived from eucalyptus/acacia is also imported
- High value timbers – of a range of species and imported in various forms including logs, lumber and sawnwood, veneers and plywood

The analysis below looks at the key characteristics of each supply chain and analyses the chain from the point of view of ensuring the legality of the wood as it enters and moves through the supply chain.

SUMMARY OF THAILAND WOOD SUPPLY

IMPORTS

LOGS AND SAWN TIMBER

HIGH VALUE SPECIES
Principally Dipterocarps and dense or highly coloured species of legume family or traditional European and N. American species such as Oak, Beech, Cherry and Ash.
Also a range of conifer species

TEAK
Wood enters as logs or as sawn timber.
Discrepancies in volumes and values make detailed analysis and reconciliation difficult.

RUBBERWOOD
Export of rubberwood logs now banned from a number Asian countries. Only 3158m³ of logs imported in 2010. Mostly imported as sawn timber or pre-processed in some form

OTHER TYPES OF WOOD AND WOOD PRODUCT

VENEERS & PLYWOOD
Imported plywood with core plys of rubber and other woods
Thailand imports face veneers of high value species
Domestic rubber used for core ply

FLOORING & CONSTRUCTION
A range of species imported for flooring as sawn timber or panels from within the region and selected locations outside

FURNITURE
A range of furniture and part-finished furniture parts

FIBREBOARD, CHIPBOARD, MDF

BLOCKBOARD
Imports of blockboard exceed exports by 3 times as imported board is used to manufacture other products.

WOOD CHIP AND WOOD FIBRE

PULP & PAPER

OTHER
Products not identified

FUELWOOD AND CHARCOAL
No record of origin or destination

DOMESTIC SUPPLIES

Government owned plantations
Forest Industry Organization

Industrial-scale plantations
Plantations owned and run by large scale processors on leased land

Plantations and smallholdings owned by farmers and individuals

PRIMARY SOURCES

Malaysia
Myanmar
Laos
USA, Canada
Conifers from Canada, New Zealand and South America

Myanmar
Laos
Malaysia
China

Malaysia
Laos
USA
South America
European Union

Malaysia
Laos
Myanmar
Various African countries
Papua New Guinea
South America

Malaysia
China
Vietnam

Malaysia
Laos
Other

Malaysia
Laos
Other

CANADA/USA
AUSTRALIA/NEW ZEALAND

CANADA
USA

Sources not attributable

No record of source but probably Myanmar, Laos etc

TEAK

RUBBER

EUCALYPTUS

SECONDARY SOURCES

Malaysia
China
Hongkong
Other country
Timber or chain of custody is often routed through a second country or entrepot and true origin or source is obscured

THAILAND'S PROCESSING AND MANUFACTURING SECTOR

Imported logs of high quality produce veneers for facing plywood, particle board, wood panels and MDF.

Logs are also sawn, and together with imported sawn wood the high value species are used for furniture, doors, windows and construction, flooring and manufactured products

Sawn timber for general purpose construction are commonly from Malaysia - MLH, Kempas, Kenung etc
Higher value woods - such as teak, yellow balau, merantis etc are used for doors, framing, flooring etc

Teak used for high value end use. Imported teak is usually larger and of higher quality than domestic-grown plantation teak and so used for high-value products and products involving solid wood construction such as furniture, flooring strips and parquet blocks.

Teak logs are also veneered and teak veneers used to face plywood, chipboard, particle boards, MDF and blockboard.

Sawn rubberwood imported to supplement domestic supplies and meet specific or high- specification end use. Not usually used for core veneers veneers in plywoods which come from domestic sources

Veneers of different quality are imported: principally veneers for facing of plywood and particle boards and veneers for core ply. Though much core ply derives from domestically supplied rubber wood.

Generally face veneers are from high quality timbers such as: teak, cherry, mahogany, rosewood etc
Ready made plywoods are imported - with or without face veneers. Face veneers are often added in Thailand to plywood with rubberwood cores. Plywood which requires core veneers that are not rubberwood - for specialized marine ply for instance - are also imported

Although Thailand manufactures and exports flooring and construction timbers, including manufactured products such as doors, windows and timbers, it also imports semi-processed woods for finishing in Thailand

Like flooring and construction timbers Thailand manufactures and exports substantial quantities of wooden furniture and furniture containing wood. But not all of this is wholly manufactured in Thailand and wooden furniture is also imported together with part-finished furniture parts.
The value of imported furniture has slowly increased and in 2009 and 2010 was of the order of US\$50 million

Although a major producer of particle boards based on domestically produced wood, Thailand imports small but significant quantities of fibreboards
Particle board manufacturers use principally rubberwood as the core substrate. MDF factories use mainly rubberwood, though 2 factories are recorded as using eucalyptus.

Hardboard factories use eucalyptus.
Blockboard and similar products used by joiners for manufacture of large dimension furniture, kitchen ware, bedroom furniture etc
Some blockboard and joinery boards are also exported, but the volume of the wood exported is only about 35% of the volume of imported

Wood chips and fibre are principally products exported from Thailand. But Thailand does import small volume of wood chips for the particle board manufacturers.
Chips exported are principally eucalyptus

The bulk of pulp and paper is imported from Canada and the USA and supplies the domestically located pulp mills

Product and sources not identified but quantities are significant. In 2010 over 179,000 tonnes were imported and 68,000 tonnes exported

Not part of manufacturing process but is a small but important component of the wood supply chain. In 2010 fuelwood imports amounted to over 6000 tonnes with over 260 tonnes exported. Charcoal was even bigger with a recorded 86,000 tonnes imported and 13,000 tonnes exported

OUTPUTS AND EXPORTS

ROUND LOGS

Round logs of rubberwood from Thailand's plantations
Very small volumes

SAWN TIMBER

Sawn timber from Thailand's plantations - estimated to be between 1.5 - 2 million m³ RWE

VENEERS AND PLYWOOD

SHUTTERING AND CONSTRUCTIONAL PLYWOOD

FLOORING STRIPS, PARQUET AND BLANKS

ARCHITECTURAL FURNITURE

Doors, windows, paneling, skirtings, mouldings

PANELS, MDF AND PARTICLE BOARD

BLOCKBOARDS AND OTHER JOINERY BOARDS

MANUFACTURED PRODUCTS

Solid wood furniture
Manufactured and composite furniture
Garden and external furniture
Beadings, mouldings
Curtain rails and poles
Kitchen items
Toys

7.2 Definitions of legality

Legality means adhering to the rules and regulations that specify the proper and acceptable conduct relating to a particular activity or product.

Verifying the legality of timber requires examination and confirmation of three key parameters:

- The origin or source of the wood. Without knowing the origin of the wood it is impossible to make any statements as to its underlying legality
- Whether the wood or timber product can be adequately identified and confirmed as being what it claims to be
- Whether the activities undertaken to produce and transport the wood have been conducted in accordance with the related rules and regulations

So establishing the legality for wood and timber in supply chains will depend on finding sufficient documentary or physical evidence that provides:

- Proof of origin (or previous ownership)
- Proof of product – independent and objective proof that the wood or product is what it claims to be, in terms of identity, quantity and quality
- Proof of legality – to demonstrate that the production and transport of wood has followed due process

7.3 Proof and evidence

Proof is the result of the accumulation of sufficient evidence, and the types of evidence used are of 4 basic types. These 4 sources of evidence comprise the basic tools that auditors and certifiers use when conducting audits and certification inspections: but they will also be the main sources of verification for establishing timber legality and origin.

7.3.1 Documentary

Documentary evidence comprises hard or soft copies of documents and forms, related to the origin of the wood; harvesting and production; transport; and processing.

Documentary evidence is also the main means of verification for ensuring that the controls governing the production and transport of timber have been adhered to. This includes: letters of authority; stamps and seals; authorised signatures and permissions; restrictions and quotas.

Documentary evidence comprises a combination of: invoices, purchase orders, sales orders, manifests, packing lists, delivery notes, warehouse inventories and stocktakes etc.

7.3.2 Data analysis and reconciliation

This is an increasingly important source of evidence. Data collected along the processing and supply chain can be compared to base data related to the actual timber stock or the origin and

production of timber - either from stock surveys, inventories, harvest data, from records and documents related to imports.

The effectiveness of this type of evidence depends on data being complete and reliable, but when this is the case then the comparison and reconciliation of data sets at different points along the supply chain provides a very effective means of verification.

