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Import Substitution in Circular Economy Perspective: A Study on Textile And Apparel Industry

Siti Nurkomariyah[1], Intan Maria Lewiayu Vierke[2]

[1,2]Politeknik APP Jakarta, Jl. Timbul no 34 Cipedak Jagakarsa, Jakarta Selatan, 12630, Indonesia

ABSTRACT: The import substitution policy has not been effective in controlling imports of textile raw materials. This research aims to build a framework that connects the circular economy with the import substitution of textile raw materials. We carried out a synthesis based on literature studies and in-depth interviews with government representatives and the textile and apparel (TTA) industry. A circular economy can be an instrument for import substitution by producing recycled materials from waste from residues along the TTA value chain. Recycled products include fiber and yarn (secondary raw materials), which are mixed with primary raw materials to produce sheet cloth, which can be an import substitute. Two potential benefits can be achieved simultaneously, namely controlling imports because the demand for recycled materials can be met by domestic industry and export opportunities because of the positive trend in recycled material demand. The results of this research recommend collaboration between stakeholders who are members of the TTA circular value chain. This research contributes to policymakers and decision-makers, especially in terms of controlling imports and adopting a transition to a circular economy.

KEYWORDS: circular economy, import substitution, recycled materials, textiles, textile products

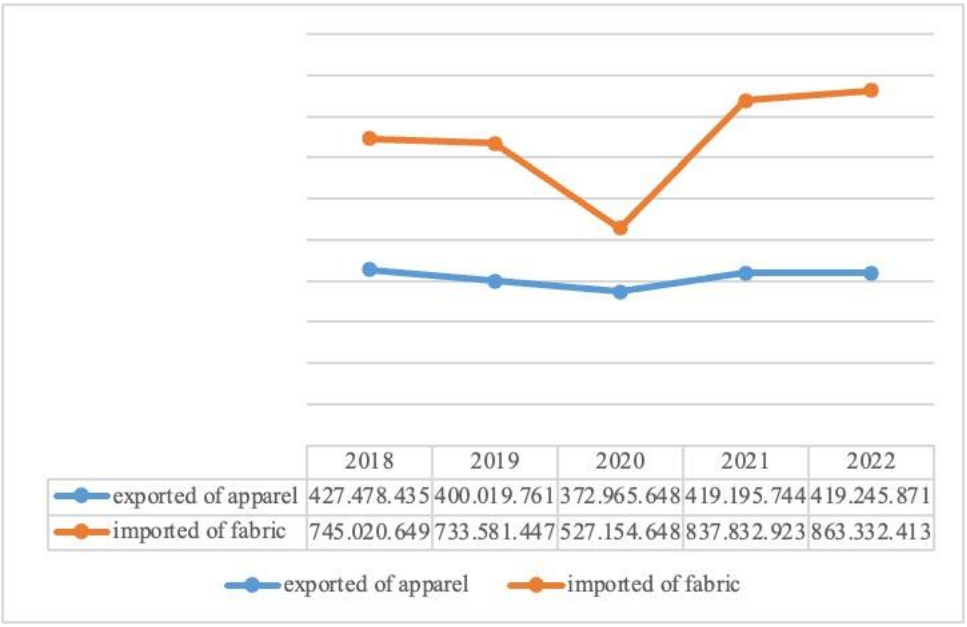
I. INTRODUCTION

The textile and apparel (TTA) industry is one of the economic sectors that has excellent potential to be developed. This industry has made a significant contribution to the Indonesian economy, especially as an essential source of exports. Based on BPS data, in 2022, exports of textile products reached 13.96 billion USD. Behind its export contribution, imports of this sector also show an increase every year and even experienced a trade balance deficit in 2018 and 2019. This prompted the Indonesian government to establish an import substitution policy as an instrument of import control. Some of the policy instruments that have been documented include the imposition of safeguard duties on yarn, fabric, carpet, and clothing products, restructuring of machinery/equipment, approval of fabric imports through import approval (*Persetujuan Impor/PI*) and verification of industrial capability *(verifikasi kemampuan industri/VKI)*, and certification of the level of domestic components (TKDN). These policies are expected to provide opportunities for domestic industries to develop, increase their utilization and competitiveness, increase investment, and accelerate downstream programs.

However, these efforts have not been able to improve competitiveness and Indonesia's position as a net importer of fabrics. As stated by Nurkomariyah and Tyasti, the BMTP policy does not significantly improve the competitiveness of Indonesian fabric products in the global market, and the trade specialization index remains a net importer [1]. Based on data from the Ministry of Industry, the realization of import substitution in fabrics until the third quarter of 2022 has also only reached 8.72%, while yarn, fabric, apparel, and textile products have exceeded the target of 35%. Until 2022, the trade balance of textile raw materials will still show a deficit of US$ 4 billion.

