Swedish University of Agricultural Sciences
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Ansvarsfull pappersförsörjning till ett globalt matrisorganiserat detaljhandelsföretag

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Master Thesis
No 204

ISSN 1654-1367
Uppsala 2019

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Master Thesis, 30 ECTS credit *Advanced level in Business Administration*
MSc in Forestry 12/14 *(EX0753)*

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Abstract

Pressure from regulation as well as customer demand on responsibly sourced and produced goods and services is greater than ever. IKEA is considered a bench mark company as regards CSR in global supply chains and now a system needs to be put in place to also secure responsible paper sourcing.

In this study methods for working with responsible paper sourcing, traceability and reputational risk are evaluated according to internal and external prerequisites and conditions of IKEA. The mixed methods approach included supply network mapping, interviews and use of secondary data. Paper supply networks were described at an overarching level for all IKEA organisations purchasing paper, and were mapped at a detailed level for the IKEA paper articles found in the retail store. A detailed mapping of IKEA paper products supply network and its risk exposure constitutes an important basis for change.

Reputational risk can be managed in various ways and IKEA has chosen a proactive approach, where responsible sourcing and exclusion of unacceptable wood sources is seen as the preferred risk management tactic together with transforming paper sourcing into only so called *More Sustainable Sources*. More Sustainable Sources is material which according to IKEA represent higher sustainability standards and for wood based materials it is currently defined as recycled material and FSC certified materials. In the study, the traceability concept is developed not only to include transparency factors, as determined by supplier relations, but also to consider the level of network complexity, company control and how both these features are affected by the organisational set up for purchasing paper. Accordingly, the three main practical tools for addressing responsible paper sourcing isolated and evaluated in this study are 1) requiring and transforming IKEA paper supply to come from only More Sustainable Sources, 2) manage the prerequisites for traceability and responsibility by developing the way paper sourcing is done at IKEA and 3) to develop Due Diligence working methods for paper. Cost aspects of different alternatives are not evaluated in detail but is considered as recommendations are made to IKEA based on the study.

Results reveal that the complexity of IKEA paper supply networks is not only caused by the long and complex supply networks of the paper industry but also by the scattered way in which paper is purchased by different IKEA organisations. Addressing the matter of traceability at a time of fast expansion and developing sourcing practices at IKEA inevitably put a strong focus on how traceability prerequisites and company control is related to the organisational set up for purchasing paper. All IKEA organisations purchase paper that reaches the customer. Many advantages are expected from increased alignment and cooperation within and between the different purchasing organisations in order to increase traceability by decreased supply network complexity and fostering closer business relations with paper producers which has potential to increase transparency in the supply network. The results also reveals that if the company does not set clear requirements on the material used for its products, these will be contaminated by controversial materials in terms of unacceptable wood sources which, even though they come in small quantities, get widely spread in the product assortment.

IKEA is recommended to prioritise increased control in paper supply chains through centralised purchasing, paper consolidation and cooperation between the different purchasing organisations. Responsible sourcing in general and traceability prerequisites in particular should be an outspoken objective in this development.

Restricting the number of paper qualities used in products and packaging securing a convenient size of the paper sourcing should be seen as a central tool to decrease supply network complexity, enable purchasing directly from the paper mills and get access to FSC certified materials in a cost-efficient manner.

Results reveal great production capacities upstream the current paper supply chain which is already FSC certified. IKEA should therefore take advantage of this situation and require certified materials. Targets for Mores Sustainable Sources, including FSC certified materials, should prioritise and be aggressive at high risk markets such as Asia.

To support the development of working methods increased communication between paper purchasers through a *communication network*, *training* in areas of traceability and risk within the paper industry and *common paper industry intelligence* including responsibility evaluation of market actors is suggested. A common and consistent approach for responsible paper sourcing will additionally have to be based on a *paper specific standard* and a *cross organisational steering model*.

Keywords: *CSR, paper industry, reputational risk, supply network, traceability*

Sammanfattning

Ökad reglering såväl som kundefterfrågan har lett till att kraven är större än någonsin på att ansvar ska säkerställas i företags produktion och upphandling av varor och tjänster. IKEA anses vara ett ”benchmark-företag” vad gäller socialt och miljömässigt ansvarstagande i globala försörjningskedjor. Nu måste IKEA skapa ett system för att säkerställa ansvar även i sin pappersförsörjning.

I den här studien utvärderas metoder för ansvarsfull pappersförsörjning, spårbarhet och varumärkesrelaterad risk utifrån IKEA:s interna och externa förutsättningar. Olika metodologiska ansatser har använts för datainsamling. Intervjuer och sekundärdata har utgjort viktiga informationskällor. IKEA:s försörjningsnätverk har dessutom beskrivits både på ett övergripande plan, då adresserande alla IKEA:s inköpsorganisationer, och på en mer detaljerad nivå, då adresserande de pappersprodukter som säljs i varuhusen. En detaljerad kartläggning av IKEAs pappersbaserade produkters försörjningsnätverk samt dess riskexponering ger en viktig utgångpunkt förförändringarbete.

Risk i relation till ett företags varumärke kan hanteras på olika sätt och IKEA har valt en proaktiv ansats där oacceptabla råvarukällor ska undvikas och där målsättningen ska vara att förflytta företagets sourcing till källor som kan anses hålla en hög standard ut ett hållbarhetsperspektiv, s.k. *More Sustainable Sources*. More Sustainable Sources för träfiberbaserade material är idag definierat som returfiberbaserat material och FSC-certifierat material. Spårbarhetskonceptet utvecklas i studien till att inte bara innehålla aspekter av öppenhet mellan aktörer i försörjningsnätverket, utan även hur spårbarheten påverkas av försörjningsnätverkets komplexitet och företagets kontroll, samt hur dessa båda faktorer påverkas av hur företaget organiserar sina pappersinköp. Sammanfattningsvis är de tre huvudsakliga verktyg för ansvarsfull pappersförsörjning som identifieras och utvärderats i studien: att 1) ställa krav på att det material man köper ska komma från s.k. More Sustainable Sources, att 2) påverka förutsättningarna för att säkerställa ansvarsfull pappersförsörjning genom att utveckla sitt sätt att köpa papper och att 3) arbeta med Due Diligence för paper. Kostnaden för olika implementeringsalternativ utvärderas inte i detalj, men är en aspekt som beaktas i de rekommendationer till IKEA som görs baserat på studien.

Resultaten visar att pappersindustrin representerar långa och komplexa försörjningsnätverk, men också att komplexiteten i IKEAs försörjningsnätverk kan härledas till det spridda sätt på vilket IKEA köper papper. Att adressera spårbarhetsfrågan i detta snabbt expanderande företag kräver fokus på sambandet mellan sättet att organisera sina pappersinköp och de förutsättningar detta skapar för spårbarhet och kontroll. Inom IKEA köper ett flertal organisationer papper som når slutkunden. Att samordna inköpen inom och mellan IKEAs interna organisationer, bättre följa upp och förstå pappersaffären och öka fokus på den totala pappersaffären på IKEA skulle leda till minskad komplexitet, bättre förutsättningar för närmare relationer till pappersproducenter och därmed ökad spårbarhet och kontroll i försörjningskedjan. Resultaten visar också att om företaget inte ställer tydliga krav på att det material som används i produkterna inte kontamineras av kontroversiella material som, om än förekommande i små mängder, får stor spridning i produktsortimentet.

Rekommendationen till IKEA är att öka kontrollen över sin pappersaffär genom ökad centralisering, konsolidering av volymer och kvalitéer samt samarbete mellan inköpsorganisationerna, och att ansvarsfull pappersförsörjning i allmänhet och spårbarhet i synnerhet vara ett uttalade mål i detta utvecklingsarbete.

Att begränsa det antal papperskvalitéer som används i produkter och förpackningar är ett sätt att säkerställa en lämplig storlek på pappersaffären och kan ses som ett centralt verktyg för att minska komplexiteten i försörjningsnätverken. Konsoliderade pappersvolymer ökar möjligheten att göra affärer direkt med pappersbruk istället för genom mellanhänder, ökar potentiellt tillgängligheten av FSC certifierade volymer och möjliggör köp av FSC-certifierat papper till ett bättre pris.

Den kartläggning av IKEAs försörjningsnätverk för papper som gjorts inom ramen för denna studie visar att en stor del av den produktionskapacitet som idag finns uppströms IKEA:s försörjningsnätverk är FSC certifierad. IKEA bör därför dra nytta av det faktum att denna produktionskapacitet är certifierad genom att ställa krav på det material man köper därifrån. Målsättningar för vilken andel av IKEA:s pappersförsörjning som ska komma från *More Sustainable Sources*, dvs. FSC certifierat material och returfiber, ska var högt satta på den Asiatiska marknaden och andra marknader, där risken för oacceptabla råmaterial är särskilt stor och en förändring bör ske snabbt.

Till stöd för utvecklingen av ansvarsfull pappersförsörjning på IKEA behövs ett kommunikationsnätverk för de som köper papper inom företaget. Utbildning måste erbjudas till inköpsorganisationerna kring spårbarhets- och riskaspekter inom pappersindustrin. Gemensam Business intelligence innefattande utvärdering av marknadsaktörers grad av ansvarstagande är också en viktig del i att skapa konsekvens mellan inköpsorganisationerna och gemensam ökad kompetens. En gemensam och konsekvent ansats för ansvarsfull pappersförsörjning bör dessutom baseras på en pappersspecifik standard och en organisationsövergripande styrmodell.

***Nyckelord**: CSR, försörjningsnätverk, pappersindustrin, spårbarhet*

Foreword

"Your friend is your needs answered" are words written by the Libyan poet Khalil Gibran in the beginning of the last century. I believe there is a need within each one of us to follow our own true wish about who we want to be and what we want to do. The wish that we carry inside is sometimes hidden or diffuse to us though. I therefore consider that a true friend of mine is likely to be a person who finds true interest in searching for the wish within me and who helps me see my wish clearly enough to choose to follow it.

As my friend Evelina Thiger tried to find out what I wanted to do for my master thesis, she didn't have to dig too deep to realise that I had had a wish to get better understanding of IKEA and the ambitious agenda for fair and sustainable global supply chains that the company has taken on. Walking to the bus stop on a rainy November's day, surrounded by the dark quagmires of campus Ultuna, we could conclude that the only thing needed to make me follow the recently identified wish would probably be a kick in the butt from a good friend. Evelina therefore offered me her kind support and asked me how far out the quagmire I wanted to go.

Humbleness and respect were the dominating feelings at getting to spend the last semester of many years of studies at IKEA of Sweden in Älmhult. I thank Anders Hildeman for giving me the opportunity to invest the work hours of my master thesis in a subject of importance to IKEA!

At defining the research scope humbleness took slight character of nervousness. I was fortunate to work with Matti Stendahl as my supervisor. Not only patiently spending many hours discussing the study's execution, but also reminding the inexperienced student of a master thesis limits while simultaneously encouraging the continuous work. Thanks also to Professor Anders Roos and Professor Lars Lönnstedt for great encouragement and support!

My supervisor at IKEA has not been less encouraging. Ulf Tillman has in a thoughtful and engaged way not only provided supervision but also the kind of coaching that fosters confidence as well as increased work efficiency. That kind of welcoming to your work-life is priceless.

Priceless are also the people at the Älmhult central office who regardless of status and position always find time to support a newcomer with any trivial matter, offering both great professionalism and the best work environment that I have experienced. There are actually too many of these fantastic people to mention them all here.

A friendly approach and great professionalism is also characterizing for the many interviewees and key informants who supported me with the information essential for the study. I am very grateful to you all!

Last but not least I am fortunate to have an amazing family supporting me through life. In regards to support, my father is particularly important. He is the person who believes in me no matter what, and he continuously reminds me of this fact. Thank you!

Contents

1 Introduction

1.1 Background

The pressure from regulation as well as costumer demand to secure responsible sourced and produced goods and services is greater than ever (UNGC, 2013). Multinational corporations are increasingly responsible not only for their in-house operations but for sound environmental and social performance at their suppliers and in the entire supply chain (Andersen and Skjoett-Larsen, 2009; Amaeshi et al., 2008; Seuring and Müller, 2008; UNGC, 2013). Failure in working with suppliers on sustainability and responsible behavior is a potential source of risk that can cause damage to the reputation and sales of a firm (Christopher and Gaudenzi, 2009; Chopra and Meindl, 2013; Lemke and Petersen, 2013; Seuring and Müller, 2008). Reputational risk has often been overlooked in relation to sourcing decisions and supplier evaluation in conventional supply chain management literature, though it is an area gaining increased scientific and managerial attention (Chopra and Meindl, 2013; Lemke and Petersen, 2013). The carriers of greatest reputational risk are the actors close to the market, e.g. the brand owning company (Andersen and Skjoett-Larsen , 2009; Lemke and Petersen, 2013). As a means to enhance social and environmental change NGO:s are increasingly taking advantage of reputational vulnerability which fosters Corporate Social Responsibility (CSR) to become the contemporary foundation to mitigate reputational risk throughout the supply chain (Amaeshi et al., 2008; Lemke and Petersen, 2013; Roberts and Dowling, 2002; Roberts, 2003). Sustainable sourcing is of reputational importance and also incentivized by corporate sustainability motivations. Though, global corporations are increasingly engaging in securing sustainable production methods at their raw material producers as they acknowledge the risk of future supply deficits if they don't (Chopra and Meindl, 2013).

Forests and forestry have increasingly been viewed as a common global concern, which is partly caused by the recognition of the global warming, where deforestation is acknowledged as one of the major contributors to the CO_2 imbalance. Furthermore, 1.6 billion people are estimated to directly or indirectly depend on forest for their livelihood. (FAO, 2014a) Forests appeal to people in many ways, as does the wide range of renewable forest products. The more divergent however is people's perceptions on what comes in between the forest and its products, which is forestry (Bass et al., 2001). As it is not obvious what a consumer would consider an acceptable source of wood fiber, stakeholder agreements through certification schemes have an important role in the forest sector (Bass et al, 2001; Paetz and Nierentz, 2012). Even if sustainable forest management (SFM) techniques are continually being developed around the world, there are still a wide range of anomalies within the global forestry sector (FAO, 2014b). Considering that 15-30 percent of the annual global round wood production is estimated to spring from illegal logging, watchfulness among consumers and all previous actors of the supply chain on the raw material source is reasonable (Canby and Oliver, 2013).

The present study concerns responsible paper sourcing at the global retail company IKEA. IKEA has committed to the sourcing of wood from acceptable sources, discountenancing e.g. illegally harvested wood and wood from areas of high conservation values. Essential to this undertaking is the traceability of the paper products wood fiber content. Traceability as it concerns wood and paper-based products is *"the ability to track sources of wood in finished products through the supply chain to – as close as is practical – their origins" (*Noguerón et al. 2012). Traceability as a means to secure responsible paper sourcing is an area not only meeting increased pressure from legislation but also increased interest from NGO:s and research organizations (Noguerón, 2013; WWF, 2014; UNGC, 2013). Even governmental

bodies imposing the harder policies engage in the supporting of business organizations in the design of robust Due Diligence solutions (Perrault and Kamat, 2013). For, it is a challenging task. The complex nature of global paper supply chains, commonly involving raw materials, semi-processed materials and products crossing country borders, automatically obstruct efforts for responsible sourcing through the tracing of paper fiber back to the forest (Carlsson et al., 2006; Haartveit et al., 2004; Noguerón, 2013; Skilton and Robinson, 2009). Experiences from responsibility initiatives in the global food industry suggests that increased requirements for traceability in complex supply networks tend to drive supply strategy development towards supply network simplification (Skilton and Robinson 2009).

1.1.1 IKEA

IKEA is a rapidly expanding, multinational home furnishing company with the vision to "create a better everyday life for the many people". In 2012 the company operated in 44 countries, had 139 000 co-workers and annual sales of 27 billion euro. To reach the company vision the mission is to keep prices low, allowing as many people as possible to afford the products. This makes efficiency in all parts of the value chains fundamental to the company's success. (IKEA, 2012) In supply chain management literature IKEA is exemplified as a company that keeps its costs low through sourcing basic modules in low-cost countries (Chopra and Meindl, 2013) and according to the Reputational Institute in USA the company is characterized by branding themselves rather than products or brand portfolios (Christopher and Gaudenzi, 2009). This strategic positioning makes the company particularly vulnerable to negative publicity about social and environmental issues of their supply chain (Andersen and Skjoett-Larsen, 2009).

In 2013 IKEA was estimated to buyonepercent of all the wood used for commercial purposes worldwide, a figure that includes wood and wood based board but does not include wood fiber used as raw material for paper and cardboard (IKEA, 2013). The official sustainability reporting shows a steady increase in sustainably sourced wood volumes (Op. cit.) and as concerns CSR in global supply chains the company is considered a benchmark company (Andersen and Skjoett-Larsen, 2009). The company holds a dominant position in its supply chains, enabling it to influence its suppliers. Through its code of conduct, IWAY, the company communicates what suppliers can expect from IKEA as well as what IKEA requires from its suppliers in terms of working conditions, child labor, environment and forest management (Andersen and Skjoett-Larsen, 2009). The proactive approach in working with responsible wood sourcing also involves partnerships with external stakeholders such as environmental NGOs and engagement e.g. in the FSC general assembly (IKEA, 2013). IKEA has a specialized Forestry organization with auditors in the different geographical areas where IKEA has suppliers of wood containing products. The company has already set generic sustainability definitions regarding paper supply acknowledging recycled fibers and FSC[1] certified fiber as more sustainable, and thereby preferred, sources. In IKEAs sustainability strategy it is stated that all wood and paper in IKEA shall come from Mores Sustainable Sources in 2020. Despite the generic development process towards sustainable supply chains being far-reaching, paper assortments are still not included in IKEAs sustainability reporting on forest products (IKEA, 2013). Furthermore, an incident in 2013 indicated development

[1]Forest Stewardship Council. Certification through the scheme is a market based tool enabling customers to choose products with raw materials from sustainable sources. The certification scheme is managed through a global, multi-stakeholder, membership organization. Learn more at https://ic.fsc.org/

needs in the company's paper sourcing routines as a German environmental advocacy group declared that "mixed tropical hardwood" had been found in IKEA note books (RobinWood, 2013).

IKEA organizations purchasing paper

Prerequisites for the tracing of wood sources in finished paper based products vary within IKEA. To start with, paper is purchased *centrally* by four different organizations. *IKEA of Sweden (hereinafter IoS)* is the trading organization managing the supply of the products found in the retail stores. Among the products are easily identified paper products such as napkins or solid paperboard boxes, though there are also papers used for e.g. surfaces or filling material in furniture which are not always obvious. *IKEA Components (I Components)* owns the mission of sourcing all packaging material of the products, namely the flat packs for which IKEA is known. As part of IKEAs current expansion, I Components is in a phase of aggregating all sourcing of packaging to its central organization, as this sourcing is partly managed locally by the furniture suppliers. The fairly new product segment called the Swedish Food Market, which is found outside the checkouts at the retail stores, is supplied by an organization called *IKEA Food Services (IKEA Food)*. IKEA Food is also the organization supplying the Scandinavian foods for the restaurants at IKEA stores all over the world as well as the hot dogs for the bistro at the store's exit. Foods frequently come in paper based packaging, and the restaurants and hot dog stands also need napkins, paper cups and other paper based items for their service. The fourth organization purchasing paper is IKEA Indirect Material and Services AB (IMS). This organization is responsible for purchasing and supplying non-home furniture products that are needed in the IKEA business and supplies e.g. hygiene products, copy paper and such for internal consumption at offices and at IKEA retail stores. IMS also manages large paper volumes as the 110 000 ton paper used for the famous IKEA catalog. The sourcing strategies and supplier relations of these different organizations vary. The dominant position in supply chains for which IKEA is known might not be true for all segments and in all organizations. Furthermore, paper is not only purchased through the central organisations, but e.g. hygiene products and local food for the restaurant is also purchased locally around the world.

The paper segments

At IoS, paper is categorized into the four paper segments Tissue, Fine paper, Corrugated board and Solid paperboard. Tissue paper is what is found in products such as facial tissue, hand towels, serviettes, sanitary towels etc. Commonly tissue of better qualities is virgin fiber based whereas other qualities can be recycled fiber based (Anon, 2014). Fine paper is printing and writing papers; defined by properties such as whether they are coated, bleached, wood containing or non-wood containing[2]. These are mainly virgin fiber based papers. Corrugated board is made from kraft liner and semi-chemical fluting which are commonly virgin fiber based, and of recycled paper based testliner and fluting "Wellenstoff", (Anon, 2014). Solid paperboard is paperboard made of only one type of furnish and can be laminated with a surface paper of Fine paper quality for improved print options. (Anon, 2014).

[2] "Non-wood containing" referring to most of the lignin being removed in the chemical pulp production

Trading Areas and Sourcing regional presence

IoS has nine Trading Areas through which the home furnishing articles are sourced. These are: Americas, North-, North East-, Central- and South Europe, Greater China, South- and South East Asia, and Hong Kong Trading Agent Asia Pacific

I Components is currently situated in Sweden, Slovakia and China, IMS is present in some way in all IKEA markets and IKEA Food is located in Sweden.

Supplier categories

IKEA evaluates its suppliers as function of dependency, strategic fit and long term (≥3 years) performance. Performance is a matter of price, availability, product quality and sustainability, factors that all have the same weight in the evaluation. Each material category can add up to two material specific criteria to measure performance, and e.g. suppliers of the solid wood category are evaluated according to the sustainability status of the raw wood they use in the products. Dependency is naturally a question of what optional suppliers are available and at what cost if the current supplier would have to be replaced. The IKEA suppliers can also be classified as a product development/innovation supplier if they are evaluated to be well equipped in this area and don't have any severe performance issues. Due to these factors the IKEA Suppliers are sorted into the following categories:

IKEA Prioritized supplier

IKEA Product development /Innovation Supplier

IKEA Potential prioritized Supplier

IKEA Critical suppliers

IKEA Supplier

The evaluation scheme is important to isolate and rank the capability of the suppliers in developing their future performance, which is the progress that IKEA wants to drive.

Figure 1 summarizes the IKEA purchasing organisations, the paper segments, purchasing regions and supplier categories.

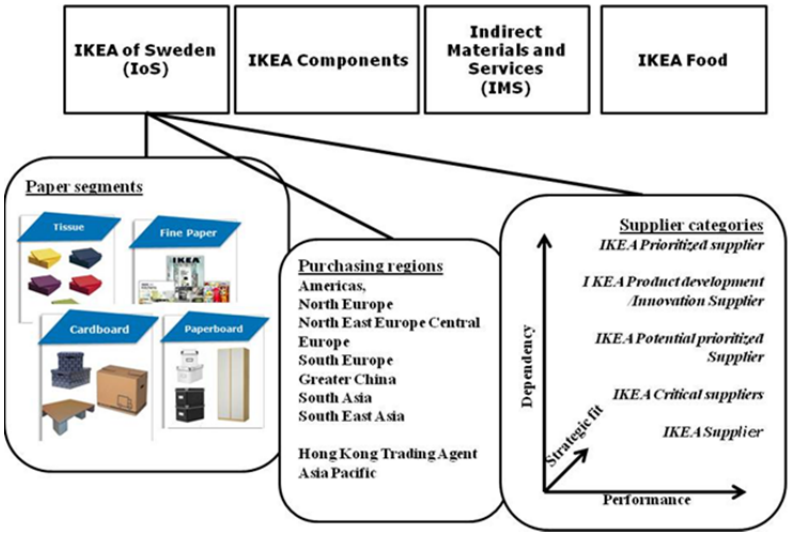


Figure 1. IKEA purchasing organisations, paper segments, purchasing regions and supplier categories.

1.2 The global paper industry

According to RISIs[3] *Annual Review of Global Pulp & Paper Statistics*, the global paper industry reached a record level of 399 million metric tons of paper and paper board produced in 2011. Used for these products is about 44% virgin fiber pulp (also including non-wood based pulp particularly from Asia) and 56% recovered pulp (Magnaghi, 2014).

The world's greatest paper and board producer is China. In 2011 China accounted for 25% of global paper and board production. The country also has the world's largest demand for paper and board materials, accounting for 24% of the global demand (UMB, 2012). Production tonnages per geographical region and share of global production per top producing countries are shown in Figure 2.

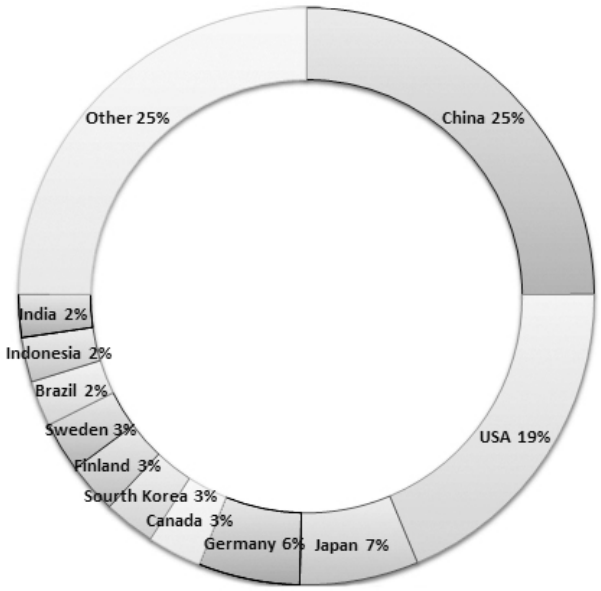


Figure 2. Share of total global paper and board production per top producing countries 2012 (Source: Giampiero Magnaghi, Bureau of International Recycling, 2014.)

In 2011 the global production of wood fiber based pulp was 182 million metric tonnes. USA remained the world's greatest pulp producer in 2010 accounting for 27 % of the world's pulp production. China was the second largest pulp producer and the world's largest importer of market pulp in 2010, imports corresponding to 25 % of the total global import value (Noguerón, 2013; UNECE/FAO, 2012). China is also the world's greatest importer of recovered paper, imported tonnages reaching 28 million tons in 2011, dominantly originating from USA and Europe (Magnaghi, 2014). The world's major wood-pulp producers are presented in Figure 3 below.

[3] "World leading information provider for the global forest products industry" (see: http://www.risiinfo.com/)

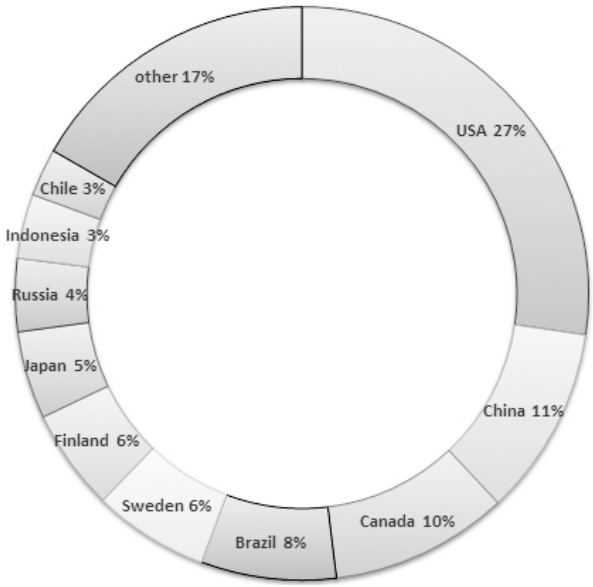


Figure 3 Share of annual pulp production by top producing countries in 2012 (Source: Giampiero Magnaghi, Bureau of International Recycling, 2014)

The paper and pulp industry is globally consolidated and dominated by relatively few multinational companies (Karikallio et al. 2010; Martel et al. 2005). In later years though, the importance of the historically dominating producers has decreased, both in terms of what countries represent the great production volumes and in terms of total market share for the top producing companies (Karikallio et al. 2010; Noguerón, 2013; UNECE/FAO, 2012). In the year of 2000 the paper and pulp industry was dominated by North America, the Nordic countries, Germany, Japan and China, whereas e.g. Brazil Indonesia and India were minor players (Noguerón et al. 2013).

During 2005-2010 almost 60% of pulp investments and 70% of paper investments were realized in Asia (Karikallio et al. 2010). During the last twenty years South American pulp capacity (Brazil, Chile, Uruguay) has increased from four million tons to 16,7 million tons in 2012. Based on already announced projects the capacity is expected to reach 30 million tons in the coming ten years (UNECE/FAO, 2012). Still many major pulp and paper products producers are in North America and Europe, however, apart from their relative importance decreasing at a global level, these markets even face decreased outputs in later years (Karikallio et al. 2010; UNECE/FAO, 2012). Closure of capacities, corporate restructuring, industry consolidation, increased efficiency and innovation has been in focus (UNECE/FAO, 2012).

Paper products are global commodities which many times travel a long way from the forest to the final customer (Noguerón et al. 2013). There is substantial intra-industrial trading in pulp and paper products (Karikallio et al. 2010; Zhang and Buongiorno, 2007). Countries import and export the same products to exploit economies of scale which is only possible by extending markets abroad (Karikallio et al. 2010). Pulp and paper prices are determined globally and regional prices are almost identical when taking into account exchange rates and transaction costs (Ibid). As Karikallio et al. (2010) conclude: pulp and paper markets are competitive in the sense that a single firm, no matter how large, cannot increase the price of its products without losing market shares and experience fall in total revenue.

Raw materials

Wood raw material for paper has many sources such as residues from sawmills, from thinning and harvesting forests and increasingly from plantations (Noguerón, 2013). Between 2000 and 2010 the area of planted forest was increased by five million hectares per years globally, where the largest net gains of forest area were in Asia due to great afforestation efforts (FAO, 2010).

Even though China is reporting a net gain of forested area of three million hectares per year, much of the plantations are for water and soil protection and apart from being the world leading wood pulp importer the country also imports 20 % of its total round wood consumption (UNECE/FAO, 2012). The imports stand for 44 % of the global import value for roundwood, and the greatest volumes comes from Russia (FAO, 2010; UNECE/FAO, 2012). The risk of getting controversial wood sources in Chinese supply chains is thought to mainly come from its wood imports, particularly of tropical hardwood from illegal sources (Canby et al, 2013). Though, illegal logging is also a major problem in Chinas greatest round wood supplying country Russia (Canby et al, 2013; UNECE/FAO, 2012). Proportions of wood from illegal sources in the North West of Russia were estimated to be between 5-15% in 2009 (Arets et al, 2008)

A large share of controversial wood in Asia, and globally, also comes from great Indonesian pulp and paper producers that for many years have substituted lacking production capacity in forest plantations by using tropical hardwood from the Indonesian rainforests. The problem has been described as structural as the companies let industrial production capacity grow faster than raw wood supply from the companies' plantations corresponded to (Barr and Cossalter, 2004). The cases of the paper giants Asian Pulp and Paper (APP) and Asia Pacific Resources International Limited (APRIL) have been high-profile cases on a global level for several years due to their fast destruction of tropical forests in Indonesia, and the World Wildlife Fund / World Wildlife Fund for Nature (WWF) recommends paper purchasers and investors not to source or involve in other affairs with the concerned actors before considerable changes have been implemented at the companies (WWF-Indonesia, 2014a; WWF-Indonesia, 2014b). APP is not only present in Indonesia and China but is currently also acquiring production capacity in e.g. Canada and USA (UNECE/FAO, 2012).

Apart from the risk of illegal wood sources a recent study also reveals that Chinese supplier commonly also lack material traceability systems, are unaware of e.g. North American legal requirements, e.g. the Lacey Act, and hesitate to provide insight in their supply chains even though high level management meetings are arranged to overcome potential concerns (Noguerón, 2013).

1.3 Increased pressure from legislation

Predominant international legislations on wood product trade are the Lacy Act, addressing trafficking in illegal wildlife, fish and plants, and the European Union Timber Regulation (EUTR) that became effective in March 2013. The EUTR is intended to prevent that illegally logged wood is entering the 27 EU Member States (Fernholz, 2013). Additionally the Australian Illegal Logging Prohibition Act introduced in 2012 is prominent, which detailed regulation governing due diligence approaches will come to effect in 2014 (WRI, 2014).

The Lacey Act has until now not included paper products if the paper is not part of a product containing other wood, though the new EUTR applies also to paper products, with the exception of bamboo based and recycled fiber based papers (Noguerón et al. 2013; NEPCon, 2014). This is the first time Due Diligence is required for the composite material of wood based paper.

1.4 Previous studies on responsible paper sourcing and traceability

As paper is now being included in international legislation on responsible wood sourcing and traceability governmental bodies as well as NGO:s and research organizations are engaging in providing support to the actors in need to develop their own systems for due diligence (Perrault, 2013; Noguerón, 2013). Responsible paper is not a new subject of interest, but the legal requirement for corporations to secure legality in their supply chains has moved focus from supporting tools external to corporations, towards the ability of corporations to exercise due diligence. As legal pressure is increased also in the solid wood industry, actors is also continuing to focus on this area, providing meaningful insight also to the paper segment on e.g. risk evaluation methods and geographical high risk sourcing areas (Canby and Oliver, 2013).

In the context of increased pressure from legislation on wood traceability certification organizations are thought to be an important source of competence for companies who now need to develop their own due diligence set up (Fernholz, 2012). Additionally FSC certification is expected to, even if it not substitutes an in-house due diligence system according to the new EUTR, play a significant role in the solution for many wood trading companies as a FSC certificate should work as a key element of risk assessment (Fernholz, 2013; FSC, 2014d).

Civil Society and environmental NGO's initiatives

Initiatives to support the risk assessment in wood supply chains have been taken by the World Resources Institute (WRI) and the Environmental Investigation Agency (EIA), supported by the United States Agency for International Development and companies in the forest sector. (Canby and Oliver, 2013; Forest Legality Alliance, 2014) The organisations are developing a risk assessment tool based on data collection on forest laws, enforcement challenges, CITES[4] status and transparency indicators (Canby and Oliver, 2013). Presently the tool provides information on nine countries, mainly in high risk areas (Forest Legality alliance, 2014). NEPCon, Rainforest Alliance and FSC have developed a country list of overall risk categories and other sources such as the UK and European Timber Trade Federation, Global Witness and Chatham House are providing some country specific information. In the light of the new EUTR the business association Forest Trend emphasizes that more information is needed to assess wood origins and flows towards the European market (Canby and Oliver, 2013)

The WWF and Rainforest Alliance are not only active parties in setting the agenda on what should be addressed on the forestry responsibility agenda, but also work proactively to influence and guide consumer behaviour. The two NGO:s both provide consumer guidelines for paper purchasing, like IKEA designating e.g. FSC certified and recycled paper as

[4] The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an agreement between 178 different governments with the aim to ensure that international trade of wildlife and plants should not threaten their survival (CITES, 2014

preferable from a sustainability perspective. One recent initiative is the web based tool "Check Your Paper" developed by WWF. Through the tool papers sustainability is measured with a generic approach according to forest impacts through wood harvesting, greenhouse gas emissions, water pollutants and wastes. All papers ranked can be found at the webpage, for any paper purchaser to review (WWF, 2014).

The WRI continuously update their guide to "Sustainable Procurement of Wood and Paper-based Products". The comprehensive work is designed both as a decision support tool and an information tool, e.g. covering the great variety of tools in terms of projects, initiatives, publications and labels that are to aid sustainable procurement of wood and paper-based products (Noguerón et al., 2012).

Paper traceability specific study

In 2013 the WRI published the report of a case study on managing transparency with suppliers in global paper supply. The study was carried out in collaboration between Staples Inc., Rainforest Alliance and WRI focusing on five private label products with origin in China, United States and Brazil. Used for the study was an internet based information system managing supply chain information and documentation which can be reported directly by suppliers and sub-suppliers. The study reveals that pulp and paper manufacturers and integrated paper companies are better prepared to answer questions about the origin of their raw material than e.g. paper converters, and that information about the origin of raw material gets increasingly difficult to obtain as the supply chain gets longer. The authors also state that high level, direct and consistent communication is critical to align priorities of the supplier with priorities of the buyer on increasing transparency, and to overcome mistrust in what the information of the supply chain will actually be used for. Obtaining accurate and sufficient information takes time and effort, especially if it is not prioritized by the supplier to work on supply chain transparency and in markets where here is no history of tracking raw material origins. A critical issue in working with transparency in the purpose of responsible sourcing is the concern of the supplier of information being used in their disadvantage, e.g. for circumventing them in business. The obstacle of mistrust needs to be overcome by direct communication with the suppliers. (Noguerón et al., 2013)

Research in related areas

Reputational risk management

Lemke et al., 2013 argue that reputational risk and its management is an area in need of increased attention as this type of risk is commonly overlooked in supply chain risk management. Their focus is on how CSR in the supply chain, referred to as Supply Chain Social Responsibility, can work as reputational risk mitigation. As CSR literature commonly seen from a perspective of "do good" qualities the work of these authors focus solely on the risk mitigation qualities. The authors' argue that for practitioners, work has to start with identifying and understanding what risk their supply chain is exposed to. Based on the identification and understanding of risk exposure mitigation strategies can be developed. These might include working with SCSR as well as choosing the right business partners (Lemke et al., 2013).

Corporate Social Responsibility

There is a great wealth of research made in the area of (CSR) and sustainable supply chains. CSR literature is commonly involved with the relation between the corporation's commitments in regard to the treatment of the people and environment and the corporation's

financial performance (Brown and Dacin, 1997; McWilliams and Siegel, 2001; Stanaland et al., 2011; Porter and Kramer, 2006). Some researches focuses on the problematic of CSR being driven by external expectations of the company and not aligning with the core businesses and values of the firm (Porter and Kramer, 2006; Porter and Kramer, 2011). The authors argue the opportunity for long term sustaining of company commitment are in the areas most important to the company business. In these areas the company has the most resources to make a meaningful impact on society. The authors stretch the CSR concept into calling it Creating Shared Value, and argue the agenda of corporate responsibility should integral competing and profit maximization (Op. cit).

