Study Group on Sustainability of
Textile and Apparel Industry

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Ministry of Economy, Trade and Industry
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Introduction

Today, Japan's textile and apparel industry is at a major turning point. With the spread of the COVID-19 infection, sales of the apparel and other businesses have dropped significantly, while at the same time the industry is experiencing changes in consumer needs based on the "new normal." Furthermore, there has been a structural change even before COVID-19: the import penetration rate has reached 98% in the domestic apparel market, while the market size has diminished from 15 trillion yen in 1991 to 10 trillion yen in 2019.

"Sustainability" has emerged as an important perspective for the future textile and apparel industry.

We can see efforts to implement the Sustainable Development Goals (SDGs) in both public and private sectors since its adoption in 2015.

Efforts for sustainability have already initiated in some companies in the industry, whilst efforts in most companies are far from satisfactory.

However, interest in efforts for sustainability is increasing among young generations, especially the Generation Z. With the global expansion of ESG investment\(^1\) that places emphasis on sustainability, the textile and apparel industry can afford no further delay in efforts for sustainability.

A large number of upstream, midstream and downstream companies are involved in the textile and apparel industry and its supply chain is globally connected. In addition, its end products, clothing, are worn daily by consumers. In consideration of the above, it is high time to start efforts for sustainability, especially in the textile and apparel industry.

Because the industry is seriously affected by the spread of the COVID-19 infection, it is understandable if investment on efforts for sustainability is hesitant. However, there are also cases where efforts for sustainability led to new businesses, new customers and entry into new markets.

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\(^1\) Investment that considers not only financial information but also environmental, social and governance factors of the company.
In order to promote sustainability in the industry, "Study Group on Sustainability of Textile and Apparel Industry" was established in February 2021. The group, with participation of a wide range of experts, advanced discussions and studies to present "a blueprint for a new era after COVID-19," free from the past modality of the industry.

This report compiles the discussions and studies of the group and makes a policy proposal toward the future for both public and private players involved in the textile and apparel industry to start unified efforts for sustainability.
I. Present State of the Industry

As represented by Tomioka Silk Mill, the textile industry pioneered Japan’s modern industrialization. Even after the World War II, textile products were major export items and the industry contributed to the development of the Japanese economy through the influence in its mechanization. However, due to deterioration of its export competitiveness owing to yen appreciation and the industrialization of developing countries, its domestic production has decreased.

The market scale of the domestic apparel industry has gradually diminished: the domestic market shrank from 14.7 trillion yen in 1991 to 10.4 trillion yen in 2019. On the other hand, domestic supply quantity almost doubled, from about 2.0 billion pieces in 1990 to about 4.0 billion pieces in 2019.

Furthermore, under the influence of the spread of COVID-19 infection, clothing sales decreased, affecting not only apparel companies but also many textile-related companies that are involved in production. In addition, consumer needs of clothing have changed: telework at home decreased needs for suits and other work clothes in favor of more casual clothes, for example.

![Figure 1: Market scale of the domestic apparel industry](source: Textile Industry 2021 (Yano Research Institute Ltd.))

Source: Textile Industry 2021 (Yano Research Institute Ltd.)

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2 Total of Men's Clothing market, Women's Clothing market, Kids and Babies Clothing market, Sportswear market, and Kimono market
The number of domestic establishments of the textile industry has decreased to less than one fifth of the number in 1991 as of 2018. The causes include a diminishing domestic market and increased import rate of textile products and lack of successors in textile producing regions due to the low birthrate and aging population.

The textile industry has a long and complicated supply chain. Each step, such as raw yarn, cloth production, dyeing and finishing and sewing, are separated as a division. In addition, sewing process has a multi-layer subcontracting structure. The divided production bases are connected by trading firms. It is also suggested that, with the shift of production to foreign countries in Asia, the connection between domestic apparel companies and manufacturing plants has weakened.

On the other hand, the industry has its strengths in textile production. Its production of high-function fibers such as sweat-absorbing/quick-drying, moisture-absorbing/heat generating, and antibacterial functions are highly evaluated and adopted by the global market.

The use of a broad range of fibers from natural fibers, including cotton, hemp, wool and silk to chemical fibers, and advanced technologies and products, which include the development of special fine threads is an advantage of the industry. Its excellence also includes various weaving techniques of denim and lace, knit production, and finesse and expression in dyeing and finishing.