Some of the factors that lead to high imports include 1) availability of cotton raw materials, 2) lower price of imported raw materials, and 3) buyers from global brands have determined specifications and fabric suppliers (nominated suppliers) to the garment industry, most of which are imported. The primary raw material for textile products is cotton fiber. However, the production capacity in Indonesia is not able to fulfill the needs of the textile industry, so it must be imported. Production efficiency in the upstream and intermediate sectors is still a significant problem, so it is less able to compete both in the domestic and global markets, so this industry is often referred to as a sunset industry. The garment industry strongly supports Indonesia's textile growth in the downstream sector. The garment industry has comparative and competitive advantages in the global market. Various global retailers and brands such as Adidas, Nike, HnM, Uniqlo, and Zara entrust their production to Indonesia due to good quality and more efficient costs. In general, the business model of Indonesia's export-oriented garment industry is manufacture or CMT (cut, make, trim). They only provide labour and garment production services according to the buyer's

specifications. The buyer fully controls quality control and raw materials. With this business model, we can identify that garment exports are linear with fabric imports. If garment exports increase, then fabric imports also increase, as illustrated in Figure A.



A. The volume of apparel exports and fabric imports by Indonesia (Ministry of Industry, 2023)

According to Gereffi, the commodity chain model of the textile industry is buyer-driven, where companies focus on ensuring production and sales run smoothly and are integrated [2]. Coordination with actors along the value chain is integrated and controlled by the company or hierarchy [3]. In this case, the brand owner or buyer, who is the lead firm, coordinates and manages all stages of production, starting from the procurement of raw materials until consumers receive the goods. Fashion brands focus on intangible production such as design, R&D, logistics, marketing, and service. As for production, they do it through offshoring with garment industries in developing countries such as Indonesia, Vietnam, and Bangladesh.

In recent years, the world's fashion trend has moved towards sustainable fashion, which is fashion products that pay attention to environmental, social, and economic aspects—for example, using renewable and recyclable raw materials, as well as production systems that practice sustainability principles to minimize the environmental impact of industrialization. Referring to cbi.eu, the demand for sustainable fashion is projected to increase steadily as the world community becomes increasingly concerned about the deteriorating environmental conditions. Recycled fashion is one type of sustainable clothing product that has been developed by leading brands such as HnM, Adidas, and Nike. In general, these products are made from a mixture of recycled materials and primary materials.

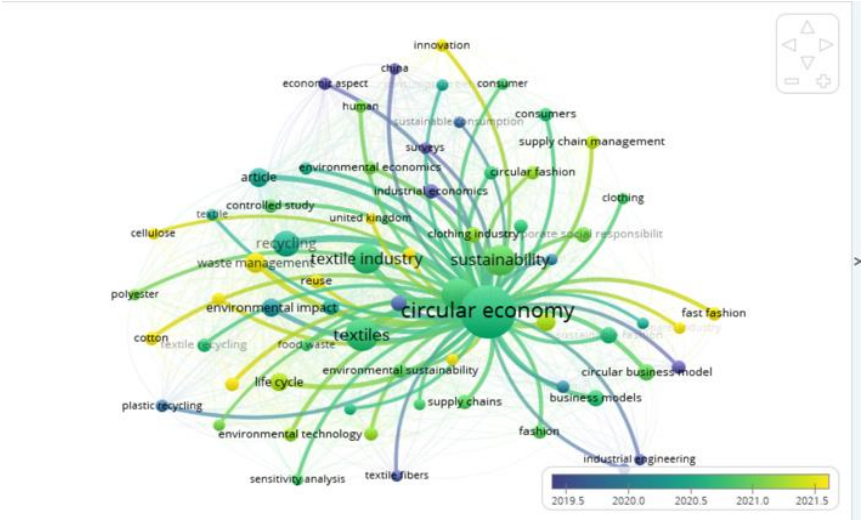
The development of recycled materials by various global fashion brands is a manifestation of their commitment to achieving sustainability development goals (SDGs) and creating corporate value. The circular economy is the strategy they chose to accomplish the 12th goal of SDGs, which is responsible production and consumption.

They conduct R&D to develop clothing products from recycled textile and non-textile waste and build a business ecosystem to produce secondary materials. Some leading brands engage consumers to collect household textile waste by providing collection bins and incentivizing them. They also encourage actors in the value chain to enter the business ecosystem.

The demand for recycled materials is a new opportunity and challenge for ITTA. Currently, the domestic industry is not able to fulfill it, so it is still very dependent on imports. Globally, there are not many companies that have developed it. This situation can be utilized by the textile industry in Indonesia by implementing a circular economy along its value chain to produce recycled raw materials from the production waste they have. Thus, the recycled material needs of the garment industry can be met by the domestic sector, and export opportunities can be utilized.