A considerable amount of studies and working papers also focuses on management control systems for corporate Code of Conducts (OECD, 2001; Leigh and Waddock, 2006). Systems typically include tools as record keeping systems, training, compliance offices, production controls, internal and external audits, whistle blowing facilities and internal incentive systems etc.(OECD, 2001). As outsourcing and off-shoring in the context of the globalized economy one of the core problematic for the management of corporate responsibility is naturally the complexity of supply chain relations and hence the need for transparency levels allowing focal companies to understand events of suppliers and sub-suppliers upstream their supply networks (Leigh and Waddock, 2006; Andersen and Skjoett-Larsen, 2009). As CSR concerns conducts of the upstream supply chain it also tangents the research area that is referred to as Sustainable Supply Chain Management (SSCM)

Sustainable Supply Chain Management

Seuring and Müller (2008) offer a conceptual framework to summarize that research of the field of Sustainable Supply Chain Management. Reviewing 191 papers published between 1994 – 2007 results reveal that the three aspects most frequently mentioned to be barriers for implementing sustainable supply chains was 1) higher costs 2) coordination effort and complexity 3) insufficient or missing communication in the supply chain. Correspondingly the supporting factors of implementation a system for SSCM have been identified by the authors as: 1) company-overlapping communication, 2) management systems (e.g., ISO 14001, SA 8000), 3) monitoring, evaluation, reporting, and sanctions, 4) training/education of purchasing employees and suppliers and 5) integration into the corporate policy. The literature review also confirms that external pressure or incentives trigger firms to manage the sustainability of their supply chains. Based on the nature of the triggers the authors argue that there are two major strategies, of which one is labelled “supplier management for risk and performance”, and the other is called “supply chain management for sustainable products”. The first strategy is incentivised by the reputational risk of social and environmental matters not being addressed. Environmental and social standards and criteria for supplier evaluation is identified as core features of SSCM when practised for reputational risk and performance (Seuring and Müller, 2008)

Environmental Strategies in Multinational Corporations

In the area of how complex multinational corporations (MNCs) should coordinate and control their environmental strategies Epstein et al. (2006) provide some empirical insight and a counterargument to the common idea that increased organisational complexity leads to more decentralized decision making (further developed in chapter 2.7.3). What are commonly closely guarded by corporate headquarters are key aspects such as environmental standard, environmental programs and performance evaluation systems. This is true even as organisational complexity increase (which was not expected by the authors). By centralizing these three components of the environmental strategy companies can ensure minimum

performance levels and consistency across the organisation and still preserve or develop a high level of autonomy for their subsidiaries regarding their aspects of the strategy. In this way MNCs can guide their organisations toward improved environmental performance while leveraging business units and facilities valuable expertise and knowledge. This is particularly important as MNCs has increased subunit autonomy and increased decentralization in recent years. According to the study setting of targets and objectives can be delegated to decentred levels. The authors also conclude that it is critical that top management send a clear message of that environmental performance is critical to the company and that strong expertise in the area has to be ensured (Epstein et al. 2006).

Previous student's research on related subjects

Student works in the area of *traceability* mainly concerns food supply chains, e.g. Redekop, (2011), with the exception of one work on the cotton supply chain for fashion, Andersson, (2014). Cotton in supply chain of home textiles is also the main focus in works on *responsible sourcing*, see Holmsten-Carrizo (2013), companied by works of e.g. mineral supply chains; see Airike, (2012). *Sustainable Supply Chains* overlap with previously mentioned works but also includes a few studies related to the forestry sector, e.g. the adaptation of CSR in the timber supply chain, Kelly (2012).

In the area of *reputational risk* and *reputational risk management* student studies are seemingly rare, even though the concept is touched upon related to study areas of e.g. traceability (Andersson, 2014). The proliferation of works on *CSR* in later years is nevertheless noticeable, covering all above mentioned studies and furthermore e.g.: Raditya (2009), Lukkarinen (2010) and Ek (2012). Previous SLU-students studies at *IKEA* have been concerned with the birch plywood industry in Russia (Terzieva, 2008), Birch forest management practices in China (Samuelsson, 2006) and the introduction of GIS[5] in IKEAs Wood Sourcing System (Renats, 2009). Curiously there is also a comparative study made on the implementation of sustainability policies regarding forestry in the forestry related sector of home furnishing and home improvement companies (Lan, 2008). Results of the study suggests that FSC is the most trusted certification system among the multinational corporations addressed in the study, and that European retail companies sourcing significant volumes of wood based products were better performing than corresponding North American companies (Lan, 2008).

Redekop (2011) investigates the conditions for SSCM in the Chinese food processing industry to understand what factors that must be considered by multinational companies active at this market must consider. Findings suggest a lack of traceability infrastructure and reliable enforcement of regulations which is argued to foster opportunistic behaviour. Andersson (2014) studies traceability in the fashion industry through literature case studies and qualitative interviews with experts. The study results confirm that traceability is crucial for companies' ability to work with and communicate their CSR work and by this gain competitive advantage (Andersson, 2014). As Holmsten-Carrizo (2013) studies responsible cotton sourcing and transparency in the home textile industry IKEA is one of case companies. Results reveal that companies of various sizes choose to work with Code of Conducts rather than with a "commitment-approach". Further tools commonly used are multi-stakeholder initiatives, eco-labels and innovations. Results reveal there is room for collaboration initiatives to enforce significant change in the concerned industry. Together with one other company

[5] Geographic Information System

IKEA distinguished itself by having well defined set targets for sustainable cotton sourcing (Holmsten-Carrizo, 2013). Kelly (2012) studies the adaptation of CSR within the timber supply chain focusing on attitudes, behaviours and perceptions of its practitioners. Results reveal positive attitudes towards CSR and Sustainable developments but that ideas of how it should be implemented varies between organisations. Forest certification is found to be a tool stimulating power dynamics within the supply chain as it gives NGOs influence in the choice of focus areas of CSR practices in the supply chain.

Another way for NGOs to influence corporations CSR agenda is through responsibility partnerships. Lukkarinen (2010) studies objectives and perceived benefit of forestry corporations-NGO partnerships and found that corporations found it to be potentially positive for the company image and useful in terms of getting access to special competences. NGOs on their part saw potential in influencing corporate behaviour and obtain resources for their own objectives and goals. Raditya (2009) studies CSR in forest products companies and the perceptions of their customer-companies. Results suggests that stakeholder involvement is seen as part of building accountability into the forest products companies business operations, and that these are considerably engaged in their stakeholder expectations. CSR programs are even targeted for various stakeholders as it is seen as a means to strengthen the corporate reputation and gain competitiveness (Raditya, 2009).

1.5 Problem description

Perceived development needs in the area of responsible paper sourcing in IKEA

Initial discussions with business- and forestry organization representatives indicate that IKEA lack a harmonized way of working with traceability and risk evaluation in their paper supply chains. Harmonized in this respect refers to the standards and requirements communicated to the suppliers and implemented in the different purchase organizations being consistent. Challenges are expected as allowances for differences has to be consciously made for variations in paper segments, geographical areas and purchasing organisations considering the prerequisites for working with traceability and risk within them.

IKEA has not yet found a convenient way of integrating traceability aspects and risk evaluation in sourcing decisions, e.g. by choice of sourcing tactics and supplier evaluation according to clear criteria. IKEA does not implement the own due diligence system to secure traceability and, at the time of this study, unacceptable wood sources of the paper industry cannot be avoided.

The company's expansion will lead to significantly increasing demand in e.g. Russia and China. These are two countries seen as high risk markets in relation to illegality (Hontelez, 2014). This development is perceived to bring increased risk to the company if not better considered.

IKEAs purchasing organisation is perceived by the specialised forestry organisation to lack consciousness about prevailing high risk sources and that there are many blind spots in wood fiber sourcing which have to be addressed. The tools that exists in the company are not currently well overviewed and needs to be assessed.

Generic problem description

IKEA and other companies currently stand before the great challenge of developing their own due diligence set up which for the first time include also paper as a wood based material. For

this cause a need for increased understanding of traceability in the paper industry - and more importantly its management - has emerged.

The above studies provides essential insight e.g. to understand motivation, drivers, attitudes and current development trends within the areas of CSR, responsible sourcing, SSCM etc. Studies also provide important insight in how these issues can be addressed and managed both within the organisation and together with suppliers, from generic perspectives and sometimes through empirical examples provided through case studies. Apart from the recent WRI/Staples study on transparency within the paper supply chain carried out by Noguerón et al. 2013 previous research on how a multinational corporation should handle responsible sourcing and traceability in relation to the global paper industry in specific is scarce.

In this study previous research provide a theoretical framework describing the relationship between supply network complexity, relations between actors in the supply network and traceability. This conceptualisation of the determinants of traceability is operationalised in the study to allow an assessment of the prerequisites for traceability through describing the complexity of the supply network and transparency between the actors of the supply chain. In the context of the theoretical framework the paper supply chains of IKEA's paper based home furnishing products are mapped in detail as an assessment of IKEA's current external prerequisites for traceability. Understanding the supply chain structure is expected to give direction on the approach for working with traceability.

Traceability is also indicated directly based on ability to provide wood sourcing information. Like the recent WRI/Staples study also the current study will reflect possible variations in transparency based on geographical regions and will accordingly strengthen, or challenge, previous research results.

Also risk is assessed though the mapping of IKEA's paper based products supply network, and also evaluated in a generic way in the mapping of all IKEA organisations paper purchasing. As emphasized by Seuring and Müller (2008), Lemke and Petersen et al. (2012) and Chopra and Meindl (2013) reputational risk of irresponsible behavior is traditionally not given as much attention in the conventional description of sourcing decisions and risk evaluation. In this study reputational risk is a core concept of the as is-description that will potentially constitute a basis for change as recommended by Lemke et al 2013 (see page19). The mapping of the paper supply chains of IKEAs paper based products exemplifies what risk exposure can look like and from where it might originate.

Different from e.g. the WRI/Staples study the current study also attempt to look in to the purchasing company and add a practical dimension of how a company can manage its own – internal – prerequisites to affect the traceability- and company control situation. Apart from describing the current set up for purchasing paper the study also shares some examples of how IKEA is already working successfully with responsible wood sourcing for wood based materials other than paper. The study contributes with three practical tools to secure responsible paper sourcing and traceability and evaluates the applicability of these at different circumstances.

The wide scope for studying the particular topic of responsible paper sourcing on a global level has potential not only to provide input to the corporations facing the challenge of complying with the new EUTR, but also to capture, specify and illustrate various aspects of the industry and responsibility and risk factors within it that needs to be further investigated and discussed.

Recommendations for measures to secure responsible paper sourcing considers previous studies findings of barriers, such as costs and coordination efforts, and success factors, such as training for purchasers, and aims to set a clear direction for development at IKEA but might also be used to inspire other companies with similar challenges.

1.5.1 Main objective

In this study methods for working with responsible paper sourcing, traceability and reputational risk are evaluated according to internal and external prerequisites of IKEA – a global matrix-organized retail company. Reputational risk can be managed by companies in various ways. As IKEA has chosen a proactive approach, where exclusion of unacceptable wood sources and securing responsible sources is the preferred risk management strategy, the study mainly considers the prerequisites for obtaining traceability in paper supply chains and ability to control and secure responsible paper sourcing.

1.5.2 Research questions

Research questions RQ1 and RQ2, defined below, have been formulated to assess existing external and internal prerequisites for working with responsible sourcing, traceability and risk evaluation in paper sourcing. In research question RQ3 measures to develop work with responsible sourcing, traceability and risk, will be evaluated based on the prerequisites assessed under RQ1 and RQ2. These measures will be based on the adaptation and evaluation of three focal methods for responsible wood sourcing and traceability (presented in chapter 2.5.) synthesized from literature as well as on the company's experiences on working with responsible wood sourcing up-to-date.

RQ1. For each IKEA purchasing organization and paper segment, how does the supply of paper look like considering volume, procurement region, supplier category and central-local sourcing mix?

- Which are the prerequisites for traceability in the paper supply networks?

- Considering IKEA CSR criteria on wood resources, referred to as IKEA's minimum requirements on wood, what sections of the current supply network represent risk exposure?

RQ2. What activities, resources, and company infrastructure (structures, information systems and culture) to support responsible paper sourcing, traceability and risk evaluation currently exist in IKEA?

RQ3. Based on RQ1 and RQ2 results, which methods are applicable for IKEA to work with traceability and risk evaluation and what organizational activities, resources, and company infrastructure are needed to support the methods?

- Do preferable methods differ between paper segments and sourcing regions?

- Are there consequences for SCM strategies and tactics in general due to changes in product- and information flows in purpose of enhancing traceability?

- How can the company's expansion be considered in strategies for responsible sourcing?

2 Theoretical framework and literature review

To assist the reader, notes about which part of the theory section that mainly support each research question (RQ) have been added to the headlines of this chapter.

2.1 Reputational Risk Management (all RQs)

A good reputation and trust is connected to numerous success factors of a corporation, such as: employee commitment, performance and good morale, knowledge transfer and successfully integrated processes between B2B partners in a supply chain, reduced negative impacts of information asymmetry between supply chain partners, cross functional coordination and knowledge creation, reduced risk for investors and better perceived quality of the products (Christopher and Gaudenzi, 2009; Lemke and Petersen et al., 2013). Even regression analysis has shown that a good reputation is positively correlated with sustained profitability over time (Roberts et al, 2002).

Formulated by Christopher and Gaudenzi (2009) reputational risk is defined as failure to meet stakeholders' reasonable expectations of an organizations performance and behavior. As corporate reputation and brand image constitutes fundamental components of business, avoiding reputational risk has been found to be a key driver to implement Corporate social responsibility (CSR) initiatives in companies (Roberts et al, 2002; Roberts, 2003).

CSR is a broad concept referring to a companies' overall treatment of people and environment (Andersen and Skjoett-Larsen, 2009) It is a topic enjoying much popularity in litterateur and among practitioners, which is not strange as it has repeatedly proved to be related to corporate performance (Lemke and Petersen et al., 2003). The concept has two main characteristics, the relationship between the company and the larger society, and the company's voluntary activities in the area of social and environmental issues (Andersen and Skjoett-Larsen, 2009). Through a review of several concepts and definitions related to CSR, such as sustainable development, corporate citizenship, sustainable entrepreneurship, triple bottom line, business ethics etc. van Marrewijk (2003) concludes that a "one solution fits all" is not an appropriate way to match the development and ambitions of different organizations. Accordingly, such a great number of standards and initiatives (prominently e.g. Global Sullivan Principles and United Nation Global Compact, CERES Principles) has arisen that it is difficult to keep track of them (Ecolabel Index, 2014; Leigh and Waddock, 2006). Considering this development it is not surprising that companies volunteer to "proactively" manage stakeholder and environmental responsibilities, with the development of management system theories (e.g. Total Responsibility Management) as well as norms of environmental auditing and report, sustainability strategies and codes of conducts as consequence (Andersen and Skjoett-Larsen, 2009; Leigh and Waddock, 2006).

Roberts (2003) argues that effective management of social and environmental issues is a key component of maintaining good reputation. The author develops the idea of a reputational management strategy which should be based on the understanding of the stakeholders' expectations of the company. Roberts argues that corporate responsibility should be defined by a wider range of stakeholders than just shareholders and customers and adopts a stakeholder model after Dowling (2001) as showed in Figure 4. In the model, company stakeholders are divided in four categories; authorities, business partners, customer groups and external influencers. Within each one of them it is often possible to identify many different stakeholder of various interests and priorities. The model is a useful tool to identify stakeholder interest's importance to the corporation. As emphasized by Porter and Kramer

(2006) the stakeholder expectations should not be directly adopted by the corporation. The authors address the importance of company managers to resist the hype created by media, activists and governments of holding companies responsible for social consequences. To be productive, the development of CSR in the company should be done in the most appropriate way according to the firm's strategy rather than adopting a too generic approach. A proactive approach in meeting stakeholder expectation on responsible behavior implies that the way a corporation works with CSR is incorporated in its core businesses. (Porter and Kramer. 2006)

Synthesizing from these previous scientific works, CSR initiatives should be built on the understanding of the corporations' stakeholders and their expectations, but implemented by the corporation in accordance with its core business and corporate strategy.

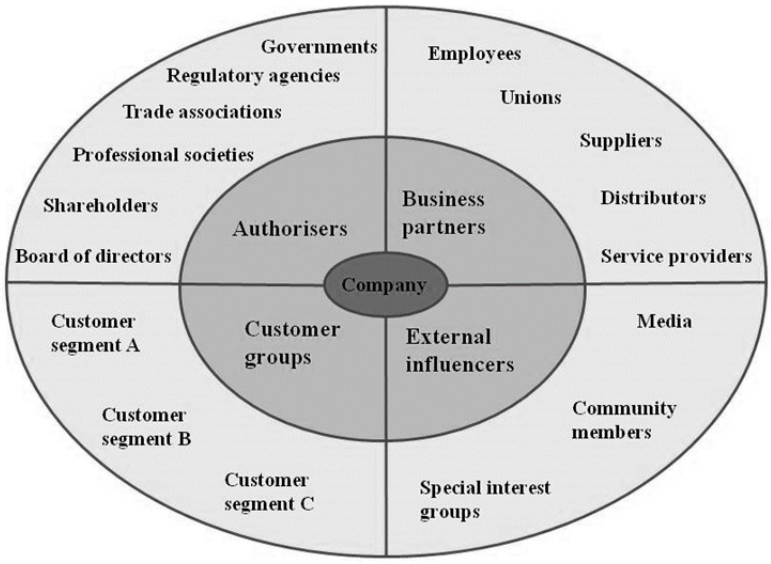


Figure 4. Company stakeholders as presented by Roberts (2003), after Dowling (2001).

2.1.1 Conceptualizing Risk

Drawing from numerous scientific works Harland et al. (2003) presents eleven types of business related risk: strategic risk, operational risk, supply risk, customer risk, competitive risk, fiscal risk, regulatory risk, legal risk, financial risk, asset impairment risk and reputational risk. Related to the different types of risk there are different kinds of loss, such as financial-, performance-, physical-, psychological-, social loss and loss of time. The article deals with risk and risk management in complex supply networks and offers a description of the risk concept. Simplistically, risk can be described as the chance of danger, damage, loss, injury or any other undefined consequence. Scientifically it has commonly been defined as the product of the *probability of loss* and the *significance of the loss* (Harland et al., 2003). Considering reputational risk, a third element may also be included: *what proportion of the burden the organization would have to incur* (Lemke and Petersen et al., 2013).

Accordingly, risk assessment concerns two main questions:

1) How likely is it that an event will occur?
2) What is the significance of the consequences and losses if the event occurs?

The first question depends both on the extent of *exposure to risk*, and on the *likelihood of a trigger* that would realize the risk. Concerning the second question some losses can be reasonably estimated, such as penalties for non-compliance, and in some cases the

significance of consequences will be dependent on circumstances and hard to estimate. (Harland et al., 2003) The difficulty in determining monetary loss of reputational damage has been pointed out as a factor undermining incentives for corporate reputational risk mitigation (Lemke and Petersen et al., 2013)

Lemke and Petersen et al. (2013) suggests that four generic decision options are available in companies' risk management:

1) Risk avoidance - Refers to elimination of all activities that expose the organization to risk
2) Loss prevention and control – refers to management of the impacts as risk is realized
3) Risk transference – shifting responsibilities to a third party via insurance policies
4) Risk retention – retaining associated costs of the risk and assume all responsibilities and costs if something were to happen (Lemke and Petersen et al. 2013)

In this study the basic risk management strategy evaluated is risk avoidance. What the corporation should avoid is unacceptable wood sources. The agreement between governmental bodies, the scientific society, NGOs and other stakeholders is continuously developing, though the framework given by the previous chapter defining unacceptable wood and responsible wood sourcing is adopted for the present study. The specifications of FSC unacceptable sources and the IKEA minimum requirements are adopted as the formulation of the agreement between stakeholders.

The exercising of responsible wood souring naturally includes the participation and careful consideration of the continuous dialogue between stakeholders on the definitions of unacceptable wood sources. The other essential cornerstone is naturally the exercising of due diligence, including the tracing of wood fiber back to its origin in the forest. This is a challenging task in the complex supply networks of the paper industry.

2.2 Responsible sourcing in the forestry sector (RQ1 and RQ3)

2.2.1 Certified wood, acceptable wood and unacceptable wood

Simplistically, wood can be divided into three categories according to the level of sustainability in forest management practices, namely certified wood originating from forests where forest management practices are claimed to be sustainable, acceptable wood fulfilling a set of minimum requirements for forest management practices and unacceptable wood or wood from controversial sources.

2.2.2 Forest certification

Sustainability in forestry commonly reflects the three areas of social-, economic- and environmental sustainability commonly referred to as the Triple Bottom Line[6] (FSC, 2014a; PEFC, 2014). Certification through the certification scheme Forest Stewardship Council (FSC) is based on a common agreement among stakeholders on what will actually be the criteria for sustainability in forest management, and reflects all areas of the triple bottom line.

[6] The wording "triple bottom line" was coined by John Elkington in his book *Cannibals with Forks: the Triple Bottom Line of 21st Century Business* in 1997, and ultimately draws from the definition of Sustainable Development specified by the Brundtland Commission of the United Nations in 1987 and described in "*Report of the World Commission on Environment and Development: Our Common Future"*

The United Nations Global Compact (UNGC)[7] has formulated ten principles in the areas of human rights, labor, environment and anti-corruption, which are derived from The Rio Declaration on Environment and Development, The United Nations Convention Against Corruption, The Universal Declaration of Human Rights and The International Labor Organization's Declaration on Fundamental Principles and Rights at Work. (The two latter also referred to in the FSC standards.) According to UNGC the FSC certification addresses the majority of the areas in focus of UNGC, such as:

- *Human rights: indigenous peoples rights, community impacts, health and safety, fair prices/wages;*
- *Labor: nondiscrimination, freedom of association;*
- *Environment: deforestation, toxic chemicals, erosion/soil health, water, biodiversity, waste management;*
- *Anti-corruption.(Perrault, 2013).*

The certification scheme is the tool for translating these focal areas into practice and to demonstrate and verify to the customer that forestry practices have lived up to the criteria of sustainable forest management. Examples of practical implications in forest management methods can be the maintenance and enhancement of attributes of high conservation values forests e.g. by abstaining from harvesting certain forested areas or biologically valuable trees; to consider indigenous peoples rights in forestry practices and by securing the social and economic wealth of forest workers (FSC, 2014b). Wood from sustainable managed forests would be the first wood category.

In the UNECE/FAO Forest Products Annual Market Review of 2012/2013 it was announced that the world's total certified forests had, for the first time topped the ten percent mark as a proportion of total forest area. 8.5 percent were certified by either Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification schemes (PEFC). Forests certified by other well-known standards such as American Tree Farm System (ATFS), the Canadian Standards Association (CSA), Sustainable Forestry Initiative (SFI) and Malaysian Timber Certification Council (MTCC) are commonly also certified by PEFC and figures on certified forest land area of these certification systems are often amalgamated into PEFC's figures as certified forest areas are presented. FSC and PEFC are currently developing its standards to make sure that the certifications fulfill the new requirements of the EUTR (UNECE/FAO (2013).

In May 2012 the global certified area was 394 million hectares, which potential supply of certified round wood was estimated to 27 percent of the global round wood production. 92 percent of the certified forests are in the northern hemisphere whereas only two percent of the tropical forests were certified in 2012 (Fernholz et al., 2012). Whereas certified forest areas increases in northern countries, there is generally greater fluctuation in areas of Africa, South America and Asia as audits more commonly leads to the loss of certificate (Ibid.). Figure 5 shows the relative shares of total global certified forest area by world region in 2012 and for

[5]The UN Global Compact works toward the vision of a sustainable and inclusive global economy which delivers lasting benefits to people, communities, and markets. Read more at: http://www.unglobalcompact.org/AboutTheGC/index.html

the comparison also the share of forest cover by world region as presented by FAO in their latest Forests Resources Assessment.

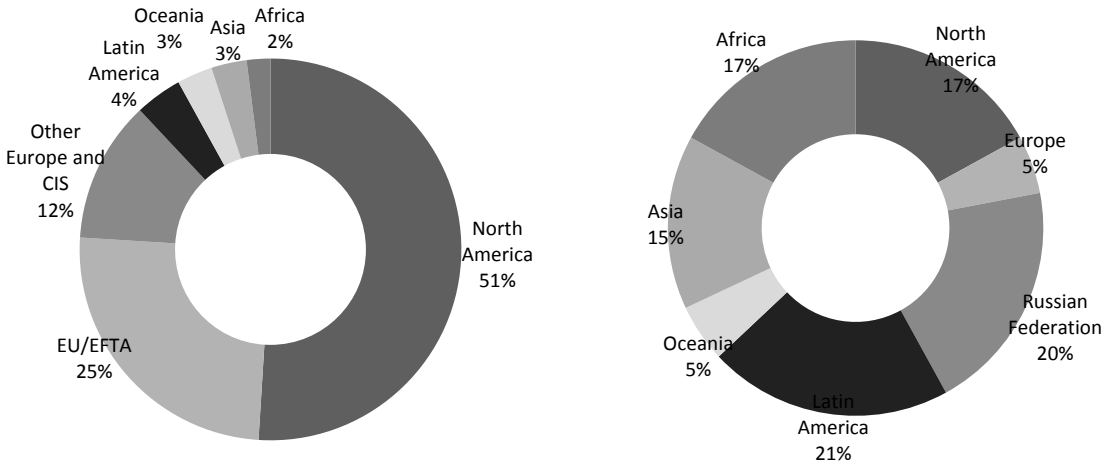


Figure 5. Left: relative shares of total global certified forest area by world region, 2012. After Fernholz et al., 2012. Right: Share of forest cover by world region, 2010 (FAO, 2010).

Forest certifications are developed to visualize to the customer that a forest product origins from forestry meeting standards of sustainable forest management (SFM). Apart from forest management methods living up to sustainability criteria, complementing certifications such as Chain of Custody- (CoC) and Controlled Wood (CW) certifications are issued. CoC certification refers to the generic process of tracking/tracing (the two words are both used in this report and have the same meaning) materials through manufacturing and distribution from the forest to the market and CW is used to assure that actors working with both certified and uncertified wood only mix the certified volumes with wood from acceptable sources (Kozak et al., 2003; FSC, 2014c). Due to their long experience in working with traceability certification organizations are thought to be an important source of competence as wood trading companies are now facing increased pressure from legislation to develop their due diligence in wood traceability (Fernholz et al., 2012).

FSC Chain of Custody certification verifies that FSC certified materials is identified or kept segregated from non-certified or non-controlled material through the supply chain (FSC, 2014c). Through different CoC systems processing- transformation-, manufacturing and distribution units can make a variation of FSC claim depending on the status of material entering the process. Claims are categorized as FSC 100%, FSC Mix (with a percentage or credit claim) or FSC Controlled Wood claim (FSC, 2014c). Companies associating with FSC additionally have to commit not to involve in any controversial forestry related activities according to the Policy for the Association of Organizations with FSC (FSC, 2011).

In IKEA, FSC certified wood, together with recycled wood, is considered a “More Sustainable Source” and as previously mentioned IKEA has a target to only use wood from More Sustainable Sources in 2020.

2.2.3 Acceptable and unacceptable wood sources

The second wood category represents wood from acceptable sources. The definition of an acceptable source is basically that forestry practices have not violated a set of minimum requirement which would have downgraded it to the third category of unacceptable wood sources. As IKEA defines the minimum requirements for wood used in their products, the

criteria are analogous to the FSC definition of unacceptable sources. The FSC criteria of unacceptable sources and IKEAs minimum requirements are shown in table 1.

Table 1. Left: criteria for unacceptable wood as formulated by FSC. Right: The IKEA minimum requirements for wood used in their products. Table shows that what is considered acceptable and unacceptable wood is corresponding between the two organisations. Sources: FSC, 2012; IKEA, 2012

FSC - Unacceptable material that cannot be mixed with FSC certified materials	**IKEA - Minimum Requirements Wood used in IKEA products fulfils the following criteria:**
Illegally harvested wood	Not from forests that have been illegally harvested;
Wood harvested in violation of traditional or civil rights	Not from forestry operations engaged in forest related social conflicts
Wood from forests in which high conservation values are threatened by management activities	Not harvested in Intact Natural Forests (INF) or other geographically identified High Conservation Value Forests (HCVF) unless certified according to a system recognized by IKEA
Wood from areas being converted from forests and other wooded ecosystems to plantations or non-forest uses	Not harvested from natural forests in the tropical and sub-tropical regions being converted to plantations or non-forest use;
Wood from forests in which genetically modified trees are planted	Not from officially recognized and geographically identified commercial Genetically Modified (GM) tree plantations

2.2.4 Illegal timber and risk assessment

Central among unacceptable wood sources is illegally logged timber. Illegal timber is associated with negative environmental, social and economic impacts such as deforestation, water pollution, spread of disease, climate change, loss of biodiversity, land and natural resources conflicts, disempowerment of local and indigenous communities, the loss of lives and livelihoods, human rights violation, corruption and armed conflicts. Recent studies suggests that the amount of illegal harvested wood accounts for 50 -90 percent of harvested volumes in key producer tropical countries in the Amazon Basin, Central Africa and Southeast Asia. As previously mentioned the figure is estimated to 15-30 percent globally. (Canby and Oliver, 2013) Assessing risk of buying illegally harvested wood is complicated due to variation in legislation around land tenure, forest management and transparency in different countries and country sub regions. Commonly the categorizing of risk levels is not always explanatory on country level, but needs to be analyzed at regional level. Furthermore lists of high risk countries or trade patterns are not likely to be published as this would be politically sensitive, and there is stated to be a great deficit in formal and political guidance on country and trade flow risk. This situation makes the considering of species central to risk assessment in wood supply chains, as certain species carries a higher risk charge. (Op.cit.) The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an agreement between 178 different governments with the aim to ensure that international trade of wildlife and plants should not threaten their survival (CITES, 2014). The CITES species list is recognized by the UNTR and wood with a CITES permit is given compliance to the legislation (UNECE/FAO (2013) Nevertheless, information of species commonly needs to be considered along with its origin to make a reliable base for risk evaluation.

Apart from species and geographical region the transparency situation in a can be used to evaluate risk of illegal logging operations. A strong correlation between Transparency International's published measures of political and judicial corruption and illegal logging has been proved. (Seneca Creek Associates LLC and Wood Resources International LLC, 2004; Canby et al, 2013)

2.2.5 EUTR requirement for Due Diligence

The new international timber trade legislations have increased pressure on the individual organizations due diligence development to assure that responsibility is enforced in the entire supply chain. As described by the European Commission the *due diligence* notion refers to the operators undertaking of risk management exercises to minimize the risk of introducing illegal timber or its products at the European market. The key elements in doing so are:

1) Information on country of harvest, species, quantity, details of the supplier and information on compliance with national legislation
2) Risk assessment focused on illegal wood in the supply chain according to the information collected, and in relation to the legislation
3) Risk mitigation in terms of increased control through information and verification from suppliers (European Commission, 2014)

2.3 Supply chains and networks (RQ1)

A supply chain is dynamic network of entities through which materials, information and funds flow (Chopra and Meindl, 2013; Mattsson, 2000). As described by Chopra and Meindl (2013) a supply chain consists of all parties directly or indirectly involved to satisfy customer demand. The supply chain might include manufacturers, component/raw material suppliers, transporters, warehouses, wholesalers/distributors and retailers as well as the customers themselves. Within the individual organizations the supply chain consists of all functions involved in fulfilling customer request, such as product development, marketing and sales, operations, distribution and service. Despite the concept of supply chains, when describing such structures it is commonly more accurate to refer to a *supply chain web* or *–network* as e.g. a manufacturer in reality may receive materials from several distinct suppliers (Chopra and Meindl, 2013; Haartveit et al., 2004; Skilton and Robinson, 2009). Furthermore oversimplification of the supply chain concept and hence of problems in managing materials, information and funds risk to prevent scholars and managers from fully understand events of the supply network. For example a changing mix of supply chain participants might obstruct possibilities to understand reasons for defects and adverse events (Skilton and Robinson, 2009). A theoretical illustration of a supply network is shown in Figure 6.

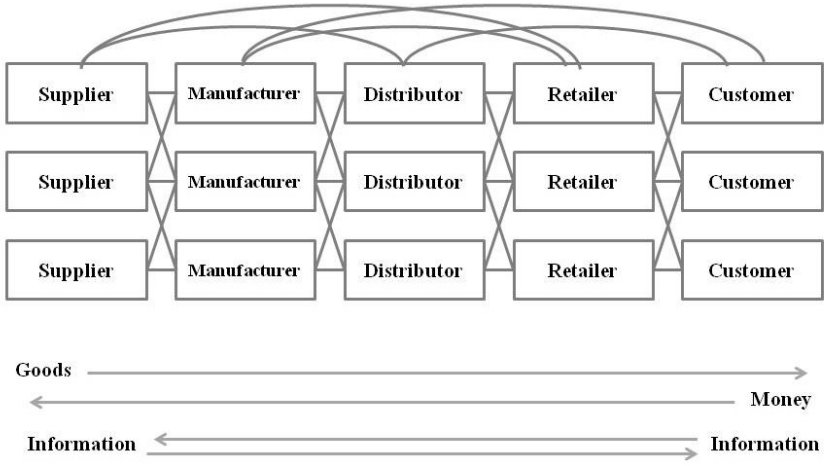


Figure 6. Teoretical illustration of a supply network, after Chopra and Meindl 2013.

The objective of the supply chain should be to maximize costumer value, while minimizing the cost of doing so, in other words maximizing *supply chain surplus*. In its turn the supply chain surplus can be divided into *consumer surplus* and *supply chain profitability*. The former (consumer surplus) referring to the difference between the value of the product as perceived by the customer and the maximum price the customer is willing to pay for it, and the latter (supply chain profitability) referring to the difference between the product price and the supply chain cost for providing it. The supply chain profitability equals the accumulated profits generated by the supply chain, hence the supply chain success should be measured in terms of the overall supply chain profitability. (Chopra and Meindl, 2013)

Costs are generated by all flows of information, products and funds within the supply chain and the aim of *supply chain management* (SCM) is managing these flows to maximize supply chain surplus. The decision phases of SCM are categorized into supply chain *strategy and design*, supply chain *planning and supply*, and supply chain *operation*. In the strategy and design phase the supply chain structure is designed, normally for several years ahead. Resource allocation, what functions and processes will be owned by each stage in the supply chain, what to outsource and to keep in-house, capacity and location of production and warehousing units, transportation and information systems to be used etc. Framed and constrained by the supply chain strategy and design, the planning phase matches supply and demand over the time period of a quarter to a year. The planning includes deciding what markets to be supplied by which location, subcontracting, inventory policies, timing and size of marketing and price promotions. At the operational level, the time horizon is the weekly or daily basis and decisions concerning e.g. inventories and transportation are made related to the handling of individual orders. (Op cit.)

2.3.1 Sourcing

Sourcing is defined as the set of business processes required to purchase goods and services. Jointly with facilities, inventory, transportation, information and pricing, sourcing is one of the main drivers of supply chain performance in terms of efficiency and responsiveness. The sourcing decision concerns *who* will perform a particular supply chain activity, such as production, storage and transportation or information management. The decision considers whether the source is to be efficient or responsive and whether it should be kept in-house or be outsourced. The latter is naturally determined by the potential of outsourcing to generate a greater supply chain surplus than an in-house operation would do, but also considering the possibility of risks in outsourcing. Globalization has allowed companies to grow revenues and

decrease costs. Gaining cost reduction by moving production to low-cost countries (referred to as off-shoring) is one of the main reasons to globalize supply chains. (Chopra and Meindl, 2013)

Within the sourcing decision a number of metrics of the direct impact on cost of goods and accounts payable are central. Average purchase price, price variability, supply quality, average purchase quantity, supply lead times and supplier reliability are some of the relevant metrics to evaluate supply chain performance. Related criteria are used when evaluating and selecting what suppliers to work with. As supply chains are becoming increasingly global and fragmented the efforts to verify and track supplier performance are becoming more difficult (Chopra and Meindl, 2013) As companies fail to gain from off-shoring decisions two reasons have been isolated as predominant: *focusing on unit costs* instead rather that the total cost of the off-shoring decision and *ignoring critical risk factors*. Whereas unit cost reduction from lower labor- and fixed costs and possible tax advantages are generally seen as the great cost savers, increased complexity and cost of managing the supply chain due to increased length and duration of information, product and information flows acts as counterweight.(Ibid.)

It is a common understanding that the globalization of supply chains has increased supply chain risk according to factors reaching from natural disasters to coordination problems (Chopra and Meindl, 2013). Risk increases with increased network complexity, and outsourcing and globalization increase the different sources and types of risk (Harland et al., 2003). The difference between global supply chains that have succeeded and those who have not is thought to be the ability to incorporate suitable risk mitigation into the supply network design (Chopra et al, 2013). In conventional supply chain literature the risk mitigation focuses on the supply chains performance in generating surplus and avoid risk drivers such as disruptions, delays, system-, forecast-, and intellectual property risks (Chopra et al, 2013; Seuring and Müller, 2008). Hence, the reputational risk of irresponsible behavior is traditionally not given as much attention in the conventional description of sourcing decisions and risk evaluation. This is a curiosity as a firms' reputation has proved to have such a significant impact on the overall performance (Christopher and Gaudenzi, 2009; Roberts et al, 2002) The sourcing decision in relation to reputational risk is rather described in the context of the supply chain sustainability and risk emerging from failing in working with the suppliers on sustainable development (Chopra and Meindl, 2013). Irrespectively of the type of risk (operational disruptions or reputational damage), the risk mitigation strategy comes at a price. The network design should allow a tailored mitigation strategy for a particular risk source to achieve a good balance between the amount of risk mitigated and the increase in cost (Op cit.) The United Nations Global Compact[8] (UNGC) emphasizes the issue of intuitively simple products moves through complex and multilayered supply chain networks and states that most companies typically have little direct influence and control beyond the first tier of the supply chain. Increased traceability commonly demands costly development of both infrastructure and information management. (Perrault et al., 2013)

2.3.2 The forest industrial supply network

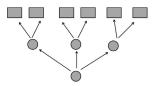
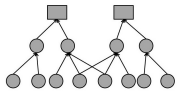
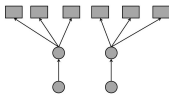
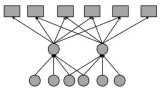
In the forest industry, products from one processing stage serve as raw material for other stages and long and complex supply chains are typically assembled (Carlsson et al., 2006; Haartveit et al., 2004). Material flows are divergent and interrelated (Haartveit et al.,2004) and

[8] *"The UN Global Compact is a strategic policy initiative for businesses that are committed to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labor, environment and anti-corruption."*

in the large network of production units of the pulp and paper industry it is very rare that all refinement is made in one single company (Carlsson et al., 2006).