7.3.3 Inspections and physical checks

This is a traditional way of verifying information related to timber. It is expensive, time-consuming and demanding of resources, but it is a very effective tool for providing 'hard' evidence. Due to its disadvantages this type of verification is used less frequently than in the past, but in many cases it provides the most reliable means of assurance that the wood - or the data and documentation provided - is accurate.

The inspection of logs in transit or as it leaves the forest – to ensure that they all carry the correct hammer mark - is a common and reliable form of physical check. There are few viable alternatives to this kind of check though bar codes attached to trees are progressively replacing hammer marks. Nevertheless bar codes still need to be checked and scanned by somebody.

7.3.4 Verbal

Although a common technique when conducting conventional auditing, evidence from discussions, meetings and interrogations is likely to prove less useful as evidence for establishing legality or origin of timber; unless supported by other forms of evidence.

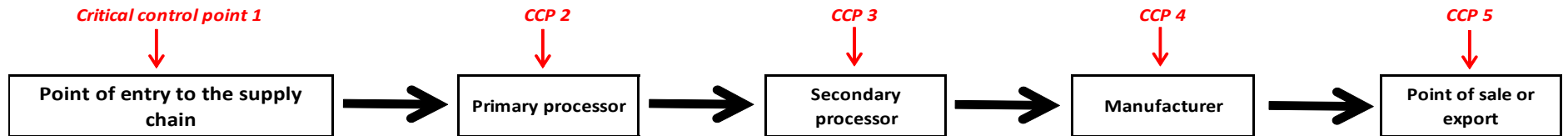
7.4 Basics of supply chain monitoring

The fundamental principles and systems of monitoring supply chains and the benefits of properly documented Chain of Custody systems (CoC) are well known. Most commercial companies understand the benefits of controlling their supply chains to optimise efficiency and minimise costs, and they are responsible for the data collected and the way that it is utilised. Government bodies have traditionally not used, or been familiar with, these techniques - though this is now changing.

The example shown below shows the key elements of a supply and highlights the key requirements in terms of what is needed to ensure legality of timber within the system. Each major point in the supply chain - where timber enters or is removed; transformed, changes location or changes ownership - is a control point (usually referred to as a critical control point or CCP).

Example of a supply chain and simple chain of custody (solid wood garden furniture)

NOTE 1 It is assumed that each critical control point represents a change of location OR change of 'ownership' of the timber or product.



Produced in country

Felled and harvested as raw timber from:

- Natural forest
- Plantation
- Agricultural by product

Imported

In the form of:

- Round log
- Lumber or sawn timber
- Veneer, plywood or board products
- Processed or semi-finished product
- Fibre, pulp, paper

Product

Rough sawn timber

Product

Dried and cut to dimensions

Product

Pieces fabricated into chairs and tables

Product

Packaged and labelled furniture ready for export or in retailers showroom

CCP 1



EVIDENCE AND PROOF OF LEGALITY

At this point in the supply chain - the point of entry - what documentary or physical evidence would be necessary to demonstrate:

1. Proof of origin or source of wood
2. Proof of the legality of the wood
3. Proof of the product's identity

CCP 2



At each Critical Control Point (CCP) in the supply chain what documentary or physical evidence is considered the absolute minimum to ensure:

1. Proof of the origin of the wood or its previous 'owners' or custodians
2. Proof of the legality of the wood and the processing and transport of the wood up to this CCP
3. Proof of the product's identity to this CCP

CCP 3



CCP 4



CCP 5



The question is a relatively simple one: at each CCP what kind of evidence needs to be collected to ensure that an inspector or auditor can establish the legality of the timber to that point. At any point timber may (almost certainly will) be a mixture of wood from different sources. The objective is to collect evidence to prove the origin, its identity and its legality to that particular CCP.

7.5 Legality issues relating to supply chains in Thailand

Within the timber supply chains of Thailand there are a number of issues related to legality and traceability of timber that are specific to the species or product. These are dealt with under sections 7.6 – 7.9 below.

But there are a number of problems and issues that are common to supply chain management in general, and these are summarised here.

7.5.1 Proof of origin

Irrespective of whether the wood originates from within Thailand or from outside, one of the 3 cornerstones of establishing legality is to demonstrate where the wood has come from.

For imported timber Thailand relies on a Certificate of Origin (CoO) issued by an organisation in the country from which the wood has been sent. This document provides a statement that the wood making up a particular shipment has come from a particular country, but it is not a guarantee that this reflects the real origin of the wood. Certificates of Origin do not specify, or make reference to, the past chain of custody and it is widely acknowledged that timber may have been routed through a number of different locations before it physically leaves the country and acquires a CoO.

However, a CoO is frequently the sole document relating to origin. Shipping documents do provide some form of corroboration, as Bills of Lading and Ships Manifests are solid pieces of evidence that the wood has been shipped - but these documents contain no specific mention of the wood's origin, just the supplier.

But for wood being imported to Thailand a CoO is not mandatory- and seems to depend on the country of origin. Many shipments of wood enter with no CoO at all: under these circumstances the only documentary evidence of origin are the shipping documents and any stamps or marks that may be physically attached to the timber.

A CoO is frequently mistaken as providing some form of evidence of legality of the wood and it is important to recognise the fundamental weakness of a CoO in this respect. If the CoO does not identify the specific location from which the wood originates it is not possible to say anything about its original legality, although a CoO does imply legality of transport. It is perfectly possible for a CoO to declare its origin accurately - for instance the country of origin - but with the wood actually coming from illegal harvesting of a Wildlife Reserve: in which case it is clearly illegal.

Timber originating from within Thailand suffers the same lack of documentary evidence. A CoO is not required for timber purchased locally from domestic suppliers. But a CoC can be provided by the RFD if a customer requests proof of origin. Such a certificate may provide an acceptable

type of evidence when the source can be clearly established and supported by evidence of traceability - such as timber from FIO plantations. But currently, a CoO does not appear to be a reliable or foolproof means of establishing the wood's true origin.

For domestically produced eucalyptus and rubberwood the situation is especially uncertain. Timber originating from rubber plantations and eucalyptus plantations is not required to have documentation for transport. Furthermore, the registration of plantations does not require baseline data on the quantities of timber within domestic plantations to be recorded or published. Consequently, it is not possible to use data comparison and reconciliation techniques to establish the origin of rubber or eucalyptus within Thailand's timber chains, even though there is data on origin and quantity of imported rubber within the chain. Thailand may be confident of the legality of its domestically produced rubber and eucalyptus timber, but currently Thailand does not have a consistent system for proving its origin. This compromises its ability to state, with confidence, that it is certain of its legality.

The uncertainty relating to the precise origin for its domestically produced timber, and the reliance on the CoO issued by exporting countries, means that Thailand does not currently possess a rigorous or reliable process on which to base statements about the origin of timber within many of its supply chains – particularly those involving imported timber or involving rubber and eucalyptus.

7.5.2 Baseline data

As discussed above, the ability to monitor timber supply chains relies on the ability to analyse and reconcile data collected as timber passes along the supply chain.

It is increasingly recognised that a similar process of regular data capture and analysis will be a fundamental component of any system which monitors the legality of timber within supply chains.

The system works by periodically collecting data from within the supply chain, for instance at points where the timber is transformed or changes ownership: these are called **control points** or **critical control points (CCPs)**.

This data is then compared with data from previous CCPs, or with the baseline data collected at the starting point of the supply chain: effectively the first and most important CCP. When discrepancies or unexplained differences in the two data streams are identified then this can only be resolved by a more detailed examination of the circumstances and what has actually happened to the timber, but the comparison and reconciliation of data provides a powerful identifier of potential problems within the supply chain and which may have implications for its legality.

For example, an increase in the quantity of timber between 2 successive CCPs may indicate that timber from an unknown or unrecorded source has entered the chain and mixed with existing flow of timber. To establish whether this timber is 'non-legal' or legal but from another source will need more detailed investigation, but the data reconciliation exercise provides clear evidence of a situation in the timber flow that needs to be examined and where legality might need to be confirmed.

Given the capacity of modern computers and sophistication of computer software, this type of data comparison is a very effective and cost-efficient means of monitoring timber supply chains and identifying potential problems related to legality.

Even paper-based systems can be subjected to this kind of data analysis and reconciliation, though this is more time-consuming and subject to human error.