According to Stahel, the circular economy is an alternative that can return a product from its end-of-life cycle into a source of raw materials for other industries [4]. Some researchers state that the main principles of the circular economy are reducing waste and extending product life [5]-[9]. The textile industry value chain in Indonesia is integrated from upstream to downstream. It started from the manufacture of fiber, yarn, and fabric to the garment industry. Each of these chains generates solid, liquid, and gaseous waste and residues. In the context of circular economy, we can utilize these wastes and residues to become secondary raw materials. As stated by Bappenas in its study, 2.3 million tonnes of textile waste were generated in 2019, but only 12 percent was recycled, and the rest was disposed of in landfills [10]. It is projected that the number will continue to increase by 68 percent by 2030. In the context of the circular economy, these wastes can provide economic value either through reuse or recycling.

Research on the circular economy is still limited to concepts. Several researchers identified barriers to the circular economy of textiles and generally categorized them into four, namely technology, regulation, market, and culture [9], [11], [12]. Some researchers added that the challenge of transitioning from linear to circular is the complexity of the textile industry's value chain, as they generally do not adopt vertical integration but involve multiple interacting actors [13], [14]. The transition to a circular economy has also driven changes in companies' business models and the development of new business models such as clothing rental, second-hand clothing sales, and recycling industries [11], [15]. Previous research has also focused on the potential environmental, economic, and social benefits of the circular economy [10], [16], [17], as well as supply chain management [18], [19]. However, a study that examines the link between circular economy and import substitution has not been conducted, which is the novelty of this research. The development of circular economy studies in ITTA is presented in Figure B.



B. ***VosViewer Analysis***

This research specifically aims to build a framework that connects circular economy with import substitution. The provision of recycled materials by domestic industries is an alternative strategy to control imports of textile raw materials. Waste and residues in each textile value chain can be used as raw materials for the production of recycled materials to replace raw materials previously imported from nominated suppliers. This research was conducted with a qualitative descriptive approach—citation of various literature relevant to the research objectives. Validation was conducted through interviews with several resource persons from government and industry representatives.

II. METHODOLOGY

This research was conducted using a qualitative descriptive approach. We used primary and secondary data, which were then analyzed to build a framework that can be an essential idea of this research. We collected preliminary data through interviews with resource persons from the government and industry. The first respondent was the Ministry of Industry, the government representative specifically in charge of the textile and apparel industry. The second respondent is the management of an export-oriented garment company that is developing recycled materials from its production waste. The respondents were selected purposively based on their level of expertise and the substance of the research objectives. The respondent is only one company because, in Indonesia, the number of export-oriented garment companies that have committed to and have a sustainability roadmap is still very limited.

We obtained secondary data through literature studies of published scientific articles, Indonesian government regulations, BPS data, and company documents. We did not conduct a systematic literature review due to the limited number of articles available in reputable article databases such as Scopus, Science Direct, and Proquest. Therefore, we conducted a traditional literature review with a "snowball sampling" method of selecting articles related to the keywords "import substitution" and "circular economy." We synthesized relevant articles to answer this research question. We then validated the reports with interviewees to obtain a more objective analysis. We conducted in-depth interviews by asking open-ended questions to explore the interviewees' understanding and opinions on the research topic. We then elaborated a framework that can contribute to policymakers, industry, and theory development related to import substitution and circular economy.\

III. RESULTS AND DISCUSSION

Import substitution is a policy to restrict the entry of manufactured goods into the country. It is the best trade strategy to promote industrialization and economic growth in developing countries. This strategy can also promote local products and reduce

dependence on imported products [20]. Import control is essential to protect the domestic industry from unfair trade such as dumping, subsidies, monopolies, etc. The Indonesian government started to practice an import control policy.

The Indonesian government started practicing import substitution policy during the New Order period at the beginning of Repelita II. The aim was to develop high-tech industries such as iron and steel and petrochemical industries [21]. With this policy, many foreign investments came in with technology that had an impact on increasing the productivity of the domestic industry. This policy is considered effective in encouraging the growth and development of the national manufacturing industry.

In 2019, the Indonesian government again established an import substitution policy. This policy was reinitiated as an effort to control imports of raw materials, auxiliary materials, and manufactured goods. The government targets 35% import substitution to be achieved by 2022 in fiber, yarn, sheet fabric, apparel, and other textile products, covering 530 tariff posts. Some of the programs undertaken to achieve this target include 1) gas price reduction; 2) revival of 340k tonnes PTA facilitation & paraxylene caprolactam investment; 3) apparel park development; 4) anti-dumping duty (BMAD) facilitation; 5) fiber import approval through PI and VKI; 6) safeguard/trade safeguard duty (BMTP) for yarn, fabric, and apparel; 7) government-borne import duty (BMDT) for the fiber industry; 8) downstream industry; 9) program to increase the use of domestic products (P3DN); 10) restructuring of machinery/equipment; and 10) tax allowance.

Some indicators of the success of import substitution are lower imports, increased utilization, and investment. Based on a report released by the Ministry of Industry, the achievement of import substitution from 2019 to 3rd quarter 2022 has only reached 15.13%, or it can be said that it is still far from the 35% target. The achievements of import substitution in five textile product groups are presented in detail in Table C.

