





# Sustainability Impacts of Global Used Clothing Trade and Its Supply Chain

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**Abstract.** Global trade of used clothing, which comprises a series of activities that connect the Global North to the Global South, has grown substantially over the years. This paper analyses the trade data of the export/import trade of used clothing to provide an overview of global trade statistics and explores the sustainability impact of the used clothing trade. Both qualitative and quantitative secondary data were employed in the study. Analysis of export data revealed a declining trend, which may be attributed to the import bans of used clothing and new cheap imports from Asia. While the United States is constantly being the top exporter, and Pakistan is the top importer, the value of exports grew the fastest in China during the last decade. Analysis of sustainability impacts revealed both positive and negative facts. Used clothing markets support thousands of livelihoods and provide affordable clothing for those who live in poverty; however, the fast fashion phenomenon is threatening this important trade. Therefore, this study urges an investigation of alternative business models to reutilize clothing waste. Remanufacturing and recycling-based business models, when implemented in the Global South, could provide viable solutions to reutilize excess clothing while enhancing the sustainability benefits. Developing collaborative relationships among the stakeholders of the used clothing supply chain is immensely necessary to implement such disruptive business models and to capture values along the supply chain.

**Keywords:** Used clothing · Sustainability · Supply chain

## 1 Introduction

The global consumption of used clothing has been increasing. According to the UN Comtrade data, the total value of used clothing exports in 2020 amounts to US\$ 4 billion [1]. Although the used clothing trade is relatively small than the trade of new clothing, representing nearly 0.6%, it makes a significant impact on developing economies. For instance, the trade of used clothing carries a substantial value for some African countries, compared to the sale of new clothing, which accounts for over one-third of all garments purchased by Africans [2]. The demand for used clothing has increased since the 1990s, followed by the economic liberation of many third-world countries [3]. Currently, almost

all countries are involved in this trade, either as exporters, importers, or processors [4]. It is argued that the used clothing trade reflects the inequality among the world's population and the differences in the level of economic development between the Global South and the North [5].

The used clothing supply chain is highly globalized, complex, and fragmented, which consists of various stakeholders and activities. This trade is also accompanied by smuggling and illegal trade practices [4, 6], making it difficult to ensure its traceability. A typical supply chain of the used clothing trade includes charities, commercial waste collectors, sorters, exporters, importers, wholesalers, and market traders. Used clothes are collected by charities and commercial waste collectors in the Global North sorted based on the quality, garment types, or fabric types, and exported to be reused in the Global South, where most of the consumers cannot afford to pay for new clothing. However, this trade is affected from time to time by trade policies, import bans, and changes in taxes and tariffs [3, 7]. Regardless of the obstacles, the used clothing trade has grown into a profitable global business. It has become a million-dollar global business that is spread among various geographical regions, which means the sustainability impacts are appearing on a global scale as well.

The used clothing trade gained less attention in the scholarly literature and the studies focused on the Triple Bottom Line (TBL) sustainability impacts of this trade are limited. However, with the ever-increasing quantities of discarded clothing and their overflow from the Global North to the South, it is becoming important to explore this trade in terms of its global scale and the TBL sustainability impacts, which are little understood so far. On the other hand, TBL sustainability of this trade is questionable due to lack of transparency in its global supply chain. To fulfill the gap, this paper aims to formulate an overview of the North-South used clothing trade statistics, recent trends, and its contribution to TBL sustainability.

## 2 Methodology

Given the intention of this study of developing an understanding of the global used clothing trade and its sustainability impacts, the paper draws on secondary literature to conduct a review work. Both qualitative and quantitative secondary data were employed in the study. A quantitative trade data analysis was conducted using the data extracted from the UN Comtrade database for the HS code 6309-textiles; worn clothing and other worn articles. Global import/export values for ten years (2010–2020) were extracted and analyzed to provide an overview of the used clothing trade statistics and recent trends. Secondly, a systematic literature review has been conducted to gain insight into the sustainability impacts of the global used clothing trade. A broader search was conducted using keywords of “used cloth\*”, “secondhand cloth\*”, “sustainability”, or a combination of them. The search was limited to the papers published since the year 1990 and were written in English. The search resulted 234 articles from the Scopus database. The articles were first screened by reading the titles and abstracts to exclude the articles that were not directly relevant to the used clothing trade and its impacts. For example, papers were excluded because they focused on textile recycling and sustainability benefits. The first screening yielded 51 articles. A full-text reading was carried out in

the second stage of the screening process and further 36 articles were excluded, which were mostly focused on consumer attitudes toward used clothing. There were 15 articles selected for the analysis. The articles were categorized based on their impact on the TBL sustainability and analyzed in Sect. 3.2.