Supply chain material flows can be described according to five theoretical structures referred to as the V-type, A-type, T-type, X-type and the I-type described in Table 2. Haartveit et al. (2004) describe the characteristics of the forest industry according to these flows, and consider it to be a combination of the different types combined in a complex network.

Table 2. Types of material flows. Materials as dots and products as squares. After Haartveit et al., 2004

	**The V-type refers to a material flow were partitioning and splitting of raw material generates a number of products.**
	The A-type refers to a converging flow were several raw materials end up in significantly lesser amounts of end products
	The T-type refers to a material flow were a small number f raw materials end up a large number of products and the number of diverging point increases downstream the supply chain.
	The X-type refers to a material flow were a large number of raw materials converge into a lesser number of modules, which can then be combined into a multitude of end products
	The I-type has one raw material which end up as one final product

In sawmills the diverging production process of desired dimensions also generates both consequence products and by-products (Haartveit et al., 2004). Manufacturing of pulp includes extraction of cellulose fibers from various fiber sources such as wood supplied directly from the forest and increasingly from plantation forests, from by- products from sawmills, fiber from used/recycled papers and sometimes even non-wood fibers such as bamboo (Martel et al., 2005; Noguerón et al., 2013). A visualization of the forest industrial material flows and the position of the pulp and paper industry within this is provided by Haartveit et al. (2004) and reproduced in Figure 7.

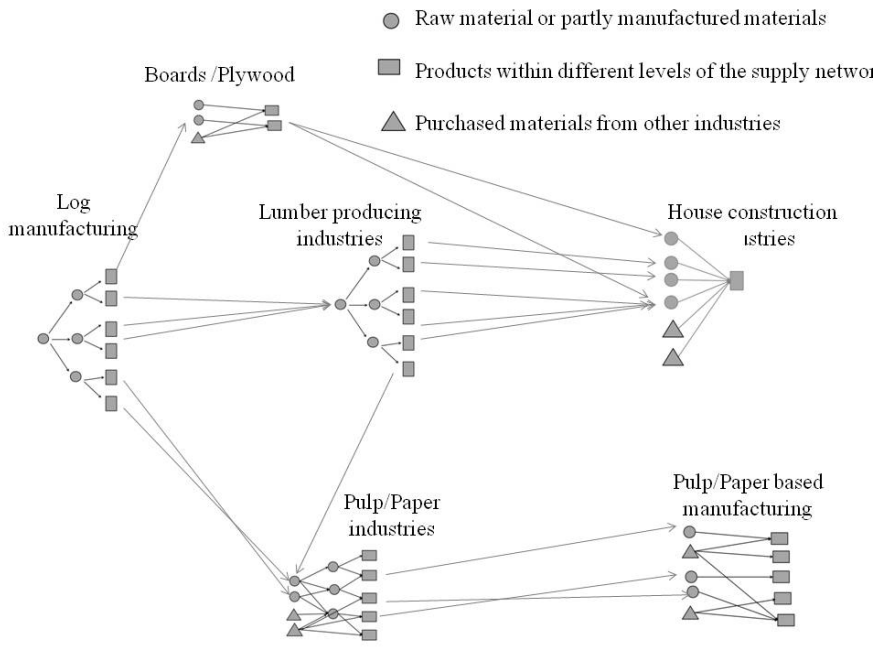


Figure 7 Material flows in the forest industry. Reproduced after Haartveit et al. (2004).

Different mixtures of fiber inputs generate pulp of different quality and function, used for numerous different paper qualities (Haartveit et al., 2004). Roughly, fiber properties and the paper qualities generated from them can be divided by the use of hardwood (deciduous species) or softwood (conifer species). Hardwood kraft pulp, e.g. from short fiber Eucalyptus, is used in printing and writing for an opaque paper with a smooth surface good for printing, or in tissue for the smoothness. Softwood kraft pulp, e.g. from long fiber Spruce, is used for strength in most papers. In products like toilet paper where strength as well as softness is desirable spruce from thinning is suitable, whereas in sacks, high long fiber content is desired to generate tear strength and then the fibers from the logs surface, generated in sawmills, is preferred. Mechanical pulp is mainly used in newsprint and other printing paper. (Carlsson et al., 2006) From paper and other materials a wide range of converted paper products are manufactured by various cutting and shaping techniques (Haartveit et al., 2004; Martel et al., 2005) motivating Haartveit et al. (2004) to classify the overall paper industry as an T-type material flow. In a paper end product such as cardboard or a gift packaging several different paper qualities are commonly used aggregating different paper qualities into a product increasing the material flow complexity further. The supply network of a more complex paper product can generally be expected to also be more complex (Lamming et al., 2000).

Martel et al. (2005) suggests that the pulp and paper supply chain is suitably described as a supply- , a manufacturing- and a distribution network. Naturally, the complexity of the value chain and its complex material flows is also increased by the different levels of integration in pulp and paper supply chains, where in the present industry variation is great. As some actors are integrated from their own forest land or plantations to the end market, other actors are buying pulp, producing paper and outsourcing to an external converter before distributing the end product to the market. The supply chains of most large players in the industry are multinational. (Martel et al., 2005) Products of the different stages of the supply chain (logs, wood chips, pulp, paper products) are all distributed across country borders. There is even a link between the end products and backwards to the production, as recovered paper is estimated to stand for 50 percent of fiber used in production of paper and paperboard in Europe and North America in 2011-2012 (Martel et al., 2005; Valois et al., 2013).

2.4 Traceability and supply network complexity (RQ1)

Defining traceability

Traceability is one of many tools through which greater supply chain sustainability can be achieved and adverse events of the supply network understood and avoided (Perrault et al., 2013; Roth et al., 2008; Skilton and Robinson, 2009). The concept refers to being able to trace a product from its raw materials to its final placement in the market and eventually its end-of-life disposal (Perrault et al., 2013). UNGC has chosen to adopt the definition of traceability as formulated by the International Organization for Standardization (ISO) in 1987 as follows:

"The ability to retrace the history, use or location of an entity by the means of recorded identification."(Perrault et al., 2013)

An entity in this case refers to a process, product, organization or a person. A product in that sense may refer to the origin of materials and parts, the history of process applied to the product, or the distribution and placement of the product after delivery (Ibid).

Traceability as it concerns wood and paper-based products is *"the ability to track sources of wood in finished products through the supply chain to – as close as is practical – their origins (*Noguerón et al. 2012)*"*.

Drawing on numerous scientific works Skilton and Robinson (2009) defines traceability as *"the ability to identify and verify the components and chronology of events at all stages of a process chain"*. A more simplified definition is provided by Roth et al. (2008) referring to traceability as *"the ability to 'map' the supply chain"*. A definition that implies that mapping itself might serve as an indicator of the level of traceability. Due to many attempts to define the traceability concept two main categories have emerged, referred to by Skilton and Robinson (2009) as logistic- and attribute-oriented. Logistic oriented traceability concerns only the physical movement of a product, whereas attribute oriented traceability also tracks information on quality and safety.

Factors determining traceability in supply networks

Based on a thorough literature review as well as analysis of the global food supply network and its recent years recalls Roth et al. (2008) offers a conceptual framework for working with supply chain quality management. The authors suggest that trust as well as transparency are critical factors in enabling identification and verification of sources and sequence of events in supply networks (Roth et al., 2008). Skilton and Robinson (2009) develop the idea that traceability depends not only on the *network complexity* buy also on the *degree of tight coupling* in information flows and the *transparency of buyer-supplier relations*, which is suggested by Roth et al. (2008). As described by Skilton and Robinson (2009) barriers to traceability arise when information about movements and attributes is hidden, ambiguous, lost or distorted. Even if it might be presumed that actors in a supply network know what they exchange and with whom, this is not always the case. Complex exchange relationships entail the risk of unintended errors and accidents and the authors emphasize that considering the frequency in which material goods is separated from information complex supply networks naturally bring barriers to traceability.

Transparency is defined as *"the extent to which information about sources, processes and relationships is readily accessible to counterparties in an exchange, and to outside observers"* (Lamming et al., 2004: Roth et al., 2008; Skilton and Robinson, 2009) As the level of transparency determines the amount of effort required to achieve traceability, and as

transparency has proven to be affected by network complexity, transparency constitutes a link between supply network complexity and traceability (Skilton and Robinson, 2009). The authors argue that network complexity is negatively related both to transparency and traceability.

Based on Normal Accident Theory Skilton and Robinson (2009) adds the dimension to network participant relations to the traceability conceptualization. If participants base exchanges on a minimal specification of product or service or when the specification is unimportant in relation to other goals of the participant, then suppliers' relationships are loosely coupled. Conversely, strong commitments to enduring relationships, including transaction specific investments that increase efficiency of the relationship, are considered more likely in a tightly coupled network. Transparency is argued by the authors to increase as couplings gets tighter, but only to a certain point where reporting and information gets so detailed and standardized participants consider themselves reporting "everything that needs to be reported" and managers overlooking information needed to understand unanticipated or infrequent adverse events. Therefore, in a tightly coupled complex network with rather standardized information systems, transparency is not automatically supporting traceability to a desired level. In a linear network, transparency might even be positively affected by couplings being loose. (Skilton and Robinson, 2009) The authors also argue that the degree of tight couplings is commonly negatively related to network complexity but that the relationship is not entirely orthogonal.

Defining supply network complexity

The supply base is defined as the proportion of the supply network that is actively managed by the focal company through contracts, purchasing of parts, materials and services (Choi et al., 2006). Supply base complexity has been defined by Choi et al. (2006) as a function of 1) the number of suppliers in the supply base 2) the degree of differentiation of the suppliers and 3) the level of inter-relationships among the suppliers. Defining complexity according to amount, differentiation and interrelationships is supported from mathematics as well as social sciences and is therefore considered by the authors to robustly capture the three dimensions of complexity. Skilton and Robinson (2009) have adopted the complexity definition of Choi et al. (2006) to be true for the entire supply network. The authors argue that large networks are more likely to be more complex, have a larger number of exchanges and process stages, be populated by a greater variety of participants and interact in a greater variety of ways. In this aspect the size of the network can be seen as the constraint to its theoretical complexity. Hence, the larger the amount of participants, the bigger the room for network complexity.

In accordance with this reasoning the authors offers a generalized matrix exposing traceability as a product of network complexity and network participants' relationships in terms of tight or loose couplings shown in Figure 8.

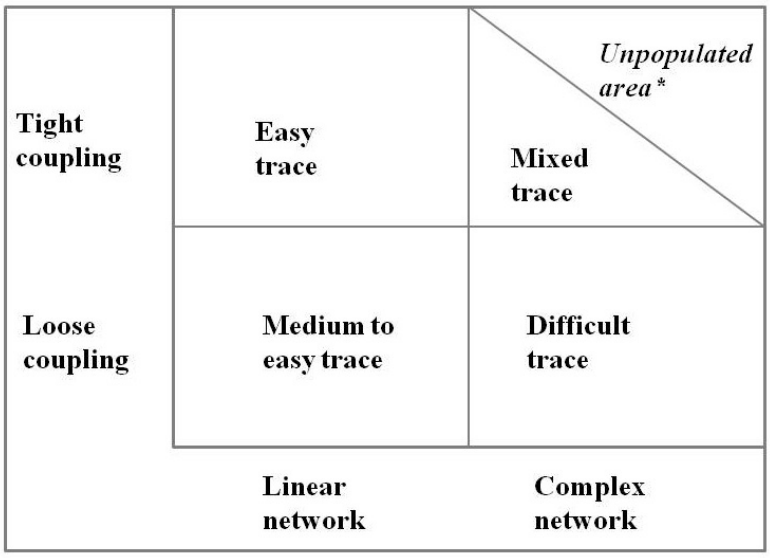


*Figure 8. Traceability as a product of network complexity and participant relations, freely interpreted from Skilton and Robinson, 2009 *Unpopulated area due to the argumentation of network complexity and degree of couplings not being orthogonal.*

According to the authors argumentation of a complex network commonly implicating loose couplings, traceability in these would naturally be hard to achieve. As it has been argued that the transparency generated from tight couplings in complex networks doesn't always serve traceability the traceability problem seems to be further complicated. Skilton and Robinson (2009) note that food safety initiatives in powerful global players of the food industry, with complex, tightly coupled and information intensive supply networks are likely to foster the evolution towards fewer suppliers in tightly coupled and linear supply chains. Something that can partly be related to the information overload at the central actor caused by the strive for traceability.

Traceability systems must be tailored to the supply network they are deployed in. In tightly coupled linear networks effective traceability systems are already common, whereas the authors argue that for loosely coupled and complex networks information system-based solutions are probably limited to very simple logistical solutions. For a relatively tight coupled complex network traceability can be increased by reducing complexity, assigning an enforcement role to a central player and investing in system resources and data quality. Actions that need to be seen in the light of the opportunity cost of choosing a smaller supplier base. (Skilton and Robinson, 2009)

2.5 Responsible sourcing methods for evaluation (RQ 3)

In theoretical terms the risk management strategy of IKEA is the avoiding of high risk sources, in other words to source paper responsibly. Its implementation requires understanding of reputational risk based on stakeholder expectations (including legal requirements), and it involves the consideration of this risk in sourcing decisions. To strive for responsible sourcing, avoidance of high risk sources and increased traceability, methods have been synthesized from literature as well as the company's experiences on working with responsible wood sourcing up-to-date. Based on this review, three methods for responsible sourcing were identified. These methods will be further evaluated in this present study and are presented below:

- Increasing the share of more sustainable sources

  At IKEA “more sustainable paper sources” have been defined as FSC certified paper and recycled paper. Through these definitions the company may measure and demonstrate sustainability improvements in paper sourcing.

- Exercising a Due Diligence system/Code of Conduct

  A due diligence system is based on the collection and verification of relevant information to assess and mitigate risk. The code of conduct specifies company requirements, and the due diligence is the means to ensure compliance.

- Managing traceability prerequisites

  The supply network complexity and the relations between actors in the supply network are two crucial factors for transparency and traceability. The choice of sourcing process at strategic level (central- local sourcing mix) and at tactical level (supply network complexity and supplier relation) is therefore crucial to the managing of traceability prerequisites.

2.6 Describing activities, resources, and company infrastructure (RQ2 and RQ3)

To structure the assessment of activities, resources and infrastructure already in place to support work with traceability and risk analysis in IKEA paper supply, some basic concepts used to describe an organisation will be reviewed. This generic conceptualization draws from the resource based view of the corporation described by C.K. Prahalad and Gary Hamel in their famous paper called ”The Core Competence of the Corporation” in 1990, pedagogically treated by Grant (2009). The conceptualization is complemented with what’s been called *“The organizational capability approach”* describing e.g. through what mechanisms organizational resources are coordinated into capabilities through the organizational infrastructure (Korhonen et al., 2005; Stendahl, 2009). Chosen part of the organizational infrastructure, such as organizational structure and culture is further developed and some process modeling method terminology is also treated. Apart from supporting a structured assessment of organisational internal prerequisites that could support work with responsible paper sourcing, traceability and risk, the theories will also constitute a background supporting the suggestions of working methods suitable for IKEA, by taking company specific features into consideration.

2.6.1 Resources, capabilities and organisational infrastructure

Resources are the productive assets of an organization and capabilities are what the organization can do. In other terms organizational capability is a *“firm’s capacity to deploy resources for a desired end result”* (Helfat et al, 2002 cited by Grant, 2009). There are three principal types of resources namely: tangible-, intangible- and human resources. The tangible resources are the easiest to identify. These are the financial resources and physical assets identified and valued in the organization’s financial statements. Tangible resources can be identifies and mapped in a fairly straightforward way. Intangible resources are e.g. trademark, technology and intellectual properties such as copy-rights and patents, and organizational reputation, relations and culture. Human resources are the competence, skills, capacity for communication and productivity of the organizations employees. To enable employees to harmonize and integrate their skills and efforts the organizational context naturally plays a

crucial part, and this context is determined by the key intangible resource organizational culture. (Grant, 2009)

The organizational infrastructure comprises the features of organizational structure, -culture and management systems, including information systems (Korhonen et al., 2005; Stendahl, 2009) and combine and coordinates the organizations resources (Stendahl, 2009). In this manner the organizational infrastructure constitutes the link between the resources and capabilities of the firm as expressed in Figure 9. Though, the features constituting the organizational infrastructure are in themselves obviously organizational resources, with coordinating functions. As expressed by Korhonen et al. (2005) technology mobilizes the tangible and intangible resources, the organizational structure creates a platform for combining resource flows and the organizational culture binds the resources into the company's values and vision.

Figure 9. Organisational resources employed through the organisational infrastructural features to constitute the firms capabilities. Freely after Kohornen et al., (2005) and Stendahl (2009).

Routinisation is a way to translate directions and operating practices into capabilities. By becoming routine the process gets reliable and efficient. From an evolutionary economist point of view repetitive patterns of activity, or organizational routines, are the fundamental building blocks of what an organization do (Grant, 2009)

To identify a firm's capabilities, these are commonly disaggregated to activities (Grant, 2009). There are several approaches to systematically identify an organization's activities, such as functional modeling, value chain analysis and process modeling (Grant, 2009; Jørgensen, 1995; Porter, 1985; Roos et al, 2001). These approaches build on the idea that a sequence of actions through which a specific task is performed constitutes an organizational process (Grant, 2009). There is a multitude of different modeling techniques to assess and describe the organizational processes (Aguilar-Savén, 2003)

Organisational process modelling

Describing an organisation through describing, or modelling, organisational processes is an important tool to understand and improve organisational performance (Ronald P, 1998; Roos et al, 2001). It has also an important role in increasing the individuals understanding of how the personal work suits with the whole (Roos et al, 2001).

A process can be described in more detail by sub-processes and activities. And, as the definition above implies the five main components of the process are: 1) object in, 2) activity, 3) resources, 4) information and 5) object out. This can be visualized as in figure 10.

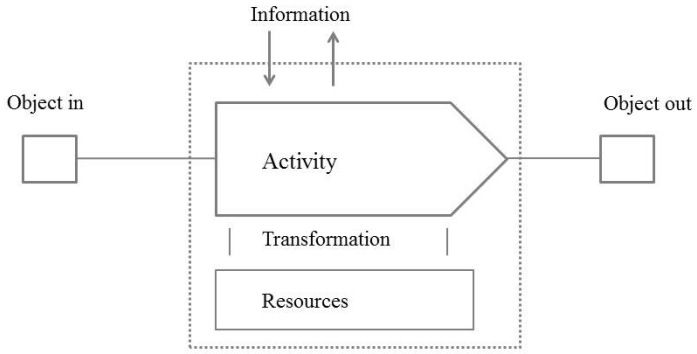


Figure 10. The components of a process. Freely from Roos 2001.

The object in represents the demand that justifies the execution of the process. Object out is the result of the transformation that is enabled by activities and resources. Object out of a process is the object in of for the following activity. Information supports or steers the process.

Different types of processes are categorized according to their role in the organisation and the purpose of the process mapping. Some basic categories are: main/core processes, supporting processes and steering processes.

Roos et al. (2001) argues that main/core processes *"at a high level of generalization describes the purpose of the business"*, and that they reflect the core competences of the firm. Supporting processes are according to the author only valued by their ability to support the core processes. Steering processes steers and coordinates the work through the basic tasks: determining directions of the work, clarify, communicate and motivate the direction, create prerequisites for the organization to work in the set direction, and follow up and amend the work. (Roos et al, 2001)

2.6.2 Understanding the matrix organisation and its impact on working methods

The organisational structure focuses, coordinates and stabilises the behaviour and work of the organisations co-workers. Generally the organisational design and the environment that it fosters will create either a high level of stability (which risks repressing development) or a good environment for creativity and innovation (Jacobsen et al. 2008).

As described by Jacobsen et al. (2008) the matrix organisation combines function oriented- and market oriented organisational divisions with the attempt to coordinate similar functions such as procurement, production and internal services while simultaneously use the advantage of the market oriented organisation. The market units then have to rely on common resources of the function based units. The basic matrix organisations have two dimensions, while more complex matrix structures can comprise three of more dimensions (Sy et al., 2005). The two main features of the organisational design is the *basic structure*, with the units where employees "belong", and the all the *projects* through which most of the work happens. A project is defined by the solving of a specific task within a set time frame (Jacobsen et al., 2008).

One major gain in organizing this way is the development of local knowledge and orientation, and the governing of specialisation within each function. The organizational structure is especially suited for a dynamic and heterogenic environmental context and is characterised by decentralisation and low level of standardisation and fixed working tasks. The organisational

structure creates forums for professionals of different competence to meet and cooperate, and encourages innovation and fast action (Jacobsen et al., 2008; Sy et al., 2005).

Other strengths are stated to be that leverage of economies of scale is possible while simultaneously remaining small task focused, that it focuses employees on multiple business goals, that it facilitates innovative solutions to complex technical problems, that it improves employees' companywide focus through increased responsibility and decision making, that it allows for quick and easy transfer of resources, that it increases information flow through the creation of lateral communication channels and that it enhances personal communication skills. (Op cit.)

Though, getting the matrix organisation working really well is known for being difficult. Some of the obstacles frequently mentioned are misaligned goals, unclear roles and responsibilities, ambiguous authority, lack of matrix guardian and silo-focused employees, all of which breeds unpredictability and conflicts (Jacobsen et al., 2008; Sy et al., 2005). The organisational structure is also stated to be time consuming, e.g. due to a lot of meetings, generating extra administrative burden and increase the likelihood of resistance to change as employees may attribute the matrix with loss of status, authority, and control over traditional domain (Jacobsen et al., 2008; Sy et al., 2005).

Sy et al. (2008) offers some best practices to improve the matrix organisation. For example conflicting goals can be overcome by constant communication of company vision and objectives serving as a beacon to align goals and objectives.

Unclear roles and responsibilities is a problem in almost all matrix organisations. According to Sy et al. (2005) there are four fundamental elements when establishing roles and responsibilities, namely: 1) clear guidelines and descriptions on roles/areas of responsibilities; 2) assignment for accountability for business objectives; 3) a single point contact of information or approval for areas of responsibility; and 4) a set plan for communication and information sharing. Crucial to overcome silo focus among employees is measures such as: training employees in the inherent characteristics of the matrix organisation provide a cross-functional work experience and creating prerequisites to build relationships within the organisation.

2.6.3 Centralisation vs. decentralisation

The question of how authority should be distributed within the organisation is central in organisational literature. In a centralized organization decisions are moved upwards the hierarchy to be made, and in the decentralized organisation authority to make decisions is moved to co-workers operating at a low hierarchal position. In between the two extremes there are naturally a linear scale where different organisations can be positioned.

Each organisation need to consider the potential advantages and disadvantages with centralization or decentralisation, though the decision is not limited to a generic organisational set up. The level of centralization/decentralization can be decided on a work-task-level, giving co-workers great freedom of actions in some areas of their work, and delimiting them to follow centrally decided directions in other. (Jacobsen et al., 2008)

In general, the advantages of centralization is thought to be clear steering signals and consistent practices and personnel policies, which both creates predictability within the organisation. The disadvantages of centralization are thought to be information issues according to not making use of individual competences, repressed motivation among co-

workers according to the lack of possibility to take initiatives and weakened accountability due to the lack of possibility to influence central decisions.

The advantages of decentralize decision making are predominantly the ability to utilize knowledge and experience of individuals, that it fosters flexibility and responsiveness to the environment, that is motivates and encourages co-workers to be creative, and that is fosters accountability. The main disadvantage is the risk of sub-optimization. (Jacobsen et al., 2008) As summary of centralisation and decentralisation advantages and disadvantages is presented in Table 3.

Table 3. Advantages and disadvantages of centralisation and decentralisation

Centralization		**Decentralization**	
Advantages	**Disadvantages**	**Advantages**	**Disadvantages**
Clear steering signals	Inability to employ individual competence	Ability to employ individual competences	Risk of sub-optimizing
Consistent practices	Repressed motivation	Motivated and creative co-workers	
Organisational predictability	Weakened accountability among co-workers	Organisational responsiveness an accountability among co-workers	

A complex and dynamic environment pushes the organisation towards the decentralizing of authority to enable the use and response to information from the surrounding world. This is needed to reduce insecurity and adapting to new circumstances while striving for organisational goals. External requirement for consistency and predictability adversely fosters centralization and regulation.

In the area of how complex multinational corporations (MNCs) should coordinate and control their environmental strategies Epstein et al. (2006) provide some empirical insight and a counterargument to the common idea that increased organisational complexity leads to more decentralized decision making. What are commonly closely guarded by corporate headquarters are key aspects such as environmental standard, environmental programs and performance evaluation systems. This is a true even as organisational complexity increase (which was not expected by the authors). By centralizing these three components of the environmental strategy companies can ensure minimum performance levels and consistency across the organisation and still preserve or develop a high level of autonomy for their subsidiaries regarding their aspects of the strategy. In this way MNCs can guide their organisations toward improved environmental performance while leveraging business units and facilities valuable expertise and knowledge. This is particularly important as MNCs has increased subunit autonomy and increased decentralization in recent years. According to the study setting of targets and objectives can be delegated to decentred levels. The authors also conclude that it is critical that top management send a clear message of that environmental performance is critical to the company and that strong expertise in the area has to be ensured (Epstein et al. 2006).

2.6.4 Standardisation

There are a variety of ways to coordinate work in an organisation, and the greater the horizontal differentiation (e.g. number of different specialists, offices and departments) the greater the need of coordinating. Jacobsen et al. (2008) names various ways of coordinate work, such as mutual adaptation, direct supervision by a hierarchical structure, standardizing working tasks, -results, -knowledge and- norms, and mutual adaptation through vertical and horizontal relations.

Mutual adaptation is sufficient when the tasks that people are doing and that need to be coordinated is possible to overview by all involved. Direct supervision through a hierarchy is built in a vertical management structure where leaders have authority to instruct other people in their work. It is limited by the number of people pone leader can actually supervise which is usually six to eight people, or at most 12. This way of coordinating work is quite resource demanding as it takes people of productive work, and decision making can become slow as the decision must pass several vertical levels to be made. The standardisation of working tasks is the use of rules, written routines and procedures to make sure certain things are always done the same way. Using rules, routines and procedures are used to coordinate is referred to as formalization. It's is one of the most important features of a bureaucracy as described by Weber. It risks passivating co-workers, being malfunctioning in unpredicted events and repress flexibility and readjustments. Another way of coordinating work is through the standardisation of results through set criteria for evaluation and management by objectives. This strategy is compatible with decentralised authority (e.g. of the matrix organisation) as it opens up for flexibility, creativity and initiative within the organisation. The risk is that people of the organisation becomes so focused on measurable results that they don't, in a desirable extent, see the overarching objectives of the organisation and the context of the work they do. For complex situations it can be necessary demanding collaboration between people with different competences mutual adaptation through horizontal collaboration arrangements. This is a number of different structural constructions that seeks to improve communication and coordination between organisational unites or departments at the same organisational level.

The different mechanisms are normally not used in an isolated manner, but rather combined. Organisations commonly try to standardize when this is possible but complement with direct supervision of mutual adaptation when necessary.

On a generic level Mintzberg 1979 organises the choice of coordination strategy according to the situations level of simplicity and lucidity. For a simple and lucid situation mutual adaptation is a convenient choice, and for a complex and inestimable situations mutual adaptation through horizontal collaboration arrangements. In between these two extremes direct supervision and standardisation or working tasks, results and knowledge are positioned.

2.6.5 Organisational culture

Organisational culture emerged as a study phenomenon in the1980s, as it had finally been accepted the western worlds loosing of markets shares to the Japanese could not only be explained by differences in energy- and labour costs. The key to the Japanese success was found to be the organisational culture and numerous studies have since then described and proved how the uniting of people in common sense of connectedness and fellowship might determine the success of an organisation. (Jacobsen et al., 2008)

Jacobsen et al., (2008) argues that the growing interest on ethical and moral phenomenon of the organisation reflects a general societal development. The organisational behaviour discipline is influenced by new technology, market liberalisation and global trade, increased information flows and awareness of environmental and social issues related to the rich and poor of the world. Cases of private and public organisations lacking judgement naturally underpin the interest. Organisational culture might play a crucial part in guiding people in what' right and wrong and guide the individual in representing the organisation. Organisations with ethical values distinctly formulated tend to also have co-workers acting according to these. (Jacobsen et al., 2008)

Schein (1985) defines organisational culture as:

"A pattern of shared basic assumptions that a group has learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."

Schein emphasises the groups sharing of common values and assumptions, that the culture is built on learning, that the culture will be sustained as long as it perceived as accurate, that it is taught to new members and that it has to do with emotion (Jacobsen et al., 2008). To make the culture concept useful for studying organisations is should be understood as a means for people to create meaning, context and stability in their being together. (Ibid.)

Through common values, norms and assumptions the organisational culture might work as a steering instrument, guiding co-workers on how to act in a given situation, and delimit working attention to prioritized areas. In this way the organisational culture, as well as the formal organisational structure, focuses and systematize information flows and work. A strong and inclusive culture that gives individuals the sense of being part of a greater context, with common goals and visions, works coordinating and fosters cooperation. To a certain extent the organisational culture might actually replace administrative steering instruments, through the generation of trust and solidarity. Organisations with great trust between managers and co-workers, classically referred to as *organic solidarity*[9], might actually be more cost effective and effective in general than organisations relying on traditional bureaucratic- administrative steering mechanisms. (Op cit.)

Trust is a fundamental prerequisite to delegate freedom of action and foster flexibility in the organisation. In combination with the creation of new social constructions around work tasks the organisation gets in a good position for renewal. Commonly emphasised prerequisites to build cooperation on trust are the development of a strong commonalities culture and that the co-workers have adopted virtues such as honesty, loyalty and reliability.

Studying organisational culture

The organisational culture is suggested to exist at three different levels, namely as: Basic Assumptions, Values and Cultural Artefacts. As it is difficult to in a direct way study peoples basic assumptions and the adopted truths constituting the cultural core, the understanding of basic assumptions is commonly created by studying other "levels" of the organisational culture. (Jacobsen et al., 2008)

[9] "Social cohesion based upon the dependence individuals have on each other in more advanced societies" Read more: The Division of Labour in Society by Émile Durkheim, first printed in 1893

Behavioural norms and values (the middle level) are thought to reflect the Basic Assumptions and Truths. Cultural Artefacts are physical as well as behavioural and verbal expressions of culture, such as furnishing, technology and dress codes. Artefacts are the most visible part of the organisational culture, but then only just represents the top of the cultural iceberg. Deeper understanding of the culture can be created only by talking to the people in the organisation and interpret what the artefacts really stand for. The organisational culture can be understood by identifying the relationships between the three levels of its existence. (Jacobsen et al., 2008; Lawson et al., 1998)

Jacobsen et al. (2008) summarizes the seven dimensions of basic assumptions first formulated by Schein (1991). The dimensions have shown to be useful to characterize organisational culture in empirical studies. Here freely translated from Jacobsen et al., (2008):

- Perceptions of the relationship between the organisation and its environment
- The way the organisation views peoples actions
- The way the organisation reaches a "truth"
- The way the organisation relates to time
- Assumptions on the human nature
- The way the organisation views relations between people
- The way the organisation views conflicts

3 Methods

The undertaken study is a descriptive case study. Descriptive case studies answer questions about *what is happening* or *has happened* (Yin, 2012). Choosing a case study approach allows a structured investigation of a study phenomenon in its real world context (Bryman, 2008; Yin 2012) which is explicitly what the present study aims to do. The present case study is based on six month on place research at IKEA of Sweden in the central office of Älmhult, Sweden. Through a mixed methods approach external and internal prerequisites for responsible paper sourcing, traceability and risk evaluation at IKEA are mapped. As the prerequisites are described this constitutes the context in which three focal methods for working with responsible paper sourcing, traceability and risk, presented in chapter 2.5, are discussed and evaluated. Based on this discussion recommendations to the focal company are made.

The mixed methods approach generated data from several sources of evidence, which is common for a case study (Yin, 2012). The different data sources is not used for cross verification as suggested by Yin (2003) and Bryman (2008) though, but rather has a complementary function in capturing an overarching understanding of organisational prerequisites for working with responsible paper sourcing, traceability and risk. An approach described by Bryman (2008).

3.1 Conceptual framework and research method

To address each of the research questions this study combines different theories and methodological approaches. These procedures are summarized in Table 4 and further explained in the following chapters.

Table 4. Methodological general approach overview

Research Question		Theoretical framework	References	Methodological approach
RQ1. How does the supply of paper look like considering volume, procurement region, supplier category and central-local sourcing mix? - Which are the prerequisites for traceability in the paper supply networks? - What sections of the current supply network represent risk exposure?	**Overarching level.** Sample: all IKEA org. purchasing paper. (IoS, I Components, IMS, I Food)	Reputational risk management Supply networks management and sourcing Traceability, transparency and network complexity	Harland et al. 2003 Lemke and Petersen et al. 2013 Skilton and Robinson 2009 Roth et al. 2008 Lamming et al. 2004 Choi et al. 2006	-Open interviews with key informants -Collection of secondary data
	Detailed level. Sample: IoS paper products supply network + 4 IComponent suppliers	Same as above plus: Supply network mapping	Same as above plus: New 1997 Haartveit et al. 2004 Farris 2010 Noguerón et al. 2013	Supply chain mapping excel based questionnaire + Risk evaluation according to IKEA set CSR criteria for wood sources
RQ2. What activities, resources, and company infrastructure (structures, information systems and culture) to support responsible paper sourcing, traceability and risk evaluation currently exist in IKEA?		Resource based view of the firm The organisational capability approach Organisational theory/organisational behaviour	Grant 2009 Stendahl 2009 Korhonen et al. 2005 Roos et al. 2001 Jacobsen et al. 2008 Sy et al. 2005	-Semi structured Interviews -Open interviews with key informants -Participant observation (incl. Internal documents)
RQ3. Based on RQ1 and RQ2 results, which methods are applicable for IKEA to work with traceability and risk evaluation and what organizational activities, resources, and company infrastructure are needed to support the methods?		Same as above plus previous research on CSR and supply chains	Empirically driven discussion based on the above references and further influenced by: Epstein et al. 2006 Seüring et al. 2008 Porter and Kramer 2011 Lemke and Petersen et al 2013	(Gap-) Analysis

3.2 Assessing prerequisites for traceability and risk in the current paper supply network (RQ1 and RQ3)

The supply networks are described at an overarching level for all purchasing organisations and at a more detailed level for the products categorized as paper products at IoS. At I Components four suppliers are also addressed with a mapping activity to get an indication of the transparency situation this organisation faces at the Asian and European market.

At the more detailed level the IoS paper supply networks were mapped through an Excel based structured questionnaire, described in chapter 3.2.4, directed to suppliers and sub-suppliers of the supply network. For the IoS paper products all supply networks, for all

products categorized as paper products, were mapped and the supply chains of four prioritised I Components packaging suppliers where mapped.

At the overarching level the supply network is described though open interviews and email correspondence with key informants. In the complex IKEA organisation the sampling method for choosing these key informants can be described as snowball sampling (Bryman, 2008). The sampling criterion for key informants was that they were expected to have understanding of the entire organisation they represented. To quantify the paper supply of the four purchasing organisations, various approaches were adapted depending on information availability of each organisation. The data collection approach is further described in chapter 3.2.5.

3.2.1 Model to evaluate prerequisites for traceability (RQ1 subquery 1)

Overarching level

As prerequisites for traceability is assessed at an overarching level a generalized approach is adapted. The main watershed is whether paper is purchased through the central organization or locally at different markets. Network complexity as defined by the number of suppliers in the supply base is used to indicate prerequisites for traceability.

Detailed level

In the detailed mapping, the following factors are used to evaluate prerequisites for traceability:

1) **Supply network complexity and length**

Network complexity is expected to obstruct traceability. See:

- Noguerón et al., 2013
- Perrault et al., 2013
- Roth et al., 2008
- Skilton and Robinson, 2009

2) **Level of integration between the tiers in the supply chain**

This is an indicator of tight couplings, linearity in the supply chain and distance/closeness to paper- and pulp mills which are expected to have greater ability to provide information on raw material. See:

- Martel et al., 2005
- Noguerón et al., 2013
- Skilton and Robinson, 2009

3) **Transparency in terms of the willingness by supplier to provide requested information**

Transparency and trust is crucial to traceability. See

- Roth et al., 2008
- Skilton and Robinson, 2009

4) Producers FSC CoC status

As this requests experience on keeping track of materials and commitment to the FSC standard of association.

The conceptual framework of measuring prerequisites for traceability in paper supply is visualized in Figure 11.