Product Type	Import Realisation (%)
Fibre	-0,88
Yarn	60,31
Sheet fabric	8,72
Apparel	45,53
Other textiles	36,03

IV. REALIZATION OF IMPORT SUBSTITUTION ACHIEVEMENTS OF TEXTILE PRODUCTS IN 2019 - THE THIRD QUARTER OF 2022 [22]

Based on Table C, import substitution in yarn, apparel, and other textile commodities has reached the target of 35%. However, for the fiber commodity, imports increased by 0.88%, resulting in a negative realization. As for fabric sheets, although imports have fallen, they are still far below the target. The high import of fiber is because the demand for clothing and other textiles made from cotton raw materials in both the domestic and global markets is still very large due to the characteristics of cotton-based fabrics that are more comfortable to wear and absorb sweat.

Several companies in the upstream sector, such as Asia Pacific Rayon (April Group) and South Pacific Viscose, have developed the rayon industry as a substitute product for cotton. The government also encourages increased production capacity and investment in the rayon industry to reduce dependence on cotton imports. Rayon fiber has similar characteristics to cotton and is renewable, so it is believed to be a substitute product. According to the Ministry of Industry, basically, if we look at the volume of imports, there has been a decrease, and the substitution of cotton imports by rayon has reached the target. However, because the realization of import substitution achievements uses a baseline value instead of import volume, quantitatively, the trend is increasing. Based on BPS data, there is an upward trend in cotton import prices throughout the 2019-2022 period, from US$1.79/kg to US$2.21/kg. Meanwhile, if we look at the volume, it tends to be stable, as presented in Table C.

Table D shows that the volume of fiber imports has fallen since 2019; although it rose by 4.4 percent in 2021, it fell again in 2022. However, if we calculate by volume, there was a 41 percent decrease in imports, with an average rate of 12 percent each year. Import substitution of flat fabrics has also not reached the government's target, and imports of knit fabrics have increased by 18.5 percent. A source from the Ministry of Industry stated that the high fabric imports were likely driven by apparel exports, which also increased by 27.4 percent, as illustrated in Figure A.

The Ministry of Industry claims that the decline in textile imports that occurred throughout the 2019-2022 period was an achievement of the import substitution policy. However, this needs to be proven empirically with statistical analysis. During this period, there were various disruptions, such as the China-US trade war, COVID-19, and the Ukraine-Russia war, which had an impact on the economy, supply, world trade, and Indonesia's trade balance.

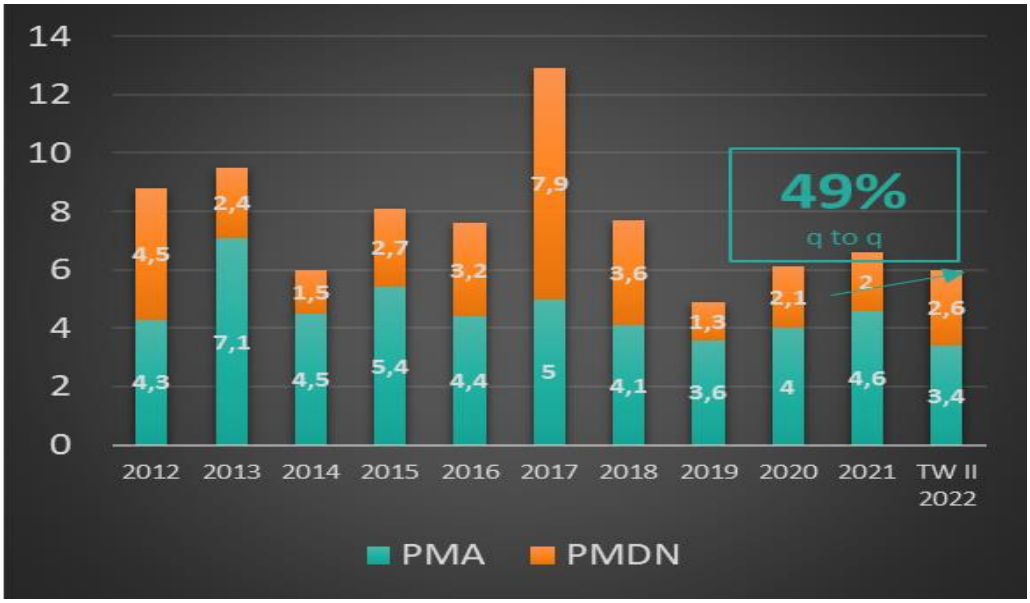
The second indicator is the increasing utilization of the textile industry. Based on the Ministry of Industry's report, ITTA utilization in 2022, in aggregate, rose by 13.15 percent. However, this growth is still lower than before Covid-19. Before the pandemic, the utilization of the textile and apparel industries was 73 percent and 76 percent, respectively. During the pandemic, the utilization of the textile industry dropped dramatically to 47.5 percent. Meanwhile, the garment industry's utilization still

stands at 62 percent. This situation happened because, during the pandemic, some garment companies shifted their production to medical clothing and masks. By the end of 2022, the utilization of fiber, yarn, and fabric producers rose dramatically to 61.77 percent, while that of clothing producers only grew by 1.75 percent. However, it is necessary to empirically validate the significant variables causing this increase in utilization, import substitution policies, or other variables such as post-COVID domestic and global economic growth.

