



CHALMERS

Recovery Potential of Cotton Fibers from the Textile Products Using Circular Economy Strategies in Sweden

Master of Science Thesis in Industrial Ecology

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ABSTRACT

The gradual increasing trend of global population growth along with rising living standards are mostly responsible for enormous consumption of textile products. This potential fast-growing fashion industry eventually posing threat on resources extraction and increasing generation of textile and clothing wastes brings many adverse effects on the environment. The issue has gained much attention because of loss of resources and environmental degradation related with these flows. In line with EU textile waste management directives, the concept of circular economy (CE) can be applied. Connecting the CE concept to the textile and clothing sector can lead to shifting from a linear supply chain to a more circular supply chain. Accordingly, the study sets its first objective to quantify cotton fiber consumption in Sweden and map out potential textile flows including post consumption level indicating amount measured in tons. To quantify the flows and make the process more concrete, a product approach is being applied where, CN codes (for selecting textile related products) and NACE codes (to identify their economic activities) are used. 43 CN codes are selected related with cotton textile products. Domestic material consumption (DMC) is calculated using import, export and domestic production data. The calculated finished cotton textile fibers were 77000 tons/year (rounded) in 2011 which is nearly 8.12 kg/person per year. Using this data and information on post-consumer phase like collection, export, resell etc. the flows of finished cotton textile fibers and textile waste stream generated to Sweden in 2011 are mapped.

Thereafter, the second objective of this study is to explore circular business strategies that are being put in practice in different organizations to understand what kind of strategies need to be selected to address economic or material challenges. Therefore, the study identified various strategies to recover potential cotton fibers from the waste stream for instance, circular supplies to ensure 100% closed material loop with providing renewable, biodegradable, and recyclable resources. Product service system, extended producer responsibility and product life extension strategies are identified to ensure services like repair and warranty that can extend product's life time, product take-back scheme to encourage reuse, resell or share unwanted clothes with other under sharing platforms, and finally re-/ upcycle or perhaps cascade use of discarded clothes to recover its potential values. Those strategies in some cases help to generate new business opportunities along with providing green jobs and eventually assist in recovering potential cotton fibers. Finally, it can be concluded that practicing circular strategies from every aspect could alleviate pressure on extracting virgin natural resources thus reducing the environmental burdens.

Keywords: Circular Economy, textile and clothing industry, product approach, recovery of cotton fibers, circular strategies, CN codes, NACE economic activities

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Chapter 1: Introduction

1.1 Background

The industrial revolution during the period of 18th and 19th century is considered as one of the major turning points in history and responsible for the continual growth of population and changing living standards. This revolution not only brought a glorious change in the technological innovations but also makes our life easier. Among all other industries during this time textiles were the dominant one in terms of employment, value of output and capital invested where modern production methods had been used for the first time (Landes, 1969). However, we have formed such an economic system based on the notion of infinite natural resources and linear by nature as ‘take-make-use-dispose’ (Preston, 2012). Consequently, rapid urban and industrial development requires an enormous flow of materials that influence an ever-increasing need for extraction of natural resources (McKinsey, 2015). The conception has been changing with the passage of time. Awareness has been increasing among people regarding the unsustainable existing linear economic system. Therefore, a popular concept of ‘circular economy (CE)’ has emerged especially in Europe. Thus, the CE concept can be considered as a development strategy, responsible for the economic growth while consuming limited natural resources, reconsidering the production process, industrial design and consumption patterns. According to Ellen McArthur Foundation (2012), the circular economy is “restorative or regenerative by intention and design. It aims to keep products, components and materials at their highest utility and value, at all time and design out waste from the beginning.” More importantly, considering the potential across entire value chains and cross-value chains, and closing ‘resource loops’ in all economic activities (Hislop & Hill, 2011).

Noticeably, the textile sector considered as one of the resource and labor intensive emerging sectors which is increasing with the increasing number of population and improvements in living standards that has one of the largest environmental footprints in the world (Anderson, 2013). Additionally, with regards to fashion, some sources even claim that “*it is the world 2nd most polluting industry, second only to oil*” (e.g. Ditty, 2015; Ethical Fashion Forum, 2014; Anderson, 2013)¹. The key environmental impacts of textile products arise throughout fiber production, manufacturing and use phase (Allwood, 2006; Beton et al., 2014; Laitala et al., 2012; Nilsson, 2007; Saouter et al., 2002). In addition, enormous changes in fashion industry demand more frequent replacement of the products with newer, more modern and sophisticated goods, which also responsible for the generation of more textile waste (Fletcher, 2008). However, this rapid increasing fashion industry is facing challenges due to the nature of its faster production and high volume of consumption (Fletcher, 2013) and later on an unhealthy “throwaway” consumer behavior that nourishes waste stream (Pedersen & Andersen, 2014).

In 2008, the Swedish Environmental Protection Agency (SEPA, 2011a & SEPA 2011b) estimated the net consumption of clothing and textile in Sweden around 131,800 tons or just less than 15 kg per person based on the statistics for imports, exports and domestic textile production. According to

¹ This information is cited in many internet sources and literally absorbed from an institutional publication called the Danish Fashion Institute and Deloitte (2013) which is no longer available to this date. Accordingly, it is very hard or doubtful to measure the overall environmental footprint of the sector accurately therefore critical to rank it over other industry. But the current numerous research on finding Environmental footprint of this sector using Life Cycle Assessment (LCA) methods on textile production and consumption reveal that the industry instigates significant environmental impacts.

the same source, it is found that around 8kg of textile per person per year waste appeared in the household waste and 3 kg per person/year collected by the charity organizations for reuse or reselling purposes. While another statistic shows the amount of discarded textiles for the European Union (EU) which is around 5.8 million tons/year, of them 25% is collected by different charity organizations or industry enterprises with the purpose of reusing or recycling. The remaining 4.3 million tons, is sent to landfills or municipal waste incinerators (Briga-sa et al., 2013) for energy recovery purpose. Most importantly, the total global fiber demand estimated 77.5 million tons in 2011, and considerably the fastest emerging fiber market was for cotton, which arose by 8%. On the other hand, the demand for synthetic fibers still increased by 5.6%; polyester is 86.8% of the total production of synthetic fibers (Simpson, 2012). However, EU declares textile recycling as a priority waste stream and legislated on as a revised form of Waste Framework Directive (WFD). One of the major aims of this legislation is to make the recycling process easier for EU citizens and corporations. The Directive 2008/98/EC, demarcates some basic waste management principles, for instance, waste needs to be managed without jeopardizing human health and damaging the environment and it is important to consider risk to water, air, soil, flora and fauna (EC, 2013). Considering the Swedish waste prevention and management aspects, textile resources mostly go to incineration plant for energy recovery. Recycling of textile in order to recover textile material or fabric is not performed very well in Sweden today due to lack of promising technology (Zamani et al, 2015).

According to Hawley, (2006) textile and clothing products are almost 100% recyclable and there is nothing that should be wasted in this sector. Besides, textile recycling associated companies can make larger profits by avoiding charges associated with dumping in the landfills. In addition, the company can also bear a green environmental image, provide employment, donations to charities and disaster relief. On the other hand, recycling practices can reduce the dependency of import of textile raw materials in Sweden. Considering that cotton is recognized as one of the major fibers due to the nature of its production and larger market share (Beton et al., 2014) versatility, trademark lightness, excellent performance and ordinary level of comfortability makes it an indispensable raw material for the textile industry and can be used to make all kinds of clothes and homewares. Further, Clay (2004) estimates cotton fibers production is solely responsible for the usage of global insecticides (25%) and pesticides (11%) and it requires between 7000 and 29000 liters of water for cultivating one kilogram of cotton.

To overcome problems in the textile sector and cotton in specific, the concept of CE can be applied to instigate systematic changes in fast fashion industry to achieve socially and environmentally sustainable operations. By connecting the CE concept to the textile sector, a move from a linear supply chain to a more circular supply chain can be made. Applying CE strategies such as narrowing supply chain loops, shared economy or collaborative consumption, extended producer responsibility etc., can be the way to recovery of textile materials and energy from the waste stream, creating closed loops, recycling flows and extending the service life of a garment during the use phase.

1.2 Research Question

The textile sector is an important sector with an enormous contribution to the economy but still with lot of sustainability issues that need to be addressed carefully. Therefore, the overall goal of this thesis is to contribute to the prevention and management of textile resources in the Swedish context by identifying and evaluating the way of utilizing discarded materials throughout the whole process and product flows to overcome the insufficiency of resource problems. Thus, it is important to formalize main research question and associated sub questions. Due to high demand and applicability

of cotton in the textile sector, the research is focused on this raw material to recover its potential values from the end-of-use of textile products. Consequently, the research questions are formulated in such a way so that we can realize the consumption status of cotton fibers related products in Sweden and identify strategies to limit the wastage of this resources to close the cotton loop in the industrial processes. Based on this background, this thesis work investigates the potential of cotton fibers recirculation encompassing CE strategies within the textile sector by posing the following questions:

RQ 1: How much textile cotton fiber is consumed per person per year in Sweden along with identifying associated economic activities and map outflows of materials in various life phases of textile products?

RQ 2: What kind of strategies can be applied to achieve the best output in terms of CE perspective and thus close the cotton fibers loop?

1.3 Scope of the study

- *Methodological approach*

A new methodological approach is followed in this thesis paper to quantify the cotton fiber content from the textile products where resources used in the manufacturing processes are accounted. Even though the process can be done following a simple method where exported amount is subtracted from the added value of import and domestic production in Sweden. In this process, transformation of materials in different economic activities are not taken into consideration. Therefore, to get an accurate number and avoiding discrepancy, the study applied this new methodological approach to measure the resources that are being transformed in the production process and eventually quantify the appropriate amount considering only final products.

- *Quantification of cotton fiber consumption*

Applying the aforementioned methodology, it is possible to quantify the cotton fiber consumption out of textile products for any country if they follow CN and NACE codes or other similar statistical data bases. Besides, the approach can be applicable for any products to quantify DMC, for instance, plastics and articles, machinery and mechanical appliances, pulp of wood or of other fibrous cellulosic materials etc.

- *Application of circular strategies*

Based on various industry types, the selection and application of circular strategies could be different, for instance, strategies which are suitable for textile industry wouldn't match with other like pulp and paper, electric machineries and equipment industry etc. Therefore, based on different textile related business cases, the study sets an example about the type of strategies to be selected, where and how to set appropriate strategies to minimize the resource loss and eventually close the loop.

- *Future potentials*

The study outlines the way to calculate textile materials consumption in Sweden and map out inflows and outflows of textile products. Thereafter, selected strategies to prevent or manage the wastage of resources in order to close the loop are identified.

1.4 Structure of the report

This thesis paper is structured as follows:

Chapter 2 provides additional background information regarding CE and its application in the textile sector which is mostly based on secondary literature and internet sources.

Chapter 3 presents case examples from the company perspective, in order to understand what kind of strategies they have been practicing, how and where circular strategies have been applied from various perspective in the textile sector.

Chapter 4 outlines the research strategy and underlying methodology. Therefore, main focus is given to develop methods for collection of data, then processing and analyzing data including literature study, and qualitative content analysis.

In the Chapter 5, the overall findings of this study are presented and based on the results a brief discussion is also provided. The chapter is divided into two sections. First section depicts the map of textile material flows along with number of cotton fiber consumption per person per year in tons. In the next section it is provided a schematic representation of strategies in a diagram for different sectors to recover potential cotton fibers.

Finally, Chapter 6 concludes findings of the research and critically reflects upon approaches to CE. Thereafter, potentials for future research are given.

Chapter 2: Literature Review

One of the main purposes of this chapter is to highlight and present the existing literature regarding the topic relevant to the study underlying this thesis. Accordingly, the concept of CE and its principles are described briefly. Thereafter, it is provided an overview of the textile waste management scenarios in Sweden and potential initiatives to overcome the textile waste prevention and management problem. This is followed by an overview of cotton regenerative strategies considering they are the major demanding raw materials in the textile sector.

2.1 Circular Economy associated key concepts

The existing standard of CE theoretical form have been derived from other defined concepts. Typically, all these concepts have assisted to form the conceptual building blocks to understanding the notion of CE. The concepts are as follows in order of conceptual scales:

- ***Sustainable Development***: Sustainable Development is a comprehensive concept that consists of the combination of the three dimensions of development, economic, environmental and social (Jacobs and Sadler, 1990). This concept links to CE through the economic and environmental dimensions as well as social in the name of ‘Corporate Social Responsibility’.
- ***Ecological Transition***: Ecological transition is a multi-actor process aiming to achieve an economic development compatible with the planetary limits (Dron et al., 2013). The concept, mostly used in Europe is multidimensional and it can be an implementation like eco-design, a discourse such as a wide range of stakeholders from the civil society, government etc. and finally a theoretical field (Audet, 2015).
- ***Green Economy***: Green economy is a concept that proposes economic solutions to improve human well-being and establish social equity while minimizing environmental risks and ecological inadequacies. It is a low carbon, resource efficient, and socially inclusive concept (UNEP, 2011).
- ***Functional Economy***: The Functional² Economy concept is also known as Performance Economy, where one can sell functions or performance of goods and services instead of most goods (Indigo Development, 2005 & Stahel, 2013). It is recognized as one of the profitable business models for CE (Butterworth et al., 2014) with retaining ownership of long lifespan goods. This concept can support the decoupling of growth from resources consumption and generate incentives to close production and consumption loops.
- ***Life Cycle Thinking***: The concept of Life Cycle Thinking (LCT) is a combination of Life Cycle Assessment (LCA) and Life Cycle Management (LCM). The key aims of the environmental LCT are to lessen environmental impacts like emissions to air, water and soil (Life Cycle Initiative, 2013) throughout the product, process or service’s life cycle. LCA is the tool used to assess eco-efficiency i.e. “adding maximum value with minimum resource use and minimum pollution”

² Also called as the Functional Service Economy or Service Economy. The key functional activity of this concept is Product Service System (PSS) which can be defined as “a marketable set of products and services capable of jointly fulfilling a user’s need. The product/service ratio in this set can vary, either in terms of function fulfilment or economic value” (Goedkoop, et al., 1999).

(Bjørn, and Hauschild, 2013). LCM is considered as the way to apply LCT in the organizations to improve their products and sustainability performance.

- **Cradle-to-Cradle Thinking:** Cradle-to-Cradle Thinking is a nature-inspired, biomimetic design conception developed and commercialized by McDonough and Braungart (2002) with the aim of creating products with positive environmental footprint (Bor et al., 2011). Cradle-to-cradle empowers eco-effectiveness (“*doing the right things*”) through a method formed on cycling technical and biological nutrients eventually to attain a healthy material metabolism (Braungart et al., 2007). Cradle-to-Cradle³ thinking is considered as the theoretical pillar of CE’s closed loop system (McDonough and Braungart, 2002).
- **Shared Value:** Shared Value is a management approach and the idea was developed by Michael Porter and Mark Kramer (2011) in order to establish a harmony between capitalism with societal needs. They believed that “*what is good for society is also good for business*” which was the central idea of shared value. The framework proposes to generate value by defining and addressing social needs through redesigned products and markets, redefined value chains and the creation of community development clusters (Porter et al., 2011).
- **Industrial Ecology:** Industrial Ecology is a research and application field, where materials and energy flows through industrial systems are studied. Major goals are to optimize the use of energy and materials, minimize the wastes and pollution, through transforming industrial by-products or waste into input for other processes in an economically viable way (Frosch and Gallopoulos, 1989 & ISIE, 2015). The ultimate aim is to make industrial systems mimic natural ecosystems.
- **Extended Producer Responsibility:** Extended Producer Responsibility (EPR) is recognized as the ‘polluter pays’ principle. One of the key objectives is transferring a product’s environmental responsibility over the entire life cycle back towards the manufacturer, especially for the take-back, recycling and final disposal (Lindhqvist, 2000).
- **Eco-design:** Finally, the concept of Eco-design focuses on the integration of environmental features into product development (Karlsson and Luttrupp, 2006). Eco-design is a tool to integrate LCA results or it can be used as a guideline, a checklist or an analytical tool that serves an eco-efficiency based product development process (Knight and Jenkins, 2009).

2.2 Concept of Circular Economy (CE)

In contrast to the traditional linear economic model, the notion of CE has emerged and earned much attention in the international business community. This is because of its widespread application in the form of optimizing natural resources consumption, which enables economic growth by transforming production chains and consumption patterns and reshapes industrial systems with greater efficiency (Lacy et al., 2014). Therefore, the circular economy is ‘restorative or regenerative by intention and design’ (McKinsey, 2012) while considering all potential value chains and ‘closing resource loops’ in all economic activities (Hislop & Hill, 2011). Ideally, the concept prefers to phase-

³ Cradle-to-Cradle also renown as Cradle 2 cradle or C2C and regenerative design approach

out waste (McKinsey, 2013) from the beginning of the value chain instead of relying on until the end of the chain for waste recycling.

Figure 1 depicts the general conceptualization model of CE developed by Ellen MacArthur Foundation's (EMF) for different material properties (McKinsey, 2012). The model shows a completely opposite picture of a take-make-dispose model which thus replaces disposability with restoration (Nguyen et al., 2014). The CE model is built based on the natural principles where waste is considered as resources in the system, production systems can become more flexible with more inputting capability, systems should run on renewable energy sources, and value creation through cascading material (McKinsey, 2013). Additionally, product life extension, long lasting goods, reconditioning activities, performance economy and waste prevention (Clift & Allwood, 2011) are often useful concept.

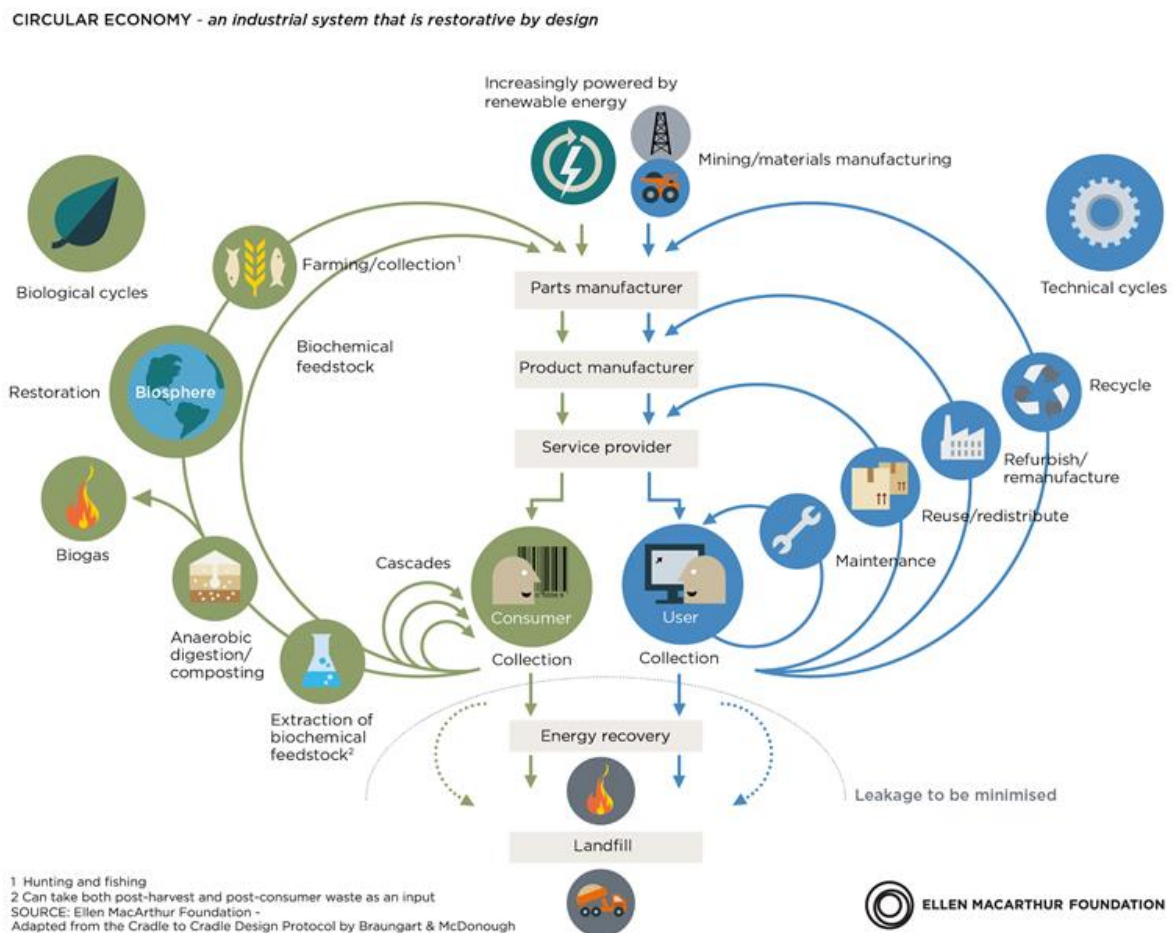


Figure 1: Schematic representation of The Circular Economy diagram (adapted from McKinsey, 2012)

2.3 Implementation of CE

The ideology of CE has gained much traction with policy makers. Accordingly, various countries have proposed acts and laws for enforcing the recycling principle of a circular economy. Germany is one of the pioneers who started to implement CE in 1996 by enforcing the enactment of the law 'Closed Substance Cycle and Waste Management Act' which is even renewed in 2012 where new European Union (EU) guidelines on improving the environment, climate and resources protection

has been added (BMU, 2013). It is declared that ‘waste’ should be treated as a property or a resource in lieu of waste. Later, the Japanese Government also made an attempt to start implementing CE by developing a legal framework and enforcing ‘The Basic Law for Establishing a Recycling-Based Society’ (METI, 2004; Morioka et al., 2005) which eventually came into action in 2002 that ensures the long-term dematerialization of Japanese society (Van Berkel et al., 2009). In 2008, China became the third country putting serious effort in implementing CE on a large scale. Besides, several other European countries like Sweden, Denmark, and the Netherlands have managed to introduce the concept of CE in their decision-making process which is accepted by the political parties and encouraged to take further initiatives for transitioning to a resource efficient Europe (Heshmati, 2015). Another important initiative was taken by the European Commission (2012) which is the ‘*European Resource Efficiency Platform (EREP) – Manifesto and Policy Recommendations*’. The platform invites leaders from various arena like business, labor and civil society to support their initiatives of becoming more resource efficient and move to a circular economy. Various examples regarding implementing CE can be given but in different forms or names which are not clearly structured rather diffused under sustainability concepts which often overlaps with sharing value, eco-design principles, functional economy, cradle-to-cradle thinking etc. Therefore, it is essential to develop a comprehensive framework for implementing CE approaches aiming at closing the loop at promising scale.

2.4 Textile waste management scenarios in Sweden

The textile sector is considered as one of the resource and labor intensive emerging sectors which has been increasing with the increasing number of population and improvements in living standards (Zamani, 2014). In addition, enormous changes in the fashion industry demand more frequent replacement of the products with newer, more modern and sophisticated materials, which are also responsible for the generation of more textile waste (Fletcher, 2008). Noticeably, when consumers think that their used garments are not usable any longer then they have fewer choices to take, either they have to discard, or sell or donate to textile collectors, for instance, active charity organizations, local municipalities, retail collectors or professional collectors. A major portion of these discarded garments in Europe is either incinerated or landfilled together with municipal solid waste. Due to lack of sustainable textile recycling technology, most of the flow is downcycled into wipes, rags or used as insulation materials in various industries (Palm et al. 2013). Figure 2 depicts the overall textile process flows starting from raw material extraction, including possible post-consumer routes for textile waste management. Based on quality of the products, various kinds of raw materials such as cotton, polyester, silk etc. are used in the textile industry which are then entered into the production process for fabric production. Many kinds of chemical reagents are used to treat fibers and dyes are added to make colorful fabrics (Roos, 2016). After passing the use phase, textile products are either ended up in the incineration plants for energy recovery or got new life because of textile collection, reuse and recycling initiatives.