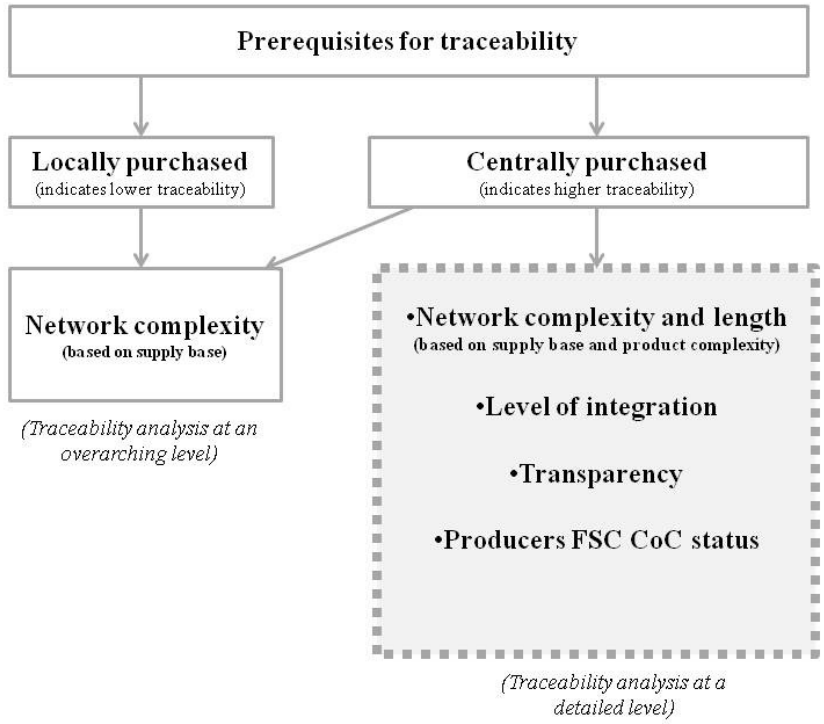


Figure 11. Conceptualisation of how traceability in paper supply networks is assessed at an overarching and at a detailed level.

3.2.2 Model to evaluate risk (RQ 1 subquery 2)

IKEA is exposed to reputational risk as unacceptable wood enters the paper supply chains. The trigger realizing the risk would be stakeholders' knowledge about using the unacceptable wood, and the potential action to this knowledge. The chance of a trigger is thought to be greater if the paper is found in the product range, than when for internal use. The significance of potential losses is difficult to estimate. Sales losses may come both from a weaker reputation in relation to responsible behaviors, though they might also originate from IKEA abstaining to sell the products of concern. From an IKEA point of view, not only the product but also its packaging is part of the customer offer.

Risk evaluation for supply networks described at an overarching level

As the paper supply is mapped in the first overarching level this does not enable risk evaluation based on the raw wood species and origin, nor on transparency at suppliers and sub-suppliers. At this level the likelihood of risk exposure is evaluated due to the following criteria:

1) The network complexity as indicated by the supply base
If the supply base consists of thousand paper suppliers, there is a great chance that any of them delivers fiber from unacceptable wood. It is also a highly information intensive task to assess such a supply network.

2) Geographical area
The purchasing regions as defined by the IoS organization will represent a generalized risk burden as briefly presented in the introduction;

3) Volume of virgin fiber.
Based on actual figures or estimations

Risk evaluation for supply networks mapped at a detailed level

As risk were evaluated for materials in the supply networks mapped in detail in this study, intelligence on risk in relation to species and geographical area, already owned by IKEA, was used. Furthermore specific actors decided by IKEA not to be convenient for paper sourcing were pinpointed as risk sources. If transparency issues arose in the supply network or information on raw materials were unlikely to be correct this was also given attention as a possible source or risk. Suppliers were then given opportunity to revise their information.

The described model for risk evaluation is visualized in Figure 12.

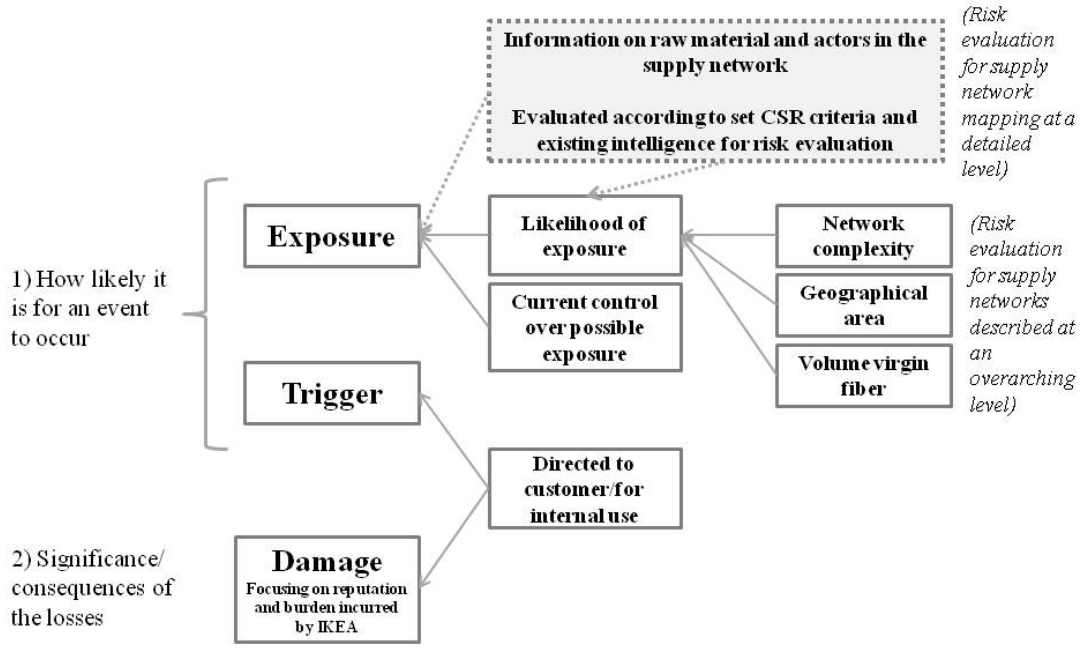


Figure 12. Conceptualisation of how risk in supply networks was evaluated in a detailes and overarching level.

3.2.3 Supply network mapping (RQ1)

Defining the supply network

As emphasized by Haartveit et al. (2004) research on supply networks should always begin with defining the supply network and the researcher's interpretation of the same. Furthermore the authors point out the important trade-off between requirements of a very detailed analysis and the research teams possibility to manage complexity. Considered central in the research approach is the incorporation of a holistic view of the supply network not to lose relevant information (Haartveit et al., 2004). Farris (2010) offers recommendations for more readable

and useful strategic supply network maps. The author suggests creating a macro map identifying the overall structure of the supply network of an industry, and let this map serve as a basis for exploring more detailed mapping of concentrated areas.

Reducing complexity and mapping according to the problem of concern

Harland et al. (2003) suggests supply mapping as the first phase of a "supply network risk tool" provided in their article. The authors suggest that the supply network should be defined in accordance to the problem of concern. *"For example, the network might be the product supply network for a particular product where it is felt there is some exposure to risk."* The authors suggest that in this situation mapping of the supply network should probably include understanding *who owns what* and *what the roles and responsibilities are* in the supply network (Harland et al., 2003; Harland, 1997). As supply network mapping would constitute the "first step" in the supply network risk tool, enriching the map with information on type of risk and its location would constitute "step two". In this stage it is also emphasised that different risk factors should be evaluated by the significance of loss they represent (Harland et al., 2003). Mapping supply networks from a product- or a product group perspective has also been suggested by New (1997) and Haartveit et al. (2004) in order to reduce complexity while keeping a holistic view.

Applying of the theories

In this study the supply networks' start and ending are defined by the raw material base and the paper reaching the ownership of the retailer. The mapping focuses on the possibility to obtain information on the material flows upstream the supply network to connect the paper to the wood species and origin. There are two levels of detail in the mapping process. First the overall supply network is briefly descried and the analysis of traceability and risk aspects are then only made through the indicators previously presented in chapters 3.2.1 and 3.2.2 . Then a more detailed mapping is made for prioritized areas of the paper supply: the IoS paper products and three Asian I Component suppliers. An approach similar to what was suggested by Farris (2010).

As the more detailed mapping is made the approach suggested by Harland et al (2003) is followed. The supply network mapped has the paper products of concern as a starting point.

To reduce complexity, focus is on identifying the paper qualities in the articles by asking the IKEA individual supplier about the products they supply. The paper qualities are then connected directly to the paper mills producing them and all potential converters and traders in between are not asked for. In this manner, the definition of the supply network is adjusted to the problem of concern (raw wood contain in paper products) as has been suggested by Harland et al. (2003). The paper- and pulp mills commonly have better information on raw material sources (Noguerón et al., 2013). As Haartveit et al. 2004 has classified the material flow of the paper industry as a T-shape, suggesting a great number of actors and great product variety at the "converter-tier" of the supply network, complexity is thought to be significantly reduced by the approach of just identifying the paper qualities and then connect these to the paper- and pulp mills.

Paper- and pulp mills are in focus for their assumed ability to deliver information on raw wood sources. Though, features of these actors also have importance to the traceability and risk evaluation. If the paper- or pulp mill is working with CoC certification today, there is of course the possibility to request certified (safe) material from this actor. Though, the association policy of FSC also serves as an indicator of responsible behavior.

3.2.4 Data collection approach for supply network mapping at IoS (RQ1 and RQ3)

To make a more detailed analysis of the supply network of the *paper products* purchased by IoS an MS Excel based structured questionnaire was developed. The questionnaire was directed to the IKEA suppliers (mainly representing only the first tier paper converter of the supply network), though it was expected that the suppliers in many cases in their turn would need to communicate with upstream actors of the supply network to obtain the requested data. In this manner the supply network was mapped by the downstream actor of the supply network identify the upstream tier and so on. The last tier of the supply network asked for was the pulp mill which ultimately was thought to have information on the wood fiber content of the pulp.

Bryman (2008) puts questionnaires and structured interviews against each other as research method and points out questionnaires to be quicker and cheaper to administer, more convenient for respondents, as they can complete the questionnaire at a time that they find convenient, and avoiding interviewer effects in the respondent (see Bryman, 2008, page 217-218). In the present case all these factors argues for the use of a structured questionnaire.

The MS Excel based structured questionnaire

The MS Excel based structured questionnaire was developed to consider the following aspects of the supply network, see Table 5. The questionnaire is also presented in Annex 1.

Table 5. Addressed aspects of the paper articles supply network and their use for assessing traceability and risk

Aspect addressed in the questionnaire	Use in assessing traceability and risk in supply networks
Current in-house operations and CoC certification status at the IKEA supplier (FSC and other)	**Traceability** (level of integration and ability to keep track of materials)+ **Risk** (certification seen as an indicator of responsible behaviour)
What products that were delivered to IKEA with and FSC claim in FY14	**Risk** (share of safe sources in current paper supply)
Paper weight per product unit (specified for each article)	**Risk** (paper tonnages)
Products estimated fiber content divided by virgin and recycled fiber	**Risk** (quantity of virgin fiber and recycled (safe) fiber respectively)
The number of distinct paper qualities, divided by virgin- and recycle fiber based papers, used in the products	**Traceability** (supply network complexity)+ **Risk** (share of virgin fiber based papers)
Specification of the paper qualities used in IKEA products	**Traceability** (connecting traceability to article numbers)
What paper qualities were purchased with an FSC claim?	**Traceability** (expected to be good for certified materials) + **Risk** (FSC certified materials considered low risk)
The possibility of getting respective paper quality supplied with an FSC claim within two years	Indicator of possible alternatives for improving traceability and work with responsible sourcing by increasing shares of more sustainable –safe- sources
The possibility to exchange virgin fiber based paper qualities into recycled fiber based paper qualities without challenging current quality requirements	See previous cell

Name and address of paper mills producing the paper qualities and their FSC CoC status	**Traceability** (supply network complexity) + **Risk** (identification of inconvenient actors in the upstream supply network, certification indication seen as an indicator of responsible behaviour)
Name and address of pulp mills supplying the paper mills and their FSC status	See previous cell
Raw wood species Latin name and country of origin. In risk countries raw wood origin also specified by region	**Traceability** (supply networks actors ability to provide information on raw materials) + **Risk** (risk analysis made using IKEA internal intelligence on species and geographical origin)

The questionnaire was structured in a manner that would allow the tracing of each articles material content back to the forest or plantation. It didn't consider any potential intermediaries but rather focused on the paper qualities used and the larger production units. Based on the pre-understanding of the paper industry and its long and complex supply networks this was considered a potential strategy to keep the holistic view without losing the most relevant information (See New, 1997; Haartveit et al, 2004). As many suppliers were to be addressed and there were a great numbers of articles to be handled, closed questions were used to allow standardisation and simplify summation and quantification (Fink, 1995). Close questions are more difficult to formulate than open questions though as answers and response choices has to be known in advance (Ibid.).

The questionnaire was developed in collaboration with personnel of long experience from working in the paper industry and paper and packaging quality experts at IKEA. Among other advantages this collaboration also helped overcoming the problem with answers and response choices needed to be known in advance. The questionnaire was presented and reviewed by the people of the purchasing organisations, who were also the people that would distribute the questionnaire to the suppliers. After reviewing the questionnaire it was further simplified. Having the questions reviewed by experts and potential respondents is suggested by Fink (1995) as a means to improve the quality of a questionnaire.

To assure questions were not misunderstood or could be answered in different manners further considerations suggested by Fink (1995) were considered, such as questions being concrete and detailed, using complete sentences, avoiding slang, negations and abbreviations.

Distribution of the questionnaire

The questionnaire was distributed to the addressed suppliers by the purchasing organisations managing the normal business contacts. Attached to the excel files there were also an introduction letter presenting the purpose of the work and giving some additional information on illegal logging and risk in general in the paper industry. The suppliers' questions and requests for support in completing the questionnaire were communicated back through the purchasing organisation to allow for a common examination of potential difficulties (gathering the different purchasing organisations at only one occasion). Though, few extra questions were asked and the common review took part as the first questionnaires had already been sent back and it was revealed which errors were actually made.

As the questionnaires were received from the suppliers they were briefly reviewed to assure sufficient information had been provided to make the necessary analyses. In many cases, questionnaires were sent back the supplier with a request or further information. Sometimes this had to be done several times.

Population and sample

There were three main reasons for choosing *the supply network of IoS paper products* for a more detailed assessment of external prerequisites for responsible paper sourcing, traceability and risk evaluation.

1) Paper products, with their highly visible paper, will play a role in profiling IKEAs paper sourcing towards the customers and therefore need to be prioritized for secured traceability.
2) Paper product assortment covers all different paper segments (Tissue, Solid board, Corrugated cardboard and Fine paper) and is almost entirely reachable through a single purchasing organisation, enabling the handling of data collection at a relatively big number of suppliers and providing segment specific information.
3) The new assortment "Paper Shop" is presently being rolled out at IKEA globally. It will potentially gain a particular role in how customers will evaluate IKEAs paper sourcing, including how responsible sourcing is secured.

The population of the investigation consisted initially all paper product supply networks, assessed through all suppliers used by IKEA during the fiscal year FY14 (2013-09-01 – 2014-08-31). The suppliers were identified by the products supplied being categorized as "paper products" by IKEA. As it was found inconvenient to address suppliers who had been phased out during the year the second criterion set for sampling was that the supplier would still be an active business partner for IKEA. For the active paper product suppliers' the *total population* was addressed. Two suppliers were excluded from further investigation as their paper products were made from cotton-based papers, and two suppliers were never addressed due to failure in addressing the correct purchasing organisation at the time for data collection. *Hence, the mapping of the IoS paper supply networks focuses on capturing the entire paper product assortment rather than representing all products supplied to IoS which includes paper.*

The study covered 26 paper product suppliers' traceability prerequisites. They were distributed over seven trading areas and supplying 722 unique articles that were purchased during FY14. Table 6 demonstrated the framing of the sample due to the set criteria.

Table 6. Sample frame and sample for supply network mapping of IoS paper articles

Sampling criterion	**No of suppliers**	**No of unique articles (No of supplier-article combinations)**	**No of unique articles being purchased during the year (No of supplier-article combinations)**	**No of units purchased during FY14**	**No of Trading Areas**
Suppliers of "paper products"	40	1375 (1561)	839 (986)	135 052 242	8
Suppliers still active business partners	30				
Paper products being wood based	28				
Finally addressed	**26**	**1135 (1269)**	**842 (722)**	**132 287 462**	**7**

Seven weeks after the set date of delivery 24 questionnaires were returned in a sufficient status for quantifying paper supply and in analyzing traceability and risk. These were divided in seven trading areas and supplying 717 unique products that were purchased during FY14.

Table 7. Respondents providing data in time for result presentation and analysis

Suppliers included in analysis	No of suppliers	No of unique articles (No of supplier-article combinations)	No of unique articles being purchased during the year (No of Supplier-article combinations)	No of units purchased during FY14	No of Trading Areas
	24	**1120 (1253)**	**836 (717)**	**131 959 142**	**7**

An overview of the sample and which of these who did- and did not return the requested information is provided in Annex 2. The two suppliers who didn't provide data in time for analysis are estimated to account for at most 66 tons of paper.

Ethical considerations of the data collection approach

As Noguerón et al. (2013) emphasised information about supply network actors and raw wood material can be seen as confidential and requests being perceived by the suppliers or sub suppliers as causing a risk getting circumvented in business if fulfilled. The data of this study is not shared to any party outside the paper-, sustainability- and forestry organisations within IKEA. In fact, the consequence of the data collection might be that certain actors are excluded from the supply network. In these cases it will be for the purpose of securing responsible sourcing. The common practice at IKEA in managing the IKEA suppliers is to create the opportunity and provide support for the supplier to develop in a way that enable continuous business with IKEA. This approach will naturally be adopted also in the present case.

The governing of trust in relations with suppliers is a major part of managing business relations at IKEA. This is naturally considered also in this project and suppliers have been welcome to feedback any questions or objections on the working method.

From personal previous experience of the global paper industry shared by the paper sustainability expert at IKEA it has been suggested that paper producers are not always contented with reporting the share of virgin- and recycled fiber in their papers. This is due to the virgin fiber being more expensive, incentivizing the producer to keep the shares low. But virgin fiber also increases paper quality, incentivizing the buyer to request a convenient share of virgin fiber. For this reason, shares of virgin- and recycled fiber in paper qualities were not asked for.

The predominant failure in the data collection process was to not immediately and clearly inform the informants that the data was to be kept confidential. Due to this omitting there were initially, and naturally, hesitations among some of the suppliers to provide the requested data. The hesitation was overcome by communicating how the information was to be used.

3.2.5 Data collection approach for overarching description of IoS non-paper products, I Component, IMS and I Food paper supply networks (RQ1 and RQ 3)

On an overarching level, the describing of IKEA paper supply networks were done through informal qualitative interviews with representatives of the respective purchasing organisations (IoS, IKEA Components, IMS and IKEA Food Services) and the use of secondary data available within the organisation or at partner organisations. Qualitative interviews are characterised by short and simplistically formulated questions that generates complex and rich answers (Trost, 1997). The predominant strengths of interviews as a source of information are that the source is targeted, focusing directly on the case study topic, and that it is insightful, as interviews provide perceived causal inferences (Yin, 2003). In the present case qualitative interviews allowed descriptions of the current situation that was thorough in relation to the researchers' limited empirical pre-understanding. An overview of informants and other data sources is provided in Table 8.

Table 8. Sources of information obtained about supply networks per purchasing organisation

Purchasing organisation	**Paper supply network information obtained, focusing on:** • **Central-local sourcing mix** • **Network complexity** • **Geographical sourcing region** • **Paper quantities (share of virgin fiber)**	**Source of information**
IoS	Amplitude of IoS paper purchasing via non-paper products. • Specification of which articles that includes paper • Type of paper in articles material content	Individual articles technical descriptions for the entire IKEA assortment
I Component	Paper quantities sourced centrally and locally at different markets Indication of virgin fiber based and recycled fiber based materials according to paper qualities used in packaging Certification status at IKEA suppliers Current control situation of supply networks of locally and centrally purchased paper	Secondary data based on an paper mill/paper quality assessment carried out early FY 14 Open interviews and email correspondence with organisation representatives: • Business task leader • Range and category leader
IMS	Information on current understanding of the organisations paper purchasing regarding e.g. central-local sourcing mix, type of paper products and quantities purchased by the organisation	Scattered secondary data available within the organisation Open interviews and email correspondence with organisation representatives: • Environmental specialist • Purchaser (focus on paper)
I Food	Paper quantities sourced centrally and locally at different markets Current control situation of supply networks of locally and centrally purchased paper German markets share of total turn over Paper quantities used for business at the German market	Semi-structured interview with Social and environmental manager German-Swedish Chamber of Commerce

Assessment of IoS paper containing products not categorized as paper products

It's not only the articles categorized as *paper products* in IKEAs assortment that contain paper. To indicate the amplitude of the paper content of other articles the organisational IT-unit was consulted to make a search through the technical descriptions of the entire assortment. The keywords used for the search were chosen in collaboration with a product engineer working with paper:

- Paper
- Surface coating materials/foils/paper
- Surface coating materials/foils/paper backersheet
- Textile/? % paper
- Foil/ melamine
- Foil/ High pressure laminate
- Foil/Laminate (melamine foil)
- Other materials/Paper composite

IKEA Components

At IKEA Components, a mapping of the paper supply, emphasising on the sub-suppliers (paper suppliers) of the IKEA suppliers (mainly converters), had been carried out a few months before the present study was initiated. Figures on volumes and shares of paper packages being centrally and locally purchased and at what markets the volumes were purchased was therefore readily available within the organisation. Further investigation of traceability prerequisites could therefore focus on testing the readiness of sub-supplier to provide information on the pulp suppliers and raw materials. A few detailed supply network mappings based on the mapping concept developed for IoS, described in the previous chapter, were carried out at I Components. This activity worked as a pilot mapping enabling evaluation of the approach's suitability to the organisation. The sample consisted of two European suppliers and three Asian suppliers of potential future importance to IKEA who were all addressed with a MS Excel based structured questionnaire. Only the assessment at the Asian suppliers an one European supplier was terminated within the time frame of this study. The Asian suppliers addressed had been informed on what Asian sub-suppliers that should be avoided for responsibility purposes, and had ensured the compliance with this request, which provided an opportunity to indicate the functionality of this approach to secure responsible sourcing.

Indirect Materials and Services (IMS)

Initially an informal interview focusing on the organisations current control over its paper supply was conducted with a Sustainability Specialist of long experience within the organisation. The picture given through the interview resulted in the quantification of the IMS paper supply being done in a flexible manner adapted to the organisations current knowledge of their paper purchases. The scattered picture and how paper supply was partly quantified is further presented in the results chapter.

One of the organisational purchasers also focused in paper, provided information on the paper supply currently under control and on coming paper sourcing projects.

IKEA Food Services

At IKEA Food Services the Social and Environmental Manager was interviewed. The interview lasted for two hours and consisted of a basic presentation of the business and going through the following topics:

- The purchasing organisation and shares and types of products being centrally and locally purchased
- Geographical distribution of current sourcing
- Different types of paper products entering the organisation
- Current data availability within the organisation on paper volumes, traceability etc.
- CSR steering instruments and related policies communicated to the suppliers
- Ongoing development work regarding responsible sourcing in general
- Reasoning on possible implications of not having information on the material sources
- Reflections on possible ways of securing traceability in the purchasing organisation

To quantify the paper supply of IKEA Food Services internal data and data provided by the German-Swedish Chamber of Commerce were combined to facilitate an estimated quantification. Internal information defined shares of paper purchased centrally and locally to the organisation, and the turnover at different markets. External information on the material use at certain markets was used to estimate figures corresponding to the organisations total turnover. This method was based on the assumption that the food would be similarly packed at the different markets.

3.3 Describing activities resources and organisational infrastructure (RQ2)

The internal prerequisites for working with responsible paper sourcing, traceability and risk evaluation refers to activities, resources, and company infrastructure (such as information systems and cultural aspects) which are already in place. The methods used for this research question were semi-structured interviews with the IoS purchasing organization, open interviews with key informants, participant observation and studying internal documents.

Participant observation

The research method refers to the researcher immersing in a social setting for an extended period of time to enable the observing of behaviour, participating in- or listening to conversations and asking questions (Bryman, 2008). According to Bryman (2008) Participant observation commonly includes interviewing key informants and studying internal- and official documents, which has also been done in the present case.

Qualitative semi-structured interviews

Qualitative semi-structured interviews were prepared for organisational staff of the IoS purchasing organisation, unstructured interviews were held with e.g. Sustainability staff and representatives of I Components, IMS and IKEA Food Services.

Worth mentioning is also the attending to three major occasions of informative importance.

- Project meeting on development of paper sourcing for corrugated cardboard packaging, February 2014 and August 2014.
- Pilot for development of IWAY Forestry and FSC certification training, April 2014.

- Meeting for evaluating a responsible paper sourcing project as a response to the encountering of unacceptable wood fiber sources in paper products in 2013, May 2014

Qualitative interviews

Qualitative interviews have great strength in allowing short and simplistically formulated questions generating rich and complex answers (Trost, 1997). As a data collection approach it is easily targeted to the case study topic, and has great potential in revealing perceived casual inferences (Yin, 2003). Two of the predominant weaknesses are bias due to poorly formulated questions and reflexivity, which means that interviewees answers what they think the interviewer wants to hear (Op cit.). Different authors have agreed that qualitative interviews shall not be viewed in an oversimplified way as "conversations" (Trost, 1997; Yin, 2003; Kvale et al, 2009). The interview needs to be well planned and great attention must be paid to how a question is put (Trost, 1997; Yin, 2003). Also, the power asymmetry between the interviewer and the interviewee should be recognized and addressed in the interview approach (Kvale et al, 2009). Furthermore a good dialogue is not a goal in itself as in usual conversations but is rather instrumentalised for the purpose of the study. An interview might also be rather manipulative as the interviewer might want to obtain information without the interviewee knowing (Kvale et al, 2009).

In the present study this power imbalance to a certain extent is thought to have been offset by the interviewees being the experts of their respective topic. Questions were also carefully formulated not to imply that the organisational members were expected to be in control over traceability and risk aspects in paper supply, but rather to openly investigate the need for support perceived by the organisations. Manipulative ways of putting questions without showing what kind of information was actually aimed for was not employed as the researcher was already seen by interviewees as part of their own organisation. Rather the approach was to gain trust between the interviewer and interviewee to allow the interviewee to feel free to answer question honestly.

3.3.1 Semi-structured interviews with the IoS purchasing organisation

In the present study two types of interviews were conducted. The semi-structured interviews with the IoS purchasing organisation was prepared to tangent the same topics and questions. One interview guide was prepared for *Business Development Managers (BDM)* and *Business Developers (BD)* at the trading offices, and one interview guide was prepared for the *Sourcing Developer* based at IoS in Älmhult. The interview guides was discussed and evaluated from a research perspective supported by the university and from an empirical perspective together with an IKEA representative before use. The two interview guides are presented in Annex 3. The BDM and BD interviews were partly coded into themes to enable comparing of answers (Bryman, 2008). The themes used were:

- Perceived decision mandate/steering bureaucracy
- Perception of IKEA values
- Goals at work
- Tools for supporting work
- How individuals in the purchasing organisation are equipped to consider responsible sourcing, traceability and risk in sourcing decisions as they get responsibility for the paper affair
    - Previous experience from the paper industry
    - Understanding of raw material and other risk aspects in the paper industry

- IKEAs way of introducing new co-workers at concerned working positions to responsibility issues in paper purchasing
- Available resources to address traceability and risk evaluation in paper sourcing

For the Sourcing Developer interview a section concerning responsible paper sourcing, focusing on the availability of more sustainable sources at the Asian market and the recent reforming of paper sourcing for Asian IKEA suppliers, was added.

Most interviews were conducted face-to-face, but for practical reasons some interviews with personnel from the IoS purchasing organisation were also made over phone. Bryman (2008) suggests one of the main advantages with telephone interviews to be that the interviewees' answers are less biased by the researchers' personal characteristics. The telephone interviews though were made as the interviewer and the interviewees had already been in contact in the purpose of the supply network mapping, and the interviewees were familiar with the topic of investigation and the close collaboration between the interviewer and the central organisation at IoS. One main disadvantage with telephone interviewing is naturally that the researches cannot engage in observation of e.g. the respondents' reactions (Bryman, 2008).

At analysing the interviews attention was paid to the risk of researcher provoked data (Bryman, 2008) as the purchasing organisation was well aware of the subject of research, and questions aiming to be neutral might not have been perceived so. It should be noted that the interviews with the purchasing organisation was not conducted in a way that would allow generalisation to the entire IKEA purchasing organisation.

As suggested by Yin (2003) and Kvale et al (2009) the more comprehensive interviews were transcribed and sent back to the informants for review to enhance the study's' reliability. As interview transcriptions were sent back the chance was also taken to ask some additional questions, or request necessary clarifications. Though to further enhance reliability as well as validity of the study, key informants were asked to read and evaluate the results and conclusions of the report, as suggested by Yin (2006).

Sampling

The sampling criterion for interview with the IoS purchasing organisation was that the interviewee should have responsibility for the paper affair, and hence involved in sourcing decisions. An attempt was also made to capture different trading areas. The interviewees are presented in Table 9.

Table 9. Sample overview for semi-structured interviews made with the IoS purchasing organisation

Organisation	Geographical location	Organisational position	Type of interview	Face-to-face/telephone interview
IoS	Älmhult	Sourcing Developer	Semi-structured	Face-to-face 1h<
IoS	Shanghai	Deputy Business Development Manager	Semi-structured	Telephone interview 30-40min
IoS	Shanghai	Business Developer	Semi-structured	Telephone interview30-40min
IoS	Moscow	Business Developer	Semi-structured	Telephone interview30-40min

3.3.2 Open, unstructured interviews with key informants

The other type of interviews made in the study were open, unstructured interviews with key informants. These interviews were not made in purpose to compare answers and make analysis, but were rather strait forward conversations regarding tools, resources, capabilities, information systems etc. related to current, and possible future, work with responsible paper sourcing, traceability and risk analysis. Organisational members considered relevant for interviewing were found through snow-ball sampling. Snowball sampling refers to a non-probability sample in which the researcher uses contacts of a smaller group of people to establish relevant contacts with others (Bryman, 2008). The sampling method does not allow for making generalisations about a population (Bryman, 2008). The interviewees/key informants and the topics of concern are presenter in Table 10. Note that even if interviews were unstructured, questions were still prepared in advance in an interview guide.

Table 10. Key informants organisational positions and study topics of concern

Organisation	**Organisational position**	**Study topic of concern**
IoS	Forest Analyst	Due Diligence on solid wood and wood based board
IoS	Solution owner	Internal information system Connect
IoS	Sustainability Manager	Work with sub-supplier control
IoS	Sustainability project leader	IWAY integration in sourcing decisions and consolidation within the organisation. Cultural aspects of sustainability work at IKEA.
IoS	Business Developer	Paper qualities in packaging
IoS	Product Engineer	Paper qualities fine paper
IoS	Solution area manager	Overview of information systems
I Component	Business task leader	Current situation and development of the packaging business, including work with responsible sourcing
I Component	Range and category leader	Current situation and development of the packaging business, including work with responsible sourcing
IMS	Environmental specialist	Current purchasing structure at different markets. Current control situation. Overview of organisational set up and functions. Previous work with developing responsible sourcing practices for solid wood adapting to the IoS set up for IWAY Forestry
IMS	Purchaser (e.g. paper)	Ongoing work on developing paper purchasing
IKEA Food	Social and environmental manager	Structure of purchasing organisation. Food traceability agenda. Development direction for future sourcing strategy and tactics..Current control situation. Resources and infrastructure to work with traceability and risk in paper supply.

3.4 Validity and reliability of the study

In social science there are four criteria commonly used to evaluate the quality of an empiric investigation, namely construct-, internal-, and external validity, and reliability (Yin, 2006).

3.4.1 External and construct validity

To gain external validity in a single case study the appropriate use of theory when designing the study is crucial. The providing of a theoretical framework supports the understanding of what parts of the study results that can be generalized to apply also to other cases and what might not (Yin, 2003, 2006, 2012). Construct validity refers to the formation of measurements that can be applied to the concepts studied. Simplistically formulated it should be clear how a phenomenon can be measured, to secure that it's not a subjective appreciation steering the collection of data (Yin, 2006). In this study the theoretical frameworks for traceability and risk evaluation, and how it can be translated to the forest industry, is what has guided the data collection and analysis for assessing external prerequisites for traceability. In this way the theory provide an approach for how the problem of concern (how to work with responsible paper sourcing) can be addressed. Due to this background some of the findings can also be generalized, even if this was not the only purpose for the use of theory. The theory provided on organisational resources, capabilities and infrastructure guided the researcher in what information was of relevance to collect at the organisation to describe internal prerequisites for traceability. Conceptualisations both of external and internal prerequisites have supported the formulation of recommendations for IKEA.

Choosing the overarching research approach

Cross verification by comparing evidence from multiple sources, referred to as triangulation, is commonly suggested as a means to increase validity in qualitative research (Bryman, 2008; Yin, 2003). Though, Silverman (2010) warns for the expenditure of time to collect the different data and the risk of data in the end being under-analysed. The author suggests that multiple data sets can be a result of not having narrowed down to the topic of research, is sceptical towards the actual benefits of triangulation and states that this working method might be for more empirically focused researchers.

This study is empirically driven and the multiple sources of evidence rather have a *complementary* function (Bryman, 2008) in providing a holistic understanding of the problem of concern, than to enable cross-checking single pieces of evidence. Data collected to describe external prerequisites for traceability has also been analysed according to the conceptualizations for tractability and risk. For much data though, particularly for describing internal prerequisites for traceability, the assessment and description of various features has been prioritised rather than further analysing this data.

Sampling

For all interviews made in this study sampling was purposive. Purposive sampling is a useful method as the sample size could preferably be adjusted to the research question of concern, what kind of information that data collection aims to obtain and what available resources admit regarding data collection. This method does not provide results that are representative for an entire population (Saunders et al., 2009).

I should be noted that in this study, it is not the perceptions, attitudes, opinions etc. of the interviewees that are to be assessed. What is obtained by the interviews is an understanding of features of the IKEA organisation. Interviewees are therefore chosen according to their ability to describe the organisational feature of concern, widening the understanding of the organisation by each interview. The prevailing limitation has been set by the time frame of the study and the possibility of organisations representatives to meet with the researcher.

3.4.2 Reliability

Reliability refers to whether the same study would have come to the same conclusion if another researcher would have implemented it (Yin, 2006). As previously mentioned, to enhance reliability all comprehensive interviews were transcribed and returned to the informants for review (Yin 2003; Kvale et al, 2009) and reliability as well as validity of the study was enhanced by asking key informants to read and evaluate the results and conclusions of the report. An approach suggested by Yin (2006). Furthermore the present chapter aims to provide a thorough description of how the study was carried out, also in order to increase reliability (Yin, 2006).

4 Results

4.1 IKEA paper supply networks, prerequisites for traceability and identified risk (RQ1)

The following description of IKEA paper supply networks will be divided by purchasing organisation (IoS, I Component, IMS and I Food). As described in the previous chapter the method for assessing supply networks were adapted to the current control situation/data availability of each purchasing organisation and according to what areas were prioritised for increased control (IoS paper articles). The chapter start with an overview, summarized in Table 11, and thereafter a more detailed description will be given for each purchasing organisation.

Table 11. Summary of the IKEA paper supply central –local sourcing mix, network complexity as indicated by the supply base, paper volumes and procurement region. The leftmost column represents company control. The rightmost column represents the risk burden of the paper volume and the column "trace" represents prerequisites for traceability

Control	Purchasing organization	Description	Central-local sourcing mix	No of suppliers in supply base	Paper tonnage (including virgin fiber)	Procurement region		Trace	Risk
	IoS	IoS paper products	Central	26	49 500	Americas Europe Greater China Asia	500 43000 5500 500		
		IoS 6096 non paper product.	Central	450	Unknown	All markets			
	I Comp.	Packaging	Central	21	150 000	Europe Greater China	52 000 95800		
			Local	Unknown	300 000	All markets			
	IMS	IKEA Catalogue	Central	3	110 000	-			
		Other	Central	60 000 (not only paper)	Unknown	All markets			
		Other	Local		Unknown	All markets			
	I Food	Food packaging and service paper items	Central	70-80	4900	Europe (food suppliers)			
			Local	3000	1700	All markets			

Current prerequisites for traceability are evaluated as good for centrally purchased paper with few suppliers in the supply base = (Green colour). Prerequisites for traceability are evaluated as obstructive if paper is purchased locally and the supply base is great = (Red colour). Various situations in between these two extremes is represented by yellow colour = For further guiding se Figure 11 chapter 3.2.

Risk is low if control of paper supply is good, if paper is sourced at low risk markets, networks are relatively simple, and if the paper is not directed to the customer= (Green colour). Risk is high if control is lacking, if there are great paper volumes (including virgin fiber) sourced at risk markets through complex networks, and if the paper purchased is directed to the customer= (Red colour). Yellow colour represents various cases between the two extremes= . Orange is used in for cases were unwanted materials are probable but are thought to get limited spreading among the customers = For further guiding, se Figure 12 in chapter 3.2.

The level of control is based on the affidavits of organisation representatives or respective purchasing organisation and categorized in to high=, medium= and low= level of control.

4.1.1 Overview

Small volumes of unacceptable material get a particularly large spread in final products

The mapping of supply networks showed that when working with responsible paper sourcing from a risk perspective, not only the volume of virgin fiber from a high risk markets can measure the risk burden incurred by the focal company. The spreading of a certain paper quality in the end products must also be considered. In the supply network mapping it was found that due to the T-shaped material flows, theoretically described by Haartveit et al (2004), of the paper industry, small volumes of a single paper quality can have great spreading in several final products.