### 3 Results

#### 3.1 Global Used Clothing Trade

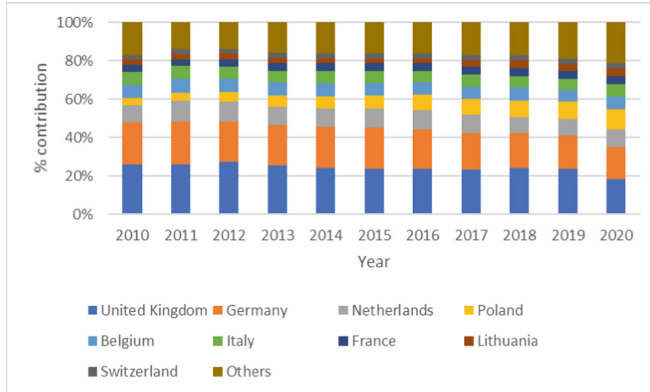
The used clothing trade is spread across various geographical regions in the world. Table 1 presents a summary of the analysis of the average annual exports of the top 10 exporters of used clothing between 2010 and 2020. Major exporters are the USA, UK, Germany, and the Republic of Korea. While historically used clothing exports were limited to the Global North, there is an increasing trend that countries in the Global South position themselves as exporters. For instance, in 2020, China has become one of the top three exporters of used clothing in the world. Between 2010 and 2020, the value of used clothing exports grew the fastest in China from US\$10 million in 2010 to US\$382 million in 2020, with an average annual growth rate of 56%. The USA remains the largest exporter in terms of both value and volume in the last 10-year period. After 2018, a declining trend in world exports can be observed. This may be largely attributed to the import bans/ restrictions imposed by some African countries in 2019.

**Table 1.** Annual average exports of top 10 exporters for the period of 2010–2020

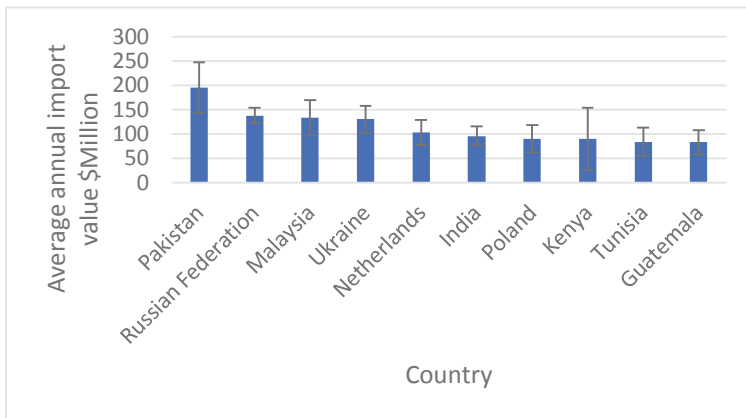
Annual average ( $\pm$ SD) Exports (volume)		Annual average ( $\pm$ SD) Exports (value)	
Country	Quantity (1000 tons)	Country	Value (\$ Million)
USA	755 $\pm$ 27	USA	639 $\pm$ 74
Germany	496 $\pm$ 29	United Kingdom	503 $\pm$ 79
United Kingdom	351 $\pm$ 22	Germany	416 $\pm$ 57
Rep. of Korea	303 $\pm$ 19	Rep. of Korea	315 $\pm$ 40
Japan	226 $\pm$ 28	China	200 $\pm$ 130
Netherlands	167 $\pm$ 14	Netherlands	198 $\pm$ 26
China	165 $\pm$ 107	Canada	150 $\pm$ 31
Italy	147 $\pm$ 16	Poland	146 $\pm$ 46
Poland	141 $\pm$ 44	Belgium	138 $\pm$ 17
United Arab Emirates	133 $\pm$ 106	Italy	130 $\pm$ 11