But such systems can only work successfully if the underlying data is reliable and consistent. Accurate and complete data from the initial CCPs is particularly critical as this provides the baseline against which subsequent comparisons and reconciliations are made. Missing or incomplete data can cause significant problems and can compromise the effectiveness and reliability of any results that are generated.

When this system is used as a means of supplying evidence for legality any discrepancy provides a starting point for investigation, but if it is clear that some form of illegality has occurred, then it is important for the system to generate accurate data with respect to the quantities of timber involved.

If the baseline data is incomplete or unreliable, then it is far more difficult to make any comparison or data reconciliation with confidence and consequently difficult to make statements relating to the timber's legality.

If this type of data analysis is to be used as part of a Legal Assurance System (LAS) then the data within the system has to be comprehensive and accurate – regardless of whether the data is collected and analysed on paper or digitally.

The gaps in data and information collection which exist within the current system - such as the absence of data for key parts of the timber supply chain (rubberwood and eucalyptus/acacia) and the weakness of the Certificates of Origin - will need to be addressed. Appropriate institutions will need to be identified, authorised and given sufficient resources to ensure that the additional data and information will be collected and input.

7.5.3 Single window and paperless system

Thailand is already constructing a new system for the control of timber flows and recording of data. Effectively this system is attempting to replace the existing paper-based system through computerisation, digital capture of data and information and digital authorisation.

As Thailand considers engaging in the FLEGT programme and signing up to a VPA it is possible that this new Single Window system could provide the basis for a Legal Assurance System (LAS).

However, as discussed above the Single Window system has not been designed specifically to eliminate these weaknesses. If a LAS is to be built around the Single Window System there will need to be significant modifications to ensure that the data within the system is comprehensive and covers all aspects of the timber supply so that the analysis and reconciliation functions can work consistently and reliably. This is not just a question of generating accurate statistics: the data and information generated by the LAS will be the evidence on which FLEGT licenses will be issued and statements on timber legality will be based.

7.5.4 Exempt species and wood as an agricultural by-product

The absence of data in any system of digital storage and analysis causes problems and generates results which are of uncertain reliability and accuracy.

Within the existing timber supply chains the difficulty of making statements about the supply chains involving rubberwood and eucalyptus have already been covered briefly and are discussed in more detail below. But it is clear that even if one component of the timber supply chain is known with precision and has comprehensive, accurate and reliable data, once it is mixed with other timber (of unknown origin, of unknown quantities or legality) then from that point on in the supply chain the accuracy and reliability is lost. As wood from various sources with different levels of information and reliability become mixed, it becomes increasingly difficult to make any statements about the composition or legality of the mixed product. The solution is to ensure that every component in the supply chain has the same type of data with the same level of precision.

If some parts of the timber chain are treated differently - with different requirements for information or requirements for data - then this introduces considerable difficulties in trying to generate data that is reliable and consistent.

In Thailand wood that is derived as an agricultural by-product does not require data to be collected and rubberwood and other species can enter the timber chain more or less undocumented. Once this timber has entered a supply chain it then becomes very difficult to make any statements about the precise composition of the supply chain and, crucially, of its legality. If timber which is 100% legal is mixed with timber whose origin and legality is unknown or undocumented, then it is impossible to make any declaration about the legality of the mixed supply.

The implications are important. Effectively the only way to overcome this problem is for this kind of timber to be identified and labelled in some way. This will enable it to be located and tracked within the timber chain. There are a number of cost-effective ways that this can be done. For instance agricultural sites that will generate wood could have some form of registration just prior to harvest and this registration (which could include a statement on its legality) could accompany the timber to its destination. Timber companies would then be obliged to record this timber (and the registration number) in their own internal chain of custody systems.

But whatever system is considered, the existing system of exemption offers a significant loophole for timber tracking and a problem for legality assurance.

There is a need to ensure comprehensive and accurate data capture in order to make the system effective as a tool for legality verification and providing evidence for licensing.

7.6 Rubber wood production and supply chain analysis

A large proportion of mature rubber plantations are owned by small holders in the south of Thailand. Transfer of rubber logs to sawmills may be directly by farmers, or through middle men or by purchase directly by sawmills. The large numbers of sawmills and small holdings make any generalisation difficult and arrangements may change depending on prices offered, volumes needed and the availability of equipment etc.

Rubber trees need to be processed relatively quickly as fungal staining leads to discolouration if the moisture content remains too high for too long. Rubber wood is thus either processed into sawn timber or chipped for board mills close to its point of origin, mostly in southern Thailand and to a lesser extent to the east of Bangkok using rubber grown in south east Thailand. There is very limited data available on the volumes of rubber wood processed but it is known that over 40% more sawn rubber wood was exported in 2011 than in 2010 with the increase recorded at over 1,000,000 m³. In addition a significant part of the Board industry with a capacity of over 3,000,000 m³ output per year is dependent on rubber wood. Thirdly many furniture and other wood processing factories in and around Bangkok use rubber wood. However, the latter are aware that the price of rubber wood in Thailand is relatively high and imported hard wood from the USA is available at competitive prices. Thus it is likely that a degree of substitution is developing.

Factories using rubber wood may purchase directly from sawmills, with transport arranged either by the sawmill or by the purchaser or arranged by a wholesaler/trader.

As described earlier, the procedures for monitoring and verifying rubber wood production and use are minimal. Whilst individual factories record the entry of wood into their mills on the RFD authorised record books, with no sources of origin and no need for transport permits, the only element that hinders entry of other species into the supply chain is price. Now that the rubber wood price appears to be uncompetitive relative to some imported species even this barrier to substitution is being weakened.

In terms of the current system the key legality issue concerning the rubberwood supply chain is the absence of any requirement to register or record primary data related to source and origin; the identity of the timber; the legality of any specific consignment or source; or any data related to primary production.

Figure 7 summarises the key issues.

The absence of data and the inability to offer proof of origin or legality or product for domestically produced rubberwood means that the current system needs significant modification if and when Thailand opts to establish a Legal Assurance System (LAS).

7.7 Eucalyptus/Acacia wood production and supply chain analysis

Figure 8 below shows a similar set of issues related to Eucalyptus as for rubber. Although not an agricultural by-product eucalyptus also does not require detailed data to be recorded or

published for plantations. Consequently, it is not possible to establish proof of origin, proof of product or proof of legality for timber once it has entered the supply chain.

During the workshop the panel discussions made clear that there were some long- standing issues related to the fundamental 'legality' of state and privately owned plantations – particularly related to the occupation of state forest land and conversion of forest land into plantations. These issues need to be resolved by the Thailand courts but it is clear that if some of the timber is considered illegal, then under the current system (where there is no requirement to record primary production data and information) it is impossible to identify and track illegal timber that may be part of the supply chain.

7.8 Teak wood production and supply chains

The FIO reports it has 80,000 ha of Teak plantations, whilst RFD (2009) reports a figure of 836,000 ha for 2008 for government and private plantations of Teak. The latter figure is reproduced in ITTO (2009) as the area of “commercial teak plantation” in Thailand. An older publication (Mahaphol 1954) mapped the “teak region” of Thailand (in the north and west of the country) and estimated the “teak bearing area” of Thailand was 2.3 million ha, some of which is likely to be found in protected areas.

The RFD does not publish data on the area of plantations. This sort of resource base data would be a useful primary data source for any system of data analysis and reconciliation. But unlike rubber and eucalypt the control of teak is regulated in a number of ways. Firstly, plantations have to be registered with the local office of the RFD or its equivalent in the provincial Ministry office. Permission from the RFD is required to fell the timber too, along with the required transport permit. In theory at least the RFD amongst its various offices should have data that shows the extent of teak plantations throughout Thailand; however, as explained above, the registers are not always kept up to date and land owners have little incentive to request an alteration to the register if the trees are felled.