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3 Establishments with four or more employees
Development in new fields such as smart textiles is also advancing. The so called smart textile uses conductive fiber which enables the acquisition of heartbeat, cardiogram and other biological data of the person who simply wears it.

[(Figure 3) Supply chain of the textile industry]

Source: Japan Textile Federation
II. Why Sustainability

The market size of the domestic apparel business is shrinking. Moreover, many enterprises of the industry are heavily affected by the spread of the COVID-19 infection, which has led to a drop in sales. The demand and sales situation has also changed: online sales increased and casual clothing are preferred.

In this kind of situation, it is not easy to take actions for sustainability. However, for future business evolution, it is necessary to take actions immediately.

With the spread of the Internet, smartphones and social networking services (SNS), individuals not only receive but also disseminate various kinds of information. In this context, certain merchandise can suddenly attract attention. For example, the initiative of Keshichi in Bishu to collect and reuse wool fibers from cutting waste in the production process and old clothes has attracted attention through media including SNS.

On the other hand, corporate activities can cause consumer boycott. For example, an exposure of poor working environments could negatively affect all products produced in the plant. The impact does not stop at the specific company but spreads to the activities of other companies involved in the supply chain. Therefore, efforts for sustainability have become essential, not only for large companies, but also small and medium enterprises (SMEs).

Recently, many companies prioritize CSR (Corporate Social Responsibility), which increases their social value, however companies cannot survive without increasing economic value at the same time. Therefore, the concept of CSV (Creating Shared Value) is attracting attention, which is a management model to increase both economic and social values.

With the spread of these concepts, efforts for sustainability has been promoted globally. Working for sustainability can strengthen the management foundation of the company and at the same time can create major opportunities to develop new markets and businesses. On the other hand, business deployment without consideration of the sustainability trend can pose a risk.

These concepts are not new for Japan. As expressed in Oumi merchants' Sanpo-yoshi principle, which means "benefits for all three sides: purchaser, buyer and society," business activities have been carried out with concepts similar to sustainability. One could argue that attention to more diverse parties is required in business activities today. Now, some companies disclose their efforts for sustainability in their Corporate Governance Code.
III. Current Situation and Policy Recommendation

1. Environmental Consideration

(1) Background

With the increased demand for resources and energy as well as the aggravation of environmental problems, such as climate change, the awareness that current production and consumption activities are no longer sustainable is being addressed. Most products are discarded after its use, in a so-called linear economy based on mass production and mass consumption. Shifting our way of consumption to a circular economy by maintaining the value of products and resources as long as possible and to minimize the disposal volume by circulating resources is important.

Therefore, efforts to reduce new resource input, collect products after consumption and using them for new products are necessary to accomplish a circular economy.

![Figure 4: Shift from a linear economy to a circular economy](Source: METI)

Furthermore, we are now embarking on an era where response to climate change is considered not as "a restriction or cost of economic growth" but as "a growth opportunity." Toward 2050 carbon neutral, the government of Japan aims to realize a carbon-free society with substantially zero greenhouse gas emission by 2050.

Environment-minded initiatives are required in all industries, including the textile and apparel
industry. The new Circular Economy Action Plan made public by the European Commission in March 2020 designated textiles and apparel as one of the priority areas. In addition, the EU is expected to announce a comprehensive strategy regarding textiles (EU Strategy for Textiles) in 2021.

In Japan, the Ministry of Economy, Trade and Industry (METI) formulated the Circular Economy Vision 2020 in May 2020 in order to realize a virtuous cycle of the environmental and economical growth. The vision designates textiles as one of the key areas where the study on resource circulation systems is urgently needed.

(2) Current Situation

All stages, from product planning to after consumption has to commit to the environment, therefore involvement of the whole industry is required. However, due to the lack of a unified concept and evaluation index regarding the environment, advanced initiatives in individual processes are yet to expand across the industry.

Advanced initiatives include efforts at the planning and production stages to reduce fabric waste by sample production using a 3D design system and the usage of byproducts (scraps). The dyeing and finishing businesses are also making efforts to reduce CO2 and advancing technology development, including supercritical carbon dioxide dyeing that can reduce water consumption compared to conventional methods.

![Figure 5] Changes in CO2 emission basic unit in the dyeing and finishing industry

Source: Japan Textile Finishers’ Association
In order to promote resource circulation in the textile industry, it is important to collect used clothes. Currently, some apparel companies are collecting used clothes in stores for reuse and recycling. However, the collection of clothes is not yet a nation-wide initiative because governmental response varies depending on the municipality. To address this situation, it is necessary to construct a functioning collection system including garment collection in stores.