Analysis of the export values of used clothing based on continents revealed that Europe is leading the world exports of used clothing with a percentage contribution of 51%, followed by Asia (27%). Within the European continent, the major contributor to the export trade is the United Kingdom, followed by Germany, Netherlands, Poland,

and Belgium (Fig. 1). Contribution to total exports from the United Kingdom, Germany, and the Netherlands has declined over the years, while the share of Poland has risen. Belgium, Italy, France, Lithuania, and Switzerland have maintained a steady supply for over a decade, but the share of the rest of the European countries is growing.



**Fig. 1.** Percentage contribution to the exports in Europe by value



**Fig.2.** Average annual import value of top 10 importers for the period of 2010–2020

Figure 2 presents the average annual import values of the top 10 importers of used clothing between 2010 and 2020 by value. The leading five importers of used clothing are Pakistan, Russian Federation, Malaysia, Ukraine, and the Netherlands, with an annual average of more than US\$100 million. The analysis revealed that imports of used clothing grew more than doubled in the Netherlands (127%) and Guatemala (119%) over 10 years, whereas Pakistan recorded a growth rate of 89% between 2010 and 2020. The import trade is not exclusively targeted at the South, significant amounts go to countries such as Netherlands and Poland. However, these European countries have large sorting facilities, which often represent interim destinations for used clothing.

### 3.2 Sustainability Impacts of the Used Clothing Trade

Analysis of trade data revealed that the used clothing trade stretched over a wide array of geographical regions, however, among the existing studies, many are devoted to African countries, which are considered leading destinations for used clothing. According to trade data, Asian countries such as Pakistan, Malaysia, and India are listed among the top 10 importers of used clothing, which deserve equal attention in the research agenda. An analysis of the TBL sustainability of the used clothing trade based on the existing literature is presented in this section.

**Environmental Impacts.** The used clothing trade brings positive environmental impacts in terms of pollution reduction and resource conservation. Extending product life by reusing garments is the best way to minimize virgin material requirements and the energy used in the extraction and processing of raw materials. Extending garment life will also recapture material value, reduce waste and pollution, and the number of new items that are otherwise purchased. For example, the purchase of 100 used garments would save between 60 and 85 new garments, depending on the place of use, and cause a 14% reduction in global warming in the case of the cotton T-shirts or a 45% reduction in human toxicity for the polyester/cotton trousers [8]. Furthermore, for every kilogram of virgin cotton replaced by used clothing, 65 kWh energy is saved, and for every kilogram of polyester replaced, 95 kWh is saved [9]. The carbon emission that occurred by the transportation of used clothing bales is found to be less compared to the carbon emitted from new clothes manufacturing [10]. These factors indicate significant environmental benefits of the direct reuse of clothing.

However, the rapid development of the fashion industry and the fast fashion phenomenon have significantly contributed to generating massive quantities of waste, which in turn fueled the growth of the used clothing trade. The average number of times a garment is worn before disposing of has decreased significantly, which means technically the materials of discarded clothing must be of good quality. However, fast fashion garments are found to be poor in quality, and therefore, traders are facing difficulties to sell them in destination markets. That means the recipient countries such as Africa are becoming dumping grounds for excess, low-quality fast fashion clothing [11]. Furthermore, an oversupply of used clothing is likely to encourage overconsumption and throwaway culture in destination markets because used clothing is readily available and affordable [12]. This may lead to a devastating situation and hinder the environmental benefits of clothing reuse.

**Economic Impacts.** The used clothing industry plays an important role in generating new employment opportunities. The types of jobs include collection, sorting, transportation, repair, washing, reconstruction, packaging, and trading [13]. In Rwanda, every \$10,000 spent by consumers on used clothing supports 4.8 full-time workers annually [14]. In Kenya, the used clothing industry employs more people than domestic manufacturers [15]. Apart from that, this trade generates government revenue from import tariffs, issuing trade licenses, and renting market stalls [3]. New business models are becoming apparent, where the tailors and designers work on restyling used clothes to fit the local consumer and culture [16]. When comparing the prices of new and used clothing, new clothing costs three to four times more than used clothing. For instance,

a men's new shirt costs around US\$ 14.5–21.8, whereas a used shirt costs around US\$ 1.81–7.20 [17].