Figure 7. Rubberwood Supply Chain

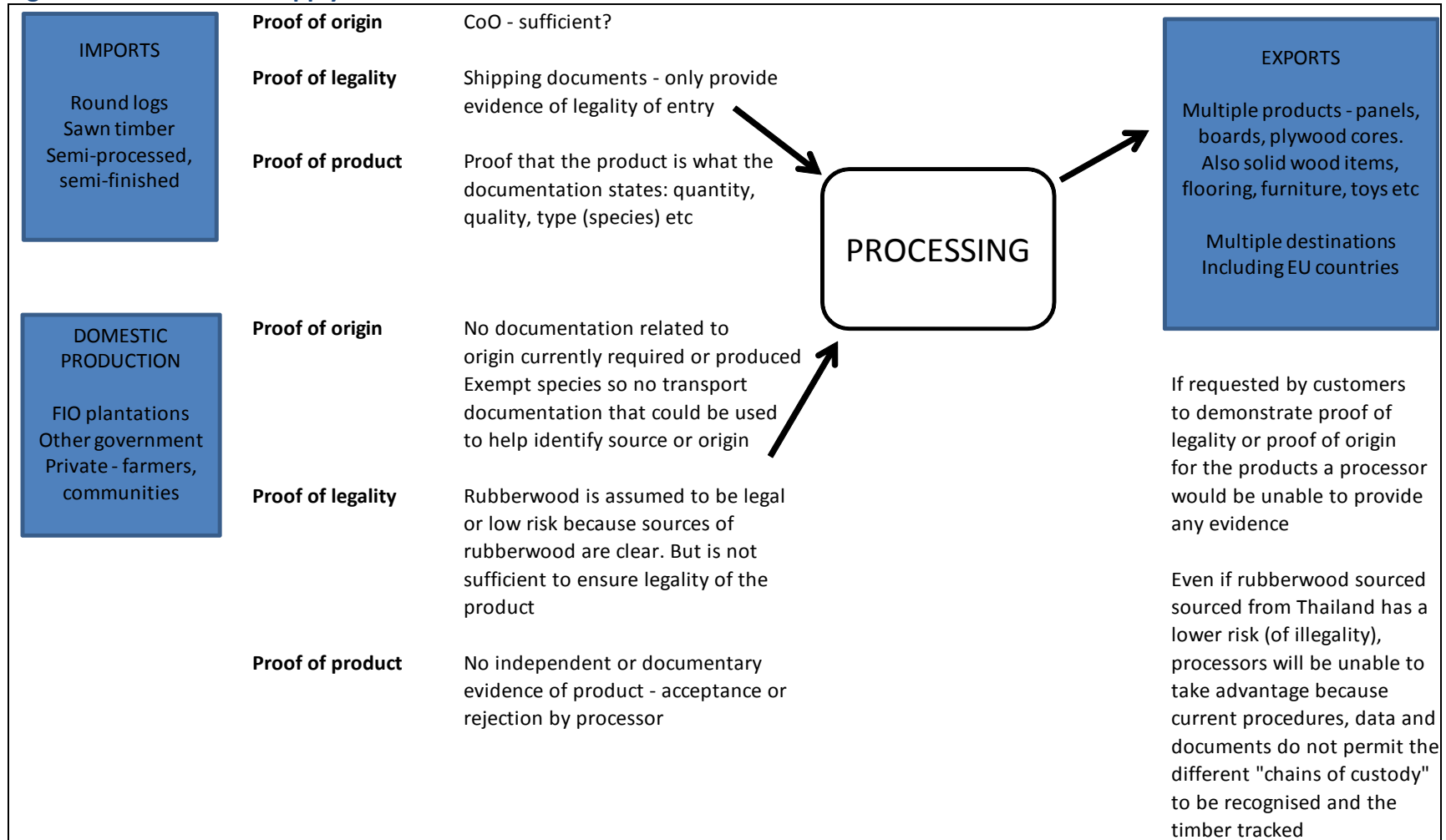
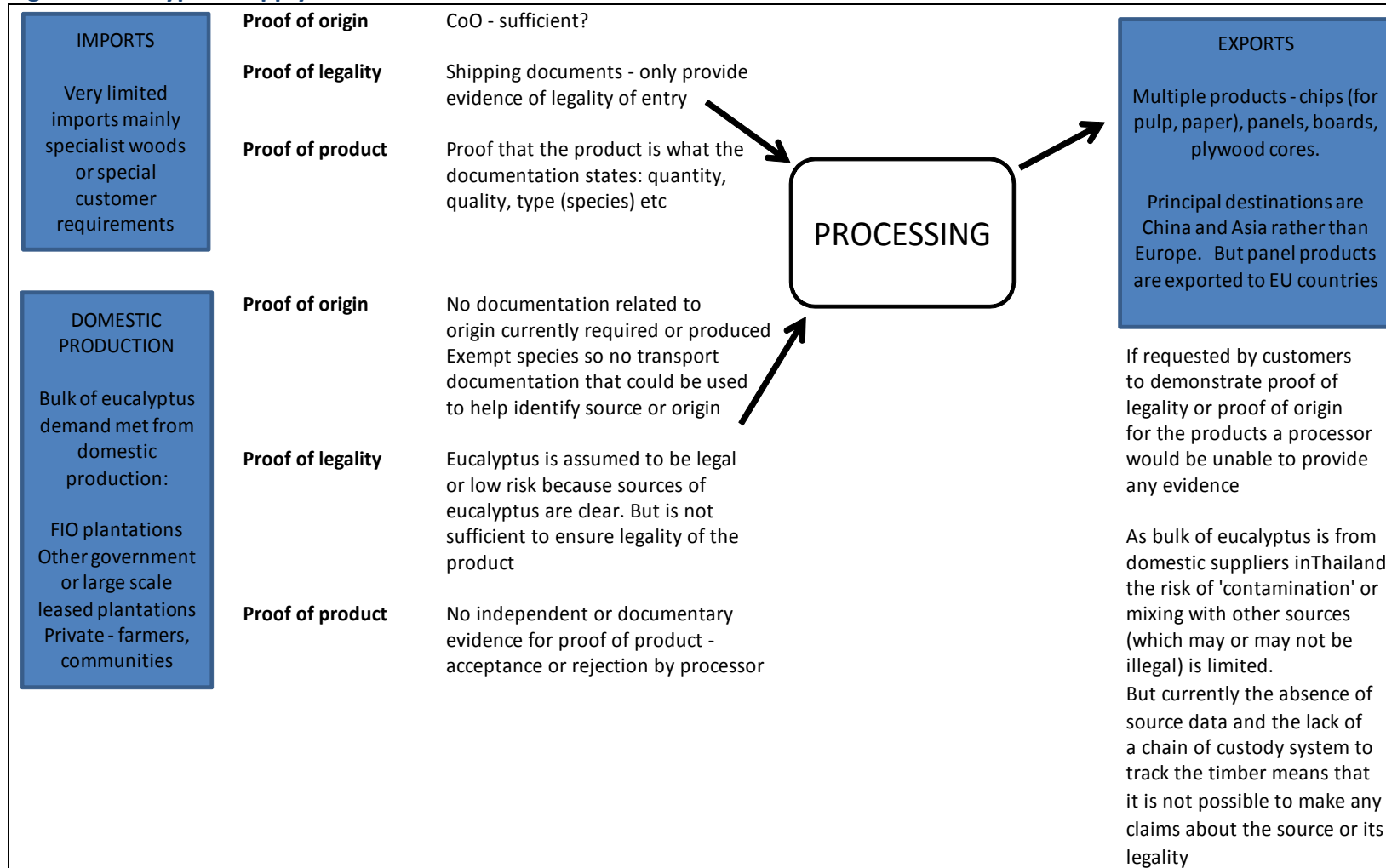


Figure 8 Eucalyptus Supply Chain



Whilst the FIO reports annual production of around 80,000 m³ of teak per year Thailand records in Customs data the importation in 2010 of at least 53,000 m³ of teak or semi processed teak from Myanmar¹³ and smaller quantities from Laos, Indonesia and five other countries. In 2010 Thailand exported over 41,000 m³ of rough or sawn teak, primarily to India. In 2011 very little teak was exported in this form. Logs of teak can only be exported by the FIO. Produce made from teak is not distinguished in trade statistics from other wooden products and thus there is no record of the volume or value of “teak” products from Thailand.

Teak is used for a variety of products including furniture, doors, flooring, cutting boards, decking and also veneer. In addition to new teak there is also a supply of weathered/distressed teak coming from the recycling of old products.

As with other wooden products once the teak is semi-processed it may cease to be classified as “wood” and thus the wood “disappears” from trade statistics as a wooden product. Distinguishing processed and semi processed teak from Thailand from teak from Myanmar is not possible, other than from a quality point of view.

Figure 9 shows a simplified form of the teak supply chain with the key issues related to legality, highlighted.