In Japan, there are no strong trend where consumers actively purchase environment-friendly products. Without the premise that consumers desire such products, it is difficult for companies selling products to actively invest in initiatives for the environment. To advance efforts of reuse and recycling in the industry, consumers' participation such as bringing used clothes that are no longer needed to garment collection boxes in stores is necessary. In this sense, consumer participation is an important factor.

(3) Policy Recommendation

(i) Guidelines on Design for Environment

In order to promote initiatives for the environment across the industry, sharing common concepts on priority issues for product design could be effective. Therefore, new guidelines that incorporate unified evaluation indices for use by textile-related companies should be incorporated. Design for Environment may include perspectives of byproduct reduction, energy and resource saving, elongation of product life and resource circulation after consumption activities. The guideline should encourage to reduce resource input at product planning and hence products should be produced in such design.

It is desirable that not only the apparel companies but also spinning, weaving/knitting, dyeing/finishing, sawing and other industries and companies of the supply chain participate in the formulation of the guidelines. It is expected that industry groups, with participation of METI, will start to lead discussions toward formulation.

(ii) Collection System

It is important to design initiatives for the environment while keeping in mind the state of the products after it is once used by consumers. The development of a system to collect garment waste is expected in order to promote reuse and recycling at stores, etc.

Currently, some apparel companies have introduced a garment collection system at stores and are
advancing initiatives of reuse and recycling. A further acceleration of these initiatives can accelerate the flow of resource circulation.

It is also important to publicize how "wastes that are collected exclusively for recycling (exclusive waste)" provided in the Waste Management and Public Cleansing Act are handled. The act stipulates that any person who intends to collect or transport wastes on a regular basis shall obtain a license. However as an exception, the handling of "exclusive waste" does not require any license. Exclusive wastes are waste paper, scrap iron, empty bottles/cans and waste fiber therefore constructing a system for the recycling of waste fiber is practical.

However, the handling of collected waste fibers varies depending on the municipality, which negatively affects the collection of waste fibers. The Ministry of the Environment (MOE) plans to survey current handling by local governments. MOE and METI will cooperate to improve the environment for garment collection at stores.

(iii) Consumer Cooperation

In order to promote initiatives for the environment, consumers’ efforts as well as companies’ are important. If products of companies that pay attention to the environment are focused, new markets will expand and enable a virtuous cycle toward resource circulation. It is important to disseminate information easily understandable for consumers: in such the cooperation of influencers may be considered. Interest in sustainability is increasing among younger generations, especially among Generation Z and this generation is expected to lead the spread of these efforts. METI should unfold PR activities for consumers in cooperation with the Consumers Affairs Agency (CAA), MOE and other government offices.
2. Responsible Supply Chain Management

(1) Background

The collapse of Rana Plaza, which left over 1,000 deaths and over 2,500 injured in Bangladesh in 2013, widely evoke the importance of responsible supply chain management in the textile and apparel industry. The tenants of the collapsed building included multiple garment factories under a subcontract with leading Western apparel brands. Due to insufficient safety management, many employees of the factories fell victim to the accident. After the accident, the 2015 G7 leaders' declaration in Elmau included "We strongly support the UN Guiding Principles on Business and Human Rights and welcome the efforts to set up substantive National Action Plans" and "We welcome international efforts, including private sector input, to promulgate industry-wide due diligence standards in the textile and ready-made garment sector." In response, many countries developed their respective National Action Plans. Japan launched its National Action Plan on Business and Human Rights in October 2020.

In 2017, the Organization for Economic Co-operation and Development (OECD) developed the Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector. Due diligence is a process through which enterprises can identify, prevent, mitigate and account for how they address their actual and potential adverse impacts. Risk areas covered by the guidance are child labor, forced labor, hazardous chemicals, etc.
Upon business with Western companies, Japanese companies are increasingly required to implement due diligence, including managing its own supply chain. Furthermore, various certifications regarding environmental safety, labor, corporate governance and other issues of textile products and their production process have been developed and operated led by Western countries. An increasing number of Japanese companies are required to obtain these international (private) certifications. Individual companies of the domestic textile and apparel industry are also expected to ascertain and respond to the materials and working environments in their supply chain in a responsible manner.