2.4.1 Collection and reuse

In Sweden, it is estimated that the total sales of new clothing and household textiles in 2008 was 132,000 tons of which 95,000 tons were clothing and the remaining home textile (Carlsson et al., 2011). It is just less than 15 kg per person based on the statistics for textile imports, exports and domestic production. Besides, it is estimated that around 8 kg of textile waste per person per year appeared in the household waste stream and 3 kg per person per year collected by the different charity

organizations for reuse purposes which is approximately 20% of textile waste (SEPA, 2011a & SEPA, 2011b), around 50% is sent to incineration plants and the remaining amount either stored in the household closets or discarded at the recycling centers (Palm et al. 2013). There are various ways to reuse old clothes, for instance, formal reuse where secondhand shop or store deposit systems have been practiced, while Ebay, Blocket, and Tradera's activities are considered as semi-formal reuse and finally sharing of clothes recognized as informal reuse (Palm, 2011). Another report presented that, formal reuse, mostly done by the charity organization in Sweden and based on ten largest charity organization collection schemes was around 26000 tons of clothes and shoes in 2008. Out of this collection roughly 19,000 (73%) tons were exported mostly to Africa and Eastern Europe and a smaller portion (11%) 3000 tons stayed in Sweden for reusing purposes (Palm, 2011) and finally (15% or 4000) sent to incineration plants or landfill. Substantial benefits from the reuse practices, can be had for example, potentially reduce the production of new textile. Environmental benefits are significant, such as lowering the global warming potential by about 15 kg of CO₂- equivalent per kg of textile (Söderman et al., 2011, Sundqvist & Palm, 2010). Noticeably there are some factors that discourage the reuse of textiles. For instance, the quality of the new textile is not that good to enable to use as second-hand garments. The quality of the collected clothes by charity organizations are not high enough to be reused or resold in the Swedish market thus ending up through either exporting or incinerated. Sometimes, reused clothes are to some extent considered filthy. One of the major economic aspects of reusing textiles is the price of second-hand clothes which are high in Sweden due to the excessive handling costs, for instance, collection, sorting, and selling (Palm, 2011). Considering the environmental benefits and lack of collection rate it can be said that there are potential possibilities to make the collection, reuse and recycling processes more efficient using CE strategies.

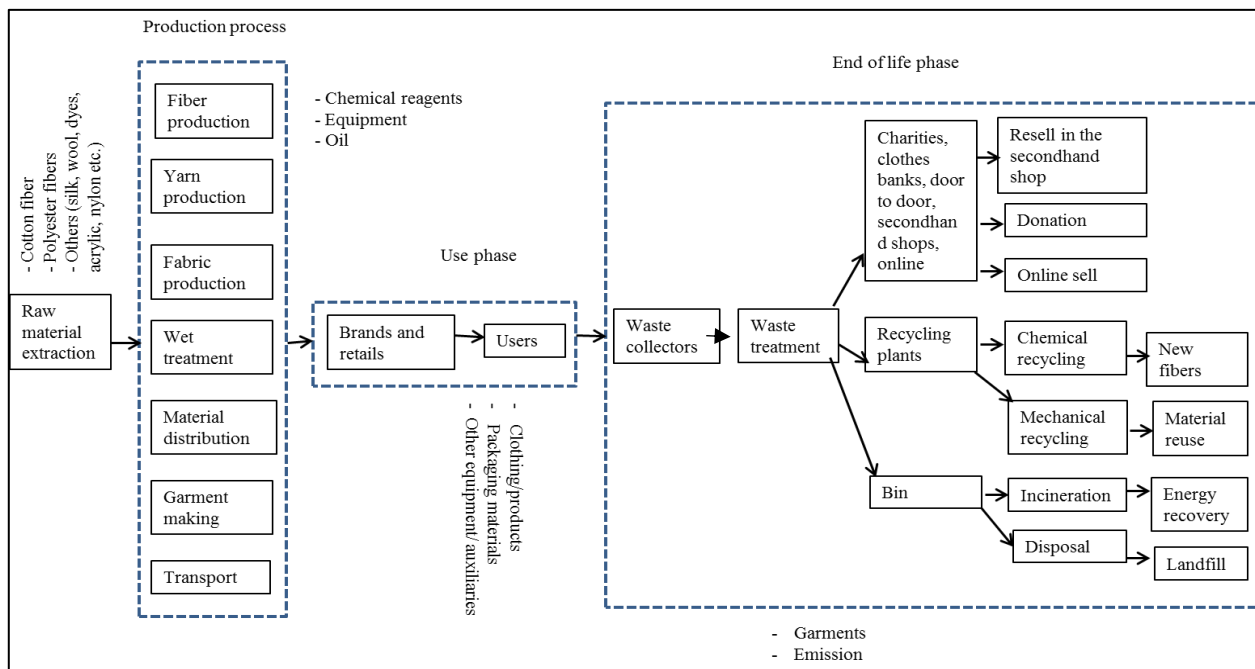


Figure 2: Overall textile process including waste recycling and material use (Partially adapted from Zamani, 2014 & Roos, 2016)

2.4.2 Recycling of textiles

In Sweden, a large-scale industrial recycling of textiles took place at Stena Gotthard until 1992 where only industrial rags were produced from the discarded textiles (Palm, 2011). After that, there was no significant recycling activities for long time. Now, there are several companies trying to change the trend, for instance, Re:newcell. Several companies along with the help of scientists from the Stockholm's Royal Institute of Technology have developed a way to recreate cotton which thus can be able to reduce the scarcity of cotton raw material. Consequently, in June 2014 a Swedish collaborating group of companies presented the world's first garment made entirely from the recycled cotton which looks similar to quality fashion products of H&M or Zara. According to the business development manager from Re:newcell, Henrik Norlin *"The technology allows us to recycle all materials that contain cellulose but best result could be achieved when recycling pure cotton."* He also mentioned that this first established fabric recycling factory can alone be able to process 20,000 tons per year (Braw, 2014). In addition, one of the Japanese companies also developed similar type of closed loop process technology in collaboration with Patagonia Inc. that can recycle discarded polyester apparels chemically to new polyester fiber of enough quality to be used as raw material (Patagonia, 2011). There are different mechanical techniques as well that used to recycle old or discarded cloths and the applicability of the methods mainly based on the quality of the rejected garments.

Even though we have recycling technologies, the major hindrance is lack of collection (Braw, 2014). In addition, there are some other factors behind the disfavor of recycling initiatives, for instance, lack or limitations of efficient chemical and mechanical textile recycling technologies, lack of automated sorting technologies, lack of investment in recycling technology, presence of different types of fiber in textiles (hard to separate), presence of dyes⁴, metals and hazardous substances in garments (Elander & Ljungkvist, 2016). Despite all those difficulties, it is still possible to make recycling process efficient along with the help of implementing CE strategies and developing technologies.

2.5 Cotton recycling possibilities

According to Hawley, (2006) textiles are almost 100% recyclable and nothing should be wasted in the textile and apparel sector. Textile recycling companies can make larger profits by avoiding costs associated with dumping in the landfills. On the other hand, recycling practice enables to reduce the significant amount of natural resource extraction and bears green environmental image to the companies. However, recycling of textile is complicated because of the mixture of other materials but it is possible to produce regenerated cellulosic fibers, for instance, viscose (also known as rayon) or lyocell from old cotton. Sometimes cotton linters are also used as raw material in the production phase because of considering cotton from textiles, a pure source of cellulose and could possibly recycle them into new textile fibers (Asaadi et al., 2015; Haule, et al., 2016; Negulescu, et al., 1998). Therefore, application of CE strategies can play an enormous role to recycle textiles made fully or partially from cotton.

⁴ Dyed textiles contain chemicals that might impact the color of the output material if not sorted out before entering the recycling process.

Chapter 3: Case studies

3.1 Existing practices of circular business strategies in the textile sector

It can be said that the textile sector has lot of opportunities to improve by applying circular strategies. Therefore, there are many companies throughout the world that are practicing and implementing circular business strategies to improve the sector and make value out of waste, hence trying to close the loop. However, there is still a need for investment in R&D to find out efficient solutions. In the following chapter, popular circular business models are highlighted along with company examples to understand their initiatives and how they are making values through creating resource loops. Besides, it is essential to understand business strategies from different dimensions and therefore there is a need to know the leakage points, for instance, sourcing, product use, end-of-life phases etc. in the textile sector. Then it is important to list out some of these circular strategies.

3.1.1 Product service system (PSS): Clothing library/Fashion library, leasing and renting

As a human being, most of us have a never-ending interest of buying or collecting a series of new outfits which happens quite very often. Consequently, most of the house has a closet full of unused or rarely used clothing. To avoid this overconsumption and considering the environmental effects, the concept of clothing library or fashion library have gotten much attraction from the fashion-conscious people (Sörbring and Ek, 2013). It can be set as an example under product service system (PSS)⁵ where performance in combination with product and services is being sold or provided to the customer to satisfy their need without being owner of the product physically (Tukker, 2004). At a clothing library, a customer who needs to pay a certain amount of money to become a regular member can borrow or even buy clothes from the shops for a while and give it back to the shop after the period of using the product. This service systems of clothing ensure that the products are used by more than one customers through a lease or pay for use arrangement (Lacy et al., 2014). However, customers have the right to come as often as they want in the shop to check or try the new outfit. With a membership card, a customer has the right to get full access to the library's full collection. Customers can also bring in their own clothes to loan them to the library on a temporary basis (Peters, 2015). This practice mostly focuses in reuse of clothing which increases the life of products and make the best use of outfits. Thus, it is considered as an interesting idea to change the idea of shopping in the market place. As an example, companies like Lena fashion library in Amsterdam Lånegarderoben and Klädoteket in Sweden have established very recently to reduce overconsumption and leasing or renting clothes to their customers. Additionally, this business model works very well for relatively high quality, durable, luxurious or rather seasonal products, occasional outfits like wedding dress, and baby clothes (McKinsey, 2014).

Like Lena clothing library, VIGGA is an award winning Danish brand that was born based on the CE concepts by sharing and providing high quality products where parents can lease organic maternity and kids wear, therefore saving money, time and resources (Vigga, 2017). Similarly, New York, USA based Rent the Runway is an online service based rental shop that provides designer dresses and accessories (Rent the Runway, 2017). Identical examples can be given that are established based on PSS ideology, for instance, Nopsa Fashion library (2017) (UK based), Nurmi clothing library (2017) (Finland based), The Netherland based MUD Jeans (MUD Jeans, 2017).

⁵ Product Service System, the idea was proposed by Tukker in 2004.

3.1.2 Sharing platforms: Swapping clothes

There are people who don't like to keep their unused thing in their closet as they get tired to use it. So, they usually end up being sold in the secondhand market or donated. However, there also exists "National wardrobe" which refers to a storage of clothes in the households (Defra, 2010) and it is hard to measure the quantity eventually losing its potential value over time. Considering this aspect, a new business idea has emerged based on sharing or renting clothing (Ekvall et al., 2014). Accordingly, there will be no ownership rather sharing or bartering or trading scheme for clothes. Companies are facilitating to their customer to share and transfer their idle resources that are no longer used and in exchange they receive voucher or special discount on next purchase. Based on sharing platforms the idea of swapping clothes has become popular in the USA where members (paying a minimum fee) can upload the items they are willing to give away online and thereafter can choose a credit value that can be usable to purchase products. The person who choose the item needs to pay only shipping and handling fee. For example, Swap.ReKindness (2017) is an example of this kind of social enterprise based on online sharing platform services.

3.1.3 Product life extension: Repair and warranty

The idea of this business model is to lengthen the life cycle of products through repairing, upgrading or manufacturing of products or even cascading practices (transforming cotton based clothing into fiber fill for furniture, and later into insulation material before returning it as a biological nutrients). Product life extension is considered as one of the better options for value creation (Lacy et al., 2014). Though the model considers the reuse and prolonging the products life aspects, still requires specialized knowledge and skills while considering remanufacturing of parts or components or refurbishing of products (McKinsey, 2013). In this regard, Nudie Jeans (2014a) (Sweden based), Patagonia (USA based) and MUD Jeans (2017) (The Netherland based) companies showing success can be considered as a best example of CE. Nudie jeans is a Swedish denim brand usually made of 100% organic cotton which offers a multifunctional business model. It provides, for instance, free repairing services or kits to their customers, redesign and resell collected second hand products and finally recycle their worn away products (Nudie Jeans, 2014a, & Nudie Jeans, 2014b). They also prefer cascading use of their own jeans and therefore produce long lasting products without using any leather content. Patagonia- "The Common Threads" has developed an initiative to make Patagonia clothes recyclable. They are conscious about what they buy, make and use therefore having strong involvement with reduce, reuse, repair, recycle, and reimagine initiatives to make the textile industry more sustainable (Patagonia, 2011). On the other hand, MUD jeans company works in a different way, to become a member it charges €25 to the customer who can then lease a jean for one year with a payment of €7.5. After finishing the leasing period, the customer either can give it back to the seller or keep it to him or get a new one in exchange of old one. During the use phase the customer will be provided a free repairing if needed (MUD Jeans, 2017). In both cases, the system of lease and deposit activities confirm a fruitful return scheme of their own products that eventually help them recover value and minimize a significant consumption of virgin cotton. Both companies make an unique value propositions for their members establishing new business models and ensures a certain raw material sourcing.

3.1.4 Extended producer responsibility (EPR): Product take back scheme

EPR is considered as one of the resource efficient and practical solution towards CE where producers⁶ are responsible for their products along with associated environmental costs throughout their life cycles. They are likely responsible to ensure that their products are resource efficient, reusable, recyclable and free from dangerous substances ([Augustsson, 2013](#)). Germany, Japan and France have implemented EPR program in a form of take-back scheme ([Zaak and Ethika, 2015](#)). The idea is either the companies who make the product or the stores that sell the product are liable to take back their product when the consumers are done. It is expected that, companies will become interested to design the product in such a way so that it can disassemble easily and can be recyclable with use of minimum hazardous chemicals. Thus, companies are taking initiatives to attract their customers to become used to the new scheme and therefore, offering discount vouchers in exchange of old clothes collecting in their store ([Ekvall et al., 2014](#)). Companies like Filippa K ([2008](#)), Boomerang ([2017](#)), Zara, H&M ([2013](#)), Patagonia (2011) and I:CO, ([2015](#)) have that kind of take-back schemes to ensure proper collection of their own products from their customers in their specified stores for reuse/resell, and eventually recycling. For instance, through the collect concept, consumers can return used Filippa K clothing to any Filippa K store, and will receive 15% discount on their next purchase. Clothing in poor condition is sent to a local charity organization. Clothing in good condition will be used in the secondhand store in Stockholm or in other retail outlets. Firstly, only gently used, seasonal clothing is accepted. If the garment sells, the owner receives a 40% commission. Submissions 'hang' in the shop for a month, after which they are returned to the owner. Filippa K produces 1 million garments per year and the future target is that all these garments have the opportunity for second life ([Filippa K, 2008](#)). Noticeably, one of the main ideas of this EPR scheme is to enhance textile collection, reuse and recycling rates through implementing producers' responsibility to their products that eventually reduces the rate of incineration or landfill. However, to ensure the product take-back scheme an efficient way would be through renting and leasing models or may be with incentivized model ([Smiths et al., 2015](#)).

3.1.5 Design for end-of-life reuse

The success and implementation rate of above-mentioned business strategies mostly depend on the quality of materials used to make clothes and the design criteria of the products. Since we are thinking of the best use of our clothing through reusing, repairing, and recycling practices, the product should meet the following circular product design criteria ([Bocken, et al., 2016](#)): It is essential to design the product using quality and bio-degradable materials that ensures reliability, easy maintenance, reparability, upgradability, modularity, adaptability, dis and reassembly and durability of the products ([Bakker, et al., 2014](#) & [BSI, 2009](#)). The design aspects eventually can be able to slow down the resource loop through extending the use phase of the products ([Chapman, 2005](#) & [Moss, 1985](#)). From the product designing point of view, Smart Textile has been trying to produce fabric using chemically recycled cotton and raw material like cellulose from Swedish forests ([Smart Textile, 2017](#)). Swedish based company named Allvar makes luxury underwear from Swedish wood. They process trees very carefully to prepare a high-quality fabric that is designed to attain highest comfort

⁶ Producer refers manufacturers within the country, importers and retailers ([Ekvall et al., 2014](#))

(Allvar, 2017). Patagonia, is also designing their products in a way which is both recyclable and durable.

3.2 Final list of circular strategies based on activities to address challenges

There are various circular strategies applied in different aspects to recover value, extend product lifecycle, link value chains and eventually close the loops. In the previous section it has described popular business circular strategies. However, it is essential to list out circular strategies that can be applied to recover cotton fibers from textile products. Therefore, the study tried to finalize a list of strategies in Table 1, along with associated business models and name of companies who are practicing or applying those strategies to recover values from the waste stream. Noticeably, it is hard to categorize them based on activities since sometimes they are kind of synonym of each other or applying the same thing but in different purposes with same meaning. For instance, sharing platforms, and product service systems are working based on the same ideology therefore hard to categorize under reuse, recycle, refurbish, repair and warranty.

Table 1: List of circular strategies along with associated business model and followed by company examples

List of Strategies	Associated business model	Benefits	Relevant company examples	References
Cradle-to-Cradle	Resource recovery	<ul style="list-style-type: none"> - Product redesign to ensure 100% closed material loop, i.e. eco-design - Therefore, design aspects should consider easy maintenance, repair, upgradability, modularity, recyclability, adaptability, dis-/reassembly 	Forest wood based Allvar's luxury underwear, Houdini, H&M, Nudie Jeans & Filippa K, IKEA, Lindex, Dutch aWEAReness, etc. (Operating based on circular design mindset)	McDonough and Braungart, 2002 , Bakker, et al., 2014 & BSI, 2009 , Ekvall et al., 2014 , Smiths et al., 2015 , Re-imagine (Etsy and Winston, 2006) , Allvar, 2017 , Houdini, 2013 , Filippa K, 2008 , H&M, 2013 , Nudie Jeans, 2014a , IKEA, 2014 , Lindex, 2015 , Dutch aWEAReness, 2017
Remake, redesign				
Re-imagine	Reduce, reuse, recycle	Thinking the systems differently with creative mindset and reimagine the value chains, design of products, choices makes the loop more productive than 3Rs		
Closed loop/Circular sourcing	Extending resource values	<ul style="list-style-type: none"> - Using fully renewable, recyclable or biodegradable resources reduce the pressure on scarce resources like cotton - endless cycling of resources using circular systems 		
		Circle materials longer before discarding ensures less resource consumption		
Collaborative production/Reduce	Industrial Symbiosis	Collective interaction with others in the production value chain in order to ensure closing material loops and reduce material consumption i.e. leftover or discarded clothes	Not known	Zaak and Ethika, 2015 , T4RI, 2017

		can be remanufactured by one entities		
Collection, sorting and refurbishing	Product life extension through Product Service System (PSS)/ Performance based services	Collection through formal & informal sectors could contribute significant values in the chain which then refurbished products can be resold on the secondhand shop/ online platform can increase the values & lifetime of the products	H&M, Kappahl, Gina Tricot, Nudie Jeans, Polarn O.Pyret, IKEA, Filippa K, Houdini, I:CO, Myrorna, Human Bridge,	Lacy et al., 2014, McKinsey, 2013, Filippa K, 2008, H&M, 2013, Circle, 2015, Nudie Jeans, 2014a, Gina Tricot, 2013, Myrorna, 2017, Polarn O.Pyret, 2015, IKEA, 2014, Houdini, 2013, Kappahl, 2015, I:CO, 2015, MUD Jeans, 2017, Patagonia, 2011, Human Bridge, 2014, Stadsmissionen, 2015
Reuse/Upcycle/ cascading		- Extending value chain through reusing or cascading practices - additional revenues by selling company branded secondhand goods	Patagonia, Nudie Jeans, MUD Jeans, Stadsmissionen	
Remanufacture/ remarketing		Discarded cloths can be remanufactured thus remarketing could lead useful business loop		
Repair and Warranty		Product service system or performance based practice can increase the reusing possibilities	Patagonia, Nudie Jeans, MUD Jeans,	Patagonia, 2011, MUD Jeans, 2017, Nudie Jeans, 2014a
Renting and leasing	Clothing/Fashion library	Increase reusability that reduces consumption level as because of sharing products instead of owning it	Vigga, Rent the Runway, Nopsa, Nurmi, MUD Jeans	Lacy et al., 2014, McKinsey, 2014, Peters, 2015, Vigga, 2017, Rent the Runway, 2017, Nopsa, 2017, Nurmi, 2017, MUD Jeans, 2017
Swap items	Sharing platforms	Helps to develop new business loop through sharing idle resources on online based platform in exchange of next purchase discounts makes the product cycle longer and linked with others value chain	ReKindness	Ekvall et al., 2014, Swap.ReKindness, 2017,
Re-/upcycling	Extended producer responsibility through product take-back scheme	Important aspects for the brand owners who are responsible to take back their products and further processing to extend its usability and ensure close the loop instead of landfilling/incineration	Filippa K, Boomerang, Zara, H&M, Patagonia and I:CO, G-Star RAW, T4RI	Smiths et al., 2015, Ekvall et al., 2014, Filippa K, 2008, Boomerang, 2017, Zara, 2017, H&M, 2013, Patagonia, 2011, and I:CO, 2015, G-Star RAW, 2017, T4RI, 2017

Chapter 4: Methodology

The major purpose of this section is to outline the methodological approach applied in this thesis work along with presenting the methods and tools used for data collection and analysis. The process starts by describing the research process, followed by the theoretical framework upon which the analysis is done.

The first step is to quantify the textile cotton fiber consumption in Sweden and map out textile flows including possible final destinations for garments. In the following step, it is focused on identifying strategies in line with the output from the first step. Identified strategies can be implemented in different stages of life cycle of textiles to achieve the maximum circularity and eventually reduce the overall cotton fibers consumption in Sweden.

4.1 Mapping of cotton textile flows in Sweden

The study is only focused on maximizing the circularity of cotton fibers and to map out the flows of cotton fibers that are being used in the textile products to Sweden. In order to know the textile flows, it is crucial to know the inflows, outflows and the final destinations of textile products. To quantify the flows and make the process more concrete, a product approach is applied. Therefore, subsequent steps are needed to get the desired amount and identification of these product groups, which are chosen based on the SCB's statistical database. The proposed product approach can only be applicable for those countries in the European region who follow CN (Combined Nomenclature) (2001) and NACE (Statistical Classification of Economic Activities in the European Community) nomenclatures in their statistical database.

4.1.1 Product approach

The main purpose of the product approach is to track down one or more products paths in a country. The approach is used to find out product's relevant economic activities where they can be transformed to produce final products or can be used as final products to aid other activities and finally to optimize the use phase of products. In the following section, the process will be described.