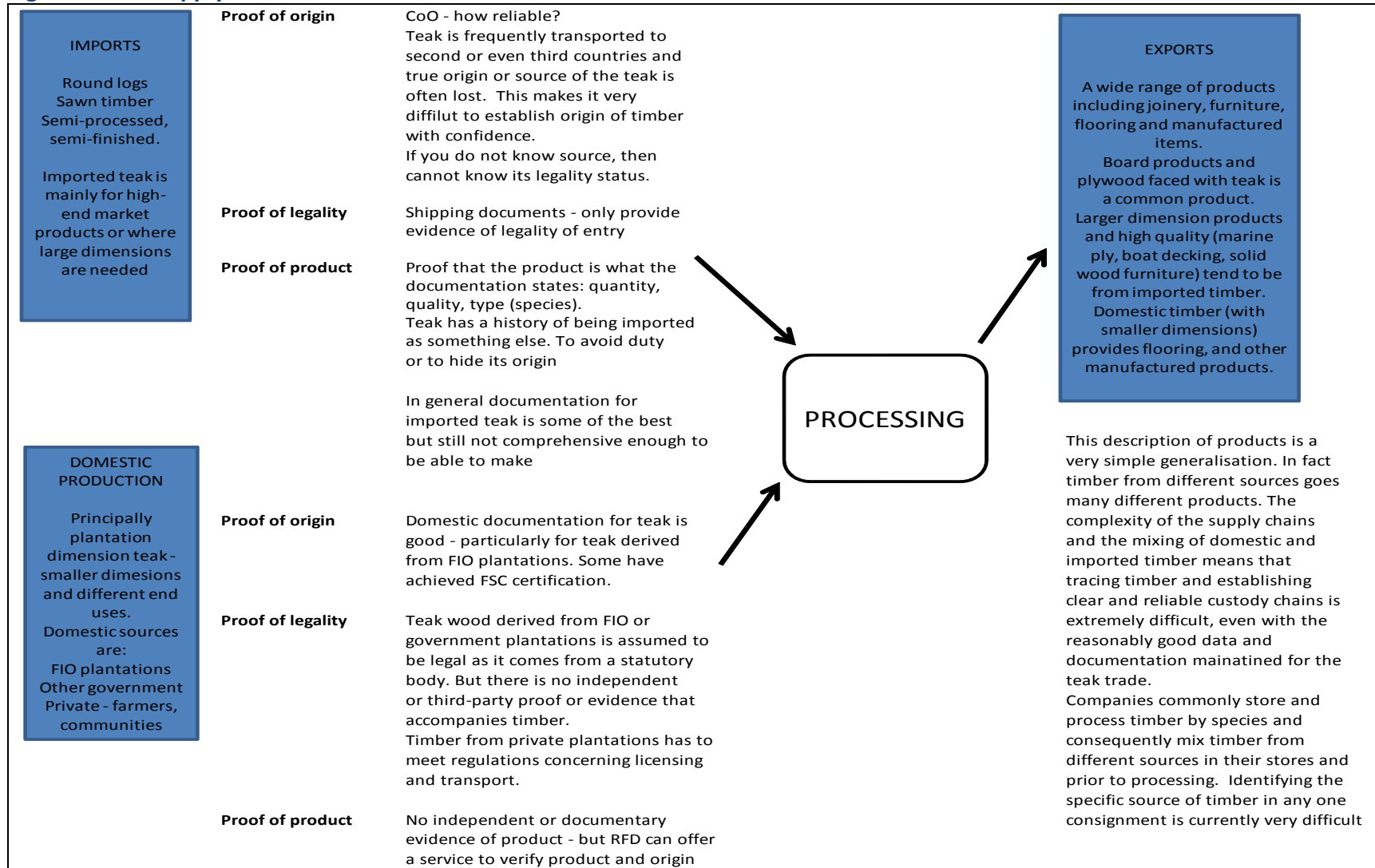
Discrepancies relating to primary data - as identified above - clearly need to be resolved so that consistent and reliable data can be input to any chain of custody system or computerised analysis and reconciliation system. If there is no published data on the area of plantations, this makes identification of source more difficult, although this is not the case with FIO plantations which are able to provide adequate information and data, sufficient in fact for some of them to have been independently certified under the Forest Stewardship Council scheme which has requirements for chain of custody systems to be in place. This sort of resource base data is a critical primary data source for any system of data analysis and reconciliation.

Teak has a long history of smuggling and assorted illegal activities due to its high value - a result of its highly desirable characteristics and limited availability of large dimension trees. This means that there is a higher potential for illegal activity and a higher risk of timber that has derived from illegal activities, entering the supply chains.

The weakness of CoO have already been highlighted and the absence of a rigorous domestic chain of custody systems in Thailand’s commercial factories means that once illegal timber has been mixed with domestic it is very difficult to identify and separate illegal from legal timber.

¹³ The figure could be considerably higher if mixed species were recorded as “other”

Figure 9 Teak Supply Chains



7.9 Use of imported timber

Thailand imports rough and sawn wood from a wide range of countries. Appendix 1 lists the 59 HS codes used by Thailand within HS Code 4407, along with the volumes recorded in 2010 for each code. The number of countries from which the timber was sourced is listed, and the country providing the largest volume against each is named.

24 of the codes are only used by one country, but the use of “other” categories hides much of the detail that could have been recorded under the HS. Noting the possible errors in data as described above in 4.3.3 and 5.1, Malaysia dominates as a source by volume, with Laos second. Myanmar is a source particularly of teak. Over 600,000 m³ of coniferous wood was imported.

7.9.1 Imports from near neighbours

Difficulties with the Certificates of Origin accompanying timber imported from Cambodia has led to very limited imports in 2010 - less than 2,000 m³ of sawn wood. Laos is a significant source of timber to Thailand, providing over 600,000 m³ of sawn timber in 2010. Laos does not require Thailand to seek a Certificate of Origin with any timber coming from Laos, so knowledge of its source is limited even when first entering Thailand.

There is an ongoing problem both in Thailand and Laos with the illegal harvesting of rosewood (*Dalbergia cochinchinensis*) and customs and the RFD are monitoring imports of timber to check for the presence of rosewood. Imports of other species are used for mixed purposes and general purpose timber for both domestic uses and export markets. Whilst timber imported from Laos is more expensive than domestically produced rubber wood it is likely that the two sources will not mix. For example, in 2010 sawn timber was imported from Laos valued at over 1400 Baht per m³, whilst sawn rubber wood was exported from Thailand at around 640 Baht per m³. Thailand also imported just over 200,000 m³ of rubber wood in 2010, mostly from Malaysia.

7.9.2 Use of imported timber from elsewhere

In 2010 rough wood imports were only one sixth of the value of sawn wood imports, with the most significant sources being, in order of value supplied, New Zealand (270,000 m³), USA (505,000 m³), Australia (27,000 m³) and Canada (199,000 m³). A great range of unit values is apparent, from 165 to 10,000 Baht per m³.

The uses of imported sawn wood vary, based on the wood quality and price. Some is used in the furniture export industry but much is used for domestic purposes.

7.9.3 High value imported timber and supply chains

This represents the most complex part of an already complicated supply chain. High value imported timber will contain virtually all of the issues and sources of illegality that exist within timber supply chains. This part of the timber supply chain will be the most difficult for Thailand to deal with when it comes to developing a Legality Assurance System and ensuring the legality of timber with the chain.

For these species in particular extra vigilance is needed when gathering evidence and a higher burden of proof is likely to be needed to ensure legality is established and maintained in the timber chain.

Single documents are unlikely to be sufficient evidence of origin, legality or identity and product and additional corroboration will almost always be required to provide a cross-check that the timber is what it claims to be.

For these species and supply chains Certificates of Origin, even when they exist, have a higher risk of being unreliable. Very high value species - such as teak, rosewood, merbau - are frequently misrepresented as to true origin. Even CITES certificates cannot be assumed to be genuine.

For some species legality of production or transport can be more or less taken for granted, but with these species every possible source of evidence needs to be gathered and scrutinised to ensure the basic legality of the product.