Consumers’ awareness has also been changing. A tendency to consider traceability and environmental burden when purchasing merchandise is growing according to consumer attitude surveys. Also the idea that products should be produced in a better production environment and using environment-friendly materials has spread, especially among younger generations. In addition, with
the recent increase of ESG investment, investors which place importance not only on the environment (E) and governance (G) but also on Society (S), including diversity, human rights and local communities are increasing.

Responsible supply chain management will enable sustainable business activities by not only reducing risks but also creating a safe and secure working environment equally for all workers.

The Carbis Bay G7 Summit Communique issued at the G7 Cornwall Summit in June this year included the following statement: "We are concerned by the use of all forms of forced labour in global supply chains, including state-sponsored forced labour of vulnerable groups and minorities, including in the agricultural, solar, and garment sectors" and "We commit to continue to work together including through our own available domestic means and multilateral institutions to protect individuals from forced labour and to ensure that global supply chains are free from the use of forced labour."

(2) Current Situation

The issues of technical intern trainees and fairness of transactions are considered as problems in the domestic supply chain. Many business operators employ technical intern trainees in processes from spinning to sewing, where legal violations (failure to pay minimum wage/premium wage, illegal overtime work, etc.) have been revealed. Some experts indicate that the employment of technical intern trainees is considered as a risk in transactions with a foreign company.

To address this situation, METI set up the Council for Textile and Apparel-Industry Technical Intern Training Programs, the members of which are representatives of related industry associations or organizations. The council formulated the decision on "Initiatives for Proper Implementation of Technical Intern Training Programs in the Textile and Apparel Industry" in June 2018. In addition to full compliance with laws and regulations, and promotion of fair trading practices, the initiatives stipulate the social responsibility of purchasing enterprises to fully confirm whether compliance with laws and regulations, ensuring fair trading practices, and proper working environments are secured across their entire supply chains. The initiatives also demand companies to confirm and guarantee that the implementation of technical intern training is properly managed in their supply chain.

The government and related industry associations/organizations have disseminated the OECD Due Diligence Guidance mentioned above to industry, but not yet understood well enough by individual enterprises. This is due to the fact that major customers of domestic apparel companies are in the
domestic market, which requires due diligence less frequently compared with Western markets. The huge cost of due diligence of the long and complicated supply chain of the textile and apparel industry may also make apparel companies reluctant to supply chain management.

As mentioned above, some Western companies require international textile certification to their business partners. For this reason, some companies in production areas are leading to receive an evaluation of their activities and products through certifications certified by a third-party organization. These certifications include OEKO-TEX, Bluesign, GOTS and Textile Exchange.

In order to promote acquisition of international textile certifications by individual enterprises, domestic textile product inspection bodies have started new initiatives. For example, Nisskenken Quality Evaluation Center is active as the only certification body of OEKO-TEK in Asia, and KE’KEN textile Testing & Certification Center was registered as the certification body of Textile Exchange in April 2021 for the first time in Japan.

[(Figure 7) Key international textile certifications]

<table>
<thead>
<tr>
<th></th>
<th>Establishment</th>
<th>Headquarters</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEKO-TEX</td>
<td>1992</td>
<td>Swiss</td>
<td>Absence of harmful substances in product</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Safe and fair working environment</td>
</tr>
<tr>
<td>Bluesign</td>
<td>1997</td>
<td>Swiss</td>
<td>Absence of harmful substances in product</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No emission of harmful substances in production process</td>
</tr>
<tr>
<td>GOTS</td>
<td>2002</td>
<td>Germany</td>
<td>Usage of organic materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Processed and distributed with attention to the environment and society</td>
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<td></td>
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<td>Setting of environmental targets on the use of water and energy</td>
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<td>No usage of chemicals containing harmful substance</td>
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<td></td>
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<td></td>
<td>Free of forced labor.</td>
</tr>
<tr>
<td>Textile Exchange</td>
<td>2002</td>
<td>U.S.</td>
<td>Usage of organic cotton, recycled fibers, or wool or down with attention to animal welfare</td>
</tr>
</tbody>
</table>

Source: Created by the Ministry of Economy, Trade and Industry based on the websites of the certifying bodies
(3) Policy Recommendation

(i) Implementation of Due Diligence

As the OECD Due Diligence Guidance provides "All enterprises have a responsibility to conduct due diligence regardless of their size or operating context," due diligence in the supply chain is a task for the whole industry, but apparel companies, who provide end products, are especially responsible for ascertaining information in their supply chain and increasing their efforts. The government, in cooperation with related industry groups should work for further dissemination, which may include easy-to-understand explanation on the need for due diligence and matters that could pose an enterprise risk.