Commodities	2018	2019	2020	2021	2022
Fibers	1.213.203.836	825.101.146	772.725.762	775.987.333	702.375.907
Yarn	275.888.864	231.904.086	244.964.738	391.718.279	441.490.971
Sheet Fabric	745.020.649	609.871.348	527.154.648	837.832.923	863.332.413
Apparel	79.451.642	64.873.716	62.219.797	70.816.501	37.682.485
Other Textiles	249.826.555	232.471.450	215.460.669	130.841.157	114.458.985
TOTAL Textile & Textile Products	2.563.391.546	1.964.221.746	1.822.525.614	2.207.196.193	2.159.340.761

V. DEVELOPMENT OF TEXTILE IMPORT VOLUME IN 2018-2022 (KG)

The third indicator is the increase in investment in the textile sector. Since the government promoted the import substitution policy, there has been an increase in the number of new investments from both foreign investment (FDI) and domestic investment (DDI). However, the rise in PMDN investment is more significant than that of FDI as illustrated in Figure E. Global economic uncertainty during and post-covid and the Ukraine-Russia war increased risks for investors. They also focused on economic recovery in their countries.



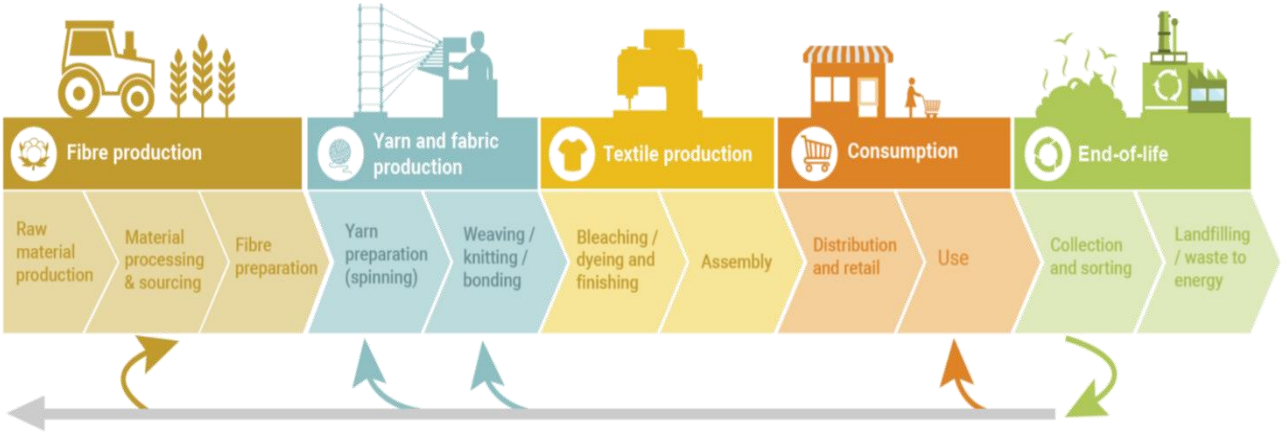
VI. DEVELOPMENT AND ACHIEVEMENT OF TEXTILE IMPORT SUBSTITUTION IN 2012 – 2ND QUARTER 2022

The increase in investment was mainly in the upstream sector, with a total investment of IDR 3.15 trillion. This investment was primarily made in the fiber industry in order to increase rayon production capacity for cotton substitution. In 2021, there is an increase in production capacity of 60 thousand tonnes, and it is targeted to reach 300 thousand tonnes in 2023, bringing total production to 1.21 million tonnes. Of this total, it will be used to meet domestic needs and also exports.

The value chain is a series of activities starting from conception to the end-of-life cycle of a good or service [23]. The textile value chain covers all value creation activities from design, raw material extraction, production, distribution, sales, and consumption, as well as the end of the product life cycle [24]. The chain covers the entire product life cycle from raw material supply to waste disposal after disposal. Value creation by each actor is represented through business models, investments, and regulations [24].

The textile value chain starts with the manufacture of fiber, which can be of natural or synthetic origin. The natural fiber value chain involves the agriculture or forestry sector, but synthetic fibers consist of the chemical industry that produces PTA, MEG, or paraxylene. The second stage is the spinning process, which produces yarn, followed by weaving or knitting to create fabric sheets. Next is the wet method which includes pretreatment, dyeing/printing, and finishing to produce fabrics that are coloured, patterned and have certain properties. The final stage of the manufacturing process is the making of clothes or other textile

products such as bedspreads, hats, household decorations, etc. The next value chain is distribution and sales, which is usually done by retailers both locally and globally. Consumers and textile waste management services are the last link of the textile value chain. In simple terms, the textile value chain is illustrated in Figure F.