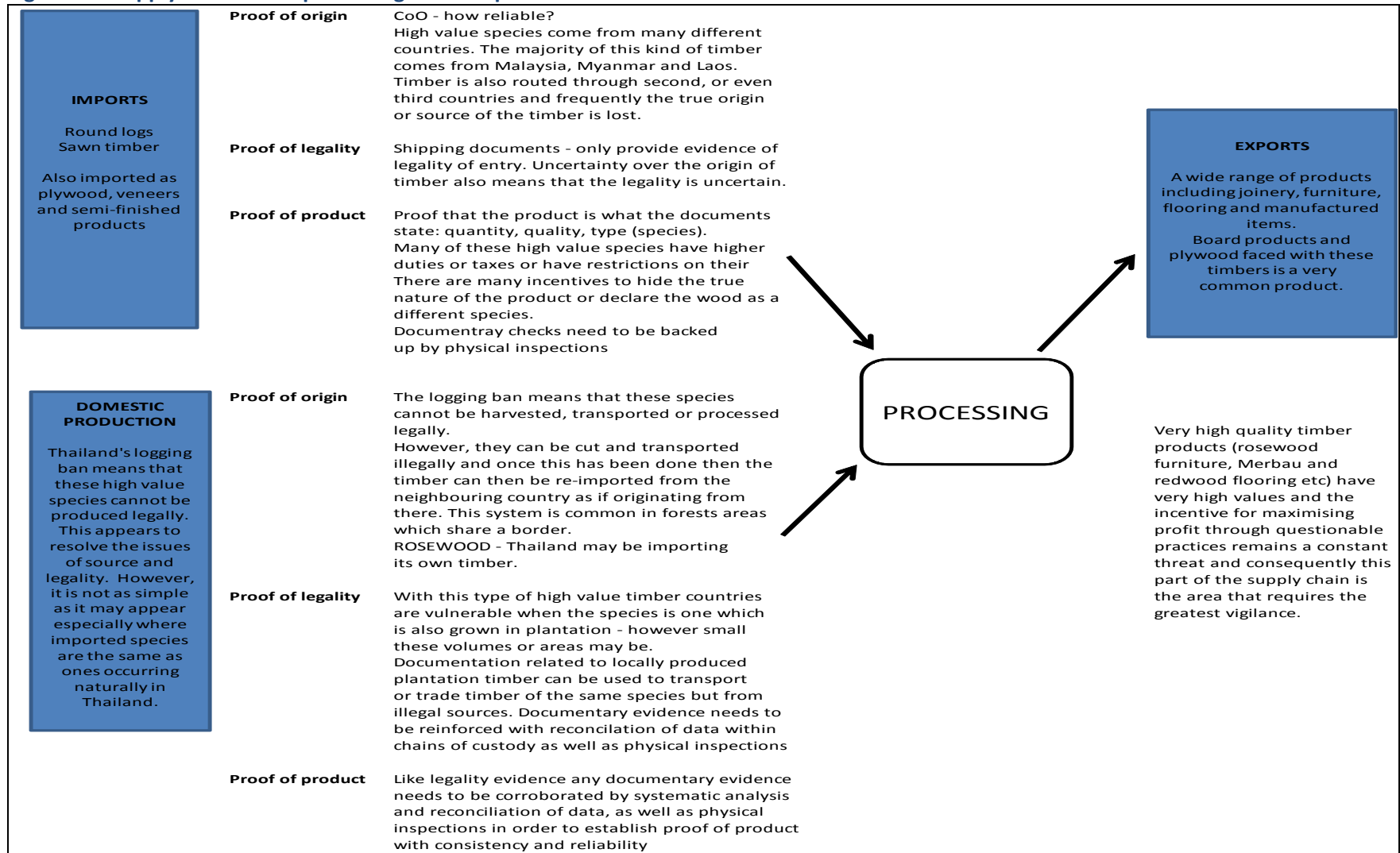
This is important because, as has been discussed previously, there is no system of data monitoring and reconciliation within the supply chains and once timber has entered it is difficult to be able to say with any assurance precisely what has happened to it.

With such high value species the timber can move in mysterious ways and enter and drop out of chains very easily. The absence of rigorous chain of custody systems within most commercial factories means that it is very difficult to track timber and make any statement as to the legality of the final product.

Appendix 15 summarises the sources of illegality and this part of the timber chain will be the ultimate test of any system of Legality Assurance.

Figure 10 below summarises some of the main issues.

Figure 10 Supply Chains of Imported High Value Species



8. CONCLUSIONS

8.1 Data recording, collation and dissemination

As previous studies have experienced, the lack of comprehensive timely data on the domestic production and use of wood and wood products in Thailand causes difficulties when assessing wood flows and the use of forest products within Thailand. Comparison of domestic production and import data with export data would allow estimates to be made of the size of domestic markets and better indications of the flows of domestic production and imports into domestic markets. The role of Thailand in transshipping timber could then also be given closer scrutiny.

The role of the RFD in collating and generating data within the overall forest products sector is limited. The RFD produces no data on domestic production of wood and the data collected, for example on wood utilised by factories, is not collated and published at a national level.

In theory at least, data collected by Customs for volumes of logs and timber imported into Thailand should match the volumes recorded by the RFD's checkpoints monitoring the transport of logs and timber within Thailand. Although one might expect some overestimate from the checkpoint system through the potential for double recording, the RFD checkpoint data provided to this study shows a significant under-recording of timber moved in the country, as compared to Customs data. However, it is clear that Customs data on quantities imported and exported needs to be carefully analysed to ensure possible errors are eliminated. As a result it is not possible, even with systematic checking of all currently available data, to make estimates of domestic production or wood and product flows through Thailand's economy, nor to provide reliable estimates of the sizes of domestic markets.

The timeliness of data production is also an issue. Customs data is now available online month by month. But data and references on domestic production typically reflect estimates from almost a decade ago. Updated estimates are urgently needed and measures put in place to produce such figures regularly and routinely.

Inconsistencies or discrepancies between data sources should provide a means of identifying problems in supply chains and possibly legality - discrepancies can effectively be used to highlight potential legality problems. However, at present it appears that data is different from different sources because of different approaches to collecting and recording data, rather than necessarily highlighting supply chain problems. Not only must accurate data be collected, but organisations responsible for data collection and collation need to have sound coordination mechanisms in place to identify discrepancies in data and resolve them. Transparent data and data systems will provide a good foundation for the building confidence in the legality of Thailand's forest product exports.

8.2 Thailand's trade in forest products and trends

Customs data for 2011 show that Thailand imported wood and wood products worth over 19 billion baht together with pulp, waste paper and paper products worth 74 million baht. Customs data also showed that for 2011 Thailand exported furniture worth just under 16 billion baht wood and wood products of 61 billion baht and paper totalling 61 billion baht.

International markets for Thailand's forest products industry are not static, indeed the industry is highly responsive to market demand and opportunities. Trends in various markets presented in this report show this change, with probably the most significant being the rapid rise in China's share of exports from Thailand.

8.3 Control and monitoring of wood flows - proof of legality

Thailand is a major player in the global timber trade – both as an importer, manufacturer and exporter. Given the level of illegal timber in the international trade and the history of illegal timber from a number of exporting countries within the region, the risk of illegal timber in Thailand's supply chains is high.

The level of illegal logging activity within Thailand is difficult to gauge. The RFD publishes data which shows just under 3,000 cases of encroachment and just over 3,000 cases of illegal logging in 2010. The volume of timber reported appears rather small - 2,000 m³. The level of illegal activity not reported is of course not known. Practices reported in the past, such as illegal logging within Thailand, followed by illegal export and re importation but labelled as sourced from a neighbouring country, may be hindered by agreement with Cambodia and Myanmar. The presence of the River Mekong along much of the border with Laos may also hinder underhand activity on a large scale. However, regular press reports of illegal felling of rose wood suggest that where markets provide an incentive illegal activity may follow.

Thailand has had some success with finding illegal timber, through conventional policing activities, and although it is refreshing to find Thailand willing to prosecute officers from the Forest Authorities who are proved to be complicit in this trade, this also shows that illegal timber is a deep rooted problem. The value of the timber is so significant that it presents a significant incentive and although it may have some success it is clear that it is not identifying the entire trade – and a significant (though unknown) percentage of illegal timber continues to be traded.

In fact it is the timber deriving from the more insidious and systemic illegal activities that is likely to avoid detection. Tackling this kind of illegality requires constant vigilance and monitoring and a systematic approach to detection.

The complicity of officers who are charged with controlling the trade complicates matters further. Periodic checks of the supply chain – such as the annual audits of timber processors as a part of renewing their processing licence - are also likely to be inadequate. The sheer volume of timber passing through these large scale processors – plywood and boardmills for example) means that even if a problem with illegal wood is discovered it is likely to be historic and a significant volume of illegal wood will have already passed through the processor and delivered to customers.