However, the trade receives frequent criticism for undermining the local apparel industry. For instance, the used clothing trade created a 40% decline in production and a 50% decline in employment in Africa between 1981–2000 [18]. Used clothes are found to be cheaper than locally manufactured clothes, and the factory production could not compete with the cheap prices, which caused the closure of garment factories, mainly in African countries [7, 19]. To safeguard domestic manufacturing industries, either import bans have been implemented or import restrictions are imposed in many African countries [5, 7]. Regardless of import bans, smuggling and other illegal practices are accompanied by the trade. For example, the import of used clothing is prohibited in Iran, but smuggling caused setting up permanent stores for used clothing without any legal fear [13].

Opening up a bale does not always lead to a recovery of the cost for traders in the destination markets, as some items are found to be poor quality, dirty, unfashionable, and ripped [20]. Bales include various items such as warm weather t-shirts, and shorts as well as undesirable items such as curtains and coats [5]. Power inequality in the supply chain and supply and demand imbalances allow exporters to cheat importers by adding undesirable items and gaining benefits of currency fluctuations [5].

**Social Impacts.** The used clothing trade is recognized as an important sector for poverty alleviation in developing countries. This trade includes several labor-intensive activities such as collection, sorting, washing, transportation, and trading. Engaging in such activities allows people to generate income and support their families. Women are often engaged in this business because barriers to entry are low and they can support their family income as well as become self-reliant [19]. This trade also provides clothes at affordable prices, which is one of the basic needs for those who live in poverty. Used clothing is sold for 10–20% of the price of new clothing [13], which creates a greater demand among the majority of the population with low purchasing power [7]. Due to high quality and affordability, used clothing is preferred over locally made clothing [13]. In the Global North, the used clothing trade supports charities by raising funds for humanitarian aid [8].

However, the consumption of used clothing is associated with health and hygiene issues. Skin diseases and louse scabies diseases are some of the risks of using them [13]. Traders have to face some uncertainties associated with buying and selling used clothing such as quality and quantity issues [20]. Apart from that, cultural issues are associated with used clothes as Western clothes are often found to be unsuitable for African culture and beliefs.

## 4 Discussion and Conclusion

Even though used clothing markets are well established, there are rising sustainability issues associated with the trade. The main concern is that the used clothing trade undermines the local manufacturing sector, thus countries are increasingly discussing

the possibility of banning used clothing imports. Analysis of trade data shows a declining trend of exports, yet in general, fast fashion is dominating consumption patterns in the North and thus, clothing disposals are growing. Therefore, it is vital to look for alternative avenues to reutilize them without further harming the environment. Reusing in a circular economy emphasizes local reuse and engaging retailers in the circularity process. For instance, there is an emergence of retailer-owned used clothing lines, which would help to overcome the sustainability issues associated with overseas used clothing markets, offer new opportunities for reuse models, and create new customer segments. Retailer-driven product take-back and resale models would increase customer returns and repurchase trends and boost the local consumption of used clothes. The fundamental for future success is to rearrange the used clothing supply chain by providing a prominent place and responsibility to fashion retailers and brand owners. They are currently disconnected from the used clothing supply chain, but their involvement is immensely necessary to develop new business models and to achieve TBL sustainability of the trade.

Waste and quality issues in the used clothing supply chain are almost hidden. More research is needed to investigate this issue using empirical data. The establishment of remanufacturing centers in the Global South to restyle used clothing and sell them back in the retail store in the North would bring more sustainability benefits to the trade, rather than simply attempting to resell unsuitable stock in destination markets. Moreover, the possibility of shifting the sorting and recycling facilities to developing countries should be investigated, which may provide cheap labor, create job opportunities for the poor, and reduce waste in landfills. Meanwhile, supply chain traceability must be enhanced, and collaborative relationships must be developed among stakeholders to understand how to recapture the maximum value of the goods along the supply chain. More research should be devoted to investigating the TBL sustainability impacts on the entire supply chain, which should include activities beyond trading such as collection, sorting, transportation, and processing of used clothes.

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