The implementation of due diligence and responsible supply chain management by enterprises can lead to the securing of workers' rights and productive jobs that generate sufficient income and appropriate social protection (decent work). For this purpose, the industry group should formulate guidelines to facilitate enterprises' initiatives for due diligence in cooperation with international organizations including the International Labour Organization (ILO) who works on a broad range of labor issues.

(ii) Environmental Improvement for Acquisition of International Textile Certifications

Some medium and small enterprises are obtaining international certifications. Accelerating the movement by communicating the need for obtaining international certifications, especially to cloth manufacturers who are suppliers is necessary. Furthermore, in order to facilitate consultation on international certifications in Japan, ideal state of human resource development and cooperation of domestic auditing organizations should be pursued.

Textile Exchange and other organizations formulating international certifications mostly consist of people from Western countries, making it is difficult to reflect the actual state of the Japanese textile and apparel industry in the operations of certifications. To address this situation, isn't it important to work to create an environment for dispatching Japanese experts.

(iii) Response to the Issue of Technical Intern Trainees

To address the problem of technical interns, continuous demand for the industry and enterprises to fully comply with the laws and regulations regarding the technical intern system based on the
"Initiatives for Proper Implementation of Technical Intern Training Programs in the Textile and Apparel Industry" decided in June 2018 is necessary.

The J∞ QUALITY system examines and certifies products that are produced by companies certified for their three processes: "weaving and knitting," "dyeing and finishing," and "sewing" in Japan. This kind of system can be utilized for a responsible supply chain management. Its further development is expected.
3. Gender Equality

(1) Background

For the promotion of initiatives for sustainability, gender equality is also an important task. SDGs states "Achieve gender equality and empower all women and girls." Both public and private sectors should work globally to create an environment where social or cultural differences between the sexes do not cause inequality.

The realization of gender equality has a great influence on society and economy. Women's participation in social and economic activities promotes economic growth, and successes in diverse human resources, can positively impact innovative creation. Survey results show that the value creation\(^4\) of an enterprise with more female managers can be 27% higher compared with other enterprises. However, gender inequality is found everywhere in the society. Worldwide, many people suffer from discrimination due to gender, including a lack of education opportunity. There is an intense need for the creation of a society free from discrimination due to gender.

We find differences in gender on various scenes also in Japan. For example, wages for women in major domestic industries are about 26% lower than wages for men,\(^5\) though the difference has gradually decreased; the men-women ratio of managers is 9 to 1.\(^6\) Housework/childcare hours per day are 41 minutes for men while 3 hours and 44 minutes for women, who bear an incomparably heavier burden.\(^7\)

Initiatives toward gender equality are underway. For example, METI and the Tokyo Stock Exchange (TSE) introduce listed companies advanced in promotion of women's participation through the selection of Nadeshiko Stocks with the aim of recognizing companies that are excellent in promotion of women's participation and accelerating their initiatives. The Corporate Governance Code, in which the TSE presents major principles contributing to corporate governance strongly demand diversity, including gender equality in the boards of listed companies. Principle 4.11 of the code provides: "The board should be well balanced in knowledge, experience and skills in order to fulfill its roles and responsibilities, and it should be constituted in a manner to achieve both diversity, including gender, international experience, work experience and age, and appropriate size."

\(^4\) 2017 McKinsey data. Value creation refers to the amount of added value created by a company in one year.
\(^5\) 2019 data based on the Basic Survey on Wage Structure
\(^6\) Data by the Cabinet Office
\(^7\) 2020 average based on the Labor Force Survey
ESG investment also pays attention to information on active participation of women as a criterion, while students place importance on gender equality policy when choosing its employer.

The Carbis Bay G7 Summit Communique that was announced at the G7 Cornwall Summit in June this year included the following statement: "Achieving gender equality needs to be underpinned by the full, equal and meaningful participation of all women in all aspects of decision-making."

(2) Current Situation

The ratio of female workers in the textile and apparel industry is higher compared with other industries. While the ratio of women to all employed workers is 44.5%, the ratio of women among people working in production plants of the industry is 58.5% and 72.6% among people working in the apparel and retail sectors.