VII. VALUE CHAIN OF TEXTILE AND APPAREL INDUSTRY [24]

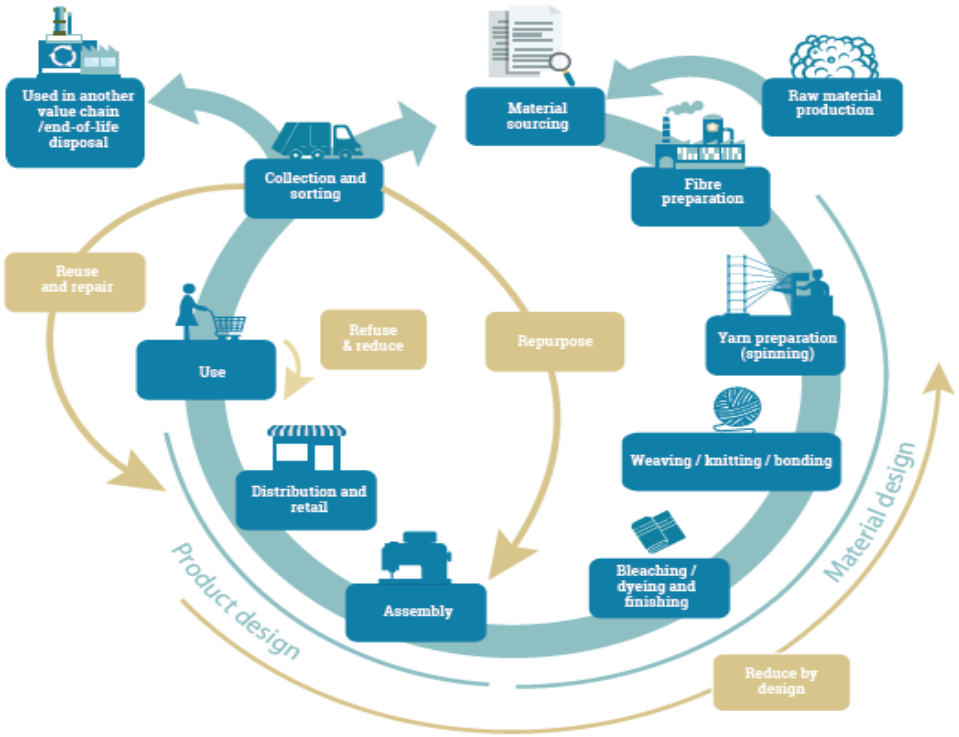
In general, ITTAs in Indonesia still apply a linear value chain (take-make-dispose) [28]-[30]. Raw materials are extracted, then produced, used, and disposed of. Sixty percent of textile fiber is used to make clothing, and the rest is used as raw material for household goods and other textiles [24]. Population growth and changes in clothing consumption behavior lead to high demand for clothing, which has an impact on raw material consumption and the level of pollution it produces [13]. Each textile value chain generates waste and residues in the form of solid, liquid, and gas [25], [31]. The fuel used in production also uses fossil fuels, which cause high greenhouse gas emissions [24, 28, 29].

In 2019, the amount of textile waste reached 2.3 million tonnes and is projected to increase by 70% to 3.9 million tonnes by 2030 if ITTA continues to implement business as usual. Of this amount, only 12 percent is recycled, and the rest is disposed of in landfills [10]. If ITTA continues to maintain its business model and society does not change its consumption patterns, by 2050, global environmental conditions will get worse, where pollution and deforestation levels will increase, and there will be a 2^{o}C increase in temperature. In addition, companies will also face the risk of a decrease in pre-tax income (EBIT) of more than three percent [28], which will threaten the survival of future generations. Therefore, the industry needs to transform to a more sustainable direction.

Bappenas designated ITTA as one of the prioritized sectors to make the transition from a linear to a circular economy. The recommendations given include increasing the reuse and recycling of materials [10]. ITTA residues and waste can have economic, social, and environmental potential. The economic potential that can be achieved if ITTA as a whole implements a circular economy includes an increase in GDP of IDR 19.3 trillion and the creation of 164 thousand new jobs. In addition, carbon dioxide emissions will drop by 16.4 million tonnes, and water savings will increase by 1.2 billion cubic meters by 2030 [10].

The principle of the circular economy is to extend the life cycle of materials so as to consume raw materials and energy more efficiently and minimize waste. The goal of circularity is to transform the linear chain (take-make-dispose) into a closed value chain where raw materials that have been used are not disposed of but are used in economic activities that create higher economic value [24]. The circular economy approach consists of the 3Rs (reduce, reuse, recycle) [6], [7], [32], but some add the 5Rs (additionally refurbish and renew) [10]. Other literature mentions 9Rs (further rethink, remanufacturing, repurpose, refuse, repair, and recover) [33].