The lack of rigorous and foolproof chain of custody systems in many commercial companies means that the authorities cannot rely on the commercial sector to consistently identify timber or exclude it from processing: indeed the high value of some of these timbers provides a very real incentive for commercial companies to ignore the presence of illegal timber in their processing chains.

It is clear that in spite of some successes the current system is unable to provide the sort of consistent and systematic identification of illegal timber. A new approach is required and it is logical to conclude that a key part of the solution is to adopt a system based on the constant monitoring of the supply chain and some form of automatic detection of problems and discrepancies: this is precisely the rationale behind computerised data monitoring and timber tracking systems – and it is almost certain that such a system will be a critical component of any Legality Assurance System.

Effective law enforcement will lead government agencies to confiscate illegal timber, and the RFD is having some success in identifying and extracting (for example) rosewood from the supply chain. However, Thailand needs to clarify in detail the procedures it follows with regards to disposing of this timber once legal procedures are complete, to prevent it re-entering the supply chain with a ‘legal’ label. Simple data on confiscated timber needs to be collated and published and, if the timber is sold, purchasers of such timber need to be made aware of its source; there must be a robust system or systems in place to avoid the risk that confiscated timber gets “legalised” and can be exported as legal timber.

8.4 Comprehensive Data Collection and Analysis

As pointed out under 8.1 it is almost inevitable that some form of enhanced data monitoring and tracking system will be needed in order to monitor the trade in timber and identify illegal timber and other criminal activities.

To facilitate this, the data needs to be not only accurate but also collected regularly and consistently. In fact this is even more important than accuracy as modern statistical techniques can make up for errors in data, but find it far more difficult to accommodate data that is not there in the first place.

A simple conclusion therefore, is that Thailand needs to investigate the development of a more comprehensive and systematic approach to data collection and storage, which can then be the basis of detailed and sophisticated statistical analysis – as well as being the basis for a system of Legality Assurance.

The key is to establish reliable baseline datasets with which subsequent data can be compared: this indicates the need for data on the resource bases – both natural and plantations and for all the major cropping systems that either produce wood as a prime function or as a by-product.

Consequently, rubber wood plantations and eucalyptus and acacia plantations need to be subjected to some form of systematic and periodic audit to establish areas, standing volumes, productivity etc.

For government plantations this should be relatively straightforward, but inducing this change in private forest and tree owners is likely to require some careful thinking and appropriate incentives.

8.5 Evidence for Proof of Origin, Legality and Product Identity

The current difficulties experienced in finding sufficient objective evidence to prove the origin of timber, its fundamental legality and even its true identity, demonstrates that considerable work is required to explore and develop documents and systems that are both suitable for Thailand but which also meet the needs of their international customers. This is true for timber being imported into Thailand but it is also true for timber produced domestically – even if the timber is made into products which stay in Thailand.

It is much easier to develop one system that meets all customers' expectations than different systems for different customers or users.

Though criticised throughout this report the Certificate of Origin (CoO) suitably modified, can be a suitable means of providing proof of origin, but it needs to be reinforced by other documentary or physical evidence.

Proving the basic legality of the timber is more complex but having plantations registered and certificated under a Thai national scheme is a perfectly feasible approach.

International schemes already exist which have pioneered and developed workable solutions related to audits, evidence and chain of custody techniques and although Thailand's stakeholders will need to satisfy themselves that any systems developed (or inherited) are culturally appropriate and that there is local 'buy-in' and commitment, there is no need to spend time and resources 're-inventing the wheel.'

8.6 Chain of custody systems

One area where significant gains could be made is in the wider adoption of formal chain of custody systems within commercial companies. Many large companies have already adopted CoC systems and sophisticated supply chain management.

If CoC systems were universally adopted it would be considerably easier for the regulating authorities to monitor the supply chains and progressively identify and squeeze out illegal timber.

The lack of a consistent approach to CoC management within the commercial sector means that the regulatory authorities such as RFD and customs are bearing a large part of the responsibility and effort to develop a national structure, which if companies were adopting CoC as standard operating practise, would not be so necessary.

It might be worth exploring what incentives may induce commercial companies to adopt standardised CoC systems, which could then provide the data required to central servers for analysis and comparison.

One additional advantage is that companies would then not need to reveal commercially sensitive information (for instance about suppliers or conversion rates) that competitors might be able to take advantage of in a system which is completely transparent.

The introduction and use of FSC certification into Thailand for both forest management and chain of custody shows that use of chain of custody systems (for both tracking the origin of timber and its movements through the supply chain) is both feasible and realistic. However, it is worth noting that the reason earlier FSC certification was withdrawn was not because of inherent illegality of the timber source but because of weaknesses in the supply chain so that it was no longer possible to claim with any assurance that the supply chain was not contaminated.

At present FSC certification has been adopted by the “easier” segments of the supply chain – industrial plantations of eucalyptus, rubber and teak. However companies that are certified achieve this by having systems in place which allow non-certified, non-legal or unknown timber to be identified and excluded from the FSC product. This internal chain of custody system can become a key component in any legality system that Thailand may develop, even if the timbers are from non-plantation sources.

It should also be recognised that a frequent reason for traders to be reluctant to adopt rigorous chain of custody systems is because they do not want the supply chain to be transparent or prefer the lack of scrutiny and the ‘flexibility’ that this gives them in the purchasing and trading of wood and timber products. The extra expense of adopting more rigorous procedures is another aspect of resistance to change.

As a result it is unlikely that timber traders will actively campaign for more scrutiny or more rigorous chain of custody systems – or indeed any additional forms of control or regulation. Against this must be balanced the fact that customers (or organisations acting on their behalf) are increasingly demanding proof of the claims that timber traders make about their wood and their trade.

For operators who sell into discriminating markets, the current systems are effective only in part. Imports from Myanmar and Cambodia have restrictions in place, assisted by those countries insisting that Thailand seek Certificates of Origin from importers. In addition, Myanmar timber is officially only allowed into the country via the port in Bangkok, rather than overland. However, once imported into Thailand wood sources are easily mixed and the absence of internal chain of custody within most companies means that once timber has entered a processing plant it cannot be easily distinguished or separated from wood of an unknown source or of unknown legality.

The RFD’s voluntary certification scheme is an attempt to give Thai industry credibility in discriminatory markets. However the complexity of the Thai forest products industry and the use of multiple species by individual factories means that the task of confirming sources by the RFD is a daunting one. Without chain of custody information, the RFD runs the risk of endorsing products incorrectly. The risk to the RFD reputation seems significant.

8.7 Consistency of regulations

The regulations covering wood from non-exempt species, particularly teak, are more stringent than those on exempted species such as eucalypt and rubber in terms of registration of plantations, permission to fell, transport and export. The RFD procedures provide operators who wish to show legality with a means to indicate where their timber has come from, within Thailand (i.e. if imported, the port). However, timber in individual mills may be of mixed sources and there is no simple way that RFD staff or purchasers can be confident that any one batch of produce has been derived from any one source of timber.

Where timber is imported, in some cases a Certificate of Origin is provided, and thus it is potentially possible for a user of imported timber to pass on source information to purchasers. However not all countries exporting to Thailand provide a Certificate of Origin and thus Thailand is importing timber of unknown harvest origin. It is possible that some of this has been sourced illegally abroad. In addition, it is also clear that batches of wood can be split up after import and it is possible for timber to pass through the supply chain with the RFD travel permit but without all the documentation required at import.

Thailand's forest products industry, particularly its wood processing industry, is large, producing a wide range of products. The mixing of wood and wood products from different sources in individual factories is common. The RFD system of monitoring wood balances at a factory level is a basic mechanism that may alert RFD staff to gross violations of regulations. However it is clear that the range of species traded makes it difficult to monitor the trade in greater detail, i.e. for individual batches in a large factory.

8.8 Variation in regulation between species and wood types

One of the notable points about Thailand's control system is the variation in government control between domestically produced species - controls reflect the degree of risk with regards to, in particular, the role of the RFD in protecting natural forests. The detailed control and monitoring of the movement of wood from Thailand's natural forests and imported wood can be contrasted with the very light control and monitoring of the majority of domestic production – namely that of rubber and eucalypt wood from plantations. The latter situation reflects the observation that few legality issues seem to arise from this production – an issue which would need further reflection during the stakeholder consultation process.