IKEA of Sweden

All IoS articles are sourced centrally. In the central purchasing organisation the different businesses are divided by the dominating material or process. Examples are "category chairs and hardwood", "category pine/spruce" and "category paper". Both the suppliers and articles are classified according to the different material categories and the categories have separate managers and purchasing teams. In this study the articles at IoS have been divided in articles classified as paper articles and non-paper articles which contain paper. For the paper articles the upstream supply networks have been mapped aiming to reach information on wood content of virgin fiber based papers. For non-paper articles it has only been assessed which articles, belonging to other categories, that contain paper and what kind of paper these articles contain.

The IoS paper articles was concluded to contain 49 500 tons of paper of which 30 300 ton is estimated to be virgin fiber. Most paper is sources in Europe (43 000 tonnes) and Greater China (5500 tonnes). The rest of Asia and the trading area Americas only represent 1000 tonnes of paper together. The supply base for the assessed paper articles is constituted of 26 suppliers. This is the part of IKEA paper supply were traceability and risk has been assessed in detail.

Divided by paper segment *Tissue* (21 000 tonnes) stands for the dominating paper quantity, of which all is virgin fiber. This paper segment is entirely purchased in Europe, showed the least complex supply networks and in general represent low risk.

Solid paperboard represent the second largest paper share (15 000 tonnes), of which only 2000 tonnes is virgin fiber. This paper segment represents the highest risk burden at the time of the study. The solid paperboard articles are sourced in all purchasing regions, and it's the virgin fiber based paper used as lamination at the articles surface that have caused the risk burden. In certain regions this paper has shown to be sourced from controversial Asia based actors, a situation already rectified at the time of writing this report. Small volumes of the wrong paper quality gets wide spreading in different final products.

Fine paper (5 200 tonnes) is mostly virgin fiber based containing 4 900 tonnes of virgin fiber, of which a considerable share is purchased in Greater China. This is a paper segment which due to the many different paper qualities used has generated complex supply networks. Due to the reforming of paper supply of Asian IKEA suppliers during the spring of FY14, large shares of virgin fibers based paper are FSC certified and represents low risk. Though, among non-certified Asian fine paper supplier there was a lack in transparency and/or ability in providing information on raw material.

The Corrugated board segment is predominately sourced in Europe, though a small share sourced from a supplier in Greater China suffered from lacking transparency or engagement in providing adequate information. During the spring of FY14 IoS has gained increased control over the paper articles supply network, and it's an area of the IKEA paper supply that will be prioritized for further control. At a generic level prerequisites for traceability for these supply networks are more advantageous than for other IKEA paper supply: centrally sources, relatively few suppliers. Risk is enhanced by the articles being at the core of the customer offer. A summary of the IoS paper articles and corresponding risk is given in Figure 13.

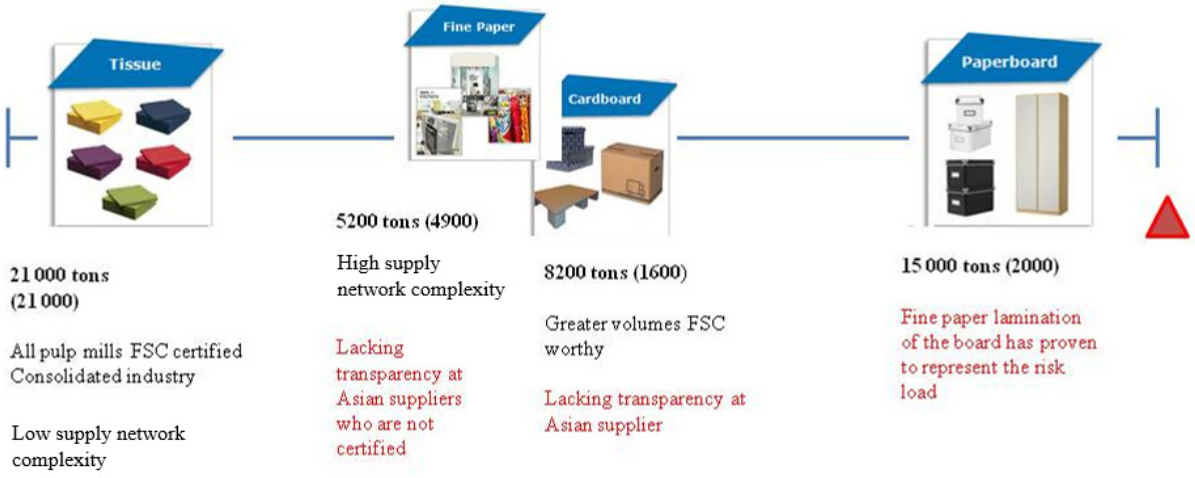


Figure 13. Synthesising figure of IoS paper articles paper tonnages, network complexity and predominant risk indicators revealed through the supply network mapping.

For IoS non-paper articles, the supply networks have not been assessed through this study. However, supply through non-paper articles is represented by 6 100 articles sourced at different markets. Foils (commonly virgin based papers) are present in 3 800 articles and honeycomb structures are included in 900 articles. Preliminary results suggest that the total number of suppliers in the supply base is 450 suppliers for these articles. Accordingly, there is still low level of control, prerequisites for traceability at a generic level is enhanced by articles being centrally purchased, and risk is high as these are also articles representing the core of the customer offer.

I Components

The paper supply to IKEA in scope of I Components business assignment amounts to 450 000 tonnes of paper in the form corrugated packaging. At I Components the centrally sourced packaging adds up to 95 800 tonnes in Greater China and 52 000 tonnes at the European market. The supply base for the central sourcing is constituted of 21 suppliers. Locally sourced packaging is purchased at all markets and adds up to 300 000 tonnes. For locally sourced packaging the supply base was not assessed and traceability can be considered low. It is reasonable to suggest that IKEA is exposed to risk due to this situation. Paper packaging in these applications are predominantly recycled fiber based which reduces the risk exposure for this paper segment.

Indirect Materials and Services

At this IMS some paper purchased centrally has been subject to far-reaching traceability work and responsible paper sourcing is secured. This is the situation for the IKEA catalogue which was entirely FSC certified, and labeled, for the FY15 edition. Apart from this, paper sourcing

at IMS is not overviewed by any central function and paper purchased by locally represented IMS personnel as well as by e.g. the retail stores has not been quantified. The entire supply base of IMS, also for non-paper products, is constituted of 60 000 suppliers. For these paper products, mainly reaching the customers at the IKEA store, traceability and control can reasonably be considered very low. Risk caused by this situation varies as some of the paper purchased by this organization is offered to the customers, and as some is for internal use.

IKEA Food

The paper supply of I Food has been quantified to 6 600 tonnes. This figure includes food packaging, transport packaging and tissue and paper cups etc. needed for the organizations service. Responsible paper sourcing has not been a matter discussed at I Food and there is no control over current sourcing. The supply base of the centrally purchased 4 900 tonnes of paper is constituted of 70-80 food suppliers ,in their turn sourcing paper packaging, and the supply base for the locally purchased 1 700 tonnes is around 3 000 food suppliers. Traceability can therefore be considered low. For the around 400-500 tonnes of food packaging paper it can be assumed that the share of virgin fiber is considerable due to prevailing regulations on materials in contact with food. This paper is part of the product brought home by the customer and represents a high risk segment. This paper is purchased centrally though, and improving traceability for this particular volume share is regarded to be easier than for much other paper.

4.2 IKEA of Sweden: supply networks, prerequisites for traceability and identified risk (RQ1)

4.2.1 The supply network of IoS paper articles (RQ1)

The 24 suppliers that provided data for the present analysis are assigned to 1 120 unique article numbers (1 253 supplier article combinations) of which 717 (836 supplier article combinations) have been purchased during FY14.

The supply networks for these articles have been mapped at a detailed level and prerequisites for traceability have been evaluated according to the factors previously described in chapter 3.2:

1) *Supply network complexity and length*
2) *Level of integration between the tiers in the supply network*
3) *Transparency in terms of the willingness by supplier to provide requested information*
4) *Producers FSC CoC status*

Risk has been evaluated according to IKEA CSR criteria based on:

1) *Species and origin of raw material (using IKEAs risk classification for species and sourcing regions for each of IKEAs minimum requirements for wood as described in Table 1.)*
2) *Actors of the supply network including their FSC status, and*
3) *Transparency of the supply network.*

The amount of paper purchased through these articles was calculated in two ways. First by multiplying the number of units of each article purchased during the year with the paper weight of the product, as specified by the supplier and controlled towards IKEAs internal data on product material content (accessed from the internal IT system PIA). Additionally the

suppliers were asked to specify how much paper, per paper quality, that they used in the paper products during FY14. In this way figures from the different sources could be compared for verification or troubleshooting.

Quantifying by multiplying units purchased and articles paper weight

The total tonnage of paper, calculated by multiplying the number of units with the paper weight of the article was 49 300 tonnes. Out of this the suppliers declared that the virgin fiber *content* as share of all the articles was 30 200 tonnes. Products supplied to IKEA with an FSC claim represented 2 900 tons of paper (2 100 tons virgin fiber). Though, which will be further described below, the tonnage of paper qualities purchased by the IKEA suppliers with an FSC claim and used in the IKEA articles account for considerably more amounts of certified materials. Hence, the certification status is lost at the last tier of the supply network.

Quantifying paper supply by suppliers data

Asking the IKEA suppliers for the net-tonnage of each paper quality used in the products supplied to IKEA during FY14 generated figures many times deviated from the calculated figures. Deviations were tracked back to many sources, such as including stock in the figures, declaring the gross tonnage instead of net tonnage, not calculating the tonnage for the entire fiscal year etc.

The result of the quantification activity underlines that IKEA and the IKEA suppliers are not used to keep track of IKEAs paper supply. The point in the supply network where IKEA and the IKEA supplier can easiest agree on the correct paper quantity is as the readymade product is shipped to IKEA. This is the paper quantity that represents the business.

4.2.2 Tissue

Tissue is the single largest paper segment among IoS paper products.

Unique article numbers: 111 (169 supplier-article combinations)

Total tonnage*: 21 800 tons

Stated to be virgin fiber: 21 800 tons

**Multiplying the amount of paper used in one product unit with the number of units purchased during FY14*

Paper volumes per trading area and supplier category

There are six tissue product suppliers in the four trading areas Central-, North East-, North- and South Europe. The supplier classification and distribution of paper volumes per supplier is presented in Table 12.

Table 12. IoS Tissue segment sourcing regions, supplier categories and paper tonnages

Trading area	Supplier category	Calculated Tonnage (Metric (metric tonnes)	Tonnage as reported by suppliers (Metric tonnes)
Central Europe	IKEA Supplier	4 470	3270
Central Europe	IKEA Potential Prioritized Supplier	3 100	3100

North East Europe	IKEA Supplier	1 140	1100
North Europe	IKEA Supplier	2 640	(2640*)
South Europe	IKEA Potential Prioritized Supplier	8 960	(3470**)
South Europe	IKEA Supplier	1 450	1220
Total		**21 800**	**14 790**

**the paper weight was not provided by the supplier*

*** the supplier only estimated paper use for the first month of FY14 an didn't get back with revised information*

Traceability prerequisites RQ1 subquery1

Certification status and level of integration at IKEA suppliers

Five out of six tissue suppliers, among them the *IKEA Potential prioritized suppliers,* claim to possess a FSC CoC certificate. Note, none of the products are supplied with an on-product label claim to IKEA.

The in-house operations of five of the suppliers are paper production and converting. Only one supplier does just converting, this is also the supplier not FSC certified. See Table 13.

Table 13. IoS Tissue segment suppliers FSC status and their level of internal integration

Trading area	Tonnage (Metric tonnes)	Supplier with FSC CoC certificate	Inhouse operations
Central Europe	4 470	Yes	Paper production + converting
Central Europe	3 100	Yes	Paper production + converting
North East Europe	1 140	No	Converting
North Europe	2 640	Yes	Paper production + converting
South Europe	8 960	Yes	Paper production + converting
South Europe	1 450	Yes	Paper production + converting
Total	**21 800**		

Certification status and complexity of the up-stream supply network

The 169 tissue paper articles supplied by the six suppliers represent 111 unique articles. The suppliers declare the use of eleven different tissue paper qualities of which ten have the same paper quality description and grammage. The deviating paper quality represents only 62 tons of paper. This means that almost all tissue paper is more or less the same paper quality.

The paper is supplied byninedifferent paper mills belonging to seven parent companies. In terms of parent companies one single actor actually manages half of the tissue volumes supplied to IKEA in FY14 through two of the converters and three of the paper mills. eight paper mills claim to possess a FSC CoC certificate and seven of these claims have been verified by the FSC web page or at the RISI database. *Difficulties to find and verify the*

production units have sometimes arisen due to information being inadequately provided by the supplier during data collection.

The pulp is supplied by 16-19 pulp mills belonging to twelve parent companies. FSC certificates have been verified for all pulp mills reported in the data collection through the FSC webpage or by the RISI database.

Three of the eleven paper qualities are supplied with an FSC claim and it is stated that the other eight paper qualities can be provided as FSC certified paper within two years. Nine out of eleven paper qualities are produced at paper mills claiming to be working with FSC CoC certification. As previously said, moving further upstream the supply network all pulp mills reported are already approved for FSC CoC according to the FSC webpage and the RISI database. An overview of the paper qualities and the supply network up-streams certification status is given in Table 14.

Table 14. IoS tissue articles paper qualities, FSC certification status of paper qualities and at the upstream production capacity

Trading area	Tonnage (Metric tonnes)	No of tissue articles	No of paper qualities used	No of papers with an FSC claim	No of paper qualities produced only by paper mills with FSC CoC claim	No of paper qualities only from pulp mills with FSC CoC certificate
Central Europe	4 470	19	3	2	2	3
Central Europe	3 100	58	3	0	3	3
North East Europe	1 140	7	2	1	1	2
North Europe	2 560	34	1	0	1	1
South Europe	8 960	37	1	0	1	1
South Europe	1 450	14	1	0	1	1
Total	**21 700**	**169**	**11**	**3**	**9**	**11**

The consolidated tissue industry is demonstrated by the domination of a small number of big actors supplying the pulp for the different qualities. Two of the pulp producers supply four of the concerned paper mills each, one pulp mill supplies three of the paper mills, three of the pulp mills supply two paper mills each. The remaining six pulp producers are only connected to one paper mill each. In other words the supply network for tissue products is not very complex. It starts with only one tissue quality which pulp is supplied by a few big production units owned by even fewer parent companies. As the pulp mills are certified there is a great unleveraged potential of increasing the volumes of more sustainable sources in this paper segment.

Information reported on species and origin of wood RQ1 subquery 1 and 2

There is great uniformity in wood raw material used in pulp production for the IKEA tissue segment. As explained earlier, tissue pulp is a mixture between long fiber soft wood species and short fiber hard wood species. On the soft wood part there are mainly three tree species

reported, namely *Pinus sylvestris, Pinus contorta* and *Picea abies* (very limited volumes of *Pseudotsuga menziesii* are also reported). They all come from Europe and Russia. On the hard wood part there are *Populus tremula, Betula pendula* and *Fagus sylvatica* from Balticum, Russia and Scandinavia and *Eucalyptus globulus*, and –g*randis* from Brazil, Portugal and Spain. The greater wood volumes are commonly *Picea abies* from Scandinavia. All species and geographical origins reported in the data collection are presented in Annex 4.

The Trade/Geographical areas carrying predominant risk burden
The risk load is slightly higher for the North East Europe supplier due to raw wood being sourced from areas in Finland and Russia with High Conservation Value Forests (HCVF) as well as Russian areas where there is risk of illegal logging. Though, if provided data is correct sourcing is only from FSC certified pulp mills. The paper mill, or potentially mills, in between the IKEA supplier and the pulp mills is still to be further investigated to validate reported data and secure responsible sourcing.

The North East European IKEA supplier declares that it is supplied by the same pulp mills that are used by the other IKEA suppliers, but despite this the supplier declares a much more limited number of species and raw wood origins. This situation suggests that the effort to present all species used in their paper may not have been sufficient to cover the actual wood content.

To conclude, the tissue segment is judged to carry a low level of risk. There has been willingness to provide the requested information, even though information was slightly less detailed at the North East European supplier. The great certified production capacities upstream the supply network suggests the development of paper purchasing in the tissue segment towards introducing requirements for FSC materials as a "hygiene factor" in the supply chain.

4.2.3 Solid paperboard

Unique article numbers: 163 (230 supplier-article combinations)

Unique article numbers purchased during FY14: 128 (163 supplier-article combinations)

Total tonnage: 14 200 tons

Stated to be virgin fiber: 2000 tons

**Multiplying the amount of paper used in one product unit with the number of units purchased during FY14*

There are ten unique solid board articles purchased from a supplier not belonging to the paper category but to textile constructions. This textile related paper volume is included in the calculations of total volumes, they only contain recycled fiber and the supplier is situated in South East Asia.

Paper volumes per trading area and supplier category

There are six solid board suppliers in six different trading areas, namely Central-, North East- and North Europe, Americas, Greater China and South East Asia. An overview is provided in Table 15.

Table 15. IoS Solid paperboard segment sourcing regions, supplier categories and paper tonnages

Trading Area	Supplier category	Tonnage (metric tons)	Of which virgin fiber(metric tons)	Tonnage as reported by suppliers (Metric tons)
Americas	IKEA Supplier	490	80	1110*
Central Europe	IKEA Potential Prioritised Supplier	1780	440	(1780)**
Greater China	IKEA Potential Prioritised Supplier	3280	540	3860
North East Europe	IKEA Supplier	360	50	180
North Europe	IKEA Prioritised Supplier	8580	920	8580
South East Asia	-	550	0	550
Total		**15 040**	**2020**	**16 060**

**data thought to include volumes other that only net volumes found in products*

***data not provided by the supplier*

Traceability prerequisites RQ 1, subquery 1

Certification status and level of integration at IKEA suppliers

Only the Central European supplier possesses an FSC CoC certificate and supplies certified articles to IoS. This supplier provides 10 of the 20 virgin fiber based paper qualities found in the segment, of which eight are purchased with an FSC claim. The suppliers in North Europe and Americas are owned by the same parent company and declare that they can get certified within two years. Table 16 shows the FSC status and in-house operations of the suppliers.

Table 16. IoS Solid paperboard segment suppliers FSC status and their level of internal integration

Trading area	Tonnage (Metric tonnes)	Supplier with FSC CoC certificate	In-house operations
Americas	490	**No**	**Converting**
Central Europe	1780	**Yes**	**-**
Greater China	3280	**No**	**Converting**
North East Europe	360	**No**	**Converting**
North Europe	8580	**No**	**Converting**
South East Asia	550	**No**	**-**
Total	**15 040**		

Certification status and complexity of the up-stream supply network

Article-wise the solid paperboard product segment is quite homogenous. It mainly consists of different boxes and magazine files that IKEA provides for storing. Typically the solid board products consist of 2-4 different paper qualities. There is the solid board, which is recycled

fiber based, and there are commonly coloured papers covering the surface, which are all virgin fiber based.

There are 46 reported paper qualities used in the 163 articles. 26 paper qualities are reported to be solid board (recycled fiber based) of varying grammage, and 20 are different kinds of virgin fiber based fine papers used for e.g. the surface. Reporting varies though as some suppliers specify paper qualities by colour and some suppliers have aggregated the reporting to the type of paper.

The following presentation focus on the virgin fiber based papers. Though, it should be noticed that one of the recycled based solid board paper quality, representing 6 160 tons, is declared to contain virgin fiber. Due to the volume this paper quality will also be included in the following analysis.

There are twelve paper mills supplying the 21 paper qualities containing virgin fiber (20 virgin fiber based and one recycled fiber based containing virgin fiber) of which eight paper mills belonging to seven parent companies are verified to be certified by FSC. The paper mills verified to be certified by FSC supply the paper for the Central-, North- and North Eastern Europe IKEA suppliers.

The four uncertified paper mills are located in China and supply IKEA suppliers in Americas as well as in China. The identification of the paper and pulp mills of this trading area by using available databases, in this case the RISI global database on paper and pulp mills, was found to be considerably more difficult than for the European paper mills. Unwanted pulp producers were found upstream the supply network.

Table 17. IoS Solid paperboard articles paper qualities, FSC certification status of paper qualities and at the upstream production capacity

Trading area	**Tonnage (Metric tonnes)**	**No of articles**	**No of paper qualities used**	**No of virgin fiber based paper qualities**	**No of virgin fiber based papers with an FSC claim**	**No of virgin fiber based paper qualities produced only by paper mills with FSC CoC certificate**	**No of paper qualities only from pulp mills with FSC CoC certificate**
Americas	490	10	2	1	0	0	0
Central Europe	1780	22	18	10	-	-	-
Greater China	3280	134	14	4	0	0	0
North East Europe	360	**23**	**5**	**4**	**2**	**2**	
North Europe	8580	**41**	**3**	**1**	**0**	**1**	**1**
South East Asia	550	**10**	**4**	**0**	**0**	**0**	**0**
Total	**15 040**	**240**	**46**	**20**	**2**	**3**	**1**

Information reported on species and origin of wood RQ 1, subquery 2

The European IKEA supplier purchasing paper from FSC certified paper mills have greater ability to provide information on species and origin of their raw wood. The Central European supplier though failed to do so during the study period, and will have to be further addressed to secure responsible paper sourcing. Paper is additionally sourced from China by this supplier. The supplier in Greater China provided information on raw material for two of the pulp mills that was not credible as it was suggested that paper was made entirely from a rare fir species. Information on raw materials provided by the suppliers is found in Annex 4.

The Trade/Geographical areas carrying predominant risk burden
The paper segment is regarded to carry the greatest risk burden among the paper segments and at IoS. Risk occurs both as unwanted suppliers have been found in the supply network and due to lacking understanding of raw materials and upstream actors of the supply network. The risk source is paper purchased from China but the paper appears, as previously mentioned, in articles converted at other markets. This is matters that will be further researched and addressed to secure responsible sourcing. Furthermore, small volumes of the wrong paper has shown to get wide spread in final products, which suggests that predominant risk exposure can be mitigated by steering paper supply of these small volumes.

4.2.4 Fine paper

Unique article numbers: 730 (731 supplier-article combinations)

Unique article numbers purchased during FY14: 436 (436 supplier article combinations)

Total tonnage; 5200 tons

Stated to be virgin fiber: 4930 tons

**Multiplying the amount of paper used in one product unit with the number of units purchased during FY14*

For the fiscal year FY14 the fine paper segment is of a particular character as it includes the largest number of unique articles but constitutes the smallest paper volume among the paper segments.

The fine paper segment includes articles categorized as Paper others and Print/Wrapping paper [10]and these articles include trays, cup coasters, paper based gift curling, posters and books supplied by one supplier each, and the Paper Shop assortment is supplied by three suppliers.

Paper volumes per trading area and supplier category
The eight suppliers are situated in Central- and North Europe and in Greater China. An overview of supplied volumes and the supplier categorisation is provided in Table 18.

[10] Eight products from three of the fine paper suppliers are categorized as Tissue or solid board articles

Table 18. IoS Fine paper segment sourcing regions, supplier categories and paper tonnages

Trading Area	Supplier category	Tonnage (metric tonnes)	Of which virgin fiber(metric tons)	Tonnage as reported by suppliers (Metric tonnes)	Assortment
Central Europe	IKEA Product Development/Innovation Supplier	890	890	(890*)	Trays
Central Europe	IKEA Supplier	30	30	7	Cup coasters
Greater China	IKEA Product Development/Innovation Supplier	1200	1180	1730**	Paper Shop
Greater China	IKEA Product Development/Innovation Supplier	530	500	1280**	Paper Shop
Greater China	IKEA Supplier	20	20	20	Gift curling
North Europe	IKEA Product Development/Innovation Supplier	1970	1860	4960**	Paper shop
North Europe	IKEA Supplier	10	0 (1)	23	Posters
North Europe	Potential IKEA Product Development/Innovation Supplier	550	450	180***	Books
Total		**5 200**	**4930**	**9090**	

**Has not provided information*

***thought to have provided gross volumes and paper stock*

****deviating figure still being researched*

The greatest volumes are represented by the Paper Shop assortment and apart from that it's the trays and books which make greater contribution to the total volume.

Traceability prerequisites RQ 1, subquery 1

Certification status and level of integration at IKEA suppliers

Five of the eight suppliers are certified by FSC, covering the Paper Shop assortment and all Chinese suppliers. The suppliers of the segment have at most converting in-house (6). An overview is presented in Table 19.

Table 19. IoS Fine paper segment suppliers FSC status and level of integration

Trading Area	Tonnage (metric tonnes)	Supplier with by FSC CoC certificate	In-house operations
Central Europe	890	**No**	-
Central Europe	30	**No**	Converting
Greater China	1200	**Yes**	Converting
Greater China	530	**Yes**	Converting
Greater China	20	**Yes**	Converting
North Europe	1970	**Yes**	Converting
North Europe	10	**No**	Converting
North Europe	550	**Yes**	-
Total	**5 200**		

Certification status and complexity of the up-stream supply network

The suppliers declared that 71 paper qualities were used to produce the 436 articles purchased during the year. Twelve for the books, 46 for Paper Shop, five for the trays, five for posters and three for cup coasters and paper based gift curling.

In the Paper Shop assortment there's a great variation of paper qualities. 27 of the paper qualities declared by the suppliers are fine papers (wood containing/non-wood containing, bleached/unbleached, coated/uncoated). Though, looking more closely at these there are 20 fine paper qualities of distinct type and grammage. In the assortment there are also ten kraft paper qualities, and also tissue paper, solid board and printing and writing papers. During the spring of 2014 the entire supply network of the paper shop assortment has been certified by FSC, and all products are purchased with an FSC claim on the invoice. The need for certified material has imposed the purchasing of pulp and paper outside China. The North European paper shop supplier purchases certified paper in Sweden and Finland and the two Chinese paper shop suppliers purchase the paper from certified paper mills in China who source the pulp from Canada, New Zeeland, Russia, Finland, Chile, Brazil, South Africa and Germany.

The upstream supply networks of the Central European supplier is completely certified by FSC and the papers are declared to be purchased with an FSC claim. The supplier announces that it can get a FSC CoC certificate within two years. Though one out of four paper and pulp suppliers could not be adequately validated due to poor information provided.

The North European poster supplier purchases paper from FSC certified paper mills, though papers are not purchased with a FSC claim and information on pulp mills were not provided.

The North European book supplier declared incomplete information on the upstream supply network. All paper qualities are virgin fiber based and nine out if twelve are declared to be supplied with an FSC claim. For the three paper qualities without an FSC claim no information was provided on paper and pulp mills. If the paper names are correct they are all produced by certified paper suppliers in Sweden and France.

The coasters were produced from Swedish pine at a certified paper- and pulp mill, though the paper not purchased with a FSC claim. The gift curling was purchased from certified Chinese paper mills sourcing the pulp from Chile and British Columbia.

Table 20. IoS Fine paper articles paper qualities, FSC certification status of paper qualities and at the upstream production capacity

Trading area	Tonnage (Metric tonnes)	No of fine paper articles	No of paper qualities used	No of virgin fiber based paper qualities	No of virgin fiber based papers with an FSC claim	No of virgin fiber based paper qualities produced only by paper mills with FSC CoC certificate	No of paper qualities only from pulp mills with FSC CoC certificate
Central Europe	890	43	5	5	5	5	5
Central Europe	30	2	1	0	0	0	1
Greater China	1200	118	19	16	16	16	16
Greater China	530	**64**	**14**	**13**	**13**	**(13)***	**(13)***
Greater China	20	**10**	**2**	**2**	**2**	**2**	**2**
North Europe	1970	**39**	**13**	**11**	**(11)***	**11**	**11**
North Europe	10	**30**	**5**	**2**	**0**	**2**	**-***
North Europe	550	**130**	**12**	**12**	**9**	**9**	**-***
Total	**5 200**	**436**	**71**	**61**	**56**	**58**	

**Information inadequately provided*

Information reported on raw species and origin of wood RQ 1, subquery 2

The newly FSC certified suppliers of the paper shop assortment (in Greater China and in Northern Europe) have good information on most of their raw materials.

A few suppliers (e.g. supplying posters and trays) have not been able to provide adequate information at all on pulp mills and raw material. There are no strong risk indicators in the segment. It has been verified that paper qualities or production units are FSC certified and placed at low risk markets. Species and origin of raw materials reported is presented in Annex 4.

The Trade/Geographical areas carrying predominant risk burden
The Fine paper areas predominant risk burden was mitigated as the Paper Shop suppliers got certified and all material purchased with an FSC claim in the spring of 2014.

4.2.5 Corrugated cardboard

Unique article numbers: 45 (54 article –supplier combinations)

Unique article numbers purchased during FY14: 32 (45 supplier-article combinations)

Total tonnage: 8220 tons

Stated to be virgin fibers: 1620 tons

**Multiplying the amount of paper used in one product unit with the number of units purchased during FY14*

There are 45 unique different corrugated cardboard article numbers (54 article-supplier combinations) of which 32 (45 article-supplier combinations) are purchased during FY14. Multiplying the amount of paper used in one product unit with the number of units purchased during FY14 the quantity of paper supplied by the corrugated cardboard suppliers result in 8 220 tonnes, of which 1 620 tons of the products content were estimated by the suppliers to be virgin fiber.

There are three suppliers categorized as corrugated cardboard suppliers. They are situated in Central- and North East Europe and in Greater China.[11]

Paper volumes per trading area and supplier category
Among the corrugated cardboard suppliers the supplier of the major volumes is categorized as an *IKEA Potential prioritized supplier* whereas the other two are *IKEA suppliers*. The volumes per supplier and trading area are presented in Table 21.

Table 21. IoS Corrugated cardboard segment sourcing regions, supplier categories and paper tonnages

Trading Area	Supplier category	Tonnage (metric tonnes)	Of which virgin fiber(metric tons)	Tonnage as reported by suppliers (Metric tonnes)
Central Europe	IKEA potential Prioritized Supplier	7590	1490	8030
Greater China	IKEA Supplier	410	70	60
North East Europe	IKEA Supplier	200	60	180
Total		**8200**	**1620**	**8270**

Traceability prerequisites RQ 1, subquery 1

Certification status and level of integration at IKEA suppliers
Despite the fact that the majority of paper volumes being supplied to IKEA are handled by actors claiming to hold a FSC CoC certificate there are no articles in the Corrugated

[11] The three cardboard paper suppliers cover all articles categorized as corrugated cardboard articles and the paper quality descriptions of the papers in the products only include corrugated cardboard paper qualities.

Paper qualities belonging to the corrugated cardboard segment are also found in products categorized as *Fine paper* (paper others and printing/wrapping papers) and *Solid paperboard*. These papers account for 1120 tons of which the vast majority (880 tons) has been described as kraft papers. The other two greater qualities are *white top kraft liner* and *printing and writing paper*, accounting for 100 and 110 tons respectively. The two major suppliers of these corrugated cardboard paper qualities are one Central European fine paper supplier producing trays and one Chinese fine paper producer.

Cardboard segment delivered to IKEA with an FSC CoC claim. Table 22 shows the FSC status and in-house operations of the suppliers.

Table 22. IoS Corrugated cardboard segment suppliers FSC status and level of integration

Trading area	Tonnage (Metric tonnes)	Supplier with FSC CoC certificate	In-house operations
Central Europe	7590	Yes	Paper production + Converting
Greater China	410	Yes	-*
North East Europe	200	No	Paper production + Converting
Total	**8200**		

**no information provided*

Certification status and complexity of the up-stream supply network

The 41 products are made from 22 different paper qualities, of which eleven are virgin fiber based. Almost all articles consist of three different paper qualities each and the virgin fiber based papers appears in half of the articles.

Looking more closely at the 22 different paper qualities used they actually represent eleven distinct paper quality descriptions produced at eleven individual paper mills. Looking only at the eleven virgin fiber based paper qualities these represent six distinct paper qualities produced at seven paper mills of which at least four are integrated with the pulp mill. One of the presumed un-integrated paper mills is supplied by a pulp mill of the same parent company. Concerning the last two paper mills, these are located in China and seem to rely on separate pulp producers.

The *IKEA Potential prioritized supplier* in Central Europe, which is the supplier of the greatest paper volumes, declares that all paper qualities (8) used in the products are supplied to them with an FSC CoC claim. The three virgin fiber based paper qualities are supplied by producers owning both pulp and paper production and in two cases the production units are integrated. The FSC claims of the mills could all be verified through the RISI database and the FSC webpage.

The Chinese supplier doesn't use any FSC certified paper qualities in their products. They use four virgin fiber based- and two recycled fiber based papers. They claim that the four virgin fiber based papers are sourced from two paper mills with an FSC CoC certificate. One of these claims has been verified and for the other paper mill information is inadequate. The pulp mill could not be identified by the provided information.

The North Eastern European supplier declares all virgin fiber based paper qualities used to be certified by FSC CoC and that the uncertified recycled fiber based paper qualities can be supplied with an FSC CoC claim within two years. These recycled fiber based paper qualities all contain some virgin fiber. The FSC claims made for the paper and pulp mills supplying the virgin fiber based papers could all be verified at the FSC web page.

An overview of the paper qualities and the FSC status of the production units is given in Table 23.

Table 23. IoS Corrugated cardboard articles paper qualities, FSC certification status of paper qualities and at the upstream production capacity

Trading area	Tonnage (Metric tonnes)	No of corrugated cardboard articles	No of paper qualities used	No of virgin fiber based paper qualities	No of virgin fiber based papers with an FSC claim	No of virgin fiber based paper qualities produced only by paper mills with FSC CoC certificate	No of paper qualities only from pulp mills with FSC CoC certificate
Central Europe	7590	28	8	3	3	3	3
Greater China	410	9	6	4	0	(4*)	-
North East Europe	200	4	8	4	4	4	4
		41	**22**	**11**	**7**	**7 (+4?)**	**7**

**data provided inadequately*

Information reported on species and origin of wood RQ 1 subquery 2

The Central European supplier claims that all paper qualities used are certified by FSC. Verification has been made for FSC CoC claim of the upstream production units. The information provided on raw wood and its origin is not detailed but can still be considered credible.

The North East European supplier purchases the virgin fiber based paper qualities from integrated and certified pulp- and paper producers in Russia. The FSC claims could be verified through the FSC homepage and the species and origins are detailed specified and species are also consistent with the FSC certificates. The sourcing regions of concern are all high risk areas for illegal logging, some are also risk areas for HCVF and social conflicts.

The Chinese supplier doesn't provide any information on raw materials species. The two large countries Canada and Russia are claimed to be the origins of the raw wood. For these two countries information on region were also requested during data collection. However no such information has been provided. Wood species and origin reported by the suppliers are presented in Annex 4.

The Trade/Geographical areas carrying predominant risk burden

The supplier located in Greater China presents two different paper mills and two different pulp mills. As previously described only the FSC claim of one of the paper mills has been verified. The information given on raw material and its origin is generic. Until adequate information has been provided by the supplier, on the actors of the supply network as well as on raw material, the virgin fiber volumes of this supplier has to be considered a risk burden to IKEA.

4.2.6 IoS paper supply through non-paper articles (RQ1)

Examples of paper entering through product *not* categorized as paper products are:

- Laminated foils used as furniture surface
- Back sheets of furniture
- Honeycomb structures used as filling in e.g. table tops
- Passpartous and other papers used with frames
- Lamp-shades made of paper

A search through the technical descriptions of the IKEA articles, excluding articles categorized as paper articles, generated 8 860 article numbers containing paper. Though, the same product gets different article numbers when directed to different specific markets. An attempt to analyse how many articles, irrespectively of what market they are directed to, that included paper showed that 6 096 unique articles contains paper. Foils are represented in 3 800 articles and honeycomb is represented in 900 articles. Preliminary results from data generating from internal data systems suggest that the supply base of these articles is constituted of around 450 suppliers.

One article though might include different types of paper. The 8 860 articles directed to specific markets held 19 495 paper applications specified in the technical descriptions.

In some of these areas the work with mapping paper origin has already started, whereas for the rest the work will be undertaken during 2014.

Prerequisites for traceability and predominant risk burden

According to the conceptual framework for evaluation prerequisites for traceability in this study, traceability for the IoS non-paper articles is enhanced if the articles being centrally purchased. The fact that the supply base for the articles is constituted of 450 suppliers obstructs traceability though.

From a risk perspective this is a paper volume included in the articles and hence at the core of the customer offer. It is thought to contain a considerable amount of virgin fiber, particularly regarding the foils, which further increases the risk burden.

Table 24. Evaluation of traceability and risk for IoS non-paper articles

Supply base (no of suppliers)	Central local sourcing mix	Relative prerequisites for Traceability	Virgin fiber	Markets	Supply base	Control	Directed to customer	Risk
450	Central	Medium	Volumes expected to be considerable	Expected to include risk markets	450	Low, though requirement for plant based materials is communicated to IKEA suppliers	Yes	High

4.3 IKEA Component's paper supply networks, prerequisites for traceability and identified risk (RQ1)

4.3.1 IKEA Component Supply networks (RQ1)

At IKEA Components the central organisation is increasingly centralising the packaging business which has previously been locally managed by individual product suppliers. It is planned that the central organisation will manage 80 percent of the sourcing of packaging at the end of FY17. The paper segment of concern is corrugated board consisting of different containerboard grades such as kraftliners, test liners and flutings.

The European market

A recent review of the paper qualities and suppliers shows that the total annual amount of packaging paper purchased at the European market is 306 480 metric tons. The volumes being purchased through the central organisation is increasing from 17 percent in early 2014 to estimated 30 percent at the end of FY14. As for the volumes representing the 17 percent these were purchased from eight suppliers in Europe. Using information reported by the eight suppliers on the paper to estimate the share of virgin fiber based paper used in packaging, kraftliner and semi-chemical flutings are presumed to be virgin fiber based. These papers represents 36 percent of the reported volumes, suggesting that about a third of the packaging paper purchased in Europe is virgin fiber based paper.