Reuse has been widely practiced through several business models, such as preloved clothing sales, rentals, and donations. Textile residues and waste are in various value-added products such as clothing, craft products, doormats, pillows, corner fillings, etc. Companies usually partner with home industries either directly or through agents as they generally produce these products. This activity is often referred to as repurposing. Recycling is one of the strategies suggested by the government. Residues and waste in every value chain, both pre-consumer and post-consumer, can become raw materials for recycled materials that global fashion brands demand. The TTA circular value chain is illustrated in Figure G.



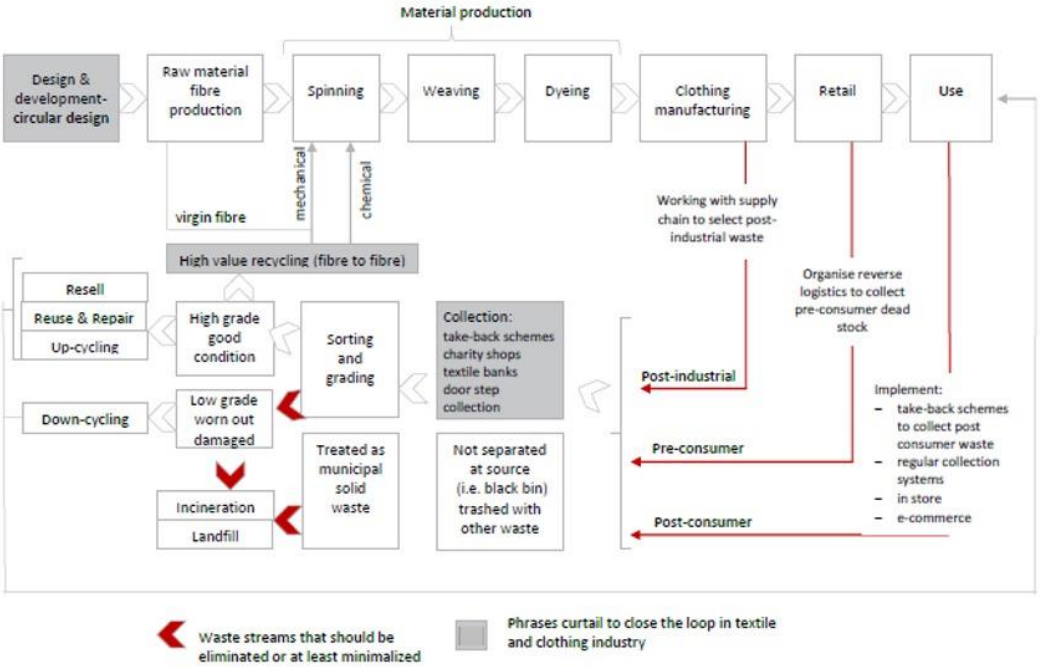
VIII. ACTIVITIES IN THE CIRCULAR VALUE CHAIN [24]

In Figures F and G, we can see the difference between the linear and circular value chains at the end of the product cycle. In the linear chain, the final process of textile fiber products after being used by consumers is collection and sorting and then disposal to a landfill. However, in the circular chain, after the post-consumer waste is collected, there is a separation process based on the quality and type of textile fiber for further processing. In the sorting process, grading is also done to classify the kind of circularity process that will be carried out. Products that fall into the good-excellent quality category are returned to the distribution and retail chain for reuse and repair.

An emerging business opportunity is the sale of second-hand goods such as preloved clothing or other textile products. For lower-grade waste, repurposing is possible. ITTA waste can also be used by value chains such as the automotive industry to make car interior upholstery, for example. Now that we understand how import substitution and circular economy policies work in ITTAs, this section outlines the answers to the objectives of this study. It describes how the circular economy can be an alternative to import substitution, especially in the case of raw materials for sheet fabrics.

Every ITTA value chain from fiber manufacturing to the final product cycle leaves residues and waste [34], both of which become negative externalities [35]. Many companies sell these wastes and residues to actors outside the value chain at low economic value. These actors add more weight; for example, some companies utilize the residues and wastes in more inferior value-added products such as gloves, mats, dacron, etc. There is tremendous economic potential if the residues and wastes with low monetary value are sold to actors outside the value chain [35]. At the same time, there is significant economic potential if they recycle these residues and wastes into secondary raw materials / recycled materials [10].

The reserve supply chain described by [13] illustrates how waste and residues flow from post-consumer and pre-consumer to upstream. Post-consumer is waste from consumers/households. Meanwhile, pre-consumer waste is textile waste that exists in retailers, namely, products that are not sold (retailer inventory). Post-industrial waste is waste from leftover production, defective products, or overproduction in the garment industry and or other textile products. The three groups of waste are collected and separated for recycling or disposal in to landfill if they are in a damaged condition. They are simply illustrated in Figure H.