4.1.1.1 Selection and cleaning process of target product at CN 4-digit level

After selecting the desired product, it is important to find out product relevant CN codes for further information and data processing. The CN statistical codes are recognized as standard accounting tool for European cities and used for foreign trade custom tariffs and statistics (The Combined Nomenclature, 2002). The level of CN code required for the study also needs to be considered, for instance, 2, 4, 6 & 8 digits represent different levels of detail of information. 8-digit CN codes (e.g. 52010010- "Cotton, neither carded nor combed, rendered absorbent or bleached") are selected for this study to quantify only cotton textile consumption, since the 4-digit level (e.g. 5201- "Cotton, not carded or combed") doesn't clearly provide the desired information. Besides, those CN codes which have no reported quantities in either statistics on imports, exports or even for domestic production are excluded (Carlsson et al., 2011) from the final CN list.

Based on the study objectives, it is confined to map out flows of textile products that are made of cotton fibers which are being used in Sweden. Therefore, the study only selected the Chapter represent cotton fabric or cotton textile. In Figure 3, can be seen the selected chapters along with their description. "Textile and Textile Articles" can be found in CN Classification Section XI. Thus,

to quantify the cotton consumption in Sweden, the relevant Chapters 52, 61, 62 and 63 have been selected for this study.

- Eurostat RAMON
 - Classifications
 - Combined Nomenclature 2002
 - Section XI – Textile and Textile Articles
 - Chapter 52: Cotton
 - Chapter 61: Articles of Apparel and Clothing Accessories, Knitted or Crocheted
 - Chapter 62: Articles of Apparel and Clothing Accessories, Not Knitted or Crocheted
 - Chapter 63: Other Made-up Textile Articles, Sets, Worn Clothing and Worn

Figure 3: The way how to search in Eurostat RAMON to obtain the target product

4.1.1.2 Selection and analysis of data from Statistics (SCB)

As the study confined its scope to only calculate flows of cotton textile in Sweden, 4 relevant CN chapters (52, 61, 62 and 63) with 8-digit level have been selected. For all those target products, data on import, export and domestic production was collected. [Appendix 1](#) represents a brief description of all those selected CN chapters while [Appendix 2](#) shows all the codes with 8-digit level including their descriptions, import, export and domestic production data in tons per year. [Figure 4](#) depicts the way to extract import, export data from the statistics website in Sweden (www.scb.se). In addition, [Figure 5](#) shows the way to get the domestic production data for Sweden. Data are available for different product groups for various years starting from 1995 and are given in different formats with various denominations, such as tons/year, number/year and €/year. Import and export data are available in tons/year. The domestic production data needs to be converted into tons/year since the data is reported in number/year, for instance, 1000 pieces of T shirts. Consequently, this quantity needs to be converted in tons/year using the weight of T shirt. In this regard, guidance is taken from the report by Carlsson et al. (2011).

Out of this selected 4 CN chapters with 8-digit level, there are some codes which have no import, export or domestic production information and therefore, they are excluded from the final CN list, for instance, 6112 (Tracksuits, ski suits, swimsuits etc.), 6214 (Shawls, scarves, mufflers), 6310 (Rags, scrap twine). These groups have no clear division in different fabrics like cotton or viscose etc. and had no reported import or export values.

- + SCB statistical database
 - + Trade in Goods and Services
 - + Foreign Trade in Goods
 - + Combined Nomenclature
 - + Goods imports from all countries by product group CN 2, 4, 6, 8 level and trading partner, classified, not lapsed. In 1995- 2016
 - + Goods exports from all countries by product group CN 2, 4, 6, 8 level and trading partner, classified, not lapsed. In 1995- 2016

Figure 4: Strategies for the search on web (www.scb.se) to extract import and export data

- » SCB statistical database
 - » Business activities
 - » Industrial Product Production (IVP)
 - » Industry output by product group according to CN and wage processing.
In 1996 - 2016

Figure 5: Strategies for the search in scb.se to extract domestic production data

4.1.1.3 Selection process of economic activities (NACE list) related to target products

It is important to know about the UMAN model ([Rosado et al., 2014](#)) since the study partially follows the methodology of this model. While accounting the urban material flows and stocks based on the Eurostat economy-wide MFA, the authors described an inherent connection between resources flows (in CN codes) and economic activities (in NACE codes). The process assists to realize the origin of the product, its destination along with covering other associated activities of the target products and quantifies dynamic material flows and stocks at the urban level. Eventually, this selective product approach will help to identify circular strategies at different levels.

EU member states usually follow the NACE economic codes. Thus, economic activities refer to using target products to produce final goods or services using resources for example capital, labor or technology. Therefore, the classification of a unit mostly relies on the total value added by the activity ([Eurostat, 2016](#)). However, both CN and NACE are part of the international economic classifications system and are entirely connected ([Figure 6](#)). In the EU level, NACE is connected to CPA (European Classification of Products by Activity), which is then coupled with PRODCOM (EU classification of goods used for industrial production) where CN is also linked.

[Figure 7](#) depicts how the target products flow through economic activities annually. Thereafter, the relevant economic sector can be ranked or categorized based on the weight share (%) of all the target products. In this study, the top economic activities are selected which represents mostly 100 % of total product flow out of total value added.

Therefore, the UMAN model generated a list of NACE sectors at 4-digit level, where the textile and textiles products annually flow through. The list also provides weight share (%) of the product (4-digit level) for individual sector ([Rosado, 2017](#), personal communication).

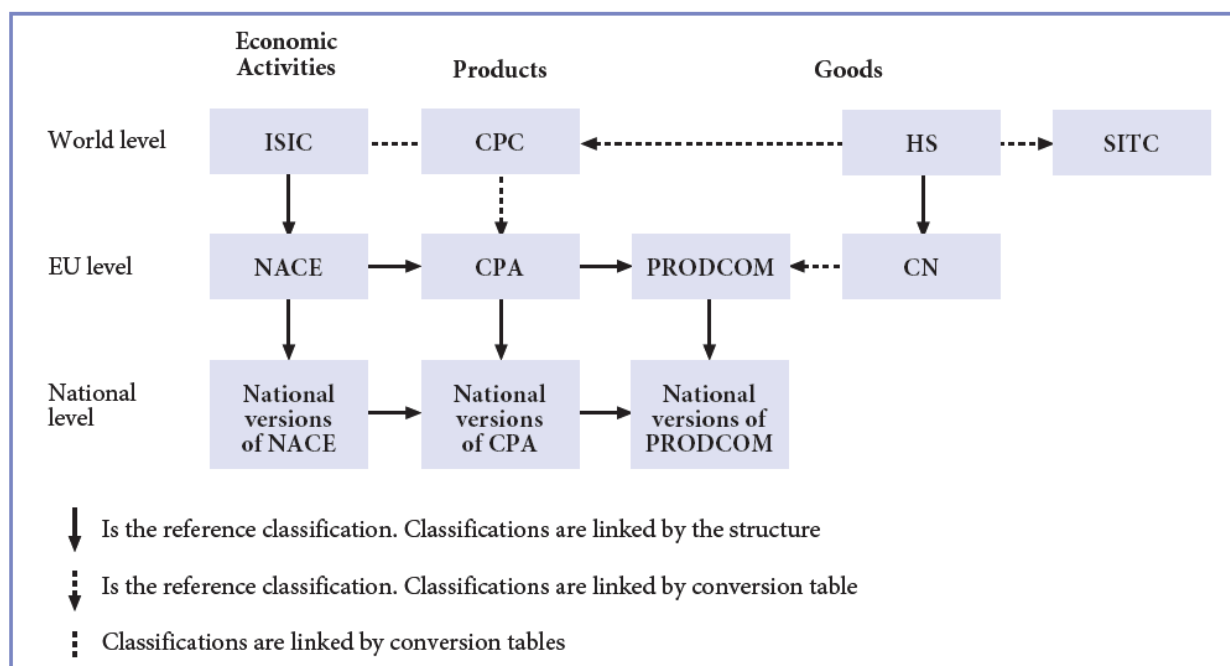


Figure 6: Connection between CN and NACE activities (adapted from [The Combined Nomenclature, 2002](#))

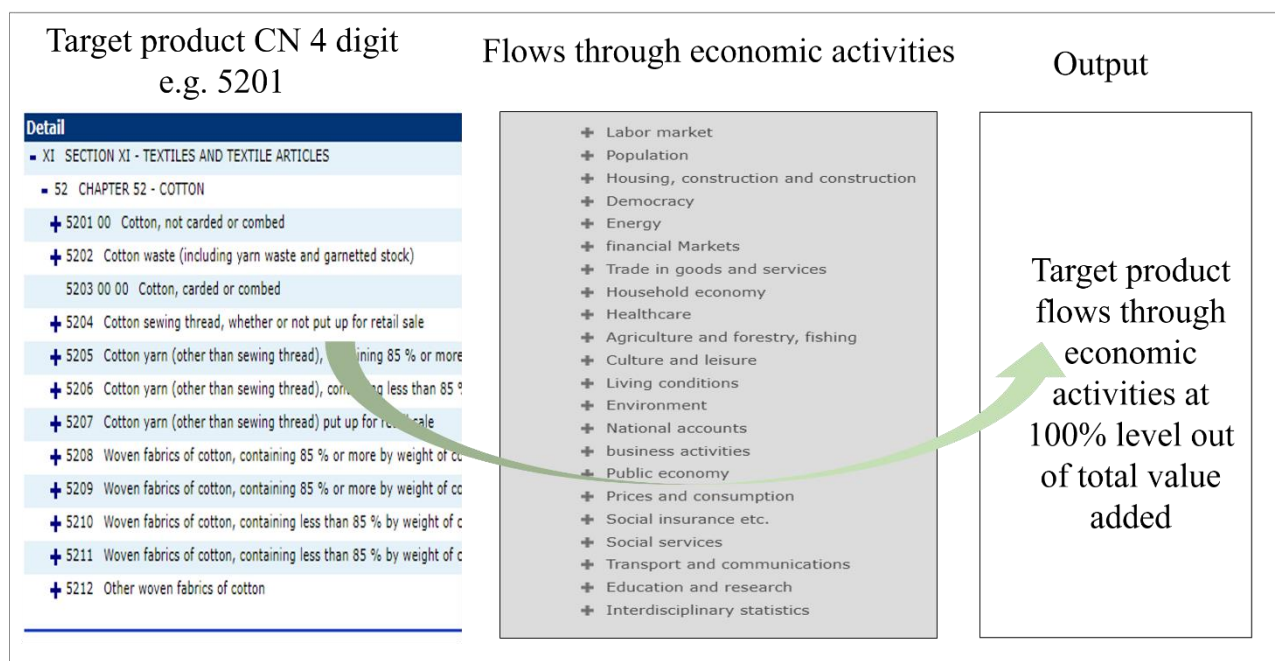


Figure 7: Selection process of substantial economic activities associated to target products

4.1.1.4 Categorizing the NACE economic activities

It is likely that the selected product, for instance, under CN code 5201 named “cotton, not carded or combed” can have several life cycle stages. It can act as intermediate product for manufacturing activities which then become transformed to another final textile or non-textile related product or it can be sold in retail shops to help sales activities or can become useful for other economic activities as final product, for instance, management activities or industrial cleaning. Therefore, one selected product has three different life cycle stages (Yu, 2017) such as ‘manufacture of textile’, ‘retail of textile goods’, ‘industrial application of textile goods’. As a result, the study accounted only the final

use phase of the products instead of accounting in between stages like how it is produced or sold as an intermediate product. A detailed analysis is done to realize this categorization based on the role of the products over economic activities, explanation of the NACE activities and getting help from the textile manufacturing catalog to know about the materials and their final use phase. Noticeably, to make the process easier and understandable, the NACE code 1711 to 3663 is categorized under manufacture activities, 5010 to 5552 is considered as for sales category and finally 3710 to 4550 and 6010 to 9900 are selected for other activities. Thus, the weight share of each economic activity attuned with the total weight share of final NACE list as 100%. Figure 8 shows the way to categorize NACE economic activities along with representing examples.

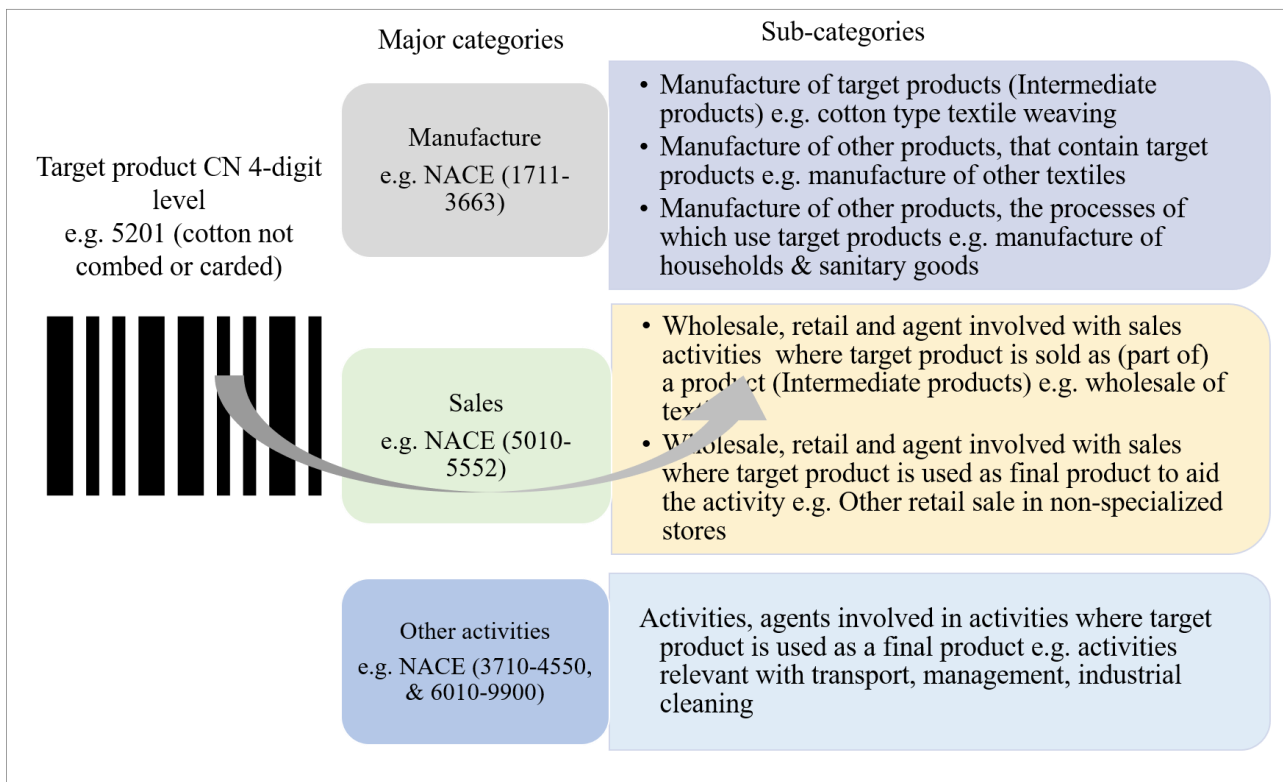


Figure 8: Schematic representation of NACE categorization

4.1.2 Calculation of overall flows

The overall calculation process can be split into two steps as can be seen from Figure 9. After gathering all the necessary data from the SCB website, available resources can be calculated by subtracting the unit of cotton textiles exported from imported amount in Sweden. In the second step, domestic material consumption (DMC) is calculated for Sweden. In this process, only final products are taken into consideration while products that are being transformed during the manufacturing process are avoided since their overall flows are not possible to track.

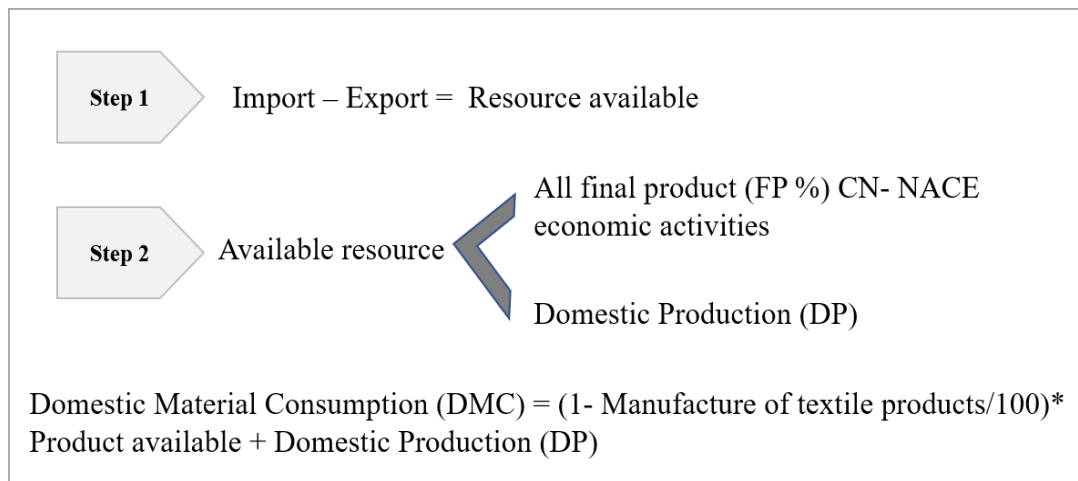


Figure 9: Schematic representation of calculation method of DMC

4.1.3 Making of Sankey diagram

Based on the above methodology, it can be possible to obtain required data to make a material flow diagram using SankeyMATIC software. Therefore, it is possible to realize the overall flow of target products including its end of use phase.

4.1.4 Limitations

This study, for instance, only considers cotton textile flows to account instead of overall textile flows. That poses some difficulties while selecting target products, for instance, textile products are not only made of 100% cotton but a mixture of other materials.

There is no available data on domestic production for Sweden. There might be some secrecy/sensitive issues related with this data set. Besides, to accomplish this research work the NACE destination activities (share %) were given through personal communication. Therefore, it seems like, this data set is not free and needs to buy from secure sources which might be a significant limitation for this kind of study. Thus, it is better to calculate DMC by avoiding NACE codes as Carlsson et al, (2011) did in their report. In that case the result might not be as accurate as expected with NACE activities.

Finally, after calculating the DMC for Sweden, the study assumed that textile products will be available in the waste stream after a certain period of time. Thus, to know their ultimate destination after use phase, for instance, (%) of collection by various organizations i.e. charity for clothes, export of collected product, secondhand retail, combustion for energy recovery, the study completely relies on different Swedish reports (for instance, Carlsson et al, 2011), company report (Mistra Future Fashion-Roos et al., 2015) and other internet sources. That information is used to map out overall flows of textile products including after post consumption scenarios to estimate quantities of collection, resell, export, landfill and incineration in Sweden.

4.2 Identifying Circular strategies

To identify circular strategies, it is essential to know the existing textile fiber recovery challenges to set suitable strategies. Therefore, the study tried to find out all the relevant challenges and categorized them based on “material input” (to know the variation of material in the textile products and their potential effect during sorting or recycling activities), “economic challenges” (to realize the challenges associated with reduce, reuse, repair, sorting and recycle, economic viability of textile wastes, and the sectors like retail, wholesale and agent involved in this business aspects), “technical

challenges” (to evaluate the technical feasibility of the textile recycling initiative) and others “challenges” (mostly focusing on information and communication gaps among various actors, such as consumers and retailers). In the following [Table 2](#), all the potential challenges to recover cotton textile fibers are presented.

Table 2: Potential challenges to recover cotton textile fibers

1. Material input	<ul style="list-style-type: none"> • It is likely that most of the textile products are made of a combination of other materials such as viscose, polyester, linen, cotton etc. which makes it harder to sort out based on the materials they are made of.
	<ul style="list-style-type: none"> • Usage of plastic prints on textile products make it difficult to remove while need to be recycled.
	<ul style="list-style-type: none"> • Usage of non-textile materials, for instance, metals, zipper, buttons etc. make the sorting process energy intensive as those need to be moved apart before recycling.
	<ul style="list-style-type: none"> • Recycling of clothing and textiles are mostly dependent on the quality of materials used.
	<ul style="list-style-type: none"> • Presence of dyeing, other chemicals and hazardous substances in textile products make the sorting process more challenging and expensive.
2. Economic	<ul style="list-style-type: none"> • One of the key economic challenges of recovering values from textile products is lack of demand of recycled textile fibers. Therefore, low demand makes the market incompatible and have a negative influence on the price of textile recycled fibers. The major reason behind this is a lack of motivation from investors mostly from the fashion industry, textile producers and even from consumers. Swedish Textile Companies usually import readymade garments and household apparels from other countries, therefore, there is low domestic production in Sweden. The textile recycling sector itself is not economically viable because of the inefficient and expensive collection, sorting and recycling activities.
	<ul style="list-style-type: none"> • Even though wholesale, retail and agent involved with the sales activities are considered as an important sector there is still lack of collaboration among the stakeholders. Therefore, there is lack of combined initiatives to address old textiles collection, sorting or recycling related problem. Some initiatives exist though, for instance, H&M usually takes back their own branded clothes.
	<ul style="list-style-type: none"> • There is lack of formal collection, sorting and recycling initiatives in Sweden. Worn out textile collection and sorting schemes are mostly carried out by the charitable organizations (Elander & Ljungkvist, 2016).
	<ul style="list-style-type: none"> • In Sweden there is a lack of market equilibrium for primary and recycled fiber as per raw materials input in textile industry. Virgin raw material is cheaper than the recycled which discouraging sorting or recycling investment (Elander & Ljungkvist, 2016).
	<ul style="list-style-type: none"> • Insufficient incentives for investments are responsible for the lack of a recycling sector (Elander & Ljungkvist, 2016) in Sweden.
	<ul style="list-style-type: none"> • It is likely that the supply of worn out textiles for recycling in Sweden is insufficient and uncertain thus sometimes required to import textile waste which is strictly regulated and recognized as trade barriers (Elander & Ljungkvist, 2016).
3. Technical	<ul style="list-style-type: none"> • In Sweden there are lack of textile recycling plants but some initiatives have been taken, for instance, by Re:newcell. They have invented a technique that

	will allow them to recycle all materials that contain cellulose (Braw, 2014). Even though there are some technologies to recycle but still quite inefficient to recover all materials. Therefore, textile recycling demands more innovations and investment.
	<ul style="list-style-type: none"> • Mechanical recycling techniques for textiles have been used mostly outside of Nordic regions solely for insulation and other inferior products.
	<ul style="list-style-type: none"> • In Sweden there are lack of automated sorting techniques make the process difficult, labor and time intensive.
4. Others	<ul style="list-style-type: none"> • As most of the textile products are made of mixed fibers along with presence of chemical and hazardous substances make it indispensable to have proper labeling of textile products prior to collection, sorting and recycling.
	<ul style="list-style-type: none"> • There is a lack of information on textile content, lack of proper databases for keeping record of collection, sorting, reuse or recycling, like what kind of entity involved in this value chain, how they are conducting those activities and the amount they recovered though recycling or reuse.
	<ul style="list-style-type: none"> • Information regarding collection points for old textiles are not sufficient.
	<ul style="list-style-type: none"> • Textile recycling practices are not getting popular due to lack of interest from the consumer since they are not interested to buy recycled textile products because of high pricing or behavioral issues.
	<ul style="list-style-type: none"> • In Sweden there is a lack of proper implementation or policy regulation to operate collection, sorting and recycling activities.

4.2.1 Review of existing circular business practices

In order to select suitable circular strategies, it is important to understand the circular business strategies from the company perspective to visualize how they have been adopting strategies and to know why they are practicing those strategies or which problems they are addressing and finally how they are implementing those tactics to close the textile loop. However, it is important to understand the application dimensions of those strategies in the textile sector from various aspects, for instance, strategies for creating values from waste (reuse, recycle) will differ from the applied strategies for functionality over ownership (for instance, product service system like repair services, renting and leasing services). Accordingly, a detailed review work is done in the case study section including examples from the company perspectives, such as what kind of strategies they are selecting, how and where they are applying those strategies.