Whilst Thailand's monitoring and control systems have been designed and are being implemented for domestic issues and concerns, the demands of overseas end users are now requiring greater information and transparency. The assumption that there are no legality problems associated with most imported timber can no longer be made. In addition, importers of Thai forest produce require evidence to show that production from domestic production is of legal origin.

8.9 The proposed paperless system

The digital system currently outlined (the National Single Window – NSW) does not yet explain how it will remedy the key weaknesses identified by RFD of the existing system, in particular: human error; fake documentation; duplications; and lost data and documentation. There is no current intention to replace the paper system with the NSW, only to use the NSW to feed existing information into the Customs e-system, and it is also not clear if or how “exempt” species such as eucalyptus and rubber wood will be covered by this system. The proposed NSW system does not yet make clear precisely what information from plantations will be input to the digital system, but unless additional data (for example production and chain of custody information) is included then the digital system will suffer the same difficulties as the existing paper-based system, noted above, in terms of documenting legality of sources.

Experience from other countries of effective digital systems for supply chain control and verification has shown that the critical components are comprehensive data acquisition and consistent data analysis and reconciliation. The amounts of data to be handled in short timeframes means that these systems do need to be computer-based, but they will only provide meaningful results if they are fed with relevant, accurate and constantly updated data. This is a significant commitment for the Thai authorities. However, without these components it is not possible to make reliable statements about legality in the supply chain.

9. POSSIBLE ACTION POINTS

9.1 Monitoring and reporting on Thailand's forests and forest products industry

European markets will be asking for greater transparency and information on sources of wood, especially in the period following 2013. If Thailand is to respond to this demand easier access to comprehensive and reliable information and data is essential. Whilst there appears to be a degree of reporting on the Thai forest products industry and procedures in Thailand in Thai, it is highly desirable for efforts to be made to provide this in suitable formats for European audiences on a regular and routine basis.

International publishers of forest products data on Thailand, such as ITTO and FAO, also have difficulties in reporting on the Thai forest products industry so that data has to be estimated or assumed. It would be useful if one government agency was to take responsibility for the whole sector and collate and publish appropriate information and statistics.

It is highly desirable for Thailand to produce detailed, accurate and timely data on the domestic production of **all** wood (data requirements for currently "exempt" species need to be considered). This needs to be done in conjunction with knowledge of the location of timber production within the country, assisted by appropriate knowledge as to where timber plantations of all species are located. Such data needs to be reported on an annual basis.

Data collection needs to be focused at critical control points such as sources of timber (plantation, forest gate, point of import etc) and key points such as factory gates where checking of data can allow essential means of data quality control.

Without comprehensive data collection and consistent data analysis, the proposed NSW paperless system will not be capable of achieving reliable claims about the legality of exports.

9.2 Proof of legality

Thailand's timber industry needs to prepare for EU purchasers applying the Due Diligence regime in 2013. Accurate information will be requested on species of wood, sources and legality. To achieve this, a number of measures should be discussed.

9.2.1 Computerised timber supply chain monitoring system.

The developing paperless system of the RFD should take on board the need for a data collection and management system that can provide information in real time about the status of timber within the main supply chains in Thailand. The outputs would inform, and provide the supporting evidence for, decisions related to legality and timber licensing.

9.2.2 The use of Certificates of Origin

Thailand has shown that it can work with neighbouring countries to address issues arising in those countries through insisting on Certificates of Origin. These may not always provide a

guarantee of legality and truth, but their presence possibly deters traders from using Thailand to launder illegal timber.

It is recommended that all wood and wood products imported into Thailand is accompanied by a Certificate of Origin. This will require coordination between countries but with ongoing efforts in each country Thailand is not alone in developing procedures. Where wood is imported from third countries (i.e. where the wood has not been originally harvested) effective action will be needed in those exporting countries to identify sources of supply, and means to ensure reliability of information and authenticity.

9.2.3 Physical segregation and chain of custody systems

If CoO are not available, an alternative might be for Thailand to separate wood with CoO from wood without a CoO (physical segregation). The RFD might consider restricting its voluntary certification system to wood guaranteed to have an authentic CoO. Chain of custody systems may be necessary where timber from different types of sources come together in one factory or one supply chain.

9.2.4 Chain of custody systems

From the private sector point of view third party certification provides a useful means of showing compliance with legality requirements. Chain of Custody systems will be needed to allow purchasers to distinguish between wood and wood products that have been produced legally within Thailand, but for which minimal monitoring and control has been exercised, from domestically produced timber from known sources.

The desirability of standardised and formal Chain of Custody systems in processing and manufacturing companies is clear, as this could provide a source of consistent and reliable data that can be used in establishing timber legality. Providing information on CoC systems to Thailand's manufacturers and processors is a first step. Stimulating them to adopt CoC systems that meet pre-defined minimum requirements could be a second.

9.2.5 Documenting legality for plantation species

Domestically produced rubber and eucalypt may have few legality problems. However, absence of data on production, showing quantities produced over time, along with their origins makes a thorough examination difficult. Identification of legality problems has had to be speculative. An assumption on legality will not be sufficient for sensitive markets. A simple legality system or endorsement may possibly be effective, but this would need to be underpinned by transparent reporting on the sources of production and the identification of issues that arise from production. Assessment at the national level is highly desirable. More robust systems may be needed with factories that use both imported and domestically produced plantation wood.

Thailand has indicated its interest to negotiate a FLEGT Voluntary Partnership Agreement with the EU which would allow for the licensing of products from Thailand documenting timber legality, through a Legality Assurance System (LAS). In this context, the Government will need to consider and discuss:

9.2.6 A legality definition

Thailand will need to produce, with active stakeholder involvement, a definition of legality with regards to all types of forest product, including consideration of currently “exempt” species. At the very least, Thailand and purchasers of wood within Thailand will need to seek details of the country of harvesting of wood that it imports from purchasers.

9.2.7 Verification mechanism, procedures and capacity

With the complexity of supply chains in Thailand the potential volume of wood needing verification the capacity of the RFD will need to be examined against requirements of the system. The supply chains will need to be able to carry detailed information from imports, such as species and harvesting source, through to export on a consignment by consignment basis.

With the means of verification checked on existing supply chains, the procedures for the issuance of FLEGT-compliant licenses needs to be developed and capacity built so that those issuing licences are aware of procedures

Finally, independent monitoring of the LAS will be needed to ensure it is working as intended.

9.2.8 Confiscated wood

Enforcement activities lead to the confiscation of wood and wood products by government. Some must be impounded for periods during prosecution, but decisions need to be made in a transparent way on what happens with this wood and how it is labelled in the market place, if it is ever released. Similarly, if the wood is used within government activities, either wholly or partially, procedures to reinforce transparent handling are desirable.

9.3 The broader market demand for information on wood sources

Thailand’s forest products industry needs to be made aware that the burden of proof of legality is likely to become considerably harder in the immediate future as a result of the EU Timber Regulation coming into force in 2013 and the time available for development of systems and their implementation is short. Some exporters might assume that if they are not exporting to legality-sensitive European or American markets they will not be affected by these market developments. However, as several of the third country markets that Thailand ships to, such as China and Vietnam, also export to Europe and North America it can be anticipated that the effects of market changes will be felt more widely. An inability to provide the requested information may lead to clients reducing risk by buying elsewhere.

APPENDICES: PROVIDED IN A SEPARATE DOCUMENT

The following appendices can be downloaded from:

http://www.euflegt.efi.int/files/attachments/euflegt/appendices_to_thai_timber_flows_report.pdf

Appendix 1: HS Codes used for relevant Thailand imports in 2010

Appendix 2: Species exempt from checkpoint and recording procedures

Appendix 3: Average values for Thai exports by HS code

Appendix 4: References

Appendix 5: Forest Act 1941

Appendix 6: Plantation Act 1992 - species requiring registration

Appendix 7: Form raised by rfd checkpoint at import

Appendix 8: Travel permit

Appendix 9: Form raised for plantation wood

Appendix 10: Voluntary certificate from RFD

Appendix 11: Example of CITES licence

Appendix 12: Relevant international trade data for Thailand

Appendix 13: Timber entry and exit points within Thailand

Appendix 14: Generic supply chain model

Appendix 15: Sources of illegality

The EU FLEGT Facility assists in the implementation of the EU Forest Law Enforcement Governance and Trade (FLEGT) Action Plan. The Facility is funded through a multi-donor trust fund, with current contributions from the European Union and the Governments of Finland, France, Germany, the Netherlands, Spain and the UK.

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