IX. ITTA WASTE AND RESIDUE SUPPLY CHAIN BACKUP [13]

Figure H represents the ideal condition of textile recycling to produce recycled materials. However, the biggest challenge is collecting household waste from consumers. This challenge requires infrastructure down to the neighborhood level by providing collection baskets. Then, specialized officers at the city district level need to collect it. Manufacturers or brand owners can also work with retailers to provide collection baskets and incentivize consumers who are willing to separate and collect their used clothes [36]. In this case, the participation of consumers, brand owners, retailers, and local governments is crucial [37], [38]. Therefore, the circular economy can only be done through collaborative stakeholders [28]; [29].

Recently, a textile company has collaborated with a local department store to provide a collection bin and give shopping vouchers to consumers who collect their clothing waste. They will then recycle the waste into fabric sheets that contain 20 percent recycled material. An innovation that should be appreciated and can be a role model for other companies. Another strategy taken by an export-oriented garment company is developing the utilization of patchwork (pieces of fabric left over from production) into recycled materials. It is building a circular business ecosystem to achieve its circularity and sustainability targets. The recycled raw materials produced by both companies become secondary raw materials that are mixed with primary raw materials. If the proportion of the secondary raw material is 20 percent, then it has substituted the direct raw material input. If the primary raw materials are obtained through imports, then a circular economy can be an alternative to import substitution.

Activity	Input	Output	Residu/waste
Fiber making	If	Of	Rf = If-Of
Spinning	Is	Os	Rs = Is-Os
Weaving/knitting	Iw	Ow	Rw = Iw-Ow
Dyeing/Finishing	Id	Od	Rd = Id-Od
Garmen	Ig	Og	Rg = Ig-Og
Jumlah	$\sum_g^f \quad I$	$\sum_g^f \quad O$	$\sum_g^f \quad R$

X. CALCULATION OF THE AMOUNT OF ITTA RESIDUE/WASTE [13]

Another alternative strategy is to build a circular value chain of waste and pre-consumer residues in a business ecosystem. Waste in each value chain is collected, sorted, and recycled by companies in the value chain or involving recycling companies and other actors. Material flow analysis can be used to calculate the amount of material that can be recycled. This was done by [34], who measured the recycling potential of textile waste in Bangladesh. However, he only sampled a few companies and did not accumulate national aggregates.

In this research, we synthesize the research conducted by [34] to elaborate on the author's understanding and justification from the interviewees and calculate the recycling potential in each value chain using the MFA approach. The amount of residue/waste in each chain was accumulated as potential recycled input materials (Table D). The recycling process we suggest is done physically/mechanically, without the use of chemicals, except during the wet process. The output is a recycled material that will

be mixed with virgin material to produce sheet fabric that is expected to fulfill buyer demand and substitute previously imported raw materials.

Realizing this is not easy, as it requires efficient collection, sorting, and recycling technologies [9] that meet the standards required by buyers. If this concept is realized, it can encourage increased utilization of the textile industry, the domestic value chain will be connected from upstream and downstream, and there is an opportunity for the birth of new business models that can create jobs. Waste collection systems can be developed with blockchain technology and involve more non-formal businesses and small-scale industries [36]. There will be a growing recycling industry that creates a number of new jobs and community involvement to separate and collect household waste. Most notably, the focus of this study is that there is a potential to reduce the volume of fiber and fabric sheet imports, which is currently still high and even tends to increase, which is replaced by recycled materials.

XI. CONCLUSIONS

The circular economy can be an instrument for the import substitution of ITTA raw materials through the production of recycled materials. Waste and residues in each value chain are collected, sorted, and recycled into secondary raw materials that can replace the position of imported raw materials. The limited supply of secondary raw materials in the global market amidst increasing demand is a huge market potential for Indonesia. Imports can move down, and exports increase so that the textile trade balance surplus will impact positively, followed by the growth of the industry. This requires the collaboration of the entire textile value chain and supporting regulations because the circular economy will not be realized without the cooperation of stakeholders and business ecosystems [28] [29].

The limitation of this research lies in the research method, which is only carried out with a qualitative approach. A quantitative approach cannot be done due to data limitations. There are no companies that can be used as quantitative measurement samples because the circular economy transition in the textile sector is still at the concept and research level, especially in the development of recycled materials. The companies we interviewed have not yet commercialized the recycled raw materials they produce. This is also why the number of interviewees in the study is not representative of the entire textile value chain. The literature linking the circular economy with import substitution is also minimal. Therefore, our synthesis lacks depth, relying more on the understanding of the author and the interviewees. However, this is a valuable finding of this research.

This research contributes theoretically and practically. The state of the art established in this study is a meaningful provision in scientific development in terms of the link between textile waste and residue recycling and import control strategies. Further studies need to be conducted to validate the relationship between the two variables with a statistical analysis approach. Practically, this study can contribute to decision-makers in the circular economy transition and company strategies to fulfill recycled material requirements for export-oriented garment products. Policymakers can determine appropriate policies to promote circular economy transition and import control effectively and efficiently.

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