4.2.2 Harmonization of strategies with the textile material flows

After understanding potential challenges associated with textile material recovery and ideas from the application of circular business strategies by companies, the study can be able to choose suitable strategies to recover cotton resources from the textile and clothing products. Thus, a list of selected circular strategies are proposed in different lifecycle stages to recover cotton textile fibers.

Chapter 5: Results and Discussion

5.1 Mapping of cotton textile flows in Sweden

In the following section, the product approach has been applied to quantify the cotton textile flows in Sweden using CN codes and NACE economic activities. It is likely that however, a very small proportion of cotton textile products are produced in Sweden out of total textile consumed per year. Therefore, it is interesting to have an overall picture of the total flows of cotton textiles into the country. Thereafter, it can be possible to have an idea about the potential future textile waste flows from the existing amount of textile products flows that annually enter into the Swedish market. Accordingly, by combining the statistics of total imports, exports and domestic production of cotton textile products, the net inflow of cotton textile products in tons has been calculated.

5.1.1 Application of Product approach

Out of the selected 4 chapters (52, 61, 62 and 63), 43 CN 4-digit codes are finalized which has a heading relevant to cotton or cotton mixed with other material. According to the SCB it can be accounted as cotton if the proportion of cotton content corresponds to over 50% out of total fiber content. Essentially a combination of cotton and polyester content can be comprised of 51% and 49% respectively that still be classified as cotton and to be considered as in the calculations of net import. Finally, it is got a total of 208 CN codes with 8-digit level excluding those which has no import, export or domestic production value.

A list of NACE economic activities 2002 has been identified. Due to having 43 CN codes under four different chapters, there are many NACE economic activities listed in this report relevant to each CN code. A detail list can be found in the [Appendix 2](#). However, based on the nature of the economic activities and relevance to the target products they are divided into three major categories as described in section 4.1.1.4. Accordingly, for instance, CN code 5201 has a major share in the manufacturing category with 97% distributed among 14 NACE sector, sales is 1.71% dispersed into 23 activities and other activities has a share of only 1.15% covering 7 sectors. It is likely that, CN codes from chapter 61, 62, and 63 reveal a significant pattern where maximum share is originated from the retail section most of the cases it is more than 85%. However, on the other hand overall share from the “manufacture” and “other activities” categories show less percentages for the relevant products which means that a very small proportion of cotton textile is being transformed in Sweden out of total consumption. The retail sector covers most of the total weight share (%) of the target products, representing a major proportion of the textile products are imported from other countries. Thus, [Table 3](#) represents a list of CN codes along with categorized number of NACE economic sectors with weight share (%) of the target products. However, a detail list with the reasoning of categorization and results of subcategorization with description of NACE codes can be found in the [Appendix 3](#).

Table 3: Categorized final NACE list of economic activities for relevant product with weight share (%)

CN code	Major Categories					
	Manufacture (textile, other textile & non-textile products)		Sales (wholesale, retail & agent involved activities)		Other activities (agents, activities involved where target product used as final product)	
	No. of economic activities between NACE code & share %		No. of economic activities between this NACE code & share %		No. of economic activities between this NACE code and share %	
	1711-3663	Share (%) /category	5010-5552	Share (%) /category	3710-4550, & 6010-9900	Share (%) /category
5201	14	97.15%	23	1.71%	7	1.15%
5202	11	97.03%	15	2.92%	4	0.07%
5203	14	47.34%	23	51.30%	9	1.65%
5204	16	14.95%	34	71.19%	15	13.86%
5205	29	77.10%	20	16.94%	8	5.96%
5206	24	92.59%	12	6.84%	2	0.57%
5207	34	5.19%	53	90.71%	35	4.10%
5208	23	1.76%	47	92.28%	35	6.00%
5209	23	6.05%	45	79.38%	21	14.58%
5210	28	67.31%	32	32.22%	13	0.49%
5211	27	42.00%	30	56.96%	16	1.12%
5212	26	26.91%	33	50.81%	18	1.26%
6101	37	11.79%	49	81.96%	35	6.26%
6102	28	2.24%	45	94.52%	17	3.25%
6103	32	3.11%	44	90.65%	46	6.25%
6104	24	1.87%	44	90.94%	30	7.19%
6105	35	9.02%	51	88.75%	32	2.23%
6106	20	1.15%	43	92.41%	25	6.11%
6107	20	3.84%	55	92.49%	21	3.67%
6108	19	5.27%	36	86.05%	24	8.69%
6109	45	1.58%	65	93.01%	56	5.36%
6110	31	2.63%	48	93.20%	42	4.17%
6111	15	2.47%	41	79.07%	22	18.01%
6114	29	2.64%	59	90.74%	45	6.90%
6115	24	3.26%	49	89.71%	29	7.04%
6116	43	6.19%	51	89.26%	24	4.56%
6201	40	8.40%	55	89.01%	45	2.60%
6202	30	1.24%	53	94.19%	31	4.62%
6203	33	9.76%	52	87.95%	44	2.30%
6204	25	2.30%	54	91.16%	41	6.55%
6205	31	11.26%	44	86.87%	37	1.87%
6206	23	3.70%	51	89.29%	30	7.02%
6207	34	5.19%	53	90.71%	35	4.10%
6208	23	1.76%	47	92.28%	35	6.00%
6209	23	6.05%	45	79.38%	21	14.58%
6211	67	15.16%	64	80.75%	67	4.09%
6213	15	5.20%	35	90.06%	20	4.75%

6301	36	1.69%	56	80.19%	36	18.13%
6302	46	4.42%	57	80.62%	37	14.97%
6303	28	9.65%	55	78.85%	18	11.50%
6304	35	9.52%	56	69.47%	39	20.99%
6305	70	7.50%	51	88.84%	29	3.67%
6306	61	4.60%	64	77.71%	58	17.94%

5.1.2 Flow of cotton textiles to Sweden in 2011

The net inflow of cotton textiles to Sweden is calculated in this report for the year of 2011 and estimated Domestic Material Consumption (DMC) was 76454 (rounded) tons or nearly 8 kg/person per year⁷. [Table 4](#) represents cotton textile flow calculation using step 1 and step 2 process as described in the methodology section. From the table, it can be seen that, the first column under CN chapter 52 i.e. code 5202 (Cotton waste) shows the highest amount of import, 3677 tons which has a significant use in NACE economic sector-2112 (Manufacture of paper and paper board) around 70% out of total weight share. Similarly, considering the clothing sector (e.g. Chapter 61 & 62), the following codes show the highest amount of import such as 6108 (Women's or girls' slips, petticoats, briefs, panties, nightdresses, pajamas) – 12801 tons/year and 6203 (Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls) – 10179 tons/year which are mainly readymade garments for serving the retailing and wholesale economic activities mostly have a share of 86% and 88% respectively. The household sector, (e.g. Chapter 63) for instance, CN code 6302 (Bedlinen, table linen, toilet and kitchen linen of cotton) shows the highest amount of import in Sweden which is about 19481 tons/year, also used in the wholesale and retailing sector having a significant share approximately 81%. The DMC value for CN code 6115 (Pantyhose, tights, stockings, socks) and 6116 (Gloves, mittens and mitts, knitted or crocheted) show negative value of 718 tons/year and 4 tons/year respectively because of bigger exporting amount than import in Sweden which is irrational. Though, the study couldn't find any information on domestic production for any CN codes from the SCB statistical database and therefore, in that case, either those exported amount supposed to be at least produced in the domestic environment or may be the result of transshipment of goods. One of the studies from Elander et al., (2014) provided the Domestic Production (DP) to Sweden in the year of 2011 as 500 tons/year but without sowing any division for related products being produced in Sweden. Therefore, considering this amount of DP, the overall DMC for finished textiles cotton fibers were 77000 tons/year (rounded) or nearly 8.12 kg/person per year. It can be seen from the table that the study avoided the manufacturing of textile products while calculating the DMC for 2011, thus it only considered the final products.

Limitations

The study couldn't find any reported data for DP for Sweden in the year of 2011. Besides, some studies, for instance, Brismar (2014) also avoided to account DP because of lack of data on the statistical database. Therefore, they calculated net flow of textiles by subtracting the export value from the imported amount in Sweden. However, one of the study provided DP data for 2011 without showing any disaggregation per product types (Elander et al, 2014). Since, only a small proportion of consumed cotton fabrics are produced in Sweden, therefore avoiding or adding the amount along with the total flow wouldn't really change the result so much.

⁷ Estimated population to Sweden in 2011 was 9481000 based on scb.se statistical database (SCB, 2011)

Table 4: Domestic Material Flow (DMC) analysis for cotton textiles to Sweden in 2011

CN code	Description of codes (Metric ton by commodity group according to CN and year)	Import ton/yr.	DP ton /yr .	Export ton/yr.	Available resource	Manufacture of textiles 1711-1830	DMC tons
5201	Cotton, not carded or combed	154	0	1	153	95.959 %	6.183
5202	Cotton waste	3677	0	8	3669	10.225 %	3293.84
5203	Cotton, carded or combed	35	0	1	34	9.327 %	30.82
5204	Cotton sewing thread	86	0	8	78	12.633 %	68.15
5205	Cotton yarn containing >85 % by weight of cotton, not put up for retail sale	373	0	16	357	76.166 %	85.09
5206	Cotton yarn containing <85 % by weight of cotton, not put up for retail sale	16	0	4	12	68.091 %	3.83
5207	Cotton yarn put up for retail sale	178	0	65	113	10.171 %	101.51
5208	Woven fabrics of cotton, containing >85 % by weight of cotton, weighing < 200 g/m ²	1388	0	331	1057	34.738 %	689.81
5209	Woven fabrics of cotton, containing >85 % by weight of cotton, weighing >200 g/m ²	1286	0	260	1026	18.491 %	836.28
5210	Woven fabrics of cotton, < 85 % by weight of cotton, weighing < 200 g/m ²	338	0	54	284	22.062 %	221.34
5211	Woven fabrics of cotton, containing < 85 % by weight of cotton, weighing > 200 g/m ²	184	0	51	133	28.525 %	95.06
5212	Other woven fabrics of cotton	75	0	9	66	21.025 %	52.12
6101	Men's or boys' overcoats, car coats, capes, cloaks, anoraks windcheaters, wind-jackets	136	0	19	117	10.967 %	104.17
6102	Women's or girls' overcoats, car coats, capes, cloaks, anoraks, windcheaters, wind-jackets	776	0	149	627	1.997 %	614.48
6103	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls,	740	0	143	597	2.944 %	579.43
6104	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers,	3812	0	1274	2538	1.733 %	2494.03
6105	Men's or boys' shirts, knitted or crocheted	1344	0	204	1140	8.781 %	1039.90
6106	Women's or girls' blouses, shirts and shirt-blouses, knitted or crocheted	721	0	240	481	1.423 %	474.16

6107	Men's or boys' underpants, briefs, nightshirts, pajamas, bathrobes, dressing gowns	3641	0	217	3424	3.650%	3299.01
6108	Women's or girls' slips, petticoats, briefs, panties, nightdresses, pajamas, negligées, etc.	12801	0	2731	10070	1.896%	9879.08
6109	T-shirts, singlets and other vests	3605	0	133	3472	1.435%	3422.19
6110	Jerseys, pullovers, cardigans, waistcoats	6014	0	938	5076	2.437%	4952.29
6111	Babies' garments and clothing accessories,	675	0	125	550	2.948%	533.78
6114	Other garments, knitted or crocheted	4454	0	648	3806	1.752%	3739.31
6115	Pantyhose, tights, stockings, socks	323	0	1064	-741	3.109%	-717.96
6116	Gloves, mittens and mitts, knitted or crocheted	0	0	4	-4	3.458%	-3.86
6201	Men's or boys' overcoats, car coats, capes, cloak	670	0	164	506	8.121%	464.91
6202	Women's or girls' overcoats, car coats, capes, cloaks, anoraks, windcheaters, wind-jackets	924	0	255	669	1.015%	662.21
6203	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls,	10179	0	2013	8166	8.964%	7434.00
6204	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers,	9275	0	2418	6857	2.210%	6705.43
6205	Men's or boys' shirts	3266	0	614	2652	11.145%	2356.44
6206	Women's/girls' blouses, shirts of cotton	1726	0	366	1360	3.611%	1310.89
6207	Men's or boys' singlets and other vests, underpants, briefs, nightshirts, pajamas, bathrobes, dressing gowns and similar articles	286	0	49	237	2.784%	230.40
6208	Women's or girls' singlets and other vests, slips, petticoats, briefs, panties, nightdresses, pajamas, negligées, bathrobes, dressing gowns	479	0	89	390	1.597%	383.77
6209	Babies' garments and clothing accessories of cotton	440	0	82	358	5.845%	337.07
6211	Tracksuits, ski suits and swimwear	755	0	253	502	13.825%	432.6
6213	Handkerchiefs of cotton, of which no side exceeds 60 cm	13	0	2	11	4.738%	10.48
6301	Blankets and travelling rugs	233	0	82	151	1.192%	149.21
6302	Bedlinen, table linen, toilet and kitchen linen	19481	0	3077	16404	2.125%	16055.41
6303	Curtains and interior blinds; curtain/bed valances	3653	0	764	2889	7.249%	2679.57
6304	Other furnishing articles,	1730	0	501	1229	3.504%	1185.93

6305	Sacks and bags, packing goods	44	0	11	33	0.030%	32.99
6306	Tarpaulins, awnings and sun blinds; tents; sails for boats, sailboards, camping goods	170	0	39	131	1.549%	128.97
Total		100156	0	19476	80680		76454.3 2

5.1.3 Flow diagram

The flows of cotton textile fibers and generated textile waste stream in Sweden are shown in [Figure 10](#). This waste stream portion in this report has been developed basically based on the guideline from a Swedish report by Carlsson et al, (2011) where the authors revealed how they have gathered information. They collected that kind of data through conducting personal or company interview in different organizations. for instance. ten big charitable organizations, municipalities, secondhand retail shops, incineration plants, and laundries. In this thesis report it has used its own data for cotton textile flows were calculated. Therefore, the study only followed the proportion they used in the Swedish report for the post-consumer textiles scenario calculation or different aspects such as the rate of collection by charitable organizations (20%), or not separately collected (80%). Then the proportion of resell, reuse or recycle locally and thereof with export and, incineration percentages in Sweden are also taken into consideration for waste stream calculation. Accordingly, considering the flow of new cotton textiles which is 77,000 tons for the year 2011 to Sweden, it is assumed that this textile resources will become available in the waste stream and out of this around 20% or 17,000 tons will be collected separately by various charitable organizations. The remaining amount around 60,000 tons, on the other hand will not be collected separately. It is likely that, the separately collected resources from the waste stream usually have another life, for instance, either they are being resold or reused or exported to other country. However, still there are so many ways to miss the flows since, it is kind of an informal sector and the recycling of textile is not popular yet or in some cases not feasible economically. Besides, there is no formal database to keep record of waste flows even though it seems like a very hard job to be in track therefore, most of the cases textiles end up in the incineration plants as for one of the energy recovery options.

Limitations and assumption

It is assumed that all the textile products that flows to Swedish market in 2011 will become available in the waste stream on an average 2 years later since the groups of products consist of various clothing items with having different life time based on the quality of textiles materials it's made of. A list of items along with their probable life time is presented in the following [Table 5](#). A storage of clothes in the household and can be expected to exist in every house which grasp a noteworthy quantity of textiles out from the flows. Besides, after collection a significant proportion of secondhand textiles are exported to other countries either for resell or reuse purposes, that make a significant fiber loss from Sweden.

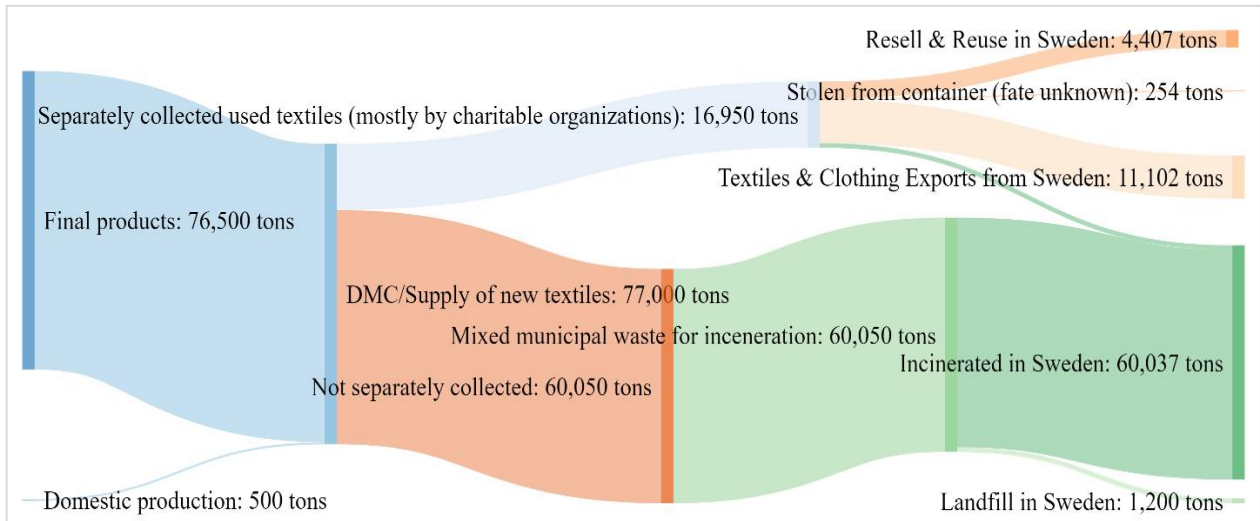


Figure 10: Schematic representation of inflow of finished cotton textile fibers and textile waste stream generated in Sweden in 2011

Table 5: Estimated life time (first use) for specific textile items (Carlsson, et al., 2011)

Textile Group	Of use (first user)
Outerwear (gowns, coats, jackets, rainwear)	About 4 years
Pants	Ca. 2 years
Jackets	Ca. 4 years
Dresses, suits and skirts	Ca. 2 years
costumes	Ca. 3 years
Shirts and blouses	Ca. 2 years
Underwear incl. socks and nightwear	Ca. 6 months - 3 years
T-shirt	Ca. 2 years
Sweaters	Ca. 3 years
baby Clothes	Ca. 2 years
Training and swimwear	Ca. 4 years
Gloves, hats, scarves, etc.	Ca. 4 years

5.2 Application of Circular strategies

A detail review work has been done on circular strategies in the case study section (Chapter 3). This section also has provided examples from the company perspective. Thereafter, it is tried to apply all those strategies in the textile flows where leakages are found, for instance, sourcing, sales and marketing, use phase etc. and develops new loops to generate values instead of wasting resources. Figure 11 shows a flow chart of textile material flows and strategies to recover cotton fibers from the waste stream. It is always better to reuse of products to increase their value chains instead of either recycling or remanufacturing. However, it is more important to consider design aspects of products because the remaining activities such as reuse, refurbishment or recycling mostly dependent on the quality of the materials used in it, its durability, adaptability, and reparability. Besides, in Sweden collection and sorting activities are not efficient since they are mostly relying on charitable organizations but non-separate collections through municipality for incineration purposes have the largest share. Accordingly, the sector losing its resource recovery potential. Therefore, it is expected that due to application of these strategies at different economic activities it is possible to recover significant amount of cotton from the waste flows and could be possible to reduce incineration

practices in Sweden. Through extending products life cycle, it is possible to reduce consumption level and thus there will be a positive impact in the resource extraction phase. Accordingly, some other ideas like product service system (leasing, renting or clothing library schemes), extended producer responsibility (product take-back scheme), sharing platforms (swap clothing) and reverse logistics strategies are applied in different stages to make a complete cotton textile loop where there will be no way to leak resources. Perhaps it would be also possible to generate new business loops, for instance, application of circular supplies that could bring new opportunities of green jobs. Therefore, the application of these strategies potentially can resolve all those challenges related with material input and economic aspects as described earlier in section 4.2.

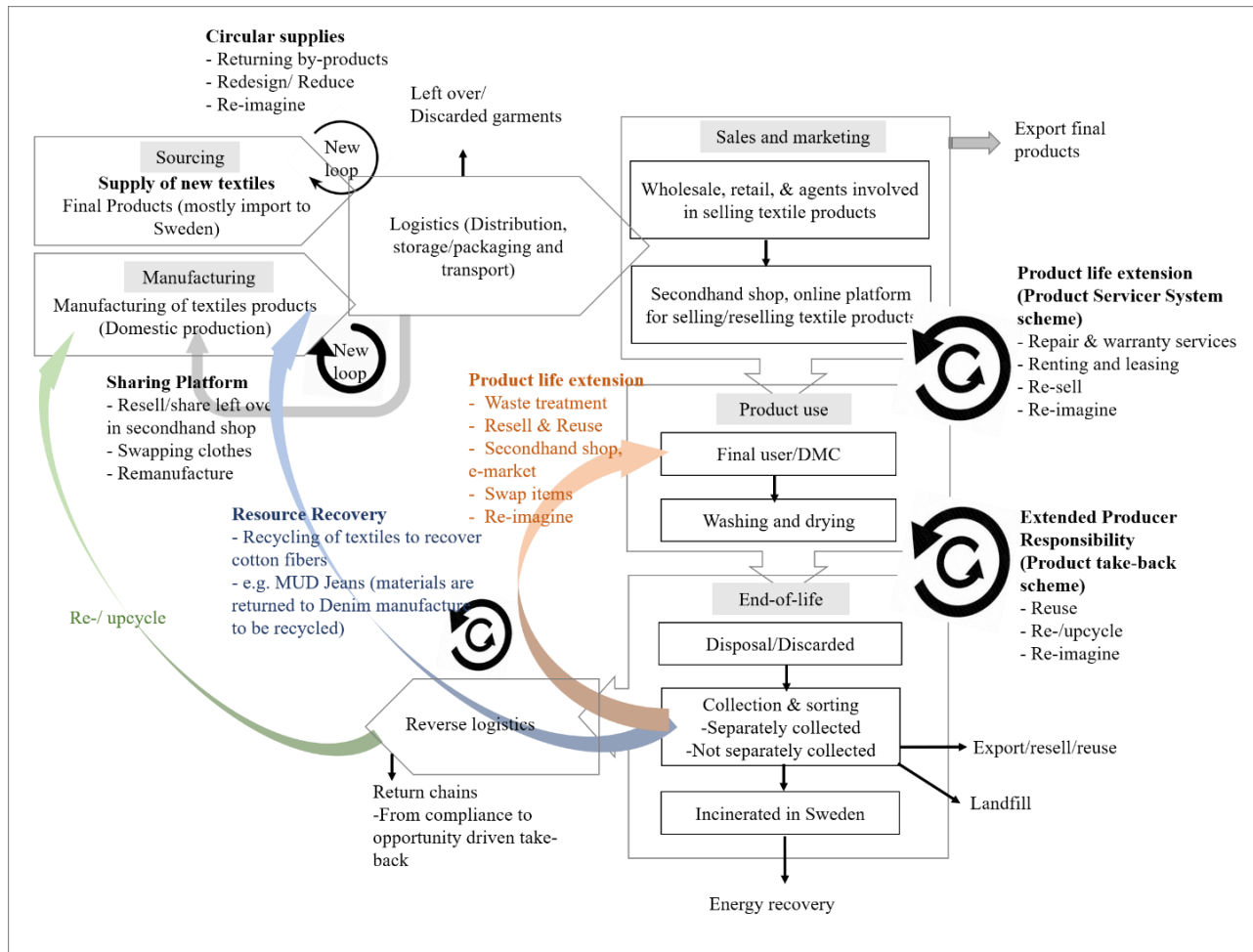


Figure 11: Textile flows and recovery potentials of cotton fibers from post-consumer textile products through applying circular strategies

5.3 Evaluation of the methodology

There are lot of discrepancies in the textile sector that need to improve, therefore the study only focused to quantify the textile cotton fibers consumptions in Sweden and investigating recovery potential of this vital resources. The study has used a product approach to quantify the textile and clothing products flows in Sweden. This method has used import, export and domestic production (DP) data along with considering the material transformed during the manufacturing process which is exclusive here. Therefore, it is used CN 4-digit codes to select cotton related products and NACE codes to identify products flows through economic activities in share (%). The information been

collected from the Swedish statistical database which is open for all. It is quite important to consider the amount that is transformed because all the imported raw materials couldn't be converted into final products and perhaps there will be some losses or even flows impossible to be traced. A general approach can be applied as well only considering import, export and DP but in that case, there is a big chance of error in the calculation since the process doesn't consider the consumption of raw materials during the manufacturing processes. Carlsson et al. (2011) and Elander, et al., (2014) followed this simple approach while accounting textile and clothing consumption in Sweden. That report showed that the DP amount was 500 tons in 2011 to Sweden which is very less, meaning that manufacturing activities are quite small for the textile sector. In that case, it doesn't really matter while quantifying DMC. It seems like most of the readymade garments are imported in Sweden. But the study found some discrepancies for DP amount in 2011. Table 4 shows that the total import was 100156 tons, exports 19476 tons, and no DP values due to lack of data thus found the available resources was 80680 tons in 2011. Due to manufacturing activities DMC end up being 76450 tons from 80680 tons which means losing around 4200 tons during product processing phase. It can be assumed that this 4200 tons is DP value which is quite higher than 500 tons provided by Elander, et al, (2014) in their IVL report since they didn't consider this manufacturing amount. But if we consider some other sector, for instance, machinery and mechanical appliances which has a huge manufacturing activity in Sweden and DMC calculation avoided this amount of transformation then there will be a big loss of material being unaccounted. Therefore, the method applied in this report is more accurate than the other and can be recommended for future studies.