The Chinese market

At the Chinese market a total of 103 980 tonnes are purchased annually of which 85 percent of the volumes were purchased from thirteen suppliers through the central organisation in 2014. Presently the volumes purchased by the central organisation have reached 90 percent. An estimation of the share of virgin fiber in the Chinese papers cannot be made in the same manner as for Europe. Kraftliners reported by the three suppliers addressed with a traceability assessment (further explained in the next chapter) showed that none of the kraftliners were virgin fiber based. All the kraftliners in the assessment contain virgin fiber, but less than 50 percent. Estimating the share of papers containing virgin fiber (although not being virgin fiber based) by presuming that this is the common status if Chinese kraftliners suggest that 63 percent of the paper volumes sourced in China would include virgin fiber, representing 65 700 tonnes.

Other markets

The central organisation of I Components is presently not involved in the purchasing of packaging at the markets North America, Russia, South Asia and South East Asia. These markets have an aggregated demand for 36 000 tonnes of packaging material in FY14.

Regarding control over the current paper sourcing, the central organisation has little knowledge about the papers purchased locally. Apart from the 36 000 tonnes of paper in North America, Russia, South Asian and South East Asia, the volumes of locally purchased packaging are at least 10 400 tonnes (6570 tonnes estimated to *include* virgin fiber) in China and 214 500 tonnes in Europe (78 300 estimated to be virgin fiber *based*).

4.3.2 Results from the traceability assessment at I Components (RQ1 subquery1 and 2)

As part of the present study three Chinese and two European suppliers considered relevant for future business were addressed with a traceability assessment. The three Chinese suppliers addressed corresponded to 15 700 tonnes of paper. One of the European suppliers

corresponded to 6 700 tonnes of paper, whereas the volume of the other European supplier is not known due that the business with this supplier is just being started up by the I Components central organisation. The assessment at the latter supplier was also not finished at the time for finalising this report.

The results from the small supply network assessment cannot be generalized to other suppliers in the different geographical areas, though provides an indication of the present traceability and risk situation.

The European supplier

The European supplier has two converting units of which one is FSC certified and the other can be certified within two years. The upstream supply network is simple, consisting of five integrated paper- and pulp mills which are all FSC certified. All papers are declared to be purchased by the packaging producers with an FSC claim.

The three Chinese suppliers

The Chinese supplier of the greatest volumes (9 300 tonnes) only supplies virgin fiber containing papers from FSC CoC certified pulp- and paper mills situated in China and Canada. Raw materials reported are mainly from Russia and Canada. All certification claims could be verified.

As for one of the suppliers of smaller volumes (2 900 tonnes) all three paper mills reported are FSC certified. No paper qualities are supplied with an FSC claim and all pulp mills reported had still not been identified and the FSC claims not verified at the time of this report.

As for the last Chinese supplier (3 500 tonnes) only one paper mill was supplying papers containing virgin fiber, and this mill is FSC certified. Two pulp mills were supplying the paper mill, of which one is identified and the FSC CoC certification claim verified. As for the other pulp mill its identity has still not been confirmed. This pulp mill has also drawn attention as it's situated in an area where there are actors operating from who IKEA have found it controversial to source as they are not fulfilling IKEAs minimum requirements on wood. Actions to identify the concerned pulp mill and secure that IKEA is not unacceptable materials in this area are ongoing.

Table 25. Summarizing table for relative prerequisites for traceability and risk at I Component

Supply base (no of suppliers)	**Central local sourcing mix**	**Relative prerequisites for Traceability**	**Virgin fiber (metric tonnes)**	**Markets**	**Supply base**	**Control**	**Directed to customer**	**Risk**
8	Central	Good	36 000	Europe	8	Medium	Yes	Low
13	Central	Good	59 000 (virgin fiber containing)	China	13	Medium	Yes	Medium
Unknown	Local	Obstructed	36 000 in total, virgin fiber share unknown	North America, Russia, South Asia, South East Asia	Unknown	Low	Yes	Medium - High

4.4 IMS supply networks, prerequisites for traceability and identified risk (RQ1)

IMS has close to 300 co-workers around the world. Sites offices are situated in Älmhult, Helsingborg, Philadelphia, Wiesbaden and Shanghai, and there are also national purchasers represented in almost all countries were IKEA operates. Within the organisation quantification of paper supply for IKEA in total has not been made. The retail stores and other organisations choose themselves when to use the service of IMS and when to manage supply themselves. The expected development for the organisation though is that the share of products and services that are purchased centrally will increase.

The catalogue

IMS manages the paper sourcing for the catalogue. During a relatively short period of time each year 110 000 tons of FSC certified paper is purchased from a small number if trusted paper suppliers. Traceability of the catalogue paper has been a prioritized area, and the organisation has already built capacity to work with responsible paper sourcing.

Non- home furnishing paper products

As previously mentioned IMS is responsible for the purchasing of all non-home furnishing products and services that is needed for the IKEA business. This means that the organisation purchases many of the items that are present at the IKEA stores. Some of these items are also of the kind that the customer will bring it home. Some examples of highly visible Fine paper and Tissue products are:

Brochures

Buying guides

Paper banners

Receipt rolls

Paper bags

Wrapping paper

Hygiene paper

The quantification of these papers is ongoing and the souring of the fine paper products is being overlooked to investigate possible cooperation with e.g. the IoS Fine paper segment.

The assembly instructions

A paper product of great importance for how IKEA can profile the organisations' paper sourcing is the assembly instructions. These are attached to all product packages that need to be assembled and hence comes with all the famous flat packs. Today all assembly instructions ae purchased by the home furnishing suppliers locally.

Table 26. Summarizing table for relative prerequisites for traceability and risk at IMS

Supply base (no of suppliers)	Central local sourcing mix	Relative prerequisites for Traceability	Virgin fiber (metric tonnes)	Markets	Supply base	Control	Directed to customer	Risk
3	Central	Good	110 000	-	3	High	Yes	Low
60 000	Central	Obstructed	Unknown	All	60 000	Low	Partly	Medium
60 000	Local	Obstructed	Unknown	All	60 000	Low	Partly	Medium

4.5 IKEA Food services supply networks, prerequisites for traceability and identified risk (RQ1)

IKEA Food Services (hereinafter I Food) manages the business of the IKEA restaurant, the Swedish Food Market (outside the pay desks) and the bistro by the stores exits. The businesses correspond to five percent of IKEAs total turnover.

Last year the organisation experienced public attention due to lacking control over its food supply. Horse meat was found in the famous meatballs served at the restaurant and the event showed that IKEA Food Services has a considerable reputational value to the IKEA brand name.

All the food for the Swedish Food Market and for the bistro, mainly produced in Sweden, is purchased and distributed by the central organisation. The central organisation also supplies half of the food served in the restaurants over the world, of which most is also produced in Sweden. The supply base of the central organisation is constituted by 70-80 suppliers, who in their turn purchase the food packaging. The other 50 percent of the food served at the restaurants is purchased locally at the different markets from estimated 3 000 supplier, and the central organisation has little control over how these supply chains are managed.

There is no information collected and stored on food packaging by the organisation. Some information is available on centrally purchased napkins and children's bibs used for the service in the restaurant. There is also some information available on material related to yearly campaigns such as the crayfish party packages sold once a year. For tax reasons the German-Swedish chamber of commerce is quantifying the material use at different European markets. Based on general numbers for the German market and for the fiscal year FY13, the following estimations have been done on the organisations' paper supply.

Table 27. IKEA Food paper supply, central local sourcing mix, sourcing regions and sources of information

Source of information	Business	Centrally or Locally purchased	Paper segment	Description	Tonnage (metric tonnes)
Chamber of commerce	Swedish Food Market	Centrally	Corrugated board (Cardboard)	Consumer packaging	555
Chamber of commerce	Swedish Food Market	Centrally	Corrugated Board (Paper, Papp, Board)	Consumer packaging	424
Chamber of commerce	Swedish Food Market	Centrally	-	Service Packaging (mainly brown paper bags)	111
Chamber of commerce	Swedish Food Market	Centrally	Corrugated board	Transport Packaging	1353
Chamber of commerce	Restaurant	Centrally	Corrugated Board (Cardboard)	Transport packaging	672
Chamber of commerce	Restaurant	Centrally	Corrugated board (Paper, Papp, board)	Transport packaging	630
Chamber of commerce	Restaurant	Centrally	-	Service Packaging (E.g. 706 tons of paper mugs)	728
Chamber of commerce + IKEA Food	Restaurant	Locally	Corrugated board (Cardboard)	Transport packaging	672*
Chamber of commerce+ IKEA Food	Restaurant	Locally	Corrugated board (Paper, Papp, Board)	Transport packaging	630*
IKEA Food		Centrally	Tissue	Napkins (recycled fiber based)	410
IKEA Food		Locally (Canada, USA, Russia)	Tissue	Napkins	100
IKEA Food		Locally (various markets)	Tissue	Napkins	300
IKEA Food		Centrally	Fine paper	Children's Bibs	37
IKEA Food		Centrally	Fine paper	Crayfish party packages (Sourced from Germany and China)	9
		Centrally	Fine Paper	Crayfish party lantern (Sourced from China)	3
Total					**6634**

**Figure based on data on centrally purchased materials. Centrally purchased materials are estimated to constitute half the total volume .*

Traceability is naturally largely obstructed as paper is supplied to IKEA Food through local food sourcing. This paper though is thought only reaches a limited share of the IKEA customers, and its relatively small volumes.

Table 28. Summarizing table for relative prerequisites for traceability and risk at I Food

Supply base (no of suppliers)	**Central local sourcing mix**	**Relative prerequisites for Traceability**	**Virgin fiber (metric tonnes)**	**Markets**	**Supply base**	**Control**	**Directed to customer**	**Risk**
78-80 (food suppliers purchasing packaging)	Central	Medium	400 expected to have great share	European	70-80	Low	Yes	Medium
3000	Local	Obstructed	1700 in total, share virgin fiber unknown	All	3000	Low	Partly	Medium-High

4.6 Activities, resources, and company infrastructure to support responsible paper sourcing at IKEA (RQ2)

Results from investigating the organizational set up and already existing prerequisites for working with traceability and risk analysis in the different IKEA organizations reveal an already strong resource base. It comprises organizational systems and human competence in the area of securing responsible sourcing of wood based materials. There are already sophisticated intelligence systems for risk analysis designed to cover raw wood from all over the world, and there is an experienced auditor organization already distributed over the various trading areas. However the IKEA Forestry organization, owning the IWAY Forestry standard and working method, is mainly centered to support the IoS purchasing and not the other businesses.

Furthermore, implementation of strategies to secure responsibility in paper sourcing is expected to be facilitated by the sustainability agenda being embedded in the entire organization and incorporated in the company's vision. Performance is measured by *price, availability, quality* and *sustainability*, and according to the outgiving of the Global Purchase Manager sustainability is the only factor with which the organization must not compromise (pers comm. Sustainability project leader). One essential feature of the existing responsibility work is that it is integrated in the sourcing scope, and the Code of Conduct is sharp – the requirements set by IWAY are minimum requirements or opening business with IKEA

The way that IKEA purchases paper is currently developing. Within the organization the general development agenda and a number of projects are already likely to change the prerequisites, external and internal, for traceability. The generic direction of the development is towards centralized paper purchasing, and there are already projects emphasizing aggregated paper purchasing using IKEAs considerable size to gain bargaining power, or for different reasons taking control over important deals.

Furthermore some recent experiences of increasing control over responsibility in paper sourcing and mitigating risk in the current paper supply are thought to have potential to contribute to the development of similar practices in the rest of the organization. The reforming of the paper supply of some Asian suppliers, carried through during FY14, provides useful guiding in the development of future sourcing tactics in this high risk trading area.

Apart from describing some already existing resources for working with traceability and risk analysis at IKEA, and some sourcing development directions which should be considered, the following chapter will also provide some organizational descriptions to be considered in the choice of working methods and their implementation.

4.6.1 Cultural aspects to responsible sourcing and the choice of working methods

Strong commitment to responsible sourcing

Responsible sourcing as part of the sustainability agenda has been integrated in the IKEA vision of creating 'a better life for the many people' by recognising that "the many people" is a term also including the people and communities upstream the IKEA supply chain. As established by Andersen and Skjoett-Larsen (2009) the CSR concept embedded in the entire organisation is essential for the success of its implementation.

Cost consciousness

One of the corner stones in the IKEA culture is 'thrift'. This is a focus that should permeate all activities in the IKEA organisation, and include a strong focus on the purchasing price. This is certainly self-evident due to the low-price vision of the business idea – keeping the price so low that as many people as possible can afford the products. Thrift, the carefulness in resource use, is certainly also in line with environmental and social issues of the sustainability concept, e.g. by minimizing the waste of employed resources. The tough requirements of continuous cost cuttings have to permeate also the approach in working with responsible paper sourcing

Strong company culture and focus on individual responsibility

Employing organisational culture as a steering instrument has a long history within the IKEA organisation as the culture and is still considered crucial for the company's success. As Jacobsen et al. (2008) argues that organisation culture emerged as a research subject in the 1980s, the founder of IKEA wrote "The Testament of a Furniture Dealer" already in 1976, formulating and describing to co-workers of the time and to all future co-workers what values, norms and informal rules that should always be present corner stones in the daily business (Kamprad, 1976). One of the focus areas is the willingness to make decisions and carry responsibility. It is recognised that this willingness carries the risk of making mistakes. In The Testament of a Furniture Dealer it is clearly declared that it is ok to make mistakes and stand for them as this is one of the natural implications for all people who dare to make decisions and carry responsibility. *"The fear of making mistakes is the root of bureaucracy and the enemy of all evolution"* (The Testament of a Furniture Dealer, Ingvar Kamprad, 1976).

Need for ability to capture new business start-ups and secure responsible sourcing

The individual mandate and creativity is certainly governed within the organisation. Though, in relation to the incident of the earlier mentioned "mixed tropical hardwood" in a small range of the IKEA paper shop products, the phenomenon of freedom of mandate and creativity was also pointed out as a risk factor within the organization. Working methods for addressing responsible paper sourcing shall strive to create necessary routines to secure a desirable supply

chain while guarding a creative and allowing working situation for those who are to implement it.

4.6.2 The IoS matrix organisation

The Home Furnishing businesses and Business Areas

The product range is the IKEA identity and the means through which the organisation satisfies costumer demand. The products are arranged in 20 Home Furnishing Businesses (HFB) based on the customers' needs and the HFB:s are sorted into nine Business Areas (BA) known as e.g. Kitchen and Dining, Children's IKEA, Lighting, Living Room and Work Spaces etc. At each of these Business Areas there are product developers and technicians who, supported by the matrix function "Range Strategy and Design" (core process at IKEA Range and Supply), design and develop the new products to be provided to the market.

Product Requirement and Compliance (PR&C)

Related to the development of the product range there is also the support function of Product Requirement and Compliance (PR&C) with the mission to define product requirements, enable verification and monitor compliance. The organisation is also to strengthen competence regarding safety and health requirements during product development and improvement.

Purchasing organisation organised per materials and processes

The needs formulated by the Business Areas in the purpose of providing the products to the market are communicated to the *material category* of concern, e.g. Paper, and to the *purchasing organisation* which are both involved in sourcing development.

The material category aggregates material specific sourcing development of all the different Business Areas that use a particular material. Examples of material categories are solid wood, plastic, glass and metals. For each material category there is a *Material Leader*. Material leaders are commonly positioned where the greatest affair is, and in the case of paper that is in packaging. Currently, the material leader for paper works mainly with paper sourcing at IoS and at I Component.

The Sourcing Developer is the link between the HFB and the material category

Communication goes through the Sourcing Developers, who for each material category is the link between the HFBs and the matrix function of purchasing (core process at IKEA Range and Supply). In this way the Sourcing Developer works as a transmitter between the material category and the purchasing organisation. Expertise in a specific material and local knowledge at the different markets of the purchasing organisation are combined with economy of scale of aggregated purchasing.

Each Sourcing Developer manages one material category and all Sourcing Developers reports to the Purchasing Strategy Manager at the Purchasing function of the matrix. The Purchasing Strategy Manager reports to the Purchase Development Manager who in its turn reports to the Global Purchase Manager. The Sourcing Developer also reports to the Supply Chain Manager within its HFB.

The Trading Areas

The Sourcing Developer manages the purchasing of the products of his/her material scope through the *trading organisation*, consisting of the nine Trading Areas previously described

(Americas, North-, North East-, Central- and South Europe, Greater China, South- and South East Asia, and Hong Kong Trading Agent Asia Pacific). On Trading Area level there is Business Development Mangers (BDM) managing one or several material categories and these respective suppliers, and there are Business Developers (BD), who can be several per each material category and who develops the business together with the supplier.

Supplier relations

Instead of engaging in short term relationships with supplier, just buying articles, IKEA has increasingly engaged in long-term relationships where the company is developing the business together with the suppliers focusing on buying capacity. Apart from cost savings and creation of optimal conditions for production the approach has been isolated as a success factor in IKEAs implementation of the organisations Code of Conduct (Andersen and Skjoett-Larsen, 2009). An important component in this strategy is the thorough evaluation and categorisation of each supplier described in the introduction chapter.

4.6.3 Experiences from the IoS paper purchasing organisation

The sustainability agenda for paper has until now focused on pollution, water and energy

Interviewing the paper purchasing organisation reveal that there is no routine to inform or educate new co-workers, at any organisational level, on responsibility issues of the paper industry. The awareness of current risk situation of an co-worker will therefore largely depend on previous experience. As concerns traceability of raw wood this is an area suggested by the interview affidavits to face a secondary position in relation to pollution, chemical use and content in products, and the use of water and energy. Also, risk issues in relation to recycled material seem to be at the front of people's minds. This situation could possibly be partly explained by the fact that the sustainability organisation has followed up environmental conditions at suppliers for a considerable period of time.

Freedom in business development but much routines and policies to be followed

Considering the level of freedom at work, answers differ at different organisational levels of the purchasing organisations. Too few interviews on this topic have been made to generalize within the organisation. Though, among the interviewees it is a common perception at BD level that work is largely affected by routines and policies to steer the work, particularly in relation to the business. Nevertheless initiatives are encouraged and there's an open environment for discussions and the free expression of opinions. It is also expressed that there is a lot of freedom in working methods and that management by objectives is the common steering method.

A KPI driven organisation also considering soft values

Performance is measured through different KIPs e.g. on price development, though "soft values" such as trust and level of cooperation with the suppliers are also emphasised as important. Governing the good reputation that IKEA has gained as a business partner is also considered an important measurement for performance and honesty is a core virtue in this aim.

Little business contacts beyond the last tier supplier – the converter

The Chinese purchasing organisation has had little contact with paper- and pulp mills. Paper trading in China, at least for small volumes, is described as a bidding business where traceable materials are hard to get hold of. As the organisation is now raising requirements for FSC certified material it's not considered convenient to source paper through a trader. The cost of

traceable materials is then 6-10 percent higher than for other papers as an indication, not a realised purchase price though.

Need for better internal market intelligence

The organisation sees opportunity in enhancing work with responsible paper sourcing by getting less dependent on the information provided by the suppliers, e.g. on the upstream supply chain, by steering of the IKEA suppliers paper sourcing and receiving support in how to find the FSC certified volumes for paper sourcing.

4.6.4 Sourcing Developer experiences in responsible paper sourcing

No need for previous paper competence to work with business development for paper

The current situation of having no routine to inform/educate the paper purchasing organisation regarding responsible paper sourcing and risk is true also for the Sourcing Developer. To be responsible for the paper category it's not necessarily so that the Sourcing Developer has any experience from the international paper industry. Getting into the position a person has one week before taking over the responsibility of the business. The working position is characterized by a lot of freedom as the Sourcing Developer largely relies on his/her personal capabilities in developing the business. The performance in doing so will be measured partly through a number of KPIs.

FSC as risk mitigation tool and enabler of fast transformation

The present Sourcing Developer has run a reform to secure responsible paper sourcing for the new Paper Shop assortment. For the Paper Shop assortment it was decided that all virgin fiber based papers should be purchased with and FSC claim on the invoice, and all suppliers of the assortment had to get FSC CoC certification. This was a way to enable a fast reform, though FSC was also evaluated to be a very powerful tool for responsibility and risk mitigation purposes regardless of the time aspect. It was seen as the only way to get "security" in paper sourcing in China.

Support from IT tools

To support the purchasing organisation the use of one of the information systems have been enjoyed to display a warning text reminding concerned parties what materials purchased that should be FSC certified. The long term process of securing responsible sourcing will also include paper consolidation as one main feature.

Expertise on responsible wood sourcing exists in IKEA but is not connected to the paper purchasing organisation

Going through the process the existing expertise of the forestry-, sustainability- and material category organisations was very valuable. It is thought by the Sourcing Developer that as IKEA is already fortunate to own in-house excellence in responsible sourcing of wood fiber based materials development work is largely a matter of sharing necessary knowledge to the people managing the business within the purchasing organisation. "We need to find a way to reach all concerned actors within the organisation" (Pers comm., Sourcing Developer 2014-05-28). Communication between the people managing the business and the people representing the expertise in responsible paper sourcing depends on the individual today, but it is under development.

One of the most important outcomes of the work with reforming the paper sourcing for the Paper Shop assortment is the increased awareness among different organisational actors. Apart from this the new experiences also provide a number of important lessons learned for the future development of responsible sourcing practises.

Cost reduction was achieved by paper consolidation despite the new FSC requirement

Changing into FSC certified paper naturally comes at a cost. The cost though was not as big as expected in the Paper Shop case, actually a considerable cost reduction was accomplished in the sourcing reform. The reduction was not as big as planned before the responsibility target became a priority. The purchasing of small paper volumes demands sourcing through traders, and lacking availability of certified material. If paper purchasing can be done in an aggregated manner certified materials are available and can be purchased directly from the paper mill. Recognising this opportunity, and also the potential of improving the business by taking advantage of the position of a bigger paper customer, the IoS Fine Paper assortment is investigating opportunities for working together with IMS for common paper sourcing. Reaching sufficient volumes it's easy to access the certified volumes, and contribute to the increased demand for responsible paper in certain regions.

FSC CoC certification can improve material management in production

The suppliers who have got certified in the process have naturally carried costs for doing so. By getting CoC certified the suppliers gain control over material flows in their own production, which has potential to increase efficiency. There is also extra administration to keep track of the certified materials, incentivising the switch to only handling certified materials to be considered by some of the suppliers. It is a way to decrease both the administrative burden and to decrease risk.

4.6.5 Paper consolidation projects

Andersen and Skjoett-Larsen (2009) isolates the fact that IKEA, benefitting from its size, is commonly an important business partner to its suppliers as an important success factor in the implementation of the Code of Conduct. Complying with the tough requirements set by IKEA is also thought to be a good reference towards other customers. As suggested by interviews on the paper organisation it might not be true for all paper segments that IKEAs paper sourcing reaches levels where the organisation actually becomes an important customer.

There are two ongoing paper consolidation projects within IKEA, enabling purchasing of greater volumes for each paper quality, and also integrating in, and taking control over, the paper sourcing. One of the projects focuses on Fine paper and is carried out by IoS and IMS in collaboration. The other paper consolidation project is carried out at I Component, where the number of paper qualities used in packaging is reviewed to see if the supply network could be simplified.

Paper consolidation has been described as something that happens periodically as it gets recognised that paper qualities have proliferated. Still, it has not been done with the purpose of supply network simplification to increase traceability.

4.6.6 The IKEA WAY of purchasing forest products

The basic concept of IKEAs Due Diligence system is the IKEA code of conduct IWAY. IWAY stands for the IKEA Way of Purchasing Home Furnishing Products. It contains a Forestry Specific Section that defines the IKEA requirements on wood raw material in terms of minimum requirements and what are considered more sustainable, and hence preferred,

wood sources. Related to the IWAY Forestry Specific Section there is a number of steering documents e.g. to guide suppliers and auditors in their implementation of the standard. The steering documents also specify roles and responsibilities at IKEA, IKEA suppliers and at IKEA sub-suppliers. The bottom line of the organisational set up for IWAY Forestry is that the consideration of the forestry standard is fully integrated in sourcing decisions at all organisational levels – which is clearly established in the steering document. This in itself might not guarantee that the careful consideration of the standard is always taken, though it clearly defines responsible wood sourcing as something that is part of the affairs, and not e.g. a feature of a parallel sustainability agenda.

The global forestry manager owns the forestry working method, and forestry specialists and -managers are responsible for forestry related risk monitoring, evaluation of wood origin information and approval of the suppliers' wood procurement plans. The forestry team is also responsible for supporting suppliers in their implementation of the forestry IWAY and increasing the shares of more sustainable sources, and for auditing. Though, the responsibility for ensuring that individual suppliers implement and maintain IWAY Forestry according to the working method rests with the purchasing organisation. The forestry organisation also provides continuous training sessions in responsible wood sourcing to the personnel working with purchasing in this area.

IKEA has a history of many corporate functions directed towards the operations of their suppliers. Social and environmental conditions are only examples of areas in which suppliers might get support in their development (Andersen and Skjoett-Larsen, 2009). This inclusive approach is adopted also in the forestry IWAY working method where forestry specialists and managers should support suppliers in implementing IWAY forestry. It is also specified what will be the business implications at non-compliance, what the conditions and time frames are for corrections of violations and at what point a non-complying supplier will be phased out. Announced as well as unannounced audits are performed at suppliers and sub-suppliers, and they are carried out both by the IKEA foresters and by third party organisations. The auditing of sub-suppliers is considered the most complex and time consuming part of the auditors work.

There are a number of tools and information systems connected to the forestry Due diligence process and the securing of overall legal compliance. Central among these is the Wood Tracing System (WTS). WTS is a web based system for managing, visualizing, and analyzing data from suppliers and storing data from the forester's audits. The system can be used for risk evaluation based on species and geographical origin of raw materials. Intelligence on risk aspects at sourcing areas all over the world is continuously developed by IKEA with the support of consultants and stakeholders such as FSC, WWF and Rainforest Alliance.

Based on collected data on sub-suppliers, type of materials, species used in the products, the species origin and wood qualities a report called Forest Tracing Survey (FTS) is produced three times a year. The FTS is to be verified by key actors of the purchasing organisation.

In the WTS the IKEA suppliers report their Wood Procurement Plan (WPP) for all wood used in IKEA products. Data reported is e.g. which sub-suppliers will be contracted, whether it's a long term business relation or not, volumes, tree species, origin of raw wood, certification status etc.

In the WTS the foresters Wood Supply Chain Audits are also reported. These audits are mainly done in high risk areas.

ECIS and EDI are two invoicing systems where the IKEA suppliers can make their statements of compliance and FSC certification claim.

'Connect' is IKEAs general digital document archive where suppliers upload a variety of documentation to demonstrate compliance with product quality requirements and other regulation, and also connect this information to article numbers. Suppliers sourcing wood from high risk areas can upload relevant documents to demonstrate legality. Currently an integration is being built between WTS and Connect to support verification and control of the reported information.

The general IWAY auditors, not belonging to the Forestry organisation, report to the Supplier Review Data Base (SRDB). The system is not yet used by the forestry organisation.

Pre- and post consumer reclaimed ,or recycled, wood and FSC certified wood are preferred by IKEA due to being acknowledged as more sustainable sources. Targets for what share of the total purchased wood volume that should consist of more sustainable sources are set and followed up continuously. What is measured is the share of the products total wood content. FSC Controlled Wood does not count as more sustainable sources, hence with a FSC mix certification, it's the wood certified as sustainably managed that is measured by IKEA.

Due diligence as practised through certification is seen by the IKEA forestry organisation as a best practice, and is used in the IKEA Due diligence system as a main element. For geographical areas with a high risk charge in respect of unacceptable wood sources, targets for share of more sustainable sources are significantly higher than in low risk sourcing regions, which reflects how certification can be used as a risk mitigation strategy. High risk regions are also addressed by more frequent audits than other areas.

More about Connect

PR&C gathers various functions among which there is a document archive called Connect. In Connect documents verifying product qualities, inclusively legal compliance, are uploaded by suppliers and trading technicians. Regarding plant materials, the US Market has a long history of requiring species specification of products material contents, which should be documented and declared at the custom according to the Lacey Act, previously described. Regarding the Lacey Act requirements the requirement normally is applied also to products not going to the American markets, as it would otherwise be an obstacle in logistics. Corresponding documentation is uploaded in Connect by the suppliers and should even be connected to the article numbers of concern. The suppliers invest on average one hour per day on approving that they live up to all requirements. Though, there is no current routine for control and verification of the information uploaded, and checking the current information status for a few chosen paper suppliers and articles suggests that information assembled in Connect is inadequate for the purpose of securing raw material traceability. Problems have been identified also by the IWAY Forestry organisation establishing that species claimed to be used by a supplier according to information uploaded in the Connect system differs from information reported and verified by the organisation exercising due diligence, as previously described.

4.6.7 Other findings

Presently there is no standardized system at IKEA measuring and assembling data on the product material contents. The closest to such system is the Technical descriptions of the IoS products. These technical descriptions are stored as pdf-files, and material contents may not be calculated from these descriptions in a convenient manner. The need for a system where

material flows can be quantified and controlled has already been identified at the organisation. Development of such a system is expected to take several years from now.

There is little insight among paper purchasers at the organisation about the work of other paper purchasing units.

There is an obvious consistency regarding that responsible sourcing and traceability in paper supply has to be a common concern of all people working with the paper sourcing.

4.6.8 Summarising table of activities, resources, and company infrastructure to support responsible paper sourcing at IKEA (RQ2)

Table 29. Summarising table of resources, capabilities and company infrastructure to support work with responsible paper sourcing, traceability and risk evaluation, and/or to be considered for developing this work

	Activities, resources, capabilities and infrastructure found to support work with responsible paper sourcing	**Features of the organisation to consider for working methods and resources, capabilities and infrastructure to support the methods**
Infrastructure	Sustainability and responsibility is embedded in the company vision and in the entire organisation	
Infrastructure		Thrift is a central part in the organisation culture and essential to fulfilling the company vision
Infrastructure		Willingness to take responsibility and make decisions is a core feature in the organisational culture
Infrastructure	Material category assembling expertise on paper sourcing and is to connect different organisational units purchasing paper – currently largely limited to IoS and I Components	
Infrastructure		Management by objectives and standardisation of results common way of steering and coordinate work
Infrastructure		Supplier evaluation with material specific criteria
Infrastructure		Scattered paper purchasing, little communication between different organisations units purchasing paper
Resources	Awareness among parts of the purchasing organisation about the risk situation in the paper industry	
Resources		Purchasing organisation lack training in responsible paper sourcing traceability and risk related to paper supply
Capabilities		Expressed need at purchasing organisation for support in purchasing FSC certified materials
Resources/ Capabilities	Experiences from reforming Asian paper sourcing to low risk sourcing by certifying IKEA suppliers and choosing more sustainable sources.	
Resources	In-house expertise, best practice, in responsible sourcing /due diligence for wood based materials.	

Resources	Routines for training sessions in responsible sourcing of wood based materials with purchasing organisations (of solid wood and wood based board)
Resources	Auditing organisation for CoC in production concerning wood based materials
Resources	Risk evaluation system for wood sources
Resources	Data system for material and traceability reporting and follow up
Resources	Data system able to connect compliance data with article numbers
Resources/ Capabilities/ Infrastructure	System in place for targets, quantification and follow up of more sustainable sources by quantifying the articles input. Incl. Risk mitigation through higher targets for more sustainable sources at high risk markets

5 Analysis and discussion

5.1 Methods for working with responsible paper sourcing traceability and risk at IKEA (RQ3)

RQ3: Based on RQ1 and RQ2 results, which methods are applicable for IKEA to work with traceability and risk evaluation and what organizational activities, resources, and company infrastructure are needed to support the methods?

- *Do preferable methods differ between paper segments and sourcing regions?*
- *Are there consequences for SCM strategies and tactics in general due to changes in product- and information flows in purpose of enhancing traceability?*
- *How can the company's expansion be considered in strategies for responsible sourcing?*

The three methods to be evaluated are:

- *Increasing shares of more sustainable sources, FSC certified materials and recycled fiber*
- *Due diligence/code of conduct*
- *Managing prerequisites for traceability.*

5.1.1 Managing prerequisites for traceability

As shown by the large number of suppliers purchasing paper for IKEA and large number of paper grades used by the IoS suppliers one of the main findings from describing IKEA paper supply networks, at a detailed and overarching level, is that the networks are very complex already at the first tier suppliers. The complexity of IKEA paper supply networks is not only caused by the set-up of the paper industry but also by the scattered way in which paper is purchased by different IKEA organisations. This obstructs not only traceability for a responsible souring purpose but most probably also optimization of the paper sourcing, as information about paper producers is not kept readily available to the IKEA business. If there is potential in having a business dialogue based on the total business with one of the paper producers of the consolidated industry, the current lack of overview will not allow leveraging from this. In the case of IKEA, work with responsible paper sourcing supported by traceability will largely have to build on how prerequisites for traceability are managed and developed. Less network complexity in itself is thought to lead to increased traceability, but this can also affect relations with suppliers and sub-suppliers in a way that fosters transparency. Traceability reporting run through the current, scattered, organisational set up for purchasing paper would lead to an information overload which would unlikely be supportive to the organisation.

A main finding from describing internal prerequisites to work with responsible paper sourcing is that the development direction of the paper sourcing at IKEA has potential to improve the organisational set up for traceability and company control. In the rapidly expanding company it has already been acknowledged that increased control over the upstream paper sourcing, volume consolidation and improved business coordination have potential to contribute to the mission of keeping cost low in all parts of the supply chain. In line with the argumentation of Porter and Kramer (2006, 2011) increased engagement in the paper sourcing and upstream supply network should serve the core business as well as the purpose of responsible paper

sourcing and reputational risk mitigation. In practice it means that responsible paper sourcing can be used as a change driver for the development for IKEAs paper business.

This approach has the potential to offer the company a simplified paper supply network with increased control and aligned policies and working methods for responsible paper sourcing. Hence, this aim needs to be lifted to the agenda of all paper purchasing to further incentivising the development direction and securing the opportunities generated by this development will be deployed.

According to recent experiences made by the IoS purchasing organisation, reported in the interviews, consolidation of volumes increases availability for FSC certified material at acceptable prices due to the purchasing of larger volumes of each paper quality. Larger volumes allow purchasing directly from the paper mill. Fewer paper qualities as well as purchasing directly from the paper mill decreases information intensity and increases traceability. This is a work-effective approach, particularly when due diligence has to be exercised. The overview of different paper qualities used in the IoS paper products, which has been carried out in this study, confirms potential in decreasing the number of different paper qualities used. The business potential in paper consolidation, already recognized by the IoS, I Component and IMS purchasing organisations, encourages supply network simplification to become a central feature in an organisational set up for working with responsible paper sourcing at IKEA, and the gain is not only the empowerment of IKEA as a customer to the paper industry and increased level of control, but also the support it gives is to availability of FSC certified material at a lower price.

5.1.2 More sustainable sources

The mapping results reveal that a large share of production capacities upstream the present supply networks are already FSC CoC certified. A finding in line with recent statistics from FSC and CEPI (Hontelez, 2014). Production capacity which output is available also at risk markets, even if not situated there since pulp and paper are global commodities. Combining these findings with positive experiences from supporting Asian IKEA paper product suppliers in becoming FSC CoC certified suggests there is great potential in getting entire paper supply networks certified and purchase FSC certified products. As paper based materials will get incorporated in IKEAs sustainability reporting on the use of wood based materials, paper might even have the potential to increase the share of more sustainable sources faster than other materials. The setting of targets for shares of sustainable sources should be done giving priority to geographical regions with a higher risk burden, copying the model used for solid wood and wood based board which is used today. As suggested by Chopra and Meindl (2013) the risk mitigated should be balances by the cost of mitigation. At the same time it should be considered that availability of certified materials at risk markets is likely to be advantageous compared to the solid wood market and therefore fast action to secure responsible paper based materials could be reasonable. The potential for making favourable paper purchases at e.g. the stagnating European paper market, where FSC materials are highly available, should also not be undervalued.

More sustainable sources offer strong, and potentially relatively cheap, risk mitigation. The larger the shares of FSC certified or recycled material there is, the less effort is takes for IKEA to control and secure responsible sourcing.

Requirements for more sustainable sources support risk mitigation as paper will continue to be purchased locally at various markets, excluding this purchase from being part of the consolidation agenda. For the local purchase it is not meaningful or realistic to aim for tracing

of wood sources. In such situation, using a certification scheme remains the only solution among the tools for responsible sourcing that this study evaluates. However, there are currently also very limited possibilities for verification of business requirements at the local purchasing functions, including a potential future requirement for FSC certified materials. Work should anyway start, and then from the end to set and roll-out the requirement for more sustainable sources and create awareness within the local purchase as part of the larger responsibility agenda within the IKEA world. As a next step, routines for follow up can be considered.

There is naturally also the option of considering these volumes small and exposure towards the customer so limited that the choice becomes to "stay low", or make these volumes part of the next step in the development of responsible paper sourcing. Here, the final decision must involve the cost of mitigating a certain risk load.

5.1.3 Due diligence

The study shows that resources to collect and verify information on raw material sources, including the matching of this information with article numbers of concern, has to be made available within the organisation to develop paper" due diligence. Personnel resources and knowhow for the design of this work is available in the present Forestry organisation. The system should include track keeping of the material content in quantitative terms for all paper articles. The extension of work effort for due diligence will largely depend on how much the supply network can be simplified and paper purchasing coordinated, and how large the share of more sustainable sources can become, meaning to what extent IKEA paper product suppliers become FSC CoC certified and able to deliver FSC certified products.