![Figure 8: Men-women ratio of employees](image)

Source: Labour Force Survey

Nevertheless, the ratio of female officers of the textile-related companies is 4.3%, which is lower than the ratio (6.0%) of the average of companies listed on the first section of the TSE. The causes may include: lack of role models, absence of a system for career advance, unconscious bias that

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8 Average in 2020. Data for "Production of clothing, etc." and "Retail of clothing, etc." are those for "Manufacture of textile mill products" and "Retail trade (dry goods, apparel and apparel accessories)" in Labour Force Survey, respectively.
9 Data by the Cabinet Office as of the end of July 2020. Officers refer to directors, auditors and representative executive officers and executive officers of companies with nominating committees.
designers, pattern makers, and other professionals could be handled by women while managers and
merchandisers who handle affairs from product development and sales strategy should be men, and
unfair burden of housework and child/family care on women. Also women tend to have concerns about
promotion due to insufficient experience in management.

SMEs account for the most part of the industry. When they have business with foreign companies,
an increasing number of the overseas prospective business partners check the turnover rate of women,
support for women, and its past contracts with companies managed by women, for example.
Sometimes gender equality is included in the conditions of transaction. It has become essential not
only for big companies but for medium and small companies to promote initiatives for gender equality.

Amid the worldwide call for gender equality, the industry should promote to create women-
friendly working environments and career formation support for women. It is important to promote
this in public-private cooperation.

| (Figure 9) Opinions regarding the workplace environment, etc. of the textile and apparel industry |
| Decisive power lies with men. | Most merchandisers who decide budgets are men. Designers, pattern makers and other professionals are mostly women. We generally suppose that a male superior leads women. (A female manager in Tokyo) |
| | Union presidents are mostly men and it is difficult to reflect women's opinions. (A female manager in Hyogo Prefecture) |
| | Decisive power lies with men in most business partners including banks. (A female executive in Tokyo) |
| Child care/family care burden on women | Some women decline to accept a manager post because they feel they should be caregivers after child rearing. (A woman in a managerial position in Tokyo) |
| Need for a system of child care/family care leave and support for women | It may be important to improve the system of maternity/child care leave and support. (A female manager in Okayama Prefecture) |
| | Before starting business with an overseas company, the other party asked about our female turnover rate, support for women, and corporate culture. (A female manager in Hiroshima Prefecture) |
| Manufacturing sites are male-dominated | Jobs in production sites have always been mostly physical work, such as carrying heavy weight and repairing machines, where men dominated. (Male manager in Gifu Prefecture) |

Source: created by METI based on interviews
(3) Policy Recommendation

(i) Setting Up a Public-Private Round Table

In order to create a women-friendly workplace and promote more women to management positions, it is necessary for the whole industry to work together. Specifically, it is required to foster management's understanding of gender equality to make efforts across the company.

For this purpose, establishing a roundtable to gather representatives of the government and the industry for sharing/understanding the importance of gender equality and also for discussing and sharing advanced examples (program to train female candidates for executive positions) and the human resource development system that companies should construct (public-private round table) should be considered.

(ii) Present Role Models for Younger Generations

Providing gender education that breaks unconscious bias and presents role models for careers after employment for young people who will play important roles in the future textile and apparel industry can have a positive impact on their career development.

For this purpose, it is advisable to establish courses (Textile Fashion Innovation School [tentative name]), where active female leaders introduce their experiences and examples of efforts for career development for junior-high, high-school, college and university students and young people who intend to make a career change.
4. Supply Structure

(1) Background

Our living has been based on mass production and mass consumption and the textile and apparel industry is not an exception. However, this kind of business and consumption activities have reached the limit. It is important to use the limited resources effectively.

For advancement of these efforts in the textile and apparel industry, the reduction of byproduct disposal and recycling are surely important. These efforts for the environment may not produce full effects if the system of mass production itself is not changed. For this reason, working toward optimum-volume production and consumption is important.

Market size of the domestic apparel businesses diminished from 14.7 trillion yen in 1991 to 10.4 trillion yen in 2019. Number of purchased items of major clothing including suits, shirt, women's dresses and blouses has been decreasing since the 1990s. Nevertheless, domestic supply quantity nearly doubled from about 2.0 billion pieces in 1990 to about 4.0 billion pieces in 2019.

[(Figure 10) Change in average annual purchase quantity of major clothing\textsuperscript{10}]

\[\text{(Pieces)}\]

Source: Family Income and Expenditure Survey

\textsuperscript{10} Two-or-more-person households (not including agricultural, forestry and fisheries households)
The increasing trend of domestic supply when the market size and the purchase quantity