Chapter 6: Conclusion

The textile sector is considered as resource intensive sector having enormous inflows and outflows of materials in different phases of lifecycle. The purpose of this thesis is to provide understanding of how this exponentially growing fashion consumption can become more sustainable. Therefore, the study tried to develop a new methodological approach to find ways to quantify the amount of waste resources from the textile sector in Sweden. Then, it is mapped out the flows of cotton textile fibers and focused on maximizing the circularity of cotton textile fibers using circular strategies.

The Product approach is applied in this report to quantify the cotton textile fibers consumption in Sweden. This method is quite unique in a sense that it considers the manufacturing of products in Sweden, but the research work can be done without this step as well, for instance, Carlsson et al., (2011) & Elander, et al., (2014) did their work in that way. The inflows and outflows of textile products in Sweden can be calculated in tons per year from the existing statistical databases. Therefore, 43 CN codes (4-digit level) and under this associated 208 CN codes (8-digit levels) were selected to make the process more accurate to account cotton textile products. In the study, 77,000 tons of cotton textile products were consumed in 2011 to Sweden which is 8.12 kg/person per year. It is revealed that, most of the readymade garments approximately 100156 tons were imported to Sweden, and a minor amount was produced domestically such as 500 tons. Therefore, it has no significant effect on the overall calculation process. However, if we consider products related with machinery industry which is quite big in Sweden and have enormous manufacturing activities it is important to consider product transformation steps otherwise the result would be wrong. In that case, we can apply this new methodology to have an accurate result. Besides, it was realized that the new proposed approach made an advancement since, the process is more systematic with having the possibility to be adapted by other European cities as it uses a standard database which allows for comparison.

However, it is assumed that, the consumed textile products are flown away in the waste stream after on an average 2 years based on their life time. The study relied on various Swedish reports to gather information on post-consumer phases of those products, for instance, collection, sorting, export, and incineration in Sweden. Finally, using this information, all the flows were mapped including pre-/post-consumer phases of textile products. It is found that, every year in Sweden a significant amount of textiles are collected by charities (3 kg/person per year). Out of this collection, a small portion is sold in the Swedish market for reuse while a majority of these sales occurred outside of Sweden which can be considered as a loss of fiber resources. Besides, a largest share of non-separately collected textiles, for instance, around 60,000 tons were sent to Swedish incineration plants to recover energy. Therefore, there ought to be an opportunity to maximize both the collection, reuse, and re/up-cycling of textiles, and eventually reduce the loss of resources from Sweden.

The study ended up by providing a schematic representation of application of circular strategies at different points of textile flows through different economic activities, for instance, supply chain, production and use phases in order to stop the leakages of resources. Therefore, the study collected and investigated all the challenges relevant to recover textile fibers. Accordingly, it was tried to address material and economic challenges using circular strategies. Thereafter, company's circular business models were analyzed to understand their strategies and evaluated how companies implemented those strategies. The strategic options such as product service systems, sharing platforms, product life extension, extended producer responsibility, and design for end-of-reuse were found most attractive and effective way of handling textile and clothing resources consumption.

It can be concluded that, it is always better to consider products design phase first in the resource management hierarchy where it uses raw materials. It is important to consider renewable and biodegradable materials with having quality of reparability, upgradability and recyclability while making textile and clothing products. Considering, reuse, repair and recycling activities it is crucial to focus on product use phase, for instance, take a good care of products etc. Besides, it is essential to change consumer behaviors to throwaway their clothes after use and motivating them to repair and reuse their products as long as possible. However, the future potential of this report could be to understand the overall process of calculation and apply it in other sector to quantify the consumption status and understanding those strategies where needed. In the future, it could also be possible to quantify the proportion of cotton fibers that can be recirculated in the process flows because of the application of those strategies. In order to make this sector more sustainable, it is important to create awareness and close collaboration among all the stakeholders from different sectors like sourcing, logistics, sales and marketing, product user and end of user of textile and clothing products. Most importantly, existing strategies need to be adopted by all the branded companies as well as other entities related with this sector. Besides, it is crucial to innovate efficient collection, sorting and recycling technologies in place and need to ensure the supply of minimum amount of textile products to be recycled to recover potential fibers.

7. References

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Appendix 1: A short description of selected CN chapters (EC, 2013)

Chapter 52: Cotton

In this chapter, the textile products are grouped in accordance with the material they are made of, for instance, in this case cotton. This group consists of 10 CN code 4-digit level and mostly containing cotton fabrics of yarns of different colors, 3 or 4 thread twill, broken twill, warp faced, the weft yarns of which are unbleached, bleached, dyed grey or colored etc. to manufacture textile products.

Chapter 61: Articles of Apparel and Clothing Accessories, Knitted or Crocheted

This chapter consists of 16 CN 4-digit code applies only to made up knitted or crocheted articles and can be grouped as “**clothing**” since it contains garments both for men and women that cover upper and lower part of the body, for instance, overcoats, car coats, capes, cloaks, anoraks (including ski jackets), windcheaters, wind-jackets, suits, skirts, ensembles, shirts and blouses, uppers of pajamas, pullovers, cardigans and waistcoats, jackets, dresses, blazers, trousers, bib and brace overalls, breeches etc. This group also covers baby clothes, underwear, socks, sleepwear etc.

Chapter 62: Articles of Apparel and Clothing Accessories, Knitted or Crocheted

Under this chapter within this heading, the articles are mostly made of two or more materials like cotton, synthetic or artificial fibers and sets for retail sale. This chapter consists of 13 CN 4-digit codes applies made-up articles of any textile fabric except wadding, and can be grouped as “**clothing**” since cover most of the garments that describes in the previous section the only exception is they are free from knitted or crocheted. Besides this group of articles are free from decoration and occupational garments, protective clothing are under this category like CN code 6203, 6204, and 6211.

Chapter 63: Other Made-up Textile Articles, Sets, Worn Clothing and Worn Textile Articles

This group consists of 8 CN 4-digit codes and can be grouped as “**household textiles**” because of the nature of articles under this category for instance blankets, traveling rugs, bedlinen, table linen, toilet linen and kitchen linen, furnishing articles, Curtains (including drapes) and interior blinds; curtain or bed etc.

Appendix 2: CN code 8-digit level for selected chapters including import, export and domestic production data in 2011

Description of codes (Metric ton by commodity group according to CN and year)	CN codes related with cotton as per raw materials, intermediate products and final goods	Imports (tons/yr.)	Exports (tons/yr.)	Domestic production (tons/yr.)	Consumption (tons/yr.)
Cotton, neither carded nor combed, rendered absorbent or bleached	52010010	17	1	0	16
Cotton, neither carded nor combed (excl. rendered absorbent or bleached)	52010090	137	0	0	137
Cotton yarn waste, incl. thread waste	52021000	16	2	0	14
Cotton waste (excl. yarn waste, thread waste and garneted stock)	52029900	3661	6	0	3655
Cotton, carded or combed	52030000	35	1	0	34
Sewing thread, containing \geq 85% cotton by weight (excl. that put up for retail sale)	52041100	1	0	0	1
Sewing thread, containing predominantly, but $<$ 85% cotton by weight (excl. that put up for retail sale)	52041900	1	0	0	1
Cotton sewing thread, put up for retail sale	52042000	84	8	0	76
Single cotton yarn, of uncombed fibers, containing \geq 85% cotton by weight and with a linear density of \geq 714,29 decitex \leq MN 14 (excl. sewing thread and yarn put up for retail sale)	52051100	31	0	0	31
Single cotton yarn, of uncombed fibers, containing \geq 85% cotton by weight and with a linear density of 232,56 decitex to $<$ 714,29 decitex $>$ MN 14 to MN 43 (excl. sewing thread and yarn put up for retail sale)	52051200	7	0	0	7
Single cotton yarn, of combed fibers, containing \geq 85% cotton by weight and with a linear density of 232,56 decitex to $<$ 714,29 decitex $>$ MN 14 to MN 43 (excl. sewing thread and yarn put up for retail sale)	52052200	34	0	0	34
Single cotton yarn, of combed fibers, containing \geq 85% cotton by weight and with a linear density of 192,31 decitex to $<$ 232,56 decitex $>$ MN 43 to MN 52 (excl. sewing thread and yarn put up for retail sale)	52052300	28	0	0	28
Single cotton yarn, of combed fibers, containing \geq 85% cotton by weight and with a linear density of 125 decitex to $<$ 192,31 decitex $>$ MN 52 to MN 80 (excl. sewing thread and yarn put up for retail sale)	52052400	11	0	0	11
Single cotton yarn, of combed fibers, containing \geq 85% cotton by weight and with a linear density of 106,38 decitex to $<$ 125 decitex $>$ MN 80 to MN 94 (excl. sewing thread and yarn put up for retail sale)	52052600	1	0	0	1
Single cotton yarn, of combed fibers, containing \geq 85% cotton by weight and with a linear density of 83,33 decitex to $<$ 106,38 decitex $>$ MN 94 to MN 120 (excl. sewing thread and yarn put up for retail sale)	52052700	1	0	0	1
Multiple folded or cabled cotton yarn, of uncombed fibers, containing \geq 85% cotton by weight and with a linear density of \geq 714,29 decitex \leq MN 14 per single yarn (excl. sewing thread and yarn put up for retail sale)	52053100	24	0	0	24

Multiple folded or cabled cotton yarn, of uncombed fibers, containing $\geq 85\%$ cotton by weight and with a linear density of 232,56 decitex to $< 714,29$ decitex $>$ MN 14 to MN 43 per single yarn (excl. sewing thread and yarn put up for retail sale)	52053200	119	1	0	118
Multiple folded or cabled cotton yarn, of uncombed fibers, containing $\geq 85\%$ cotton by weight and with a linear density of 192,31 decitex to $< 232,56$ decitex $>$ MN 43 to MN 52 per single yarn (excl. sewing thread and yarn put up for retail sale)	52053300	4	0	0	4
Multiple folded or cabled cotton yarn, of combed fibers, containing $\geq 85\%$ cotton by weight and with a linear density of $\geq 714,29$ decitex \leq MN 14 per single yarn (excl. sewing thread and yarn put up for retail sale)	52054100	25	0	0	25
Multiple folded or cabled cotton yarn, of combed fibers, containing $\geq 85\%$ cotton by weight and with a linear density of 232,56 decitex to $< 714,29$ decitex $>$ MN 14 to MN 43 per single yarn (excl. sewing thread and yarn put up for retail sale)	52054200	68	0	0	68
Multiple folded or cabled cotton yarn, of combed fibers, containing $\geq 85\%$ cotton by weight and with a linear density of 192,31 decitex to $< 232,56$ decitex $>$ MN 43 to MN 52 per single yarn (excl. sewing thread and yarn put up for retail sale)	52054300	18	14	0	4
Multiple folded or cabled cotton yarn, of combed fibers, containing $\geq 85\%$ cotton by weight and with a linear density of $< 83,33$ decitex $>$ MN 120 per single yarn (excl. sewing thread and yarn put up for retail sale)	52054800	2	1	0	1
Single cotton yarn containing predominantly, but $< 85\%$ cotton by weight, of uncombed fibers and with a linear density of $\geq 714,29$ decitex \leq MN 14 (excl. sewing thread and yarn put up for retail sale)	52061100	7	0	0	7
Single cotton yarn containing predominantly, but $< 85\%$ cotton by weight, of uncombed fibers and with a linear density of 232,56 decitex to $< 714,29$ decitex $>$ MN 14 to MN 43 (excl. sewing thread and yarn put up for retail sale)	52061200	1	0	0	1
Single cotton yarn containing predominantly, but $< 85\%$ cotton by weight, of combed fibers and with a linear density of 232,56 decitex to $< 714,29$ decitex $>$ MN 14 to MN 43 (excl. sewing thread and yarn put up for retail sale)	52062200	1	0	0	1
Single cotton yarn containing predominantly, but $< 85\%$ cotton by weight, of combed fibers and with a linear density of 192,31 decitex to $< 232,56$ decitex $>$ MN 43 to MN 52 (excl. sewing thread and yarn put up for retail sale)	52062300	3	0	0	3
Multiple folded or cabled cotton yarn containing predominantly, but $< 85\%$ cotton by weight, of uncombed fibers and with a linear density of $\geq 714,29$ decitex \leq MN 14 per single yarn (excl. sewing thread and yarn put up for retail sale)	52063100	4	2	0	2
Multiple folded or cabled cotton yarn containing predominantly, but $< 85\%$ cotton by weight, of combed fibers and with a linear density of 232,56 decitex to $< 714,29$ decitex $>$ MN 14 to MN 43 per	52064200	0	2	0	-2

single yarn (excl. sewing thread and yarn put up for retail sale)					
Cotton yarn containing $\geq 85\%$ cotton by weight, put up for retail sale (excl. sewing thread)	52071000	131	47	0	84
Cotton yarn containing predominantly, but $< 85\%$ cotton by weight, put up for retail sale (excl. sewing thread)	52079000	47	18	0	29
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $\leq 100 \text{ g/m}^2$, unbleached (excl. fabrics for the manufacture of bandages, dressings and medical gauzes)	52081190	2	0	0	2
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 100 \text{ g}$ to 130 g/m^2 , unbleached, with a width of $\leq 165 \text{ cm}$	52081216	46	0	0	46
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 100 \text{ g}$ to 130 g/m^2 , unbleached, with a width of $> 165 \text{ cm}$	52081219	127	0	0	127
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 130 \text{ g}$ to 200 g/m^2 , unbleached, with a width of $\leq 165 \text{ cm}$	52081296	29	1	0	28
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 130 \text{ g}$ to 200 g/m^2 , unbleached, with a width of $> 165 \text{ cm}$	52081299	137	0	0	137
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $\leq 200 \text{ g/m}^2$, in three-thread or four-thread twill, incl. cross twill, unbleached	52081300	2	0	0	2
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $\leq 200 \text{ g/m}^2$, unbleached (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52081900	22	10	0	12
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $\leq 100 \text{ g/m}^2$, bleached (excl. fabrics for the manufacture of bandages, dressings and medical gauzes)	52082190	13	0	0	13
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 100 \text{ g}$ to 130 g/m^2 , bleached, with a width of $\leq 165 \text{ cm}$	52082216	12	1	0	11
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 100 \text{ g}$ to 130 g/m^2 , bleached, with a width of $> 165 \text{ cm}$	52082219	4	0	0	4
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 130 \text{ g}$ to 200 g/m^2 , bleached, with a width of $\leq 165 \text{ cm}$	52082296	39	3	0	36
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 130 \text{ g}$ to 200 g/m^2 , bleached, with a width of $> 165 \text{ cm}$	52082299	4	0	0	4
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $\leq 200 \text{ g/m}^2$, bleached (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52082900	118	59	0	59
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $\leq 100 \text{ g/m}^2$, dyed	52083100	25	2	0	23
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 100 \text{ g}$ to 130 g/m^2 , dyed, with a width of $\leq 165 \text{ cm}$	52083216	70	3	0	67
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 100 \text{ g}$ to 130 g/m^2 , dyed, with a width of $> 165 \text{ cm}$	52083219	2	0	0	2

Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 130 g to 200 g/m ² , dyed, with a width of ≤ 165 cm	52083296	142	102	0	40
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 130 g to 200 g/m ² , dyed, with a width of > 165 cm	52083299	6	0	0	6
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing ≤ 200 g/m ² , in three-thread or four-thread twill, incl. cross twill, dyed	52083300	0	1	0	-1
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing ≤ 200 g/m ² , dyed (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52083900	48	7	0	41
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing ≤ 100 g/m ² , made from yarn of different colors	52084100	65	22	0	43
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 100 g to 200 g/m ² , made from yarn of different colors	52084200	191	36	0	155
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing ≤ 200 g/m ² , in three-thread or four-thread twill, incl. cross twill, made from yarn of different colors	52084300	4	1	0	3
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing ≤ 200 g/m ² , made from yarn of different colors (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52084900	34	13	0	21
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing ≤ 100 g/m ² , printed	52085100	19	4	0	15
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 100 g to 200 g/m ² , printed	52085200	204	49	0	155
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing ≤ 200 g/m ² , printed (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52085990	23	17	0	6
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 200 g/m ² , unbleached	52091100	66	4	0	62
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 200 g/m ² , in three-thread or four-thread twill, incl. cross twill, unbleached	52091200	9	0	0	9
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 200 g/m ² , unbleached (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52091900	89	2	0	87
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 200 g/m ² , bleached	52092100	29	6	0	23
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 200 g/m ² , in three-thread or four-thread twill, incl. cross twill, bleached	52092200	13	6	0	7
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 200 g/m ² , bleached (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52092900	12	1	0	11
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing > 200 g/m ² , dyed	52093100	128	19	0	109

Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 200 \text{ g/m}^2$, in three-thread or four-thread twill, incl. cross twill, dyed	52093200	60	7	0	53
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 200 \text{ g/m}^2$, dyed (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52093900	116	11	0	105
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 200 \text{ g/m}^2$, made of yarn of different colors	52094100	74	17	0	57
Denim, containing $\geq 85\%$ cotton by weight and weighing $> 200 \text{ g/m}^2$, made of yarn of different colors	52094200	5	0	0	5
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 200 \text{ g/m}^2$, in three-thread or four-thread twill, incl. cross twill, made of yarn of different colors	52094300	4	1	0	3
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 200 \text{ g/m}^2$, made of yarn of different colors (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52094900	10	13	0	-3
Plain-woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 200 \text{ g/m}^2$, printed	52095100	493	131	0	362
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 200 \text{ g/m}^2$, in three-thread or four-thread twill, incl. cross twill, printed	52095200	24	8	0	16
Woven fabrics of cotton, containing $\geq 85\%$ cotton by weight and weighing $> 200 \text{ g/m}^2$, printed (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52095900	154	34	0	120
Plain-woven fabrics of cotton, containing predominantly, but $< 85\%$ cotton by weight, mixed principally or solely with man-made fibers and weighing $\leq 200 \text{ g/m}^2$, unbleached	52101100	52	0	0	52
Woven fabrics of cotton, containing predominantly, but $< 85\%$ cotton by weight, mixed principally or solely with man-made fibers and weighing $\leq 200 \text{ g/m}^2$, unbleached (excl. plain-woven fabrics)	52101900	14	0	0	14
Plain-woven fabrics of cotton, containing predominantly, but $< 85\%$ cotton by weight, mixed principally or solely with man-made fibers and weighing $\leq 200 \text{ g/m}^2$, bleached	52102100	13	12	0	1
Woven fabrics of cotton, containing predominantly, but $< 85\%$ cotton by weight, mixed principally or solely with man-made fibers and weighing $\leq 200 \text{ g/m}^2$, bleached (excl. plain-woven fabrics)	52102900	159	2	0	157
Plain-woven fabrics of cotton, containing predominantly, but $< 85\%$ cotton by weight, mixed principally or solely with man-made fibers and weighing $\leq 200 \text{ g/m}^2$, dyed	52103100	17	11	0	6
Woven fabrics of cotton, containing predominantly, but $< 85\%$ cotton by weight, mixed principally or solely with man-made fibers and weighing $\leq 200 \text{ g/m}^2$, in three-thread or four-thread twill, incl. cross twill, dyed	52103200	11	3	0	8
Woven fabrics of cotton, containing predominantly, but $< 85\%$ cotton by weight, mixed principally or solely with man-made fibers and weighing ≤ 200	52103900	2	0	0	2

g/m ² , dyed (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)					
Plain-woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing ≤ 200 g/m ² , made of yarn of different colors	52104100	2	4	0	-2
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing ≤ 200 g/m ² , made from yarn of different colors (excl. plain-woven fabrics)	52104900	13	0	0	13
Plain-woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing ≤ 200 g/m ² , printed	52105100	53	21	0	32
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing ≤ 200 g/m ² , printed (excl. plain-woven fabrics)	52105900	2	1	0	1
Plain-woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , unbleached	52111100	1	0	0	1
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , unbleached (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52111900	1	0	0	1
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , bleached	52112000	5	2	0	3
Plain-woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , dyed	52113100	14	2	0	12
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , in three-thread or four-thread twill, incl. cross twill, dyed	52113200	41	19	0	22
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , dyed (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52113900	17	15	0	2
Plain-woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , made of yarn of different colors	52114100	8	4	0	4
Woven jacquard fabrics containing predominantly, but < 85% cotton by weight, mixed mainly or solely with man-made fibers and weighing > 200 g/m ² , made of yarn of different colors	52114910	13	0	0	13
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² ,	52114990	1	0	0	1

made of yarn of different colors (excl. those in three-thread or four-thread twill, incl. cross twill, denim, jacquard fabrics and plain-woven fabrics)					
Plain-woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , printed	52115100	28	4	0	24
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , in three-thread or four-thread twill, incl. cross twill, printed	52115200	45	3	0	42
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with man-made fibers and weighing > 200 g/m ² , printed (excl. those in three-thread or four-thread twill, incl. cross twill, and plain-woven fabrics)	52115900	10	2	0	8
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with flax, weighing ≤ 200 g/m ² , unbleached	52121110	3	1	0	2
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, other than those mixed principally or solely with man-made fibers or principally or solely with flax, weighing ≤ 200 g/m ² , unbleached	52121190	2	0	0	2
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with flax, weighing ≤ 200 g/m ² , dyed	52121310	1	2	0	-1
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, other than those mixed principally or solely with man-made fibers or principally or solely with flax, weighing ≤ 200 g/m ² , dyed	52121390	4	1	0	3
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, other than those mixed principally or solely with man-made fibers or principally or solely with flax, weighing ≤ 200 g/m ² , printed	52121590	1	1	0	0
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with flax, weighing > 200 g/m ² , unbleached	52122110	10	1	0	9
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, other than those mixed principally or solely with man-made fibers or principally or solely with flax, weighing > 200 g/m ² , unbleached	52122190	1	0	0	1
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with flax, weighing > 200 g/m ² , bleached	52122210	1	0	0	1
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, other than those mixed principally or solely with flax, weighing > 200 g/m ² , dyed	52122310	38	0	0	38
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, other than those mixed principally or solely with man-made fibers or principally or solely with flax, weighing > 200 g/m ² , dyed	52122390	7	1	0	6

Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally or solely with flax, weighing > 200 g/m ² , printed	52122510	6	2	0	4
Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, other than those mixed principally or solely with man-made fibers or principally or solely with flax, weighing > 200 g/m ² , printed	52122590	1	0	0	1
Men's or boys' overcoats, car coats, capes, cloaks and similar articles of cotton, knitted or crocheted	61012010	2	3	0	-1
Men's or boys' anoraks, incl. ski jackets, windcheaters, wind-jackets and similar articles of cotton, knitted or crocheted (excl. suits, ensembles, jackets, blazers, bib and brace overalls and trousers)	61012090	134	16	0	118
Women's or girls' overcoats, car coats, capes, cloaks and similar articles of cotton, knitted or crocheted	61022010	28	6	0	22
Women's or girls' anoraks, incl. ski jackets, windcheaters, wind-jackets and similar articles, of cotton, knitted or crocheted (excl. suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls)	61022090	748	143	0	605
Men's or boys' ensembles of cotton, knitted or crocheted (excl. ski ensembles and swimwear)	61032200	15	0	0	15
Men's or boys' jackets and blazers of cotton, knitted or crocheted (excl. wind-jackets and similar articles)	61033200	80	143	0	-63
Men's or boys' trousers, bib and brace overalls, breeches and shorts of cotton, knitted or crocheted (excl. swimwear and underpants)	61034200	645	0	0	645
Women's or girls' suits of cotton, knitted or crocheted (excl. ski overalls and swimwear)	61041200	0	7	0	-7
Women's or girls' ensembles of cotton, knitted or crocheted (excl. ski ensembles and swimwear)	61042200	27	13	0	14
Women's or girls' jackets and blazers of cotton, knitted or crocheted (excl. wind-jackets and similar articles)	61043200	103	312	0	-209
Women's or girls' dresses of cotton, knitted or crocheted (excl. petticoats)	61044200	1039	34	0	1005
Women's or girls' skirts and divided skirts of cotton, knitted or crocheted (excl. petticoats)	61045200	146	573	0	-427
Women's or girls' trousers, bib and brace overalls, breeches and shorts of cotton, knitted or crocheted (excl. panties and swimwear)	61046200	2497	0	0	2497
Women's or girls' bib and brace overalls and shorts of cotton, knitted or crocheted (excl. panties and swimwear)	61046290	0	335	0	-335
Men's or boys' shirts of cotton, knitted or crocheted (excl. nightshirts, T-shirts, singlets and other vests)	61051000	1344	204	0	1140
Women's or girls' blouses, shirts and shirt-blouses of cotton, knitted or crocheted (excl. T-shirts and vests)	61061000	721	240	0	481
Men's or boys' underpants and briefs of cotton, knitted or crocheted	61071100	1703	57	0	1646
Men's or boys' nightshirts and pyjamas of cotton, knitted or crocheted (excl. vests and singlets)	61072100	239	5	0	234
Men's or boys' bathrobes, dressing gowns and similar articles of cotton, knitted or crocheted	61079100	56	0	0	56
Bathrobes, dressing gowns and similar articles, of cotton terry fabrics, knitted or crocheted, for men or boys	61079110	1262	0	0	1262

Bathrobes, dressing gowns and similar articles, of cotton knitted or crocheted fabrics, for men or boys (excl. terry knitted or crocheted fabrics)	61079190	381	155	0	226
Women's or girls' briefs and panties of cotton, knitted or crocheted	61082100	0	98	0	-98
Women's or girls' nightdresses and pajamas of cotton, knitted or crocheted (excl. T-shirts, vests and négligés)	61083100	0	0	0	0
Women's or girls' nightdresses of cotton, knitted or crocheted (excl. T-shirts, vests and négligés)	61083110	141	0	0	141
Women's or girls' pajamas of cotton, knitted or crocheted	61083190	0	47	0	-47
Bathrobes, dressing gowns and similar articles, of cotton knitted or crocheted fabrics, for women or girls (excl. vests, slips, petticoats, briefs and panties, nightdresses, pajamas, brassières, girdles, corsets and similar articles)	61089110	12033	0	0	12033
Négligés, bathrobes, dressing gowns, house jackets and similar articles of cotton, knitted or crocheted, for women or girls (excl. vests, slips, petticoats, briefs and panties, nightdresses, pajamas, brassières, girdles, corsets and similar articles, and such articles of terry fabrics, knitted or crocheted)	61089190	627	2586	0	-1959
T-shirts, singlets and other vests of cotton, knitted or crocheted	61091000	3605	133	0	3472
Lightweight fine knit roll, polo or turtleneck jumpers and pullovers of cotton, knitted or crocheted	61102010	4213	579	0	3634
Men's or boys' jerseys, pullovers, cardigans, waistcoats and similar articles, of cotton, knitted or crocheted (excl. lightweight fine knit roll, polo or turtleneck jumpers and pullovers and wadded waistcoats)	61102091	2	1	0	1
Women's or girls' jerseys, pullovers, cardigans, waistcoats and similar articles, of cotton, knitted or crocheted (excl. lightweight fine knit roll, polo or turtleneck jumpers and pullovers and wadded waistcoats)	61102099	1799	358	0	1441
Babies' gloves, mittens and mitts, of cotton, knitted or crocheted	61112010	205	27	0	178
Babies' garments and clothing accessories, of cotton, knitted or crocheted (excl. gloves, mittens, mitts and hats)	61112090	470	98	0	372
Special garments for professional, sporting or other purposes, n.e.s., of cotton, knitted or crocheted	61142000	4454	648	0	3806
Full-length or knee-length stockings, socks and other hosiery, incl. stockings for varicose veins and footwear without applied soles, of cotton, knitted or crocheted (excl. pantyhose and tights, women's full-length or knee-length stockings, measuring per single yarn < 67 decitex, and hosiery for babies)	61159200	323	94	0	229
Full-length or knee-length stockings, socks and other hosiery, incl. footwear without applied soles, of cotton, knitted or crocheted (excl. graduated compression hosiery, pantyhose and tights, women's full-length or knee-length stockings, measuring per single yarn < 67 decitex, and hosiery for babies)	61159500	0	970	0	-970
Gloves, mittens and mitts, of cotton, knitted or crocheted (excl. impregnated, coated or covered with plastics or rubber, and for babies)	61169200	0	4	0	-4

Men's or boys' overcoats, raincoats, car coats, capes, cloaks and similar articles, of cotton, of a weight per garment of ≤ 1 kg (excl. knitted or crocheted)	62011210	97	41	0	56
Men's or boys' overcoats, raincoats, car coats, capes, cloaks and similar articles, of cotton, of a weight per garment of > 1 kg (excl. knitted or crocheted)	62011290	155	14	0	141
Men's or boys' anoraks, windcheaters, wind jackets and similar articles, of cotton (not knitted or crocheted and excl. suits, ensembles, jackets, blazers, trousers and tops of ski suits)	62019200	418	109	0	309
Women's or girls' overcoats, raincoats, car coats, capes, cloaks and similar articles, of cotton, of a weight per garment of ≤ 1 kg (excl. knitted or crocheted)	62021210	216	35	0	181
Women's or girls' overcoats, raincoats, car coats, capes, cloaks and similar articles, of cotton, of a weight per garment of > 1 kg (excl. knitted or crocheted)	62021290	121	41	0	80
Women's or girls' anoraks, windcheaters, wind jackets and similar articles, of cotton (not knitted or crocheted and excl. suits, ensembles, jackets, blazers, trousers and tops of ski suits)	62029200	587	179	0	408
Men's or boys' suits of cotton (excl. knitted or crocheted, tracksuits, ski suits and swimwear)	62031910	7	1	0	6
Men's or boys' industrial and occupational ensembles of cotton (excl. knitted or crocheted)	62032210	4	2	0	2
Men's or boys' ensembles, of cotton (not knitted or crocheted and excl. industrial and occupational clothing, tracksuits, ski ensembles and swimwear)	62032280	6	1	0	5
Men's or boys' jackets and blazers of cotton, industrial and occupational (excl. knitted or crocheted, and wind-jackets and similar articles)	62033210	174	75	0	99
Men's or boys' jackets and blazers of cotton (excl. knitted or crocheted, industrial and occupational, and wind-jackets and similar articles)	62033290	223	46	0	177
Men's or boys' industrial and occupational trousers and breeches of cotton (excl. knitted or crocheted and bib and brace overalls)	62034211	1634	383	0	1251
Men's or boys' trousers and breeches of cotton denim (excl. knitted or crocheted, industrial and occupational, bib and brace overalls and underpants)	62034231	4502	828	0	3674
Men's or boys' trousers and breeches of cotton cut corduroy (excl. knitted or crocheted, industrial and occupational, bib and brace overalls and underpants)	62034233	29	4	0	25
Men's or boys' trousers and breeches of cotton (excl. denim, cut corduroy, knitted or crocheted, industrial and occupational, bib and brace overalls and underpants)	62034235	2689	567	0	2122
Men's or boys' bib and brace overalls, of cotton, industrial and occupational (excl. knitted or crocheted)	62034251	95	48	0	47
Men's or boys' bib and brace overalls, of cotton (excl. knitted or crocheted, industrial and occupational)	62034259	11	4	0	7
Men's or boys' shorts of cotton (excl. knitted or crocheted, swimwear and underpants)	62034290	805	54	0	751
Women's or girls' suits of cotton (excl. knitted or crocheted, ski overalls and swimwear)	62041200	51	26	0	25
Women's or girls' ensembles of cotton, industrial and occupational (excl. knitted or crocheted)	62042210	4	1	0	3

Women's or girls' ensembles, of cotton (not knitted or crocheted and excl. industrial and occupational clothing, tracksuits, ski ensembles and swimwear)	62042280	53	26	0	27
Women's or girls' jackets and blazers of cotton, industrial and occupational (excl. knitted or crocheted, wind-jackets and similar articles)	62043210	13	5	0	8
Women's or girls' jackets and blazers of cotton (excl. knitted or crocheted, industrial and occupational, wind-jackets and similar articles)	62043290	383	74	0	309
Women's or girls' dresses of cotton (excl. knitted or crocheted and petticoats)	62044200	1062	272	0	790
Women's or girls' skirts and divided skirts of cotton (excl. knitted or crocheted and petticoats)	62045200	573	139	0	434
Women's or girls' trousers and breeches of cotton, industrial and occupational (excl. knitted or crocheted and bib and brace overalls)	62046211	79	16	0	63
Women's or girls' cotton denim trousers and breeches (excl. industrial and occupational, bib and brace overalls and panties)	62046231	3526	1049	0	2477
Women's or girls' trousers and breeches of cotton cut corduroy (excl. industrial and occupational, bib and brace overalls and panties)	62046233	80	25	0	55
Women's or girls' trousers and breeches, of cotton (not of cut corduroy, of denim or knitted or crocheted and excl. industrial and occupational clothing, bib and brace overalls, briefs and tracksuit bottoms)	62046239	2986	700	0	2286
Women's or girls' bib and brace overalls, of cotton, industrial and occupational (excl. knitted or crocheted)	62046251	2	1	0	1
Women's or girls' cotton bib and brace overalls (excl. knitted or crocheted, industrial and occupational)	62046259	16	4	0	12
Women's or girls' cotton shorts (excl. knitted or crocheted, panties and swimwear)	62046290	447	80	0	367
Men's or boys' shirts of cotton (excl. knitted or crocheted, nightshirts, singlets and other vests)	62052000	3266	614	0	2652
Women's or girls' blouses, shirts and shirt-blouses of cotton (excl. knitted or crocheted and vests)	62063000	1726	366	0	1360
Men's or boys' underpants and briefs of cotton (excl. knitted or crocheted)	62071100	150	14	0	136
Men's or boys' nightshirts and pajamas of cotton (excl. knitted or crocheted, vests, singlets and underpants)	62072100	45	17	0	28
Men's or boys' singlets and other vests, bathrobes, dressing gowns and similar articles of cotton (excl. knitted or crocheted, underpants, nightshirts and pajamas)	62079100	91	18	0	73
Women's or girls' nightdresses and pajamas of cotton (excl. knitted or crocheted, vests and négligés)	62082100	105	30	0	75
	62089100	374	59	0	315
Babies' garments and clothing accessories of cotton (excl. knitted or crocheted and hats, napkins and napkin liners [see 9619])	62092000	440	82	0	358
Men's or boys' industrial and occupational clothing of cotton (excl. knitted or crocheted)	62113210	219	99	0	120
Men's or boys' lined tracksuits, of cotton, with an outer shell of a single identical fabric (not knitted or crocheted)	62113231	21	0	0	21

Men's or boys' lined tracksuit tops upper parts, of cotton (not knitted or crocheted and excl. tracksuit tops with an outer shell of a single identical fabric)	62113241	79	30	0	49
Men's or boy's lined tracksuit bottoms lower parts, of cotton (not knitted or crocheted and excl. tracksuit bottoms with an outer shell of a single identical fabric)	62113242	12	5	0	7
Men's or boys' garments, of cotton, n.e.s. (not knitted or crocheted)	62113290	43	7	0	36
Women's or girls' aprons, overalls, smock-overalls and other industrial and occupational clothing of cotton (excl. knitted or crocheted)	62114210	186	64	0	122
Women's or girls' lined tracksuits, of cotton, with an outer shell of a single identical fabric (not knitted or crocheted)	62114231	8	1	0	7
Women's or girls' lined tracksuit tops upper parts, of cotton (not knitted or crocheted and excl. tracksuit tops with an outer shell of a single identical fabric)	62114241	36	17	0	19
Women's or girls' lined tracksuit bottoms lower parts, of cotton (not knitted or crocheted and excl. tracksuit bottoms with an outer shell of a single identical fabric)	62114242	6	0	0	6
Women's or girls' garments, of cotton, n.e.s. (not knitted or crocheted)	62114290	145	30	0	115
Handkerchiefs of cotton, of which no side exceeds 60 cm (excl. knitted or crocheted)	62132000	13	2	0	11
Blankets and travelling rugs of cotton, knitted or crocheted (excl. electric, table covers, bedspreads and articles of bedding and similar furnishing of heading 9404)	63013010	81	22	0	59
Blankets and travelling rugs of cotton (excl. knitted or crocheted, electric, table covers, bedspreads and articles of bedding and similar furnishing of heading 9404)	63013090	152	60	0	92
Printed bedlinen of cotton (excl. knitted or crocheted)	63022100	7999	1181	0	6818
Bedlinen of cotton (excl. printed, knitted or crocheted)	63023100	4109	569	0	3540
Table linen of cotton (excl. knitted or crocheted)	63025100	1347	237	0	1110
Toilet linen and kitchen linen, of terry toweling or similar terry fabrics of cotton (excl. floor cloths, polishing cloths, dishcloths and dusters)	63026000	4670	865	0	3805
Toilet linen and kitchen linen of cotton (excl. of terry fabrics, floor cloths, polishing cloths, dishcloths and dusters)	63029100	1356	225	0	1131
Curtains, incl. drapes, and interior blinds, curtain or bed valances of cotton (excl. knitted or crocheted, awnings and sunblind's)	63039100	3653	764	0	2889
Bedspreads of cotton (excl. knitted or crocheted, bedlinen, quilts and eiderdowns)	63041910	1022	306	0	716
Articles for interior furnishing, of cotton (excl. knitted or crocheted, blankets and travelling rugs, bedlinen, table linen, toilet linen, kitchen linen, curtains, incl. drapes, interior blinds, curtain or bed valances, bedspreads, lampshades and articles of heading 9404)	63049200	708	195	0	513
Sacks and bags, for the packing of goods, of cotton	63052000	44	11	0	33
Camping goods of cotton (excl. tents, awnings and sunblind's, sails, pneumatic mattresses, rucksacks, knapsacks and similar receptacles, filled sleeping bags, mattresses and cushions)	63069100	170	39	0	131
Total		100156	19476	0	80680

Appendix 3: A detailed list with the reasoning of categorization and results of subcategorization with description of NACE codes

CN codes	Major Categories	Subcategories	NACE codes	Description	No. of economic activities cover each subcategory	Reasons	Share (%) per subcategories	
							Major share	Total share
5201 Cotton , not carded or combed	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1721-1725	Cotton & other textile type weaving	4	Target product 5201 is the major (component of the) output of these manufacture processes		92.44%
		Manufacture of other textile products, that contain target products (1751-1830)	1754 1810-1830	Manufacture of other textiles n.e.c. Manufacturing of wearing apparel, dressing and dyeing of fur	3	It is likely that the target product 5201 is part of the products of the manufacture activities, as Cotton, not carded or combed		3.39% 0.00%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2122, 2521	Manufacture of household and sanitary goods and of toilet requisites, Manufacture of household and sanitary goods and of toilet requisites	7	"It is likely that, the product manufacturing activities don't contain any (notable amount of) target product"		1.19%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5118	Agents specializing in the sale of particular products or ranges of products n.e.c.	23	It is likely that, the target product is considered as major component of what's being sold	0.30%	1.71%
			5141	Wholesale of textiles			0.58%	
			5147	Wholesale of other household goods			0.32%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5249	Other retail sale in specialized stores, part 2		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.15%	
			5119	Agents involved in the sale of a variety of goods			0.14%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	6340	Activities of other transport agencies	7	It is likely that, the product 5201 serves as final product in these economic activity	0.16%	1.15%
			7415	Management activities of holding companies			0.68%	
			7470	Industrial cleaning			0.29%	
	Total				44			100%
5202 Cotton waste (including yarn waste and garnet stock)	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	Null	-	-	Target product 5202 is the major (component of the) output of these manufacture processes		0.00%
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	2	It is likely that the target product 5202 is part of the products of the manufacture activities, as Cotton, not carded or combed		10.21%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2030	Manufacture of builders' carpentry and joinery	9	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	0.34%	86.82%
			2112	Manufacture of paper and paperboard			70.26%	
			2122	Manufacture of household and sanitary goods and of toilet requisites			0.19%	
			2222	Printing n.e.c.			3.44%	
			2416	Manufacture of plastics in primary forms			5.00%	
			2521	Manufacture of plastic plates, sheets, tubes and profiles			8.04%	
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5030	Sale of motor vehicle parts and accessories	15	It is likely that, the target product is considered as major component of what's being sold	0.91%	2.92%
			5115	Agents involved in the sale of furniture, household goods, hardware and ironmongery			0.45%	
			5141	Wholesale of textiles			0.15%	
			5144	Wholesale of china and glassware, wallpaper and cleaning materials			0.64%	
			5152	Wholesale of metals and metal ores			0.02%	
			5156	Wholesale of other intermediate products			0.43%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5187	Wholesale of other machinery for use in industry, trade and navigation		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.03%	

	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	6312		4	It is likely that, the product 5202 serves as final product in these economic activity	0.03%	0.07%
Total					30			100%
5203 Cotton carded or combed	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1721-1725	Cotton & other textile type weaving	2	Target product 5203 is the major (component of the) output of these manufacture processes		0.30%
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	5	It is likely that the target product 5203 is part of the products of the manufacture activities, as Cotton, not carded or combed	0.01%	8.08%
			1760	Manufacture of knitted and crocheted fabrics			7.21%	
			1772	Manufacture of knitted and crocheted pullovers, cardigans and similar articles			0.86%	
			1810-1830	Manufacturing of wearing apparel, dressing and dyeing of fur				0.94%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2112	Manufacture of paper and paperboard	7	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	30.54%	38.02%
			2122	Manufacture of household and sanitary goods and of toilet requisites			0.29%	
			2416	Manufacture of plastics in primary forms			1.64%	
			2451	Manufacture of soap and detergents, cleaning and polishing preparations			0.15%	
			3130	Manufacture of industrial process control equipment			1.55%	
			3611	Manufacture of chairs and seats			3.84%	
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	23	It is likely that, the target product is considered as major component of what's being sold	0.22%	51.30%
			5119	Agents involved in the sale of a variety of goods			41.40%	
			5141	Wholesale of textiles			1.54%	
			5144	Wholesale of china and glassware, wallpaper and cleaning materials			3.30%	
			5241	Retail sale of textiles			0.26%	
			5242	Retail sale of clothing			0.01%	
			5246	Retail sale of hardware, paints and glass			1.65%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.65%	
			5212	Other retail sale in non-specialized stores			0.25%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	6340	Activities of other transport agencies	9	It is likely that, the product 5203 serves as final product in these economic activity	0.11%	1.65%
			7020	Letting of own property			0.07%	
			7420	Architectural and engineering activities and related technical consultancy			0.79%	
			7440	Advertising			0.19%	
Total					46			100%
5204 Cotton sewing thread, whether or not put up for retail sale	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1721-1725	Cotton & other textile type weaving	3	Target product 5204 is the major (component of the) output of these manufacture processes		0.01%
			1730	Finishing of textiles				0.094%
			1740	Manufacture of made-up textile article except apparel				4.819%
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	10	It is likely that the target product 5204 is part of the products of the manufacture activities	0.37%	7.07%
			1760	Manufacture of knitted and crocheted fabrics			3.95%	
			1771	Manufacture of knitted and crocheted hosiery			2.75%	
			1810-1830	Manufacturing of wearing apparel, dressing and dyeing of fur				0.64%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	3650	Manufacture of games and toys	3	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	0.04%	2.32%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5020	Maintenance and repair of motor vehicles	34	It is likely that, the target product is considered as major component of what's being sold	0.12%	71.19%
			5141	Wholesale of textiles			62.35%	
			5142	Wholesale of clothing and footwear			1.13%	
			5144	Wholesale of china and glassware, wallpaper and cleaning materials			1.01%	
			5147	Wholesale of other household goods			1.63%	
			5156	Wholesale of other intermediate products			14.12%	
			5211	Retail sale of hardware, paints and glass			0.74%	
			5241	Retail sale of textiles			3.56%	