The full exercising of Due Diligence must be urgently prioritised to paper in the Home Furnishing articles as these are formally imported by IKEA to the EU and therefore are in scope of the European timber regulation (EUTR) requirement.

Cost calculations and insight in the paper industries business is necessary to draw the boundaries of how due diligence efforts should be distributed. At a generic level the findings suggest that paper purchasing and responsible sourcing agendas need to merge to be optimized for the organisation. In this optimization, evaluation of alternative ways of sourcing paper has to include consideration of costs for alternatively complex due diligence solutions. This calculation can be done by IKEA, but also by the IKEA supplier if traceability and documentation requirements to secure legality are communicated and understood well enough.

5.1.4 Resources, capabilities and infrastructure needed to support the methods

Assessing the organisational resources, activities and infrastructure generated understanding in the prerequisites for developing work with responsible paper sourcing. Not surprisingly many of the supporting factors specified by Seuring and Müller (2008) to be crucial for SSCM in the purpose of reputational risk mitigation can already be identified within the organisation, at a generic level and in the case of solid wood and wood based board. Among these: company overlapping communication, management systems, monitoring, evaluation, reporting and sanctions, training/education of employees and suppliers and integration in the company policy. Going forward, these factors need to be made reality also for paper based materials.

The assessment of this study confirms results of Andersen and Skjoett-Larsen (2009) and Holmsten-Carrizo (2013) of IKEA being an organisation setting clear sustainability targets based on clear criteria, which are systematically followed up. And, that work with

implementing the company code of conduct at the suppliers and sub-suppliers is well developed at the company.

IKEA owns expertise and a sophisticated organisational set up for responsible sourcing, due diligence and risk analysis and management in the area of wood based materials. It should be noted though, that the capability of securing responsible wood sourcing belongs mainly to IKEA of Sweden, whereas the work is not as well developed in IKEAs other purchasing organisations. Paper is a material around which the different organisations will have to increase their cooperation as paper from all IKEA organisations was found to reach the IKEA customers.

Based on the assessment of external and internal prerequisites for IKEA to work with responsible paper sourcing it was found that essential to the development of working methods was increased communication between paper purchasers through a communication network, training in areas of traceability and risk within the paper industry and common paper industry intelligence including responsibility evaluation of market actors. A common and consistent approach for responsible paper sourcing will additionally have to be based on a paper specific standard for responsible sourcing and an IKEA-common steering model, to secure ownership and consistency. The standard is the fundament defining the direction of the work which should be carried out at the different, and decentralized, purchasing organisations, and this is what should be managed centrally to ensure common minimum requirements and consistency (Epstein et al. 2006).

The steering model needs to lift traceability and reputational risk to the strategic and tactical agenda of the IKEA paper purchasing organisations. The steering model needs to address paper purchasing organisation-overlapping strategies as well as strategies of individual organisations. It should ensure that the current development direction, including increased centralisation and control to improve the paper business, aligns with the goal of increased traceability in the purpose of responsible paper sourcing. Space has to be made for developing suitable operational solutions at each purchasing organisation.

Shared paper industry intelligence

As paper purchasing at IKEA has a history of being scattered. Separate units of the organisation purchase paper isolated from each other and paper purchasing at IoS is in fact managed by the IKEA suppliers. Therefore, the bargain power of the large sized company and intelligence in the paper industry existing in various parts of the organisation have not been utilised. Recent activities at IoS, IMS and I Components suggest an increased interest in engaging in the paper sourcing upstream the supply network. IKEA therefore has to develop its market intelligence, and then preferably also include intelligence of what actors, e.g. group of companies and individual pulp- and paper mills, who are reliable for souring in terms of traceability and responsibility manners, e.g. by maintaining a register. The register needs to be shared between the different purchasing organisations as part of enabling a common and consistent standpoint on IKEAs part regarding the paper industrial environment.

Paper purchasing communication network

The different purchasing organisations all purchase paper that will reach the customer, at the store or at the customers' homes. Overall, collaboration and overarching strategies between the different organisations (IoS, I Component and IMS) in paper purchasing and consistency in what is communicated to customers as well as suppliers is therefore particularly relevant for paper in comparison to most other material categories. The situation demands a certain level

of standardisation in how the company views and manages responsibility issues in paper sourcing.

Results reveal there is a lack of communication between the different parties involved in paper product sourcing as in best case only a few people can overview all the people or functions involved in paper sourcing. An information network needs to be created allowing information sharing and updates on responsible paper sourcing including policies to reach out to all who are involved in paper purchasing.

The network needs to be structured in a manner sustaining it even as individuals come and go. It could serve as a platform for the central organisation to inform, but also for knowledge sharing between organisational units, e.g. through what is referred to by Jacobsen et al. (2008) as "horizontal collaboration arrangements". A communication network has great potential in standardising and coordinating the work with responsible paper sourcing and how the challenges of traceability and risk can be addressed.

The consolidated paper industry does motivate cooperation between the different IKEA organisations. Both because the bargain power can be enforced by aggregating the volumes sourced. But also as there is great probability that different purchasing units will actually purchase paper from the same supplier, unaware of each other, undermining the responsibility requirements made by any of the parties if not consistent.

Training, incentives and clear measuring of performance

Given that paper in the Home Furnishing products falls under the Due Diligence requirements of European timber regulation, one of the first stands that have to be made at IoS is whether to incorporate paper as part of the already existing set up for the Forestry Section of IWAY (owned by the forestry organisation), or let policies for paper purchasing being owned by the material category paper. Based on the current capability of the Forestry organisation and the considerable development need of the paper purchasing organisation to meet the legal requirement already valid, the former alternative appears to be the realistic way forward.

Irrespectively of the ownership of the requirement formulation and implementation tools, the business organisation, and not the forestry organisation, will carry the responsibility of securing the requirements set towards the supply network can be met, and there are some features of the organisational set up which should be considered.

The paper purchasing organisations need to receive training and individuals need to be brought to a common basic level of understanding of the aim for responsible paper sourcing. Each individual should be offered understanding of why traceability of raw material is important, for IKEA and for generic sustainability reasons. Some of the important issues to be included are what risk factors actually exist in the paper supply network, how these risks can be translated into their practical origin (illegal logging, loss of livelihood, loss of biodiversity etc.) and what assessable and immeasurable costs these risks can imply to IKEA. The training should also include presentation of the tool box available at IKEA for addressing the issue. Additionally training is a means to avoid sub-optimising, e.g. as management by objectives through Key Performance Indicators (KPIs) is applied for coordinating and standardising the work. By individual understanding of the aim and basic facts freedom and courage to make adequate decisions should be created and keep people motivated.

Steering towards more sustainable sources and the avoidance of high risk sources shall be done through management by objectives at the purchasing organisations. It should integrate the traceability of virgin fiber based materials and the share of more sustainable sources in

KPIs of the purchasing organisation as well as in supplier evaluation and ranking. This approach has proved to be successful by the solid wood and wood based board segments. Traceability performance can be measured as fulfilment of the Forestry section of IWAY requirement if paper traceability requirements are integrated here, and more sustainable sources performance can be measures if paper purchase to IKEA is quantified and reported periodically by the suppliers.

5.1.5 Considerations for future expansion

The core of considering responsible sourcing in the company's expansion is to integrate traceability and risk perspectives in the opening of new businesses, not least in new markets. Being pro-active in understanding new suppliers' ability to keep track of materials and willingness to engage in a transparent supplier-customer relationship with IKEA is crucial here and should be part of the supplier evaluation and supplier start up routine. At new markets counter-purchasing in terms of what shares of e.g. materials which should be sourced locally in offset to get access to the new market has to be considered from a responsible sourcing point of view. For example, a consideration could be what tier of the supply network that the agreement covers. If the agreement cover only the last tier processing, e.g. the converter, flexibility for responsible paper sources is still kept.

5.1.6 Focusing on IKEA of Sweden

Responsible paper souring in IoS must use all methods evaluated

The work with traceability and risk at IoS should make use of all three methods that have been evaluated in this study. Results from the detailed mapping of IoS paper supply reveal potential in decreasing network complexity and increase the employment of already FSC certified production capacity upstream the supply network. As IoS works specifically with the Home Furnishing articles commonly being placed by IKEA on the European market, this is where full exercising of Due Diligence for wood in paper must be implemented to ensure IKEA meets the legal requirements or the European timber regulation.

Integration of paper into the Forestry Section of IWAY

The already existing organisational set up for IWAY Forestry would allow the amalgamation of paper into the working scope and is suggested by this study to be the natural way forward to secure that Due Diligence can be exercised according to the requirement of EUTR. Several practical issues could be handled through this set up, such as reporting of raw material information used for risk evaluation, e.g. species, origin, and sub-suppliers and when necessary validate the reported information by auditing.

The initiation of periodical reporting of paper traceability data also has the potential to be an important support tool for better understanding of the own paper purchase, and development needs of the paper supply network towards simplification, increased control, better business decisions and how to best secure responsible sourcing.

IT system development to support paper in Forestry Section of IWAY

Central to this approach is the fact that the Wood Tracing System, seemingly easily, can be modified to also handle the reporting of paper material, including specification of paper quality descriptions according to the same approach used for the mapping carried out in this study. Individual Round Wood Equivalent transformation factors can be chosen for each paper quality, to produce relevant data for IKEAs external Sustainability report. Furthermore there has already been a development project carried out which is thought to enable the connection

of traceability information to each article number. This will be done through the information sharing between the two IT systems Connect and the Wood Tracing System.

A long term need for a harmonised material management system

Generally IoS is in need of harmonized traceability systems covering not only wood fiber based products but also other material categories, including systems for quantifying material use. This kind of systems is expected to be available within the organisation some years ahead. In the meantime the different material categories will have to manage these matters separately. In this context it should be considered making use of existing systems as far as possible for reaching aims of traceability and material quantification. At the later stage, when information handling will be harmonized within the organisation it can be expected that the process will be smoother if information handling has already been aggregated.

Fast transformation to FSC certified material is possible in High risk markets

For high risk areas, such as in the trading area of Greater China, recent experiences from reforming paper sourcing to only certified materials at an acceptable price suggests aggressive targets for more sustainable sources for the cause of risk mitigation. The availability of market pulp supports availability of certified materials in many markets, other than from where the pulp wood originates. FSC as a system promotes transparency in the supply chain and could support the introduction of new traceability requirements for paper set by IKEA.

Decreasing network complexity can be done in several ways

Adjusting the network complexity of paper supply can be done in different ways: decreasing the total number of paper qualities used in the articles by substituting some paper qualities for others, by steering paper sourcing of certain paper qualities towards chosen paper suppliers and by cutting out middle hands from the supply chain. Paper consolidation is considered a powerful tool here as it increases purchasing and bargain power for desired materials.

The steering of paper purchasing can be done in different ways. Paper suppliers can be nominated/recommended to the IKEA suppliers, or the purchasing of paper can be an integrated activity at IKEA. Both options calling for an internal resource for evaluation of paper producers and keeping register of paper producers and their capabilities and product portfolios. At the fine paper segment possibilities for cooperation between IMS and IoS in paper purchasing is already being investigated and the two organisations both have experience in managing the paper sourcing.

Supply network simplification and transformation to FSC is preferably done simultaneously and requires better understanding of the paper industry

Like previously described, there are strong arguments for consolidation and increased control as certified volumes are easier to purchase if volumes are greater, as the volumes can be purchased directly from the paper mill. This shortens the supply chain and increase cost efficiency in purchasing certified material. The reforming into only certified materials in the Paper Shop assortment proved that this can be done without increasing the cost of raw material – even though the pulp is purchased all over the world and the final product is converted in China. And, the cutting out of middle hands is certainly in line with the concept of purchasing instead of trading, which IKEA strives for. Irrespectively if the paper is purchased by IKEA or by the IKEA supplier market and product *intelligence on paper and pulp producing companies should be owned by IKEA*. The information should be used by the

people of the purchasing organisations, contribution to a general increase in understanding of the industry.

Responsible paper souring is an argument to stay with a consolidated paper purchase

Consolidation of paper qualities has been done at IKEA before, though seemingly not for traceability purposes. It is a process that could potentially be involving product development as well as the purchasing organisations work with suppliers, based on consciousness of the affect paper quality content have on traceability prerequisites. Potentially it could be imposed to the material category for paper to periodically overview the variety of paper qualities used in the articles and in packaging. The overview should include evaluation of requirements for maintaining traceability and whether cost savings could be done by further consolidation.

Already available FSC certified production capacity upstream the supply chain

Supporting IKEA paper suppliers in getting certified by FSC CoC proved to be a successful approach for Asian suppliers addressed during the spring 2014. Naturally there is a one off cost getting certified and later on continuous lower costs for getting re-audited, though there is also great potential for cost savings as a result for getting better control over material flows in production. Being an IKEA supplier, committed to the high requirements imposed by IWAY has been pointed out as a sales argument for suppliers towards other customers than IKEA (Andersen and Skjoett-Larsen, 2009). Getting certified by FSC CoC naturally has the potential of similar benefits for the suppliers as they approach other costumers. The assessment at IoS showed that 13 of the 24 suppliers providing information for the study was already certified by FSC CoC, six declared that they could be certified within two years, signalling willingness to get certified, and only five suppliers were neither certified today nor declared that they could be so within two years. Two of these are supplying only recycled fiber based materials.

Due diligence at IoS and how workload is decreased through FSC certification

An alternative to getting the supplier certified by FSC CoC is to request from the supplier that all virgin fiber based papers used in the IKEA products should be purchased with an FSC claim. When auditing such supplier it would largely be a matter of reviewing the documentation of the FSC claims for the papers and making sure there is a system in place to keep track of the papers used in production. At certifying an IKEA supplier, the cost of doing so must be seen in relation to the volumes supplied to IKEA, to the risk burden at the geographical area, and to the alternative cost of auditing the supplier more frequently. The possibility that the cost of certifying the supplier might be carried also by other customers than IKEA, having interest in buying certified materials should of course also be considered. In-house auditing is considered the most expensive way of securing traceability. When additional paper supply chain actors get certified the workload carried by IKEA decreases.

According to the EUTR FSC certified materials does not substitute a corporations due diligence process responsibility. Still, FSC certification is thought to develop into a central feature for risk evaluation. What this means to IKEA is that irrespectively of all virgin fiber based papers being certified by FSC, systems still need to be in place to collect and verify relevant information. The reasoning on decreased workload though can be clarified through the Figure 14.

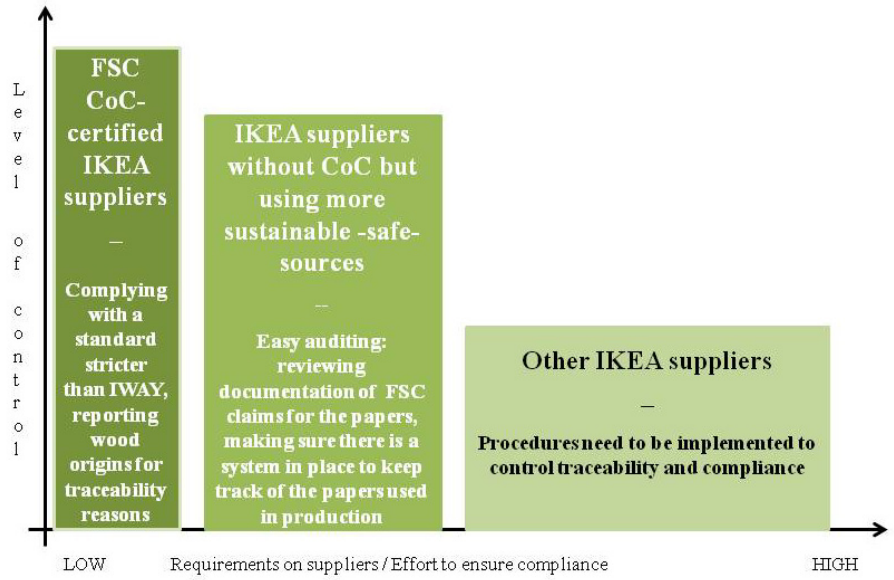


Figure 14. Conceptual figure clarifying how the in-house workload for securing responsible sourcing is decreased by the use of FSC certification.

Considering features of paper segments

The tissue segment purchased at low risk markets with an almost entirely FSC certified production capacity invites to making FSC certification a "hygiene factor" in paper purchasing. A reservation should be made though as tissue is the segment in which demand for FSC certified materials increases the most according to FSC and CEPI statistics, which might affect future costs.

In the solid paper board and corrugated cardboard segments the shares of virgin fiber based papers is currently smaller than for the other paper segments. Though, the spreading of a paper grades made of wood from unacceptable and controversial sources (identified through the finding of high risk actors in the supply chain whom IKEA has chosen not to work with) at an article level implied a great risk burden of these small virgin based paper volumes, motivating full certification of virgin fiber based materials, at least when sourced from high risk markets.

In the fine paper segment it's the great share of virgin fiber in combination with complex supply networks and large shares of production being located at high risk markets that implies the employment of FSC certifying the entire supply network. For example for books and posters sourced from low risk markets, e.g. within EU, the increase in shares of certified volumes should be done successively in a cost conscious manner.

5.1.7 Focusing on IKEA Components

As I Components is in the process of centralising the packaging sourcing there is an advantageous situation to develop practices for responsible sourcing. Centralising the paper sourcing will improve the prerequisites for traceability and the level of control will increase. To fully leverage the potential of this development there are two major features that should be considered:

1) As the organisation works with nominating the paper suppliers of the packaging paper suppliers should be evaluated according to the ability of keeping track of materials, to provide more sustainable sources, and the willingness to develop a transparent business relationship with IKEA.

2) When developing centralised paper purchasing traceability and risk management have to be lifted to the agenda of long term planning. Integrating in paper sourcing and nominating packaging suppliers should preferably prioritize high risk markets first.

I Components recognize the risk of losing capacity at the Asian market if traceability requirements on certain actors get too demanding (pers comm. Project meeting August 2014). Paper consolidation and integration in the upstream supply chain by the managing of the containerboard business can support a stronger negotiation position and support closer business relations. Tiers of the supply network can be cut out and transparency has potential to increase.

As long as I Components does not cover all containerboard sourcing for IKEAs packaging suppliers the avoidance of unacceptable material is difficult to achieve without FSC certification to secure Chain of Custody. Commitment to a responsible supply chain has to address also back-to-back agreements with concerned suppliers and FSC will cover for all materials used fulfilling at least IKEA minimum requirement for wood. The request for avoidance of certain sub-suppliers has proved to be insufficient to secure responsible sourcing at a, by IKEA, desired level in Asia.

As an immediate action, further mapping of the pulp mills currently supplying the nominated paper mills is recommended. In this manner high risk actors can immediately be identified and excluded from the supply network. However, the long term solution must set clear requirements on the wood based materials as such. As packaging is not in scope of the European timber regulation, there is a possibility to work solely with FSC certification to secure responsible sourced material, without exercising full Due Diligence, at least as a start.

5.1.8 Focusing on IKEA Indirect Materials and Services

IMS is a particularly interesting paper purchasing organisation from the aspect that IKEA has committed to provide consistency towards the customers regarding responsible paper sourcing. Under the scope of IMS paper products, paper is purchased both by the IMS organisation, larger volumes at centralized departments and smaller by IMS representatives around the world, and by e.g. retail stores themselves. IMS as an organisation is scattered and paper sourcing is managed by its different departments might be done completely independent from each other, creating a situation where consistency is hard to achieve. To address this situation an IMS specific communication network for paper purchasing is suggested. The organisation already owns great capabilities for developing traceability at a benchmark level, and competences and experiences from this work should of course be employed by other parts of the organisation, and also by other IKEA organisations.

For non-furnishing paper products purchased locally by IMS representatives managing relatively small businesses or by retail stores managing procurement, guidelines for paper procurement need to be developed. An example could be that these actors could choose between purchasing material only involving more sustainable sources or request the deal to be made by the IMS central organisation.

At IMS high profile paper material has to be addressed immediately. Paper sourcing is developing at IMS, just as at the other IKEA organisations, towards increased centralizing and control which is motivated from a business perspective. The responsibility, traceability and risk perspectives are not contradictory to this development but rather further enhance it. Though, as previously concluded, if opportunities are to be acted upon, the awareness within the organisation is a must. A low hanging fruit for increasing responsible paper sourcing at IKEA, through the work of IMS, is the aggregation of the paper volumes sourced for the assembly instruction – this paper reaches all customers all over the world.

5.1.9 Focusing on IKEA Food Services

At IKEA Food Services great efforts have been made to develop the way the organisation works with traceability in their food supply. Most probably this is the organisation that will end up with one of the greatest capacities and competences within the traceability area in the coming years. The recommendation to the organisation is to start the capacity building on traceability for paper supply. Prioritized for this work should be the consumer packaging, 980 tonnes and service packaging, 110 tonnes, in the Swedish Food Market, and the Service Packaging at the Restaurant, comprising 730 tonnes. This paper, including the packaging which is in contact with the food, is likely to include a high share of virgin fiber. This is the paper that is directed to the customer profiling the paper material at IKEA Food.

The paper napkins which are centrally purchased are recycled fiber based, which has to be considered "safe". As for the other estimated 400 tonnes of paper purchased locally at different markets, it is definitely relevant to look into what material they represent.

Other paper products directed to the IKEA costumer, profiling IKEA Foods responsibility in paper sourcing is the crayfish party packages and lanterns, and the children's bibs. These papers don't constitute big volumes of paper, but they're highly present and visible to the customer.

A natural way of starting the development process towards controlling responsibility in paper supply is to map what actors and paper materials actually exist in supply networks today. Only posing the question to the internal organisation and to the suppliers creates an important awareness of the topic and possibly also readiness towards future increased requirements. This is a way of creating the understanding of future capacity needs.

If IKEA Food central organisation is to be in control of responsible food sourcing the rapidly expanding organisation it is not credible that single retail stores over the world will purchase their local foods independently from each other in the future. As the purchasing organisation is developed to secure responsible food sourcing, it is strongly recommended to integrate the packaging issue immediately rather than considering it "priority two" and wait until the work with food sourcing is done. This is an approach that will allow coordination and cooperation between the functions supporting traceability in food and paper respectively, and the responsible paper sourcing requirements can also here be simplified to solely a requirement for FSC certified material.

5.2 Discussion

5.2.1 Responsible paper sourcing in a matrix organised retail company

This study attempted to contribute to the understanding of how responsible paper sourcing can be achieved. Through the operationalization of the traceability concept and the development

of a simple model for evaluating supply network complexity, a mapping of the focal company's supply network was carried out and an as-is risk assessment of current paper supply chains was made

The traceability concept was developed not only to include transparency factors, as determined by supplier relations, but also consider the level of network complexity, company control and how both these features are affected by the organisational set up for purchasing paper. Furthermore the situation of a global matrix organized company with decentralized decision making was considered.

The study creates an overview of the IKEAs paper supply, describes organisational features to consider when transforming the paper supply towards into responsible paper sourcing, and based on this background it suggests feasible methods and actions to start the transformation. A core feature in the transformation is to make responsible paper sourcing an agenda within already existing general strategies, tactics and operations of business development.

The work conducted has not resulted in a high level academic report but in a good information platform to start the transformation of IKEAs paper supply into a better business and responsible sourcing, which in itself is the modern way of brand management.

For other companies that are now to meet the due diligence requirements of the new EUTR it can in general be said that balance between managing prerequisites for traceability by the organisational set up for paper purchasing, use of certified materials for risk mitigation and the limitation of work load for exercising due diligence is suggested to be a useful bottom line for organisations. The business consolidation approach though is thought to be more powerful for big actors that will really gain from aggregating their bargaining power in paper sourcing.

In this study the supply network was more complex in China, and the risk of controversial material in products produced in China was higher too. The previous mentioned study by Harland et al, (2003) suggests a positive relation between supply network complexity and risk supporting the relevance of this study's finding.

For responsible paper sourcing and traceability, China provided challenges in terms of having more character of bidding business, and also including back to back agreements making supply networks more complex and buyer-seller relations loosely coupled. The presence of controversial actors, owning production capacity of considerable shares of the virgin fiber based paper market, further increases challenges for the aim of securing responsible sourcing in this particular market. Additionally, the Chinese market is the area where transparency in business relations was found hard to obtain. Results varied though as some Chinese suppliers seemingly made great efforts to provide requested information, but might have struggled themselves from traceability being obstructed by upstream network complexity. Perceptions of purchasing managers though confirmed transparency being considerably more of a problem at the Chinese market than in other markets. The findings reconfirm previous findings obtained by Noguerón, R. in 2013.

Upstream business integration could be particularly useful for paper responsibility

As expected, risk assessment through supply network mapping aiming to reach the species and origin of raw material did only in few cases enable the identification of a risk source based on a species-origin analysis. In the cases where this analysis could be conducted, traceability in the supply networks was supported by production units being FSC CoC certified. Identification of risk sections of the supply network was rather done through the realising of lack of transparency, lack of traceability as a wider concept or by identifying risk

actors (e.g. pulp and paper producers already known for controversial practices and with whom IKEA has decided not to work) in the upstream supply network. This situation motivates the argumentation of industrial intelligence to be a central part of the work with responsible sourcing at IKEA. Keeping track, not only of valid FSC certification and fibre sourcing policies, but also of willingness of transparency. The aim should be to develop business with chosen, already transparent, producers and also working in a way that increases the possibility for breaking new ground in the area of transparency e.g. at risk markets. This approach could be particularly important in such a consolidated industry as the paper industry.

The risk of dependency on FSC

This study has not questioned the choice of IKEA to rely in FSC for the developing of responsibility and sustainability performance. As IKEA increases the share of more sustainable sources in terms of FSC certified materials in solid wood, wood based board and in the paper segment the sustainability performance as evaluated by IKEAs stakeholders will largely be based on the legitimacy and reliability of FSC. This is a good choice compared to alternative certification schemes; FSC is often pointed out as a model Multi Stakeholder Initiative (MSI) (Moog et al. 2013).

Though there is a discussion going on about whether such initiatives facilitate democratisation of transnational corporations by extending participation within the scope of corporate responsibility or whether it allows the private sector to capture regulatory power (Op Cit.). The authors of the recent article "The Politics of Multi-Stakeholder Initiatives: the Crisis of the Forest Stewardship Council" examine how *"boarder market forces and resource imbalance between non-governmental and market actors can serve to limit the effectiveness of MSIs in the current neo-liberal environment"*. In the problem description it is e.g. described how important stakeholder organisations, e.g. Friends of the Earth and the Swedish Society for Nature Conservation, have resigned from FSC in recent years claiming that *"problems with FSC are so severe that supporting FSC threatens their own organizations* credibility" (FERN et al. 2008, cited by Moog et al. 2013).

Parallel to this development a watch-dog group called FSC-watch has been created. The authors conclude that the labelling scheme of FSC has weakened over time due to structural failings and as market forces have pressured standards down. The authors emphasises several problems for smaller civil society organisations in participating in the forum related to their limited budgets and scope of activity. Participating becomes a dilemma as the organisations fundamental demands fit so ill in the limited space of deliberation offered by the MSI process. For the small organizations their credibility is commonly the greatest asset and the effect on this from participating in different forums need to be considered. This situation restricts the MSI forums from illuminating the e.g. social perspectives of minorities and more radical claims by small organisations.

It should be in the interest of larger companies getting important support in their CSR work through FSC certification to make sure that market forces keeps being a driver for sustainable forest management rather than allowing these to undermine the sometimes hard requirements set by the organisation. Hard requirements are what in the long term will satisfy increasing expectations from the customers.

Recycled paper also carries a risk burden, not the least at upcoming markets

In the first months of 2014 it was discovered that the global Finnish-Swedish owned paper and packaging giant Stora Enso's operations in Pakistan included child labour collecting recycling

paper at city dumps. The company didn't express surprise by the situation and a high level manager even claimed that the company would have made the investments in Pakistan even if they would have known about the child labour (Hellekant, 2014).

The matter has been continuously discussed in media during the year and at the company considerable reorganising including the recruitment of a new CEO has followed. The point made by emphasising on this incident, is that at new markets which could be considered potential from the ongoing IKEA expansion, a pragmatic view on how to work with recycled paper within the scope of more sustainable sources need to be adopted.

In the IWAY standard it is clearly expressed that child labour is not accepted by IKEA. Relying on an industry which ethics is destabilized by the employment of child labour risks to put increase burden on the general IWAY auditing organisation, moving costs for securing responsible sourcing from one organisational body to another.

5.2.2 Method critique and the study's strengths and weaknesses

The wide scope of this study has provided challenges at every phase of its carrying through. The many factors to consider addressing several theoretical areas created such a wide range of detailed reasoning that the potential of them was not fully enjoyed for the analysis made. It has already been mentioned that Silverman (2010) warns for the expenditure of time to collect the different data and the risk of data in the end being under-analysed, and the author also relates this phenomenon to the empirically focused researchers.

At finishing this study Silverman's considerations can definitely be confirmed, the results and data generated by this study could have been used for considerably more analyses and conclusions. Though, the study aimed to provide empirical inputs in the area of responsible sourcing under increased pressure from legislation, why the holistic view is still considered to have been justified. The reading through made by key informants has been crucial to secure that reasoning is relevant and reliable.

Even though the variety of theories used for the studies theorisation a chapter concerning company expansion could have been seen as a logical consequence of the formulation of the research questions. The subqueries of RQ3 were only to be considered and discussed.

<u>The supply network mapping</u>

As mentioned initially, IKEA provides a large number of articles which are not classified as paper products even though they contain paper. An alternative choice of population would have been all IKEA suppliers supplying products *containing* paper. From this population a sample could have been chosen to represent the overall IKEA assortment.

Due to the organisational set up, this would have involved a considerable amount of people within the IKEA organisation, and was not considered practical of manageable for this study. For this reason optional working methods for the sourcing of foils could not be provided through this study.

Furthermore, a desktop investigation of wood raw material supply in the paper industry must be seen for what it is. The information obtained is largely unverified, but still the best information currently available.

It is also important to recognise that suppliers and sub-suppliers might have chosen to only declare the upstream actors of the supply network who were certified, skipping out of more questionable ones.

5.2.3 Further research

There are all reasons to give continued attention to the research area of responsible sourcing and its proactive management. Globalisation, outsourcing and off-shoring continue to cause global corporations to apologise as the product they are represented by at the market carries a burden unsustainable use of the worlds resources and mistreating of humans, over which the corporation did not have controlled or – in worst case – ignored. The information society is not likely to disappear; instead corporations might just as well acknowledge the support that is given to them by NGOs and civil society illuminating anomalies related to their businesses.

Solution oriented case studies can be valuable here enabling knowledge sharing and developing understanding and awareness of common challenges. Good examples should also be studied for the benefit of the positive development of responsible sourcing. In an industry such as the paper industry, characterised by many great and powerful actors, it might also be relevant to understand what kind of impact the single organisation is able to make, and at what areas cooperation is a necessity.

In the paper sector, increased understanding of the Asian market regarding aspects such as attitudes towards transparency, certification and other responsibility oriented topics would be valuable to the developing of responsible business in these important paper countries. Getting the topic on the agenda is a way in itself to affect the current situation. Furthermore, as researchers have now repeatedly studied the Asian market from the perspective of corporations of the "western world", it would be more relevant to now reflect the topic from another angle, from the Asian paper actors' point of view.

In the case of IKEA a topic interesting for further investigation should be what cost efficiency could be obtained in supplying virgin fiber based containerboard and other paper qualities from the European market to converters in Asia. How can factors affecting the cost break even between sourcing European or Asian paper be elaborated, and what would be an acceptable price for risk mitigation according to this sourcing model.

The traceability requirement, and proof burden for ensuring legality of wood set by the European timber regulation are potentially at such a high level that they will steer paper trade flows. A study of whether this effect becomes reality of not could be an important feedback to policy makers within EU.

6 Conclusions and Recommendations

6.1 Main conclusions

This study of methods for working with responsible paper sourcing, traceability and reputational risk based on internal and external prerequisites and conditions of a global matrix organized Retail Company yielded the following key messages to the focal company:

- Results confirm sometimes very complex, global paper supply chains and a consolidated industry where big pulp- and paper producers repeatedly appear in IKEAs upstream supply network. Network complexity varies between different paper segments, where tissue represent the least complexity and the fine paper segment currently represent the highest.

- Controversial actors known for using wood not fulfilling IKEAs minimum requirement appear at different tiers of the supply chain and are not restricted to their home markets. Small volumes of paper qualities containing unacceptable wood rapidly get large diffusion in paper articles.

- Even if controversial actors known for using wood not fulfilling IKEAs minimum requirement are not part of the "ordinary" supply chain, back-to-back agreements where different pulp- and paper mills covers orders for each other debilitate guaranties of not cooperating with the concerned actors given by suppliers and sup-suppliers of IKEAs supply network.

- Results suggest paper consolidation to be a potential tool for supply network simplification (increased traceability), increased control of the paper sourcing, and increased access to FSC certified materials at an acceptable cost– not least at high risk markets.

- Collecting data necessary for traceability purposes also offers other commercial values such as increased understanding of the paper supply chain and how it can be developed, e.g. through improved prerequisites for cost calculations, but also through the increased possibility to oversee the total business.

- Results reveal great production capacities upstream the supply network which is FSC CoC certified today.

- With the exception of two cases, all IKEA suppliers of the IoS paper products are FSC certified today or have stated interest to get certified within two years.

- In a recent transformation activity paper product suppliers in high risk markets have got FSC certified and switched to entirely FSC certified materials while simultaneously decreasing the number of paper qualities used in the product range, with no cost increase in the overall process. Additionally, there are expected advantages in production efficiency due to increased control over material flows.

- Difficulties in tracing materials in Asia have arisen due to particularly long supply chains in this geographical area, commonly involving paper traders. Experiences

within the purchasing organisation confirm the unwillingness of some Asian paper and pulp producers to share information about their supply chain.

- The current major risk burden according to raw material declared in the mapping and spreading in IoS paper products appear in the Solid board segment. Identified risk materials in current supply networks originate from the Chinese market.

- Whereas paper purchasing at IKEA has a history of being scattered the bargain power of the large sized company has not been fully leveraged in paper sourcing.

- Industry market intelligence is currently not shared between the different purchasing organisations in a standardised way, constraining its potential to improve the paper sourcing.

- There is no set routine to ensure that the purchasing organisations have crucial understanding of risk aspects of paper sourcing.

- Current communication between the different purchasing organisations and also between various departments at IoS purchasing paper needs to be enhanced if to sustain a common approach for responsible paper sourcing.

- The different purchasing organisations all purchase paper that will reach the customer why it is of great importance to adopt a common approach for responsible paper sourcing. Additionally the consolidated paper industry creates likelihood that a paper supplier will have business with several purchasing organisations at IKEA prompting the need for consistency on IKEAs part.

6.2 Recommendations

Responsible sourcing in general and traceability prerequisites in particular should be an outspoken objective as control is increased in IKEAs paper supply chains through centralised purchasing, paper consolidation and cooperation between the different purchasing organisations.

Restricting the number of paper qualities used in products and packaging securing a convenient size of the paper business should be seen as a central tool to decrease supply network complexity, enable purchasing directly from the paper mills and when convenient get access to FSC certified materials in a cost-efficient manner.

The great FSC certified production capacities upstream the supply network should be increasingly utilised by IKEA, with priority to geographical risk areas.

Aggressive targets should be set for more sustainable sources at the Asian market.

<u>Actions - important and urgent</u>

Map all people/functions active in the IKEA paper sourcing and build a communication network

There is a lot to gain in rapidly getting in contact with all people at IKEA being involved in / responsible for purchasing paper. The understanding of what people are involved at the different organisations constitutes the basis for creating a network through which information

on standards and IKEAs standpoints on responsibility matters can be communicated to all concerned parties. At creating this network an essential feature is finding a system through which communication keeps reaching all involved, even though in the individuals of the network will come and go.

Formulate the paper specific standard on responsible sourcing

A paper specific standard needs to be developed. This is the fundament of the coordinated work towards aligned goals in the different IKEA organisations. For Home Furnishing products purchased in the IoS purchasing organisation requirements for Due Diligence must be established for paper in the same manner as for solid wood and wood based board.

Introduce the over-view of sourcing structure and traceability prerequisites as part of supplier evaluation and as part of opening new businesses

Specify what factors should be used to assess traceability prerequisites and risk at opening business with a new supplier. This is an important feature to secure a robust organisational set up for securing responsible sourcing at new markets as the organisation is expanding.

Secure responsibility in paper sourcing at the actors already identified to carry a risk load.

The Asian purchasing organisation need to go through all sub-suppliers of virgin fiber based paper qualities connected to the Asian supplier not yet FSC certified. Continue the work with mapping and verifying I Components Asian sub-suppliers. Immediately start the work with transforming into FSC certified materials for products and packaging.

<u>Actions - important but less urgent</u>

Offer the paper purchasing organisation training

To consolidate the aims of responsible paper sourcing among the organisation that will implement it, each individual should be offered understanding in why traceability of raw material is an important matter, for IKEA and for generic sustainability reasons. The training should also include presentation of the toolbox available at IKEA for addressing the issue.

Initiate capacity building on industry market intelligence by setting up, or use already existing, common database for concerned industrial actors

Paper industrial intelligence at the different purchasing organisations needs to be shared in a standardised manner. Investigate how different IKEA paper purchasing organisations work with paper industrial intelligence today and how a common resource, e.g. a register of trusted and unwanted actors, could be framed and managed to enhance capacity building and consistency within IKEA

Initiate the development of a cross business organisation monitoring and steering model for responsible paper sourcing

Find and assemble relevant representatives of the different IKEA organisations and create a forum where consistency within IKEA can be secured and the responsible sourcing agenda within all organisations can be governed.