			5249	Other retail sale in specialized stores, part 2			0.44%		
			5261	Retail sale via mail order houses			3.34%		
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.28%		
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product		6110	Sea and coastal water transport	15	It is likely that, the product 5204 serves as final product in these economic activity	0.96%	13.86%
				7414	Business and management consultancy activities			12.77%	
Total					65			100%	
5205 Cotton yarn (other than sewing thread), containing 85 % or more by weight of cotton, not put up for retail sale	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1717, 1721	Preparation and spinning of other textile fibers, Cotton-type weaving	5	Target product 5205 is the major (component of the) output of these manufacture processes		4.472%	
			1721-1725	Textile type weaving				23.100 %	
			1730	Finishing of textiles				0.868%	
			1740	Manufacture of made-up textile article except apparel				0.819%	
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	9	It is likely that the target product 5205 is part of the products of the manufacture activities	9.95%	34.95%	
			1760	Manufacture of knitted and crocheted fabrics			15.59%		
			1771	Manufacture of knitted and crocheted hosiery			6.34%		
			1772	Manufacture of knitted and crocheted pullovers, cardigans and similar articles			2.67%		
			1823, 1824	Manufacture of underwear, other wearing apparel and accessories n.e.c.					11.96%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	3130	Manufacture of insulated wire and cable	15	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	0.32%	0.93%	
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles	20	It is likely that, the target product is considered as major component of what's being sold	5.30%	16.94%	
			5142	Wholesale of clothing and footwear			5.28%		
			5147	Wholesale of other household goods			0.16%		
			5241	Retail sale of textiles			1.34%		
			5261	Retail sale via mail order houses			1.21%		
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores	It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.01%			
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7487	Other business activities n.e.c.	8	It is likely that, the product 5205 serves as final product in these economic activity	5.05%	5.96%	
Total					57			100%	
5206 Cotton yarn (other than sewing thread), containing less than 85 % by weight of cotton, not put up for retail sale	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1717	Preparation and spinning of other textile fibers	6	Target product 5206 is the major (component of the) output of these manufacture processes		4.85%	
			1721, 1722	Cotton-type weaving, Woolen-type weaving				14.09%	
			1730	Finishing of textiles				1.79%	
			1740	Manufacture of made-up textile articles, except apparel				8.83%	
		Manufacture of other textile products, that contain target products (1751-1830)	1752	Manufacture of cordage, rope, twine and netting	10	It is likely that the target product 5206 is part of the products of the manufacture activities, as Cotton, not carded or combed	1.80%	28.63%	
			1754	Manufacture of other textiles n.e.c.			4.66%		
			1760	Manufacture of knitted and crocheted fabrics			7.06%		
			1772	Manufacture of knitted and crocheted pullovers, cardigans and similar articles			14.71%		
			1821, 1823	Manufacturing of workwear & underwear					9.89%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2124	Manufacture of wallpaper	8	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	1.20%	24.50%	
			3662	Manufacture of brooms and brushes			23.02%		
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles	12	It is likely that, the target product is considered as major component of what's being sold	4.97%	6.84%	
			5242	Retail sale of clothing			0.29%		
		Wholesales, retails and agents involved with sales where	5156	Wholesale of other intermediate products	It is likely that, the functions of target product is to aid the sales	1.19%			

		target product is sold as final product to aid the activity				activities, as for packaging, storage etc.		
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	6340	Activities of other transport agencies	2	It is likely that, the product 5206 serves as final product in these economic activity		0.57%
Total					37			100%
5207 Cotton yarn (other than sewing thread) put up for retail sale	Manufacture (1711-3663)	Manufacture of textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile article except apparel	4	Target product 5207 is the major (component of the) output of these manufacture processes	5.55%	5.590%
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	7	It is likely that the target product 5207 is part of the products of the manufacture activities	0.11%	3.42%
			1760	Manufacture of knitted and crocheted fabrics			2.80%	
			1771	Manufacture of knitted and crocheted hosiery			0.48%	
			1810-1830	Manufacturing of wearing apparel, dressing and dyeing of fur				1.16%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products	3	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.06%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles	30	It is likely that, the target product is considered as major component of what's being sold	62.35%	89.19%
			5142	Wholesale of clothing and footwear			1.13%	
			5144	Wholesale of china and glassware, wallpaper and cleaning materials			1.01%	
			5147	Wholesale of other household goods			1.63%	
			5156	Retail sale via mail order houses			14.12%	
			5241	Retail sale of textiles			3.56%	
			5261	Retail sale via mail order houses			3.34%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5211	Retail sale in non-specialized stores with food, beverages or tobacco predominating		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.74%	
			5212	Other retail sale in non-specialized stores			0.28%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7487	Other business activities n.e.c.	10	It is likely that, the product 5207 serves as final product in these economic activity	0.41%	0.48%
Total					54			100%
5208 Woven fabrics of cotton, containing 85 % or more by weight of cotton, weighing not more than 200 g/m ²	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1721	Cotton-type weaving	5	Target product 5208 is the major (component of the) output of these manufacture processes	2.10%	15.139 %
			1725	Other textile weaving			0.16%	
			1730	Finishing of textiles			1.43%	
			1740	Manufacture of made-up textile article except apparel			11.45%	
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	9	It is likely that the target product 5208 is part of the products of the manufacture activities	10.35%	10.44%
			1760	Manufacture of knitted and crocheted fabrics			0.55%	
			1771-1772	Manufacture of knitted and crocheted articles			0.01%	
			1823	Manufacture of underwear			8.36%	
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	3611	Manufacture of chairs and seats	36	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	1.15%	4.95%
	Sales (5010-5552)	"Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)"	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	42	It is likely that, the target product is considered as major component of what's being sold	8.50%	57.84%
			5141	Wholesale of textiles			19.50%	
			5142	Wholesale of clothing and footwear			1.62%	
			5147	Wholesale of other household goods			9.98%	
			5156	Retail sale via mail order houses			1.82%	
			5241	Retail sale of textiles			3.38%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			2.28%	
			5261	Retail sale via mail order houses			7.71%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5211	Retail sale in non-specialized stores with food, beverages or tobacco predominating		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.02%	
			5212	Other retail sale in non-specialized stores			1.43%	

	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	24	It is likely that, the product 5208 serves as final product in these economic activity	1.31%	3.37%
			7487	Other business activities n.e.c.			0.25%	
Total					116			100%
Woven fabrics of cotton, containing 85 % or more by weight of cotton, weighing not more than 200 g/m ²	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1721	Cotton-type weaving	5	Target product 5209 is the major (component of the) output of these manufacture processes	2.68%	7.024%
			1730	Finishing of textiles			1.42%	
			1740	Manufacture of made-up textile article except apparel			2.87%	
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	7	It is likely that the target product 5209 is part of the products of the manufacture activities	3.58%	3.67%
			1821	Manufacture of underwear			6.75%	
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2681	Production of abrasive products	27	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	3.15%	16.91%
			3611	Manufacture of chairs and seats			3.37%	
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	40	It is likely that, the target product is considered as major component of what's being sold	1.78%	59.34%
			5141	Wholesale of textiles			14.40%	
			5142	Wholesale of clothing and footwear			5.84%	
			5147	Wholesale of other household goods			18.11%	
			5156	Retail sale via mail order houses			6.81%	
			5241	Retail sale of textiles			3.24%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			1.75%	
			5249	Other retail sale in specialized stores, part 2			2.22%	
			5261	Retail sale via mail order houses			1.11%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	2.77%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	15	It is likely that, the product 5209 serves as final product in these economic activity	4.22%	5.29%
Total					94			100%
Woven fabrics of cotton, containing less than 85 % by weight of cotton, mixed mainly or solely with man-made fibres, weighing not more than 200 g/m ²	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1721	Cotton-type weaving	5	Target product 5210 is the major (component of the) output of these manufacture processes	1.07%	8.371%
			1730	Finishing of textiles			2.63%	
			1740	Manufacture of made-up textile article except apparel			4.39%	
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	6	It is likely that the target product 5210 is part of the products of the manufacture activities	8.48%	8.50%
			1821	Manufacture of underwear			3.55%	
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2112	Production of abrasive products	17	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	1.97%	45.25%
			3430	Manufacture of parts and accessories for motor vehicles and their engines			7.56%	
			3611	Manufacture of chairs and seats			3.04%	
			3615	Manufacture of mattresses			23.08%	
			3663	Other manufacturing n.e.c.			8.44%	
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	32	It is likely that, the target product is considered as major component of what's being sold	2.21%	32.22%
			5141	Wholesale of textiles			14.64%	
			5142	Wholesale of clothing and footwear			5.33%	
			5147	Wholesale of other household goods			4.53%	
			5241	Retail sale of textiles			1.52%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			2.32%	
			5249	Other retail sale in specialized stores, part 2				
			5261	Retail sale via mail order houses				
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.25%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	3710-4550, 6010-9900	Other activities	13	It is likely that, the product 5210 serves as final product in these economic activity		0.49%
Total					73			100%
			1721	Cotton-type weaving	5		1.73%	9.555%

5211	Woven fabrics of cotton, containing less than 85 % by weight of cotton, mixed	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1730	Finishing of textiles	7	Target product 5211 is the major (component of the) output of these manufacture processes	1.59%	0.61%
			1740	Manufacture of made-up textile article except apparel			5.77%	
			1754	Manufacture of other textiles n.e.c.				
		Manufacture of other textile products, that contain target products (1751-1830)	1821, 1822	Manufacture of underwear, and outerwear	15	It is likely that the target product 5211 is part of the products of the manufacture activities		18.36%
			3611	Manufacture of chairs and seats			5.16%	
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	3615	Manufacture of mattresses			6.48%	13.48%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	30	It is likely that, the target product is considered as major component of what's being sold	1.27%	56.96%
			5141	Wholesale of textiles			21.86%	
			5142	Wholesale of clothing and footwear			23.26%	
			5147	Wholesale of other household goods			1.12%	
			5241	Retail sale of textiles			3.15%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			2.99%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.45%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	3710-4550, 6010-9900	Other activities	16	It is likely that, the product 5211 serves as final product in these economic activity		1.12%
Total					73			100%
5212	Other woven fabrics of cotton	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1721	Cotton-type weaving	5	Target product 5212 is the major (component of the) output of these manufacture processes	4.40%	9.899%
			1730	Finishing of textiles			0.62%	
			1740	Manufacture of made-up textile article except apparel			4.82%	
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	5	It is likely that the target product 5212 is part of the products of the manufacture activities	9.95%	10.13%
			1810-1830	Manufacturing of wearing apparel, dressing and dyeing of fur				
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2124		16	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	1.06%	26.91%
			3611				11.20%	
			3615	Manufacture of mattresses			14.12%	
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	33	It is likely that, the target product is considered as major component of what's being sold	1.66%	50.81%
			5141	Wholesale of textiles			30.89%	
			5142	Wholesale of clothing and footwear			2.77%	
			5241	Retail sale of textiles			4.28%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			3.82%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.71%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	3710-4550, 6010-9900	Other activities	18	It is likely that, the product 5212 serves as final product in these economic activity		1.26%
Total					77			100%
6101	Men's or boys' overcoats, car coats, capes, cloaks, anoraks (including ski jackets), wind	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1730	Finishing of textiles	2	Target product 6101 is the major (component of the) output of these manufacture processes	0.02%	0.113%
			1740	Manufacture of made-up textile article except apparel			0.10%	
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	9	It is likely that the target product 6101 is part of the products of the manufacture activities		0.29%
			1821	Manufacture of workwear			9.55%	
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products	26	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.82%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	49	It is likely that, the target product is considered as major component of what's being sold	2.60%	81.96%
			5141	Wholesale of textiles			3.37%	
			5142	Wholesale of clothing and footwear			38.86%	
			5147	Wholesale of other household goods			5.69%	
			5153	Wholesale of wood, construction materials and sanitary equipment			1.23%	
			5242	Retail sale of clothing			15.98%	

heater s, wind- jackets and similar article s, knitted or croche ted, other than those of headin g 6103			5246	Retail sale of hardware, paints and glass			2.21%	
			5248	Other retail sale in specialized stores, part 1			2.94%	
			5261	Retail sale via mail order houses			4.44%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.50%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	35	It is likely that, the product 6101 serves as final product in these economic activity	4.44%	6.26%
Total					121			100%
6102 Men's or boys' overco ats, car coats, capes, cloaks , anorak s (inclu ding ski jackets), windc heater s, wind- jackets and similar article s, knitted or croche ted, other than those of headin g 6103	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1730	Finishing of textiles	2	Target product 6102 is the major (component of the) output of these manufacture processes		0.053%
		Manufacture of other textile products, that contain target products (1751-1830)	1772	Manufacture of knitted and crocheted pullovers, cardigans and similar articles	9	It is likely that the target product 6102 is part of the products of the manufacture activities	0.11%	0.19%
			1821	Manufacture of workwear			1.33%	1.75%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products	17	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.24%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	45	It is likely that, the target product is considered as major component of what's being sold	2.22%	94.52%
			5141	Wholesale of textiles			2.92%	
			5142	Wholesale of clothing and footwear			39.56%	
			5147	Wholesale of other household goods			12.33%	
			5242	Retail sale of clothing			18.20%	
			5248	Other retail sale in specialized stores, part 1			5.48%	
			5261	Retail sale via mail order houses			9.96%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.15%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	17	It is likely that, the product 6102 serves as final product in these economic activity	2.63%	3.25%
Total					90			100%
6103 Men's or boys' suits, ensem bles, jackets , blazer s, trouser s, bib and brace overall s, breech es and shorts	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	Null	Finishing of textiles	0	Target product 6103 is the major (component of the) output of these manufacture processes		0.000%
				Manufacture of made-up textile article except apparel				
		Manufacture of other textile products, that contain target products (1751-1830)	1771	Manufacture of knitted and crocheted hosiery	9	It is likely that the target product 6103 is part of the products of the manufacture activities	0.22%	0.33%
			1821	Manufacture of workwear			1.71%	2.61%
	Sales (5010-5552)	Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products	23	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.17%
		Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	44	It is likely that, the target product is considered as major component of what's being sold	4.62%	90.65%
			5141	Wholesale of textiles			4.30%	
			5142	Wholesale of clothing and footwear			32.46%	
			5147	Wholesale of other household goods			9.32%	
			5242	Retail sale of clothing			20.31%	
			5246	Retail sale of hardware, paints and glass			7.38%	

(other than swim wear), knitted or crocheted			5248	Other retail sale in specialized stores, part 1			2.90%	
			5261	Retail sale via mail order houses			4.70%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.71%	
			5212	Other retail sale in non-specialized stores			1.13%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	46		4.96%	6.25%
Total					122			100%
Men's or boys' overcoats, car coats, capes, cloaks, anoraks (including ski jackets), windcheaters, wind-jackets and similar articles, knitted or crocheted, other than those of heading 6103	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	3	Target product 6104 is the major (component of the) output of these manufacture processes	0.05%	0.097%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted hosiery	9	It is likely that the target product 6104 is part of the products of the manufacture activities	0.31%	0.39%
			1823	Manufacture of underwear			0.68%	1.24%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products	12	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.14%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	44	It is likely that, the target product is considered as major component of what's being sold	1.26%	90.94%
			5141	Wholesale of textiles			2.72%	
			5142	Wholesale of clothing and footwear			25.86%	
			5147	Wholesale of other household goods			7.04%	
			5242	Retail sale of clothing			31.28%	
			5248	Other retail sale in specialized stores, part 1			2.47%	
			5261	Retail sale via mail order houses			15.37%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.57%	
			5212	Other retail sale in non-specialized stores			1.09%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	30	It is likely that, the product 6104 serves as final product in these economic activity	6.04%	7.19%
Total					98			100%
Men's or boys' shirts, knitted or crocheted	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	2	Target product 6105 is the major (component of the) output of these manufacture processes	0.50%	0.635%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted fabrics	9	It is likely that the target product 6105 is part of the products of the manufacture activities	2.98%	3.17%
			1821, 1822	Manufacture of workwear & other outerwear			3.26%	4.97%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products	24	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.24%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles	51	It is likely that, the target product is considered as major component of what's being sold	5.86%	88.75%
			5142	Wholesale of clothing and footwear			53.58%	
			5147	Wholesale of other household goods			4.05%	
			5185				2.83%	
			5242	Retail sale of clothing			13.09%	
			5248	Other retail sale in specialized stores, part 1			2.71%	
			5261	Retail sale via mail order houses			2.47%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.99%	

	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	32	It is likely that, the product 6105 serves as final product in these economic activity	1.04%	2.23%
Total					118			100%
Women's or girls' blouses, shirts and shirt-blouses, knitted or crocheted	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	2	Target product 6106 is the major (component of the) output of these manufacture processes	0.12%	0.121%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted fabrics	8	It is likely that the target product 6106 is part of the products of the manufacture activities	0.11%	0.14%
			1810-1830	Manufacturing of wearing apparel, dressing and dyeing of fur				1.16%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products	10	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.06%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles	43	It is likely that, the target product is considered as major component of what's being sold	3.49%	92.41%
			5142	Wholesale of clothing and footwear			39.65%	
			5147	Wholesale of other household goods			1.54%	
			5242	Retail sale of clothing			30.87%	
			5248	Other retail sale in specialized stores, part 1			1.08%	
			5261	Retail sale via mail order houses			12.09%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.		
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	25	It is likely that, the product 6106 serves as final product in these economic activity	4.61%	6.11%
			7415	Management activities of holding companies			1.08%	
Total					88			100%
Men's or boys' underpants, briefs, nightshirts, pyjamas, bathrobes, dressing gowns and similar articles, knitted or crocheted	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	3	Target product 6107 is the major (component of the) output of these manufacture processes	0.44%	0.059%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted fabrics	8	It is likely that the target product 6107 is part of the products of the manufacture activities	0.50%	0.74%
			1823	Manufacturing of wearing apparel, dressing and dyeing of fur			1.44%	2.85%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products	9	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.19%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	55	It is likely that, the target product is considered as major component of what's being sold	1.52%	92.49%
			5141	Wholesale of textiles			9.36%	
			5142	Wholesale of clothing and footwear			36.88%	
			5147	Wholesale of other household goods			3.67%	
			5242	Retail sale of clothing			27.86%	
			5248	Other retail sale in specialized stores, part 1			1.40%	
			5261	Retail sale via mail order houses			3.39%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	2.93%	
			5212	Other retail sale in non-specialized stores			2.16%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	21	It is likely that, the product 6107 serves as final product in these economic activity	1.95%	3.67%
Total					96			100%
6108	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	3	Target product 6108 is the major (component of the) output of these manufacture processes	0.02%	0.040%

slips, petticoats, briefs, panties, nightdresses, pyjamas, negligés, bathrobes, dressing gowns and similar articles, knitted or crocheted								
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted fabrics	7	It is likely that the target product 6108 is part of the products of the manufacture activities	0.14%	0.23%
			1824	Manufacturing of wearing apparel, dressing and dyeing of fur			0.69%	1.63%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2122	Manufacture of household and sanitary goods and of toilet requisites	9	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	3.28%	3.37%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles	36	It is likely that, the target product is considered as major component of what's being sold	5.40%	86.05%
			5142	Wholesale of clothing and footwear			27.24%	
			5147	Wholesale of other household goods			3.67%	
			5211	Retail sale in non-specialized stores with food, beverages or tobacco predominating			1.00%	
			5242	Retail sale of clothing			31.06%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			1.99%	
			5261	Retail sale via mail order houses			7.77%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	2.11%	
	5212		Other retail sale in non-specialized stores	2.45%				
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	24	It is likely that, the product 6108 serves as final product in these economic activity	6.78%	8.69%
			7415	Management activities of holding companies			1.46%	
Total				79			100%	
6109 T-shirts, singlets and other vests, knitted or crocheted	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1730	Finishing of textiles	2	Target product 6109 is the major (component of the) output of these manufacture processes	0.08%	0.083%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted fabrics	9		It is likely that the target product 6109 is part of the products of the manufacture activities	
			1823	Manufacturing of wearing apparel, dressing and dyeing of fur				0.34%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	(1910-3663)	Manufacture of non-textile products, the processes of which use target products	34	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.20%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	65	It is likely that, the target product is considered as major component of what's being sold	1.03%	93.01%
			5141	Wholesale of textiles			5.99%	
			5142	Wholesale of clothing and footwear			31.35%	
			5147	Wholesale of other household goods			4.92%	
			5242	Retail sale of clothing			35.82%	
			5248	Other retail sale in specialized stores, part 1			2.91%	
			5261	Retail sale via mail order houses			6.00%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.51%	
	5212		Other retail sale in non-specialized stores	1.33%				
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	56	It is likely that, the product 6109 serves as final product in these economic activity	3.67%	5.36%
Total				166			100%	
6110 Jersey, sweaters, cardigans, waistcoats and similar articles, knitted or crocheted	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	4	Target product 6110 is the major (component of the) output of these manufacture processes	0.02%	0.061%
		Manufacture of other textile products, that contain target products (1751-1830)	1772	Manufacture of knitted and crocheted pullovers, cardigans and similar articles	10		It is likely that the target product 6110 is part of the products of the manufacture activities	
			1821	Manufacturing of wearing apparel, dressing and dyeing of fur				0.53%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	(1910-3663)	Manufacture of non-textile products, the processes of which use target products	17	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.19%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	48	It is likely that, the target product is considered as major component of what's being sold	3.20%	93.20%
			5141	Wholesale of textiles			3.62%	

ted		(part of) a product (Intermediate products)	5142	Wholesale of clothing and footwear			32.63%	
			5147	Wholesale of other household goods			3.90%	
			5242	Retail sale of clothing			34.87%	
			5246	Retail sale of hardware, paints and glass			1.22%	
			5248	Other retail sale in specialized stores, part 1			2.20%	
			5261	Retail sale via mail order houses			8.35%	
			Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139			Non-specialized wholesale of food, beverages and tobacco	
	5212	Other retail sale in non-specialized stores		1.21%				
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	42	It is likely that, the product 6110 serves as final product in these economic activity	2.99%	4.17%
Total				121			100%	
6111 Babies' garments and clothing accessories, knitted or crocheted	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	2	Target product 6111 is the major (component of the) output of these manufacture processes	0.00%	0.005%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted fabrics	8	It is likely that the target product 6111 is part of the products of the manufacture activities	0.44%	0.29%
			1824	Manufacture of other wearing apparel and accessories n.e.c.			1.08%	2.14%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	(1910-3663)	Manufacture of non-textile products, the processes of which use target products	5	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.03%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles	41	It is likely that, the target product is considered as major component of what's being sold	2.78%	79.07%
			5142	Wholesale of clothing and footwear			19.31%	
			5147	Wholesale of other household goods			1.18%	
			5242	Retail sale of clothing			45.31%	
			5261	Retail sale via mail order houses			3.73%	
			Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139			Non-specialized wholesale of food, beverages and tobacco	
		5212		Other retail sale in non-specialized stores	2.29%			
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	22	It is likely that, the product 6111 serves as final product in these economic activity	15.58%	18.01%
	Total				78			100%
	6114 Other garments, knitted or crocheted	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	2	Target product 6114 is the major (component of the) output of these manufacture processes	
Manufacture of other textile products, that contain target products (1751-1830)			1771	Manufacture of knitted and crocheted hosiery	8	It is likely that the target product 6114 is part of the products of the manufacture activities	0.16%	0.35%
			1821	Manufacture of workwear			1.00%	1.40%
Manufacture of non-textile products, the processes of which use target products (1910-3663)			(1910-3663)	Manufacture of non-textile products, the processes of which use target products	19	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.59%
Sales (5010-5552)		Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	59	It is likely that, the target product is considered as major component of what's being sold	1.37%	90.74%
			5141	Wholesale of textiles			5.94%	
			5142	Wholesale of clothing and footwear			30.41%	
			5147	Wholesale of other household goods			6.74%	
			5242	Retail sale of clothing			27.90%	
			5248	Other retail sale in specialized stores, part 1			6.03%	
			5261	Retail sale via mail order houses			7.27%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco	It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.89%		
5212			Other retail sale in non-specialized stores	1.27%				
Other activities (3710-4550), (6010-9900)		Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	45	It is likely that, the product 6114 serves as final product in these economic activity	3.95%	6.90%
			7415	Management activities of holding companies			1.54%	
Total				133			100%	
6115 Pantyhose, tights,	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	2	Target product 6115 is the major (component of the) output of these manufacture processes		0.00%
			1771	Manufacture of knitted and crocheted hosiery	8		2.84%	2.88%

stockings, socks and other hosiery, including graduated compression hosiery (for example, stockings for varicose veins) and footwear without applied soles, knitted or crocheted		Manufacture of other textile products, that contain target products (1751-1830)	1824	Manufacture of other wearing apparel and accessories n.e.c.		It is likely that the target product 6115 is part of the products of the manufacture activities	0.19%	0.23%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	(1910-3663)	Manufacture of non-textile products, the processes of which use target products	14	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.15%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles	49	It is likely that, the target product is considered as major component of what's being sold	8.70%	89.71%
			5142	Wholesale of clothing and footwear			30.57%	
			5147	Wholesale of other household goods			8.59%	
			5211	Retail sale in non-specialized stores with food, beverages or tobacco predominating			1.07%	
			5242	Retail sale of clothing			24.24%	
			5248	Other retail sale in specialized stores, part 1			4.30%	
			5261	Retail sale via mail order houses			2.27%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	3.76%	
			5212	Other retail sale in non-specialized stores			2.21%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	29	It is likely that, the product 6115 serves as final product in these economic activity	5.60%	7.04%
Total					102			100%
6116 Gloves, mittens and mitts, knitted or crocheted	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	3	Target product 6116 is the major (component of the) output of these manufacture processes		0.00%
		Manufacture of other textile products, that contain target products (1751-1830)	1771	Manufacture of knitted and crocheted hosiery	11	It is likely that the target product 6116 is part of the products of the manufacture activities	0.07%	0.09%
			1821, 1824	Manufacture of workwear, and other wearing apparels			3.23%	3.37%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	3663	Other manufacturing n.e.c.	29	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	1.38%	2.73%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	51	It is likely that, the target product is considered as major component of what's being sold	2.07%	89.26%
			5124	Wholesale of hides, skins and leather			1.34%	
			5141	Wholesale of textiles			1.69%	
			5142	Wholesale of clothing and footwear			24.12%	
			5146	Wholesale of pharmaceutical goods			1.37%	
			5147	Wholesale of other household goods			4.80%	
			5154	Wholesale of hardware, plumbing and heating equipment and supplies			2.69%	
			5156	Wholesale of other intermediate products			36.01%	
			5242	Retail sale of clothing			5.52%	
			5246	Retail sale of hardware, paints and glass			2.04%	
			5248	Other retail sale in specialized stores, part 1			1.45%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.43%	
			5212	Other retail sale in non-specialized stores			0.62%	
			7020	Letting of own property	24		2.06%	4.56%

	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities		It is likely that, the product 6116 serves as final product in these economic activity	1.19%	
			7415	Management activities of holding companies			1.04%	
Total					118			100%
6201 Men's or boys' overcoats, car coats, capes, cloaks, anoraks (including ski jackets), windcheaters, wind-jackets and similar articles, other than those of heading 6203	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1710-1740	Manufacture of textiles and textile products	2	Target product 6201 is the major (component of the) output of these manufacture processes	0.075	0.07%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted hosiery	9	It is likely that the target product 6201 is part of the products of the manufacture activities	0.08%	0.08%
			1821	Manufacture of workwear			6.98%	7.96%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products, the processes of which use target products	29	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.28%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	55	It is likely that, the target product is considered as major component of what's being sold	3.95%	89.01%
			5141	Wholesale of textiles			1.86%	
			5142	Wholesale of clothing and footwear			43.28%	
			5147	Wholesale of other household goods			5.43%	
			5242	Retail sale of clothing			19.85%	
			5246	Retail sale of hardware, paints and glass			2.43%	
			5261	Retail sale via mail order houses			2.82%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5248	Other retail sale in specialized stores, part 1		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	5.45%	
			5212	Other retail sale in non-specialized stores			0.78%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	45	It is likely that, the product 6201 serves as final product in these economic activity	1.31%	2.60%
Total					140			100%
6202 Women's or girls' overcoats, car coats, capes, cloaks, anoraks (including ski jackets), windcheaters, wind-jackets and similar articles, other than those of heading 6204	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	1	Target product 6202 is the major (component of the) output of these manufacture processes		0.06%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted hosiery	8	It is likely that the target product 6202 is part of the products of the manufacture activities	0.05%	0.05%
			1822	Manufacture of other outerwear			0.43%	0.95%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products, the processes of which use target products	21	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.18%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	53	It is likely that, the target product is considered as major component of what's being sold	5.56%	94.19%
			5141	Wholesale of textiles			3.37%	
			5142	Wholesale of clothing and footwear			31.70%	
			5147	Wholesale of other household goods			3.84%	
			5242	Retail sale of clothing			26.87%	
			5261	Retail sale via mail order houses			13.22%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5248	Other retail sale in specialized stores, part 1		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	4.72%	
			5212	Other retail sale in non-specialized stores			1.05%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	31	It is likely that, the product 6202 serves as final product in these economic activity	3.66%	4.62%
Total					114			100%
6203 Men's or boys'	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	4	Target product 6203 is the major (component of the) output of these manufacture processes		0.06%
			1760	Manufacture of knitted and crocheted hosiery	9		0.02%	0.05%

suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swim wear)		Manufacture of other textile products, that contain target products (1751-1830)	1821, 1822	Manufacture of workwear & other outerwear		It is likely that the target product 6203 is part of the products of the manufacture activities	8.65%	8.86%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products, the processes of which use target products	20	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.79%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	52	It is likely that, the target product is considered as major component of what's being sold	1.10%	87.95%
			5141	Wholesale of textiles			1.81%	
			5142	Wholesale of clothing and footwear			47.94%	
			5147	Wholesale of other household goods			1.40%	
			5242	Retail sale of clothing			27.41%	
			5248	Other retail sale in specialized stores, part 1			1.30%	
			5261	Retail sale via mail order houses			3.36%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.51%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	44		1.34%	2.30%
Total					129			100%
Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swim wear)	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	4	Target product 6204 is the major (component of the) output of these manufacture processes		0.06%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted hosiery	8	It is likely that the target product 6204 is part of the products of the manufacture activities	0.11%	0.11%
			1821	Manufacture of workwear			1.04%	2.04%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products, the processes of which use target products	13	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.08%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	54	It is likely that, the target product is considered as major component of what's being sold	2.22%	91.16%
			5141	Wholesale of textiles			3.10%	
			5142	Wholesale of clothing and footwear			28.06%	
			5147	Wholesale of other household goods			2.12%	
			5242	Retail sale of clothing			41.13%	
			5261	Retail sale via mail order houses			10.83%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.06%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	41		4.91%	6.55%
Total					120			100%
Men's or boys' shirts	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	4	Target product 6205 is the major (component of the) output of these manufacture processes		0.04%
		Manufacture of other textile products, that contain target products (1751-1830)	1772	Manufacture of knitted and crocheted pullovers, cardigans and similar articles	10	It is likely that the target product 6205 is part of the products of the manufacture activities	0.05%	0.10%
			1821, 1823	Manufacture of workwear & underwear			10.43%	11.00%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products, the processes of which use target products	17	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.11%

	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles	44	It is likely that, the target product is considered as major component of what's being sold	4.75%	86.87%
			5142	Wholesale of clothing and footwear			36.73%	
			5147	Wholesale of other household goods				
			5242	Retail sale of clothing			36.89%	
			5261	Retail sale via mail order houses			2.66%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product are to aid the sales activities, as for packaging, storage etc.	1.03%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	37		0.92%	1.87%
Total					112			100%
Women's or girls' blouses, shirts and shirt-blouses of cotton (excl. knitted or crocheted and vests)	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	4	Target product 6206 is the major (component of the) output of these manufacture processes		0.08%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted fabrics	7	It is likely that the target product 6206 is part of the products of the manufacture activities	0.20%	0.20%
			1821	Manufacture of workwear			1.55%	3.33%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products, the processes of which use target products	12	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.08%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	51	It is likely that, the target product is considered as major component of what's being sold	3.35%	89.29%
			5141	Wholesale of textiles			3.23%	
			5142	Wholesale of clothing and footwear			28.73%	
			5242	Retail sale of clothing			39.05%	
			5246	Retail sale of hardware, paints and glass			1.01%	
			5261	Retail sale via mail order houses			10.51%	
	Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.04%		
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	30	It is likely that, the product 6206 serves as final product in these economic activity	5.64%	7.02%
Total					104			100%
Men's or boys' singlets and other vests, underpants, briefs, nightshirts, pyjamas, bathrobes, dressing gowns and similar articles	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	2	Target product 6207 is the major (component of the) output of these manufacture processes		0.68%
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted fabrics	9	It is likely that the target product 6207 is part of the products of the manufacture activities	0.46%	1.23%
			1810-1830	Manufacturing of wearing apparel, dressing and dyeing of fur				0.87%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2122	Manufacture of household and sanitary goods and of toilet requisites	23	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	2.21%	2.41%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	53	It is likely that, the target product is considered as major component of what's being sold	1.09%	90.71%
			5141	Wholesale of textiles			15.95%	
			5142	Wholesale of clothing and footwear			20.73%	
			5146	Wholesale of pharmaceutical goods			1.24%	
			5147	Wholesale of other household goods			1.67%	
			5211	Retail sale in non-specialized stores with food, beverages or tobacco predominating			1.25%	
			5242	Retail sale of clothing			25.45%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			11.24%	
			5261	Retail sale via mail order houses			2.68%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.42%	
	5212		Other retail sale in non-specialized stores	3.56%				
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	35	It is likely that, the product 6207 serves as final product in these economic activity	1.81%	4.10%
	Total					122		
					4			0.10%

6208 Women's or girls' singlets and other vests, slips, petticoats, briefs, panties, nightdresses, pyjamas, negligés, bathrobes, dressing gowns and similar articles	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products		Target product 6208 is the major (component of the) output of these manufacture processes		
		Manufacture of other textile products, that contain target products (1751-1830)	1760	Manufacture of knitted and crocheted fabrics	9	It is likely that the target product 6208 is part of the products of the manufacture activities	0.09%	0.35%
			1810-1830	Manufacturing of wearing apparel, dressing and dyeing of fur				1.15%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2122	Manufacture of household and sanitary goods and of toilet requisites	10	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.16%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	47	It is likely that, the target product is considered as major component of what's being sold	1.37%	92.28%
			5141	Wholesale of textiles			16.76%	
			5142	Wholesale of clothing and footwear			11.27%	
			5147	Wholesale of other household goods			5.68%	
			5148				1.05%	
			5211	Retail sale in non-specialized stores with food, beverages or tobacco predominating			1.16%	
			5242	Retail sale of clothing			26.19%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			11.94%	
			5261	Retail sale via mail order houses			6.66%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.84%	
			5212	Other retail sale in non-specialized stores			2.23%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	35	It is likely that, the product 6208 serves as final product in these economic activity	4.35%	6.00%
Total					105			100%
6209 Babies' garments and clothing accessories of cotton (excl. knitted or crocheted and hats, napkins and napkin liners [see 9619])	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	3	Target product 6209 is the major (component of the) output of these manufacture processes		0.01%
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	8	It is likely that the target product 6209 is part of the products of the manufacture activities	4.55%	4.63%
			1824	Manufacturing of wearing apparel, dressing and dyeing of fur			1.17%	1.21%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2122	Manufacture of household and sanitary goods and of toilet requisites	12	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.20%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	45	It is likely that, the target product is considered as major component of what's being sold	1.14%	79.38%
			5142	Wholesale of clothing and footwear			17.54%	
			5147	Wholesale of other household goods			1.17%	
			5242	Retail sale of clothing			49.55%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			0.94%	
			5261	Retail sale via mail order houses				
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.27%	
			5212	Other retail sale in non-specialized stores			1.69%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	21	It is likely that, the product 6209 serves as final product in these economic activity	12.15%	14.58%
			7415	Business and management consultancy activities			1.91%	
Total					89			100%
6211 Tracksuits, ski suits and swimwear; other	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1711-1740	Manufacture of textiles and textile products	4	Target product 6211 is the major (component of the) output of these manufacture processes		0.33%
		Manufacture of other textile products, that contain target products (1751-1830)	1771	Manufacture of knitted and crocheted hosiery	10	It is likely that the target product 6211 is part of the products of the manufacture activities	0.12%	0.26%
			1821	Manufacturing of wearing apparel, dressing and dyeing of fur			10.34%	13.23%
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2122	Manufacture of household and sanitary goods and of toilet requisites	53	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		1.34%

garments	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	64	It is likely that, the target product is considered as major component of what's being sold	3.68%	80.75%	
			5141	Wholesale of textiles			4.80%		
			5142	Wholesale of clothing and footwear			35.03%		
			5147	Wholesale of other household goods			14.73%		
			5156	Wholesale of other intermediate products			1.05%		
			5242	Retail sale of clothing			6.84%		
			5246	Retail sale of hardware, paints and glass			1.58%		
			5248	Other retail sale in specialized stores, part 1			2.43%		
			5261	Retail sale via mail order houses			3.67%		
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.32%		
			5212	Other retail sale in non-specialized stores			0.83%		
		Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	67	It is likely that, the product 6211 serves as final product in these economic activity	1.12%	4.09%
Total					198			100%	
Handkerchiefs of cotton, of which no side exceeds 60 cm (excl. knitted or crocheted)	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	1	Target product 6213 is the major (component of the) output of these manufacture processes	1.26%	1.26%	
			Manufacture of other textile products, that contain target products (1751-1830)	1772	Manufacture of knitted and crocheted hosiery	6	It is likely that the target product 6213 is part of the products of the manufacture activities	0.02%	0.02%
		1824		Manufacturing of wearing apparel, dressing and dyeing of fur	2.32%			3.46%	
		Manufacture of non-textile products, the processes of which use target products (1910-3663)	2122	Manufacture of household and sanitary goods and of toilet requisites	8	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.46%	
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5040	Sale, maintenance and repair of motorcycles and related parts and accessories	35	It is likely that, the target product is considered as major component of what's being sold	4.46%	90.06%	
			5116	Agents involved in the sale of textiles, clothing, footwear and leather goods			3.71%		
			5118	Agents specializing in the sale of particular products or ranges of products n.e.c.			1.57%		
			5141	Wholesale of textiles			13.12%		
			5142	Wholesale of clothing and footwear			26.63%		
			5144	Wholesale of china and glassware, wallpaper and cleaning materials			1.12%		
			5145	Wholesale of perfume and cosmetics			1.25%		
			5147	Wholesale of other household goods			2.37%		
			5242	Retail sale of clothing			14.31%		
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			8.16%		
			5248	Other retail sale in specialized stores, part 1			1.28%		
			5261	Retail sale via mail order houses			4.85%		
			Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	4.21%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	20			It is likely that, the product 6213 serves as final product in these economic activity	0.77%
			9301	Washing and dry cleaning of textile and fur products		2.54%			
	Total					70			100%
	Blankets and travelling rugs	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	(1710-1740)	Manufacture of textiles and textile products	2	Target product 6301 is the major (component of the) output of these manufacture processes		0.63%
				Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	8	It is likely that the target product 6301 is part of the products of the manufacture activities	0.09%
			1810-1830		Manufacturing of wearing apparel, dressing and dyeing of fur				0.45%
Manufacture of non-textile products, the processes of which use target products (1910-3663)			1910-3663	Manufacture of non-textile products, the processes of which use target products	26	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		0.50%	
Sales (5010-5552)		Wholesales, retails and agents involved with sales activities	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	56		1.42%	80.19%	

		where target product is sold as (part of) a product (Intermediate products)	5141	Wholesale of textiles		It is likely that, the target product is considered as major component of what's being sold	12.85%		
			5142	Wholesale of clothing and footwear			3.77%		
			5143	Wholesale of electrical household appliances and radio and television goods			1.29%		
			5144	Wholesale of china and glassware, wallpaper and cleaning materials			3.74%		
			5147	Wholesale of other household goods			18.37%		
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			18.62%		
			5261	Retail sale via mail order houses			4.29%		
			Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139			Non-specialized wholesale of food, beverages and tobacco		36
	5212	Other retail sale in non-specialized stores		5.30%					
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	6312	Storage and warehousing		It is likely that, the product 6301 serves as final product in these economic activity	2.63%	18.13%	
			7414	Business and management consultancy activities			11.35%		
			7487	Other business activities n.e.c.			2.40%		
Total					128		100%		
6302 Bedlin en, table linen, toilet linen and kitche n linen	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	4	Target product 6302 is the major (component of the) output of these manufacture processes	1.418	1.98%	
		Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	7	It is likely that the target product 6302 is part of the products of the manufacture activities		0.09%	
			1810-1830	Manufacturing of wearing apparel, dressing and dyeing of fur			0.06%		
	Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products, the processes of which use target products	35	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		2.29%		
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	57	It is likely that, the target product is considered as major component of what's being sold	1.28%	80.62%	
			5141	Wholesale of textiles			16.07%		
			5142	Wholesale of clothing and footwear			1.55%		
			5144	Wholesale of china and glassware, wallpaper and cleaning materials			1.75%		
			5147	Wholesale of other household goods			17.72%		
			5211	Agents involved in the sale of agricultural raw materials, live animals, textile raw materials and semi-finished goods			1.37%		
			5242	Retail sale of clothing			3.08%		
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			22.23%		
			5261	Retail sale via mail order houses			8.15%		
	Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Non-specialized wholesale of food, beverages and tobacco		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	2.46%			
		5212	Other retail sale in non-specialized stores			2.52%			
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	7414	Business and management consultancy activities	37	It is likely that, the product 6302 serves as final product in these economic activity	6.87%	14.97%	
			9301	Washing and drycleaning of textile and fur products			6.90%		
	Total					140		100%	
	6303 Curtai ns (inclu ding drapes) and interio r blinds; curtain or bed valanc es	Manufacture (1711-3663)	Manufacture of textiles and textile products (Intermediate products) (1710-1740)	1740	Manufacture of made-up textile articles, except apparel	3	Target product 6303 is the major (component of the) output of these manufacture processes	4.716	5.80%
			Manufacture of other textile products, that contain target products (1751-1830)	1754	Manufacture of other textiles n.e.c.	4	It is likely that the target product 6303 is part of the products of the manufacture activities	1.42%	1.44%
1810-1830				Manufacturing of wearing apparel, dressing and dyeing of fur				0.02%	
Manufacture of non-textile products, the processes of which use target products (1910-3663)		1910-3663	Manufacture of non-textile products, the processes of which use target products	21	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		2.40%		
Sales (5010-5552)		Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5116	Agents involved in the sale of textiles, clothing, footwear and leather goods	55	It is likely that, the target product is considered as major component of what's being sold	1.85%	78.85%	
			5141	Wholesale of textiles			8.71%		
			5144	Wholesale of china and glassware, wallpaper and cleaning materials			1.04%		
			5147	Wholesale of other household goods			24.87%		
			5241				2.44%		
			5242	Retail sale of clothing			1.78%		
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			17.05%		
5261		Retail sale via mail order houses	10.95%						

6304	Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5138	Wholesale of other food including fish, crustaceans and molluscs	18	It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.404	11.50%
		5139	Non-specialized wholesale of food, beverages and tobacco			1.33%	
		5212	Other retail sale in non-specialized stores			4.62%	
	Other activities (3710-4550), (6010-9900)	6312	Storage and warehousing	18	It is likely that, the product 6303 serves as final product in these economic activity	1.54%	11.50%
		7414	Business and management consultancy activities			8.35%	
		7487	Other business activities n.e.c.			1.38%	
	Total			101			100%
	Manufacture (1711-3663)	1740	Manufacture of made-up textile articles, except apparel	2	Target product 6304 is the major (component of the) output of these manufacture processes	3.154	3.28%
		1754	Manufacture of other textiles n.e.c.	7	It is likely that the target product 6304 is part of the products of the manufacture activities	0.08%	0.09%
		1810-1830	Manufacturing of wearing apparel, dressing and dyeing of fur				0.14%
Other furnishing articles, excluding those of heading 9404	Manufacture (1711-3663)	3611	Manufacture of chairs and seats	26	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	2.24%	6.02%
		3615	Manufacture of mattresses			2.67%	
	Sales (5010-5552)	5030	Sale of motor vehicle parts and accessories	56	It is likely that, the target product is considered as major component of what's being sold	3.38%	69.47%
		5116	Agents involved in the sale of textiles, clothing, footwear and leather goods				
		5141	Wholesale of textiles			7.14%	
		5144	Wholesale of china and glassware, wallpaper and cleaning materials			1.47%	
		5147	Wholesale of other household goods			32.71%	
		5242	Retail sale of clothing			3.09%	
		5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			6.59%	
		5261	Retail sale via mail order houses			8.02%	
		5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	1.87%	
	Other activities (3710-4550), (6010-9900)	6312	Storage and warehousing	39	It is likely that, the product 6304 serves as final product in these economic activity	1.44%	20.99%
		7414	Business and management consultancy activities			15.87%	
		7487	Other business activities n.e.c.			2.32%	
	Total			130			100%
6305	Manufacture (1711-3663)	1740	Manufacture of made-up textile articles, except apparel	3	Target product 6305 is the major (component of the) output of these manufacture processes	0.014	0.02%
		1751-1830	Manufacture of other textile products, that contain target products	4	It is likely that the target product 6305 is part of the products of the manufacture activities		0.01%
		2414	Manufacture of other organic basic chemicals	63	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product	1.68%	7.47%
	Sales (5010-5552)	2710	Manufacture of basic iron and steel and of ferro-alloys			2.24%	
		5141	Wholesale of textiles	51	It is likely that, the target product is considered as major component of what's being sold	1.40%	88.84%
		5156	Wholesale of other intermediate products			85.20%	
		5212	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	0.03%	
	Other activities (3710-4550), (6010-9900)	7414	Business and management consultancy activities	29	It is likely that, the product 6305 serves as final product in these economic activity	0.04%	3.67%
		7420	Architectural and engineering activities and related technical consultancy			0.84%	
	Total			150			100%
6306	Manufacture (1711-3663)	1740	Manufacture of made-up textile articles, except apparel	1	Target product 6306 is the major (component of the) output of these manufacture processes		1.48%
		1751-1830	Manufacture of other textile products, that contain target products	5	It is likely that the target product 6306 is part of the products of the manufacture activities		0.07%

tents; sails for boats, sailbo ards or land craft; campi ng goods		Manufacture of non-textile products, the processes of which use target products (1910-3663)	1910-3663	Manufacture of non-textile products, the processes of which use target products	55	It is likely that, the product manufacturing activities don't contain any (notable amount of) target product		2.81%
	Sales (5010-5552)	Wholesales, retails and agents involved with sales activities where target product is sold as (part of) a product (Intermediate products)	5030	Sale of motor vehicle parts and accessories	64	It is likely that, the target product is considered as major component of what's being sold	8.82%	77.71%
			5142	Wholesale of clothing and footwear			2.44%	
			5143	Wholesale of electrical household appliances and radio and television goods			1.55%	
			5147	Wholesale of other household goods			12.66%	
		Wholesales, retails and agents involved with sales where target product is sold as final product to aid the activity	5139	Other retail sale in non-specialized stores		It is likely that, the functions of target product is to aid the sales activities, as for packaging, storage etc.	2.03%	
			5211	Retail sale in non-specialized stores with food, beverages or tobacco predominating			2.12%	
			5212	Other retail sale in non-specialized stores			12.14%	
			5244	Retail sale of furniture, lighting equipment and household articles n.e.c.			12.83%	
			5246	Retail sale of hardware, paints and glass			13.20%	
			5248	Other retail sale in specialized stores, part 1			2.81%	
			5261	Retail sale via mail order houses			1.91%	
	Other activities (3710-4550), (6010-9900)	Activities, agents involved in activities where target product is used as a final product	6312	Storage and warehousing	58	It is likely that, the product 6306 serves as final product in these economic activity	2.61%	17.94%
			7134	Renting of other machinery and equipment n.e.c.			10.26%	
Total					183			100%