Establish routines and standards for verification and follow up to continuously quantify net use of paper in articles

The purchasing organisation and the suppliers have to prepare for being able to report paper qualities of the product and paper net content. At the central organisation it should be looked into how a standardised system for collecting this information from suppliers could be designed and how future communication about specific articles to the customers could be arranged. Most probably the raw material reporting of paper products at IoS can be added to the existing Wood Tracing System, which connection to article numbers (through harmonizing it with the digital document archive Connect) is expected to be in place in November 2014.

Quantify the paper supply of other material categories at IoS and initiate discussion on steering model for traceability

Considering the 3800 article numbers containing foils or melamine foils there is reason to believe that there are considerable volumes of virgin fiber based paper in this segment. Quantification of these paper volumes is most likely best done by reaching out through the different material categories with a request for information and simultaneously provide information of the cause of data collection and the potential future requirements for paper sourcing. Only by understanding the situation at other kinds of paper the applicability of suggested methods for responsible sourcing can be evaluated.

Focusing on IoS

Take ownership of accessing the great FSC certified production capacity upstream the supply network, prioritizing the identified risk carriers of the supply network.

Continue the dialogue with IoS paper product supplier who have signalised interest in getting FSC certified. Evaluate according to risk of not implementing, cost for implementing and alternative cost for exercising due care in an alternative way (e.g. in-house auditing). Implementing FSC certification is likely to be a favourable alternative.

Evaluate pros and cons of amalgamating paper in the existing organisational set up of IWAY Forestry for data collection and verification vs. choosing a separate approach. Integration is likely to be a favourable alternative.

Focusing on I Components

Initiate top management dialogue on traceability matters, with focus on transparency, with Chinese paper and pulp companies considered for future business at I Component.

At I Components the businesses integration by the central organisation shall be carried out prioritizing risk markets, alternatively, absolute requirements for more sustainable sources should be set at high risk markets.

Traceability matters and responsible paper sourcing needs to be taken into consideration as I Components opens new businesses at high risk markets. FSC as a prerequisite for starting business should be considered.

Focusing on IMS

“Low hanging fruits” are present here as purchasing of important customer-close IKEA items (e.g. assembly instructions, paper bags, buying guides and brochures) are increasingly

centralised. Make sure traceability and a common IKEA approach for responsible paper sourcing is part of the consideration as the large paper businesses are developed.

Investigate how a policy for local paper purchasing e.g. managed by retail stores around the world can be formulated and communicated. One optional set up could be that each retail store can chose between purchasing only more sustainable sources (FSC certified or recycled paper) or let the business be managed by the IMS central organisation present at the concerned market.

Focusing on IKEA Food

There is a strongly developing traceability agenda for food at the organisation. Make paper traceability part of that agenda, focusing on virgin fiber based paper and paper close to the customer. Map the paper supply and evaluate the possibility to require only FSC certified materials in order to simplify implementation of responsible paper sourcing and keep focus on the food.

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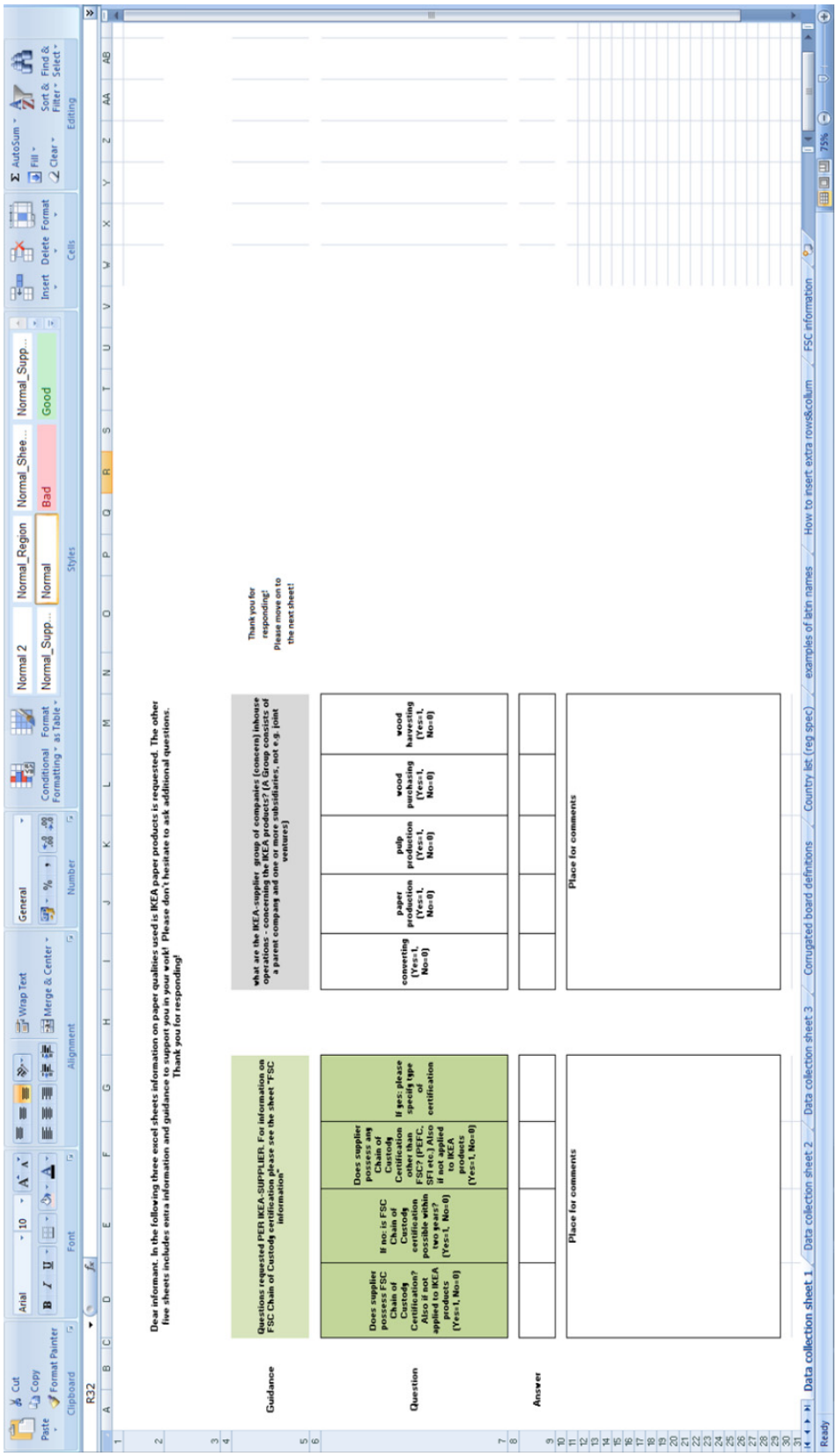
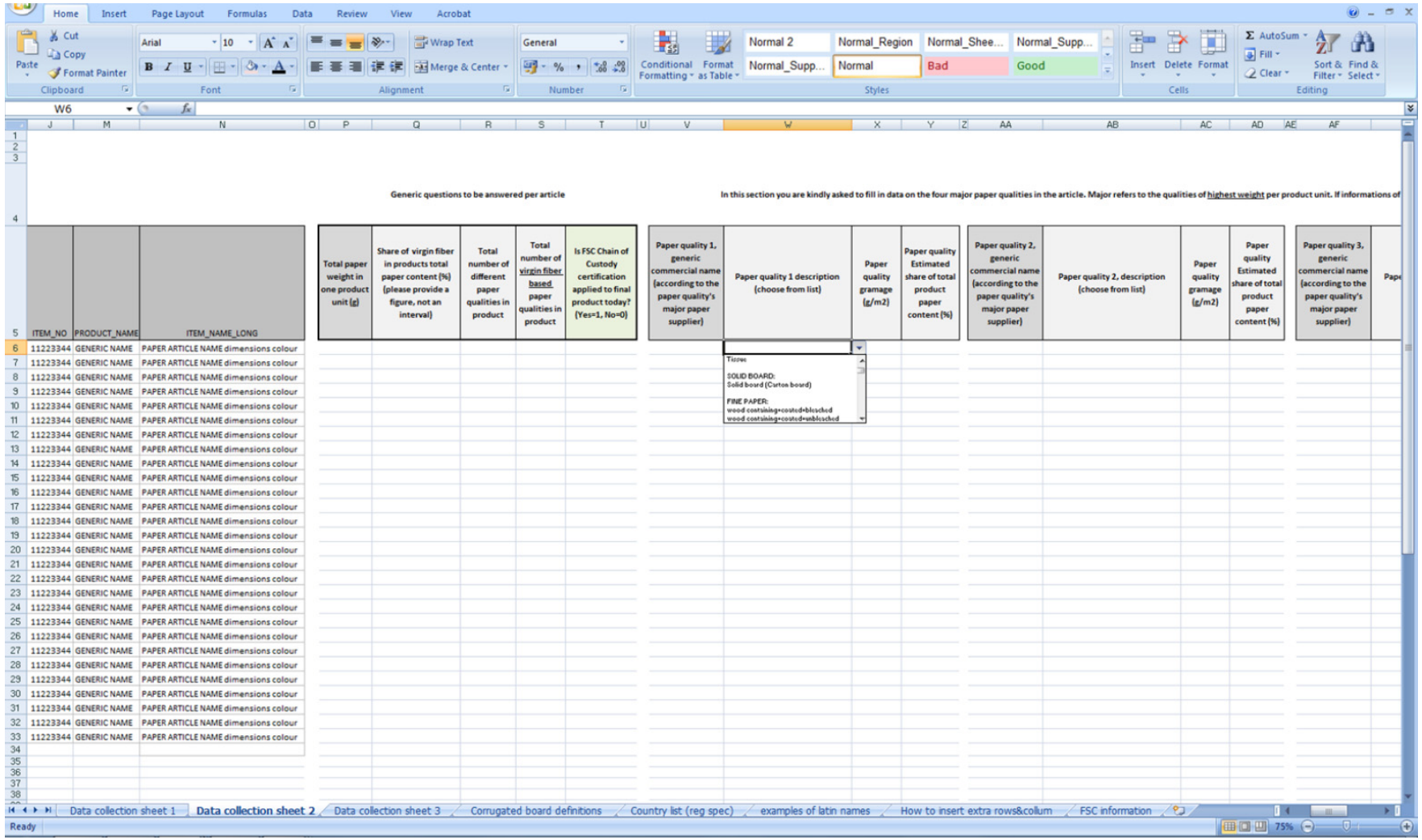
Annexes

Annex 1. MS Excel based tool for detailed mapping of the paper supply network traceability and risk

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Generic questions to be answered per article
In this section you are kindly asked to fill in data on the four major paper qualities in the article. Major refers to the qualities of highest weight per product unit. If informations of
ITEM_NO
PRODUCT_NAME
ITEM_NAME_LONG
Total paper weight in one product unit (g)
Share of virgin fiber in products total paper content (%) (please provide a figure, not an interval)
Total number of different paper qualities in product
Total number of virgin fiber based paper qualities in product
Is FSC Chain of Custody certification applied to final product today? (Yes=1, No=0)
Paper quality 1, generic commercial name (according to the paper quality's major paper supplier)
Paper quality 1 description (choose from list)
Paper quality gramage (g/m2)
Paper quality Estimated share of total product paper content (%)
Paper quality 2, generic commercial name (according to the paper quality's major paper supplier)
Paper quality 2, description (choose from list)
Paper quality gramage (g/m2)
Paper quality Estimated share of total product paper content (%)
Paper quality 3, generic commercial name (according to the paper quality's major paper supplier)
Tissue
SOLID BOARD:
Solid board (Carton board)
FINE PAPER:
wood containing+coated+blocshed
wood containing+coated+unblocshed
11223344 GENERIC NAME PAPER ARTICLE NAME dimensions colour
Data collection sheet 1
Data collection sheet 2
Data collection sheet 3
Corrugated board definitions
Country list (reg spec)
examples of latin names
How to insert extra rows&collum
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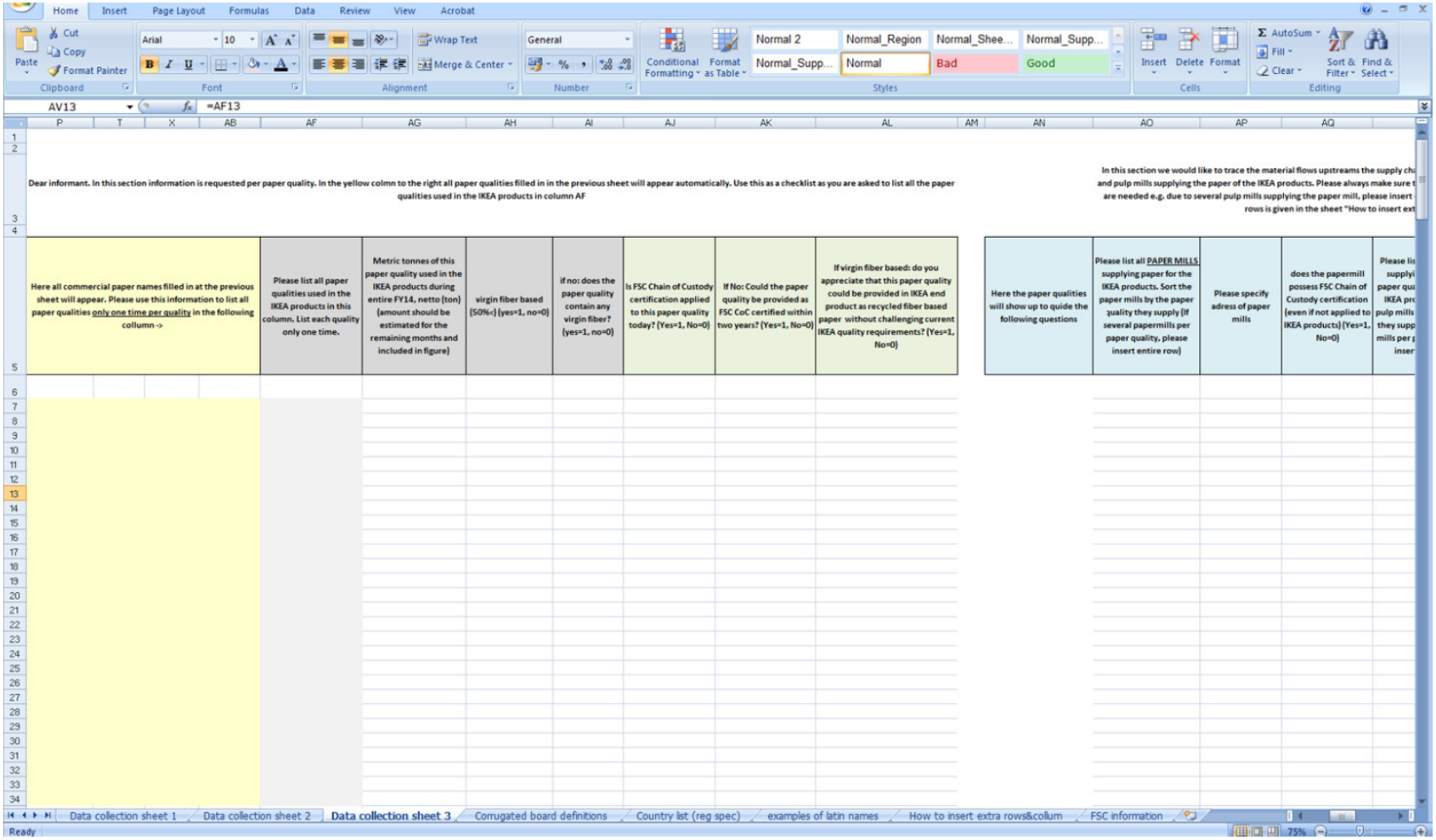
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Normal
Bad
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Delete
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=AF13
Dear informant. In this section information is requested per paper quality. In the yellow colmn to the right all paper qualities filled in in the previous sheet will appear automatically. Use this as a checklist as you are asked to list all the paper qualities used in the IKEA products in column AF
In this section we would like to trace the material flows upstreams the supply ch
and pulp mills supplying the paper of the IKEA products. Please always make sure t
are needed e.g. due to several pulp mills supplying the paper mill, please insert
rows is given in the sheet "How to insert ext
Here all commercial paper names filled in at the previous sheet will appear. Please use this information to list all paper qualities only one time per quality in the following collumn ->
Please list all paper qualities used in the IKEA products in this column. List each quality only one time.
Metric tonnes of this paper quality used in the IKEA products during entire FY14, netto (ton) (amount should be estimated for the remaining months and included in figure)
virgin fiber based (50%<) (yes=1, no=0)
if no: does the paper quality contain any virgin fiber? (yes=1, no=0)
Is FSC Chain of Custody certification applied to this paper quality today? (Yes=1, No=0)
If No: Could the paper quality be provided as FSC CoC certified within two years? (Yes=1, No=0)
If virgin fiber based: do you appreciate that this paper quality could be provided in IKEA end product as recycled fiber based paper without challenging current IKEA quality requirements? (Yes=1, No=0)
Here the paper qualities will show up to quide the following questions
Please list all PAPER MILLS supplying paper for the IKEA products. Sort the paper mills by the paper quality they supply (if several papermills per paper quality, please insert entire row)
Please specify adress of paper mills
does the papermill possess FSC Chain of Custody certification (even if not applied to IKEA products) (Yes=1, No=0)
Please lis
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paper qua
IKEA pr
pulp mills
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Data collection sheet 1
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Data collection sheet 3
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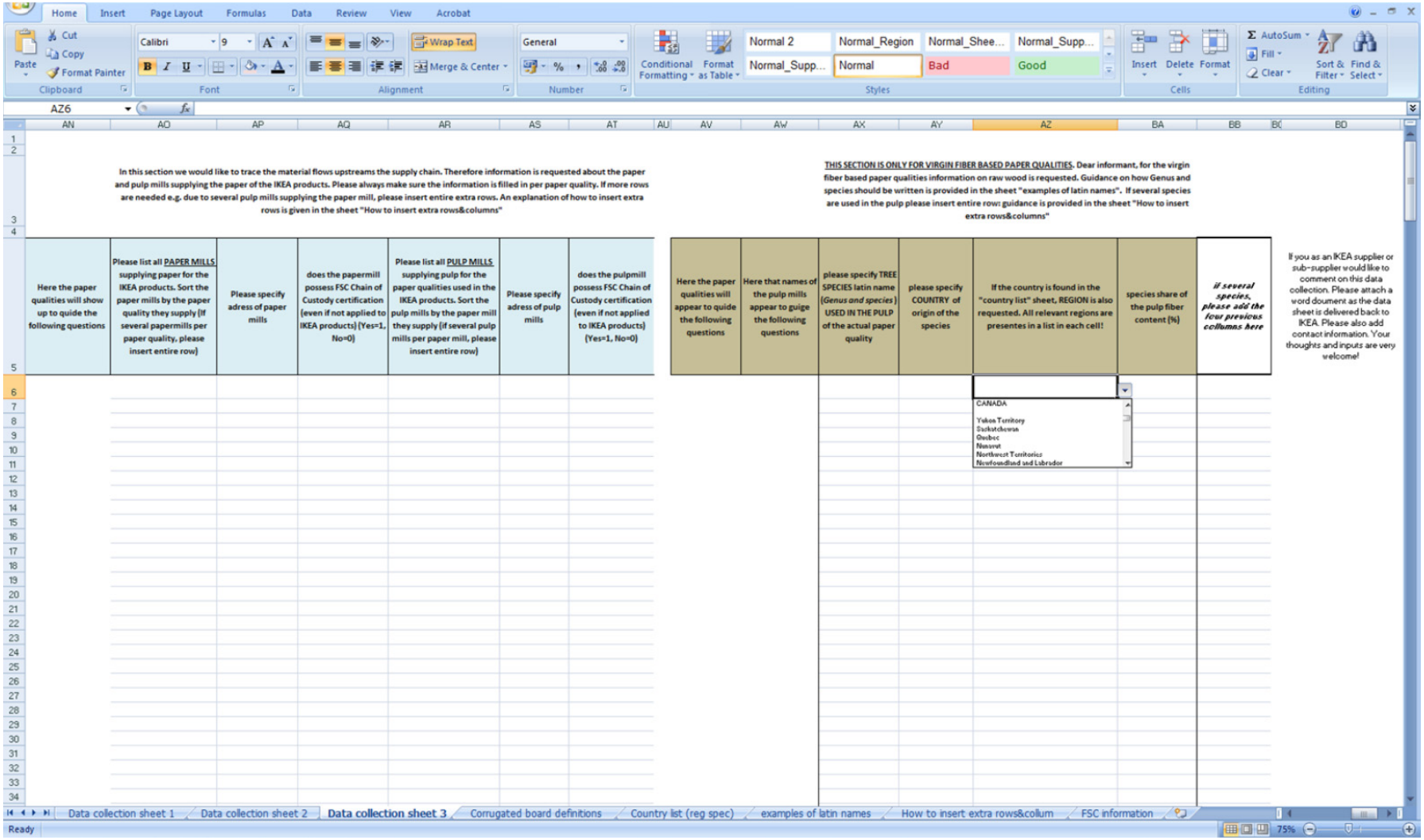
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Normal_Supp...
Normal_Supp...
Normal
Bad
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Delete
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AZ6
In this section we would like to trace the material flows upstreams the supply chain. Therefore information is requested about the paper and pulp mills supplying the paper of the IKEA products. Please always make sure the information is filled in per paper quality. If more rows are needed e.g. due to several pulp mills supplying the paper mill, please insert entire extra rows. An explanation of how to insert extra rows is given in the sheet "How to insert extra rows&columns"
THIS SECTION IS ONLY FOR VIRGIN FIBER BASED PAPER QUALITIES. Dear informant, for the virgin fiber based paper qualities information on raw wood is requested. Guidance on how Genus and species should be written is provided in the sheet "examples of latin names". If several species are used in the pulp please insert entire row; guidance is provided in the sheet "How to insert extra rows&columns"
Here the paper qualities will show up to quide the following questions
Please list all PAPER MILLS supplying paper for the IKEA products. Sort the paper mills by the paper quality they supply (if several papermills per paper quality, please insert entire row)
Please specify adress of paper mills
does the papermill possess FSC Chain of Custody certification (even if not applied to IKEA products) (Yes=1, No=0)
Please list all PULP MILLS supplying pulp for the paper qualities used in the IKEA products. Sort the pulp mills by the paper mill they supply (if several pulp mills per paper mill, please insert entire row)
Please specify adress of pulp mills
does the pulpmill possess FSC Chain of Custody certification (even if not applied to IKEA products) (Yes=1, No=0)
Here the paper qualities will appear to quide the following questions
Here that names of the pulp mills appear to guige the following questions
please specify TREE SPECIES latin name (Genus and species) USED IN THE PULP of the actual paper quality
please specify COUNTRY of origin of the species
If the country is found in the "country list" sheet, REGION is also requested. All relevant regions are presentes in a list in each cell!
species share of the pulp fiber content (%)
if several species, please add the four previous collumns here
If you as an IKEA supplier or sub-supplier would like to comment on this data collection. Please attach a word doument as the data sheet is delivered back to IKEA. Please also add contact information. Your thoughts and inputs are very welcome!
CANADA
Yukon Territory
Saskatchewan
Quebec
Nunavut
Northwest Territories
Newfoundland and Labrador
Data collection sheet 1
Data collection sheet 2
Data collection sheet 3
Corrugated board definitions
Country list (reg spec)
examples of latin names
How to insert extra rows&collum
FSC information
Ready
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Annex 2. Home Furnishing suppliers in scope of Supply network traceability and risk mapping

Trading area	*Supplier category*	*Main material category*	*Major paper segment*	*Available for analysis*
Americas	*IKEA Supplier*	*Paper*	*Paper board*	*X*
Central Europe	*IKEA Product Development/Innovation Sup.*	*Paper*	*Fine paper*	*X*
Central Europe	*IKEA Supplier*	*Paper*	*Tissue*	*X*
Central Europe	*IKEA Potential prioritized Supplier*	*Paper*	*Paper Board*	*X*
Central Europe	*IKEA Supplier*	*Paper*	*Paper others*	*X*
Central Europe	*IKEA Potential Prioritized Supplier*	*Paper*	*Cardboard*	*X*
Central Europe	*IKEA Potential Prioritized Supplier*	*Paper*	*Tissue*	*X*
Greater China	*IKEA Product Development/Innovation Sup.*	*Paper*	*Fine Paper PS Wrapp*	*X*
Greater China	*IKEA Supplier*	*Paper*	*Paper others*	*X*
Greater China	*IKEA Product Development/innovation Sup.*	*Paper*	*Fine Paper PS Wrapp*	*X*
Greater China	*IKEA Supplier*	*Paper*	*Paper others*	*X*
Greater China	*IKEA Supplier*	*Paper*	*Paper others*	*X*
Greater China	*IKEA Potential Prioritised Supplier*	*Paper*	*Paper board*	*X*
North East Europe	*IKEA Supplier*	*Paper*	*Paper board*	*X*
North East Europe	*-*	*Missing*	*-*	*X*
North East Europe	*IKEA Supplier*	*Paper*	*Tissue*	*X*
North Europe	*IKEA Prioritized supplier*	*Paper*	*Paper board*	*X*
North Europe	*IKEA Product Development/Innovation Sup.*	*Paper*	*Fine paper PS Wrapp*	*X*
North Europe	*-*	*Metals*	*-*	*-**
North Europe	*IKEA Supplier*	*Paper*	*Tissue*	*X*
North Europe	*IKEA Supplier*	*Paper*	*Paper others*	*X*
North Europe	*IKEA Potential Prod. Dev./innovation Sup.*	*Paper*	*Fine paper /paper oth.*	*X*
North Europe	*IKEA Supplier*	*Paper*	*Fine paper PS Wrapp*	*-***
South East Asia	*-*	*Textile*	*-*	*X*
South Europe	*IKEA Supplier*	*Paper*	*Tissue*	*X*
South Europe	*IKEA Potential Prioritized Supplier*	*Paper*	*Tissue*	*X*

***** *According to the internal information available at IKEA the supplier accounts for 199 000 units of baking paper a 0.2 kg, which would allow the estimation of at most 40 tons of paper being missing in the assessment.*

*** According to the internal information available at IKEA the supplier accounts for 130 000 units of wrapping paper s a 0,2 kg accounting for at most 26 tons of paper.*

Annex 3. Interview guides

Interview guide, Sourcing Developer

1) In the first part we discuss how it is to start working as a Sourcing Developer
- When did you start working as a Sourcing Developer (SDR)?
- Where is the SDR positioned in the Matrix?
- What was your mission as formulated by IKEA?
- How is performance measured in such a mission?
- What did you perceive as the most important part of your mission?
- When you were introduced to the position, what was your most important tools to take on the task?
- Did you get some particular introduction/education as new at the position?

- When you started working with the paper affair, was IKEAs sustainability targets communicated to you? If yes, by who?
- As you started working with the paper affair, what was your experience from the international paper industry at that time?
- Did you have any thoughts about responsible paper sourcing at that time?
- If yes, what was embodied in that topic to you?
- Did responsible paper sourcing have anything to do with your mission as you perceived it at that time?
- If yes, what tools did you/IKEA have to address that topic?

2) We talk about development towards increased control over responsible paper sourcing in the Fine paper segment
- As you have developed the paper supply of certain assortments at IKEA, what have been your primary 1)goals/targets and 2) tools?
- What people were involved in the work? Why?
- Have working methods among your co-workers been affected by the transformation?
- Which of your goals were hard or easy respectively to achieve?
- Were you surprised about certain things being harder/easier to achieve that your expected in the development work?
- Du your organisation use already existing resources and capabilities in a different way now that before the development process?

3) We talk about the view of the mission as a Sourcing Developer today
- Did your view upon the mission as a Scouring Developer change compared with when you started? In what way?
- Have you gained new knowledge that will be helpful in you continous work?
- Do you have the tools you need to work with responsible paper sourcing?
- Do you have the tools you need to work with a desirable level of traceability?
- Do you have the tools you need to work with risk analysis?
- Will aspects of traceability and risk affect your continuous work as a SDR? How?

4) How can we take advantage of the new experiences from transforming into secured responsibility in paper supply
- Within the organisation, what is it our routines/working methods that incur risk to our organisation?

- If you would suggest a number of measures to improve the organisations work with traceability and risk within our paper supply, what would they be?

Interview guide, Business Developers and Business Development Managers

1) Generic info.
- Position, time at this position, background/previous positions
- Mission within IKEA
- Position in the matrix
- Responsibilities towards the multiple matrix dimensions
- Relation with the supplier: involvement, cooperation, power balance

2) Culture/structure
- How would you describe your work situation? Is it a job with a lot of freedom, that leaves room for your creativity, or is your tasks very specified? (Written procedures and policies)
- Mandate to make necessary decisions
- What does this mean to you? Is the working situation something that you appreciate?

- IKEA has a range of different values Do these values have an influence on your daily work? How?

3) Goals
- How do you measure your work success?
- What are the most important goals to you?

4) Tools
- To do your work, what are the most important organisational resources? (people, data systems, information etc.)

5) Previous experience of the pulp and paper industry
- Do you have any previous experience from the pulp and paper industry?
- How would you describe your knowledge of the industry?
- If we look at this industry from a sustainability point of view, what are your perceptions of the industry? Is it a well functioning industry? Are there any problems? If yes: what are they? (if not spontaneous: forestry aspects)
- In your opinion, do you think traceability is important when we purchase paper products? Why?
- Do you perceive that IKEA might be exposed to risks when purchasing paper? What would you suggest to be the reason for this risk?
- Do you think the risk differs between different geographical regions?

6) Available resources
- In your present work situation, do you have any tools for working with traceability in paper supply?
- Do you have any tools for working with risk analysis?
- Did you and the suppliers discuss responsible sourcing?

Annex 4. Tree species and countries of origin of raw materials reported

Table 30. Tree species and countries of origin of raw materials reported by the Tissue suppliers

Trading area	*Tonnage (Metric tonnes)*	*No o virgin fiber based paper qualities used*	*Pulp mill locations*	*Tree species used in pulp production*	*Declared tree species country of origin*
Central Europe	*4 470*	*3*	*Sweden (3)*	*Pinus sylvestris*	*Sweden*
				Pinus contorta	*Finland*
				Picea abies	*Latvia*
				Populus tremula	*Estonia*
				Betula pendula	*Lithuania*
					Russia
Central Europe	*3 100*	*3*	*Sweden*	*Pinus sylvestris*	*Sweden*
			Slovakia	*Picea abies*	*Slovakia*
			Estonia	*Fagus sylvatica*	*Ukraine*
			Brazil	*Populus tremula*	*Estonia*
				Eucalyptus grandis	*Brazil*
North East Europe	*1 140*	*2*	*Sweden (3)*	*Pinus sylvestris*	*Sweden*
			Finland (2)	*Picea Abies*	*Finland*
			Russia (2)	*Betula alba (pendula)*	*Russia*
				"Pine"	
North Europe	*2 640*	*1*	*Sweden (2)*	*Pinus sylvestris*	*Sweden*
			Portugal	*Pinus contorta*	*Norway*
			Spain	*Picea abies*	*Denmark*
				Eucalyptus globulus	*Latvia*
					Estonia
					Lithuania
					United kingdom
					Russia
					Portugal
					Spain

South Europe	*8 960*	*1*	*Portugal* *Spain* *Brazil(1-4)* *(Unknown)* *Germany*	*Pinus sylvestris* *Pinus contorta* *Pinus.* *Picea abies* *Eucalyptus globulus* *Eucalyptus grandis*	*Sweden* *Denmark* *Norway* *Latvia* *Estonia* *Lithuania* *United Kingdom* *Scotland* *Belarus* *Germany* *Czech Republic* *Portugal* *Spain* *Brazil*
South Europe	*1 450*	*1*	*4* *Brazil (2-5)* *Sweden* *Germany*	*Pinus sylvestris* *Pinus contorta* *Pinus.* *Picea abies* *Pseudotsuga menziesii* *Eucalyptus grandis* *Eucalyptus spp.*	*Sweden* *Finland* *Denmark* *Norway* *Estonia* *Latvia* *Lithuania* *Germany* *United kingdom* *France* *Netherlands* *Poland* *Czech Republic* *Ukraine* *Slovakia* *Russia* *Brazil*
Total	*21 800*	*11*			

Table 31. Tree species and countries of origin of raw materials reported by the Solid board suppliers

Trading area	***Estimated tonnage virgin fiber (Metric tonnes)***	*No of virgin fiber based paper qualities used*	***No and location of pulp mills connected to the virgin fiber based paper qualities of each supplier***	***Tree species used in pulp production***	***Declared tree species country of origin***
Americas	*80*	*1*	***China***	***Eucalyptus***	***China***
Central Europe	*440*	*10*	***United Kingdom***	***Inadequate information provided***	
			Italy		
			China		
Greater China	*540*	*4*	***China (3)***	***Inadequate information provided***	
North East Europe	*50*	*4*	***Italy (2)***	*Betula spp.*	
				Acer spp.	
				Populus spp	
				Abies spp	
				Fraxinus spp.	
				Fagus spp.	
				Prunus serotina	
				Eucalyptus spp.	
				Carpinus betulus	
				Larix spp	
				Quercus	
				Pius spp.	
North Europe	*920*	*1*	***Italy***	*Eucalyptus urograndis*	
			Denmark	*Eucalyptus globulus*	
			Finland (2)	*Populus balsamifera*	
			United Kingdom	*Betula spp.*	
				Eucalyptus grandis,	
				Fagus sylvatica pendula	

				Pica Abies *Picea alba* *Pinus Sylvestris* *Populus tremuloides* *Populus tremula*
South East Asia	*0* *2020*	*0* *20*	**-**	**-**

Table 32. Tree species and countries of origin of raw materials reported by the Fine paper suppliers

Trading area	***Estimated tonnage virgin fiber (Metric tonnes)***	*No of virgin fiber based paper qualities used*	***No and location of pulp mills connected to the virgin fiber based paper qualities of each supplier***	***Tree species used in pulp production***	***Declared tree species country of origin***
Central Europe	*890*	*5*	***USA*** ***Italy*** ***Germany (2)***	***"pine chips"*** ***"hardwood chips"*** ***Southern yellow lumber pine (American supplier)*** ***Information not provided for Italy and Germany***	***USA***
Central Europe	*30*	*0*	***Sweden***	***Pinus sylvestris***	***Sweden***
Greater China	*1200*	*16*	***Canada (4)*** ***Brazil (2)*** ***Chile*** ***South Africa*** ***Unknown (5 at most)***	*Eucalyptus* *Eucalyptus globulus* *Eucalyptus grandis* *Abies balsamea* *Abies sibirica* *Betula pendula* *Larix laricina* *Larix sibrica* *Picea abies* *Picea glauca* *Picea oborata*	*Brazil* *Uruguay* *Chile* *South Africa* *Sweden* *Germany* *Russia* *Canada*

				Pinus contorta	
				Pinus ponderosa	
				Pinus radiata	
				Pinus strobus	
				Pinus sylvestris	
				Populus canadensis	
				Populus canescens	
				Populus tremula	
				Populus tremuloides	
				Pseudotsuga menziesii	
Greater China	*530*	*13*	***Finland***	*Eucalyptus*	*Uruguay*
			Russia	*Populus tremula*	*Russia*
			Canada (3)	*Eucalyptus grandis*	*Brazil*
			New Zeeland	*Pinus sylvestris*	*Finland*
			Chile	*Picea glauca*	*Canada*
			Unknown (5 at most)	*Larix sibrica*	
				Picea abies	
				Pinus contorta	
				Populus tremuloides	
				Picea oborata	
				Abies sibirica	
Greater China	*20*	*2*	***Chile***	*Pinus radiata*	***Chile***
			Canada	*Picea glauca*	***Canada***
				Abies balsamea	
				Pinus contorta	
North Europe	*1970*	*11*	***Finland (4)***	*Betula Pendula*	*Finland*
			Sweden	*Betula pendula*	*Sweden*
				Betula Pubescens	*Estonia*
				Betula Pubescens	*Russia*
				Betula Spp	*Lithuania*
				Picea Abies	*“Baltics”*
				Picea Abies	*Latvia*

				Pinus Sylvestris	*NW Russia*
				Populus tremula	*UK*
					France
North Europe	*10*	*2*		***No information provided***	***No information provided***
North Europe	*550*	*12*	***No information provided***	***Populus tremula***	***Canada***
				Fagus sylvatica	***France***
				Quercus pedunculata	***Brazil***
				Castaneasativa	***Chile***
				Betula pubescens	***Austria***
				Abies Balsamea	***United Kingdom***
				Picea Abies	
				Pinus Strobes	
				Populus Tremuloides	
				Populus Grandidentata	
				Acer Rubrum	
				Acer Saccharum	
				Betula Alleganiensis	
				Eucalyptus grandis	
				Eucalyptus Urograndis	
				Pinus sylvestris	
				Picea abies	
				Pinus radiaae	
				Abies alba	
Total	*5 200*	*61*			

Table 33. Tree species and countries of origin of raw materials reported by the Corrugated board suppliers

Trading area	***Estimated tonnage virgin fiber (Metric tonnes)***	*No of virgin fiber based paper qualities used*	***No and location of pulp mills connected to the virgin fiber based paper qualities of each supplier***	***Tree species used in pulp production***	***Declared tree species country of origin***

Central Europe	*1490*	*3*	***Austria Poland Sweden***	***Picea abies***	***Austria***
				Pinus sylvestris	***Germany***
				Betula pendula	***Poland***
				Picea spp.	***Belarus***
				Pinus spp	***Sweden***
				Betula spp.	***Lithuania***
					Finland
Greater China	*70*	*4*	***China (2)***	***"hardwood pulp"***	***Canada***
				"softwood pulp"	***Russia***
					China
North East Europe	*60*	*4*	***Russia (2)***	***Populus tremula***	***Russia***
				Betula pendula	
				Betula pubescens	
				Picea abies	
				Abies sibirica	
				Pinus sylvestris	
				Populus spp.	
	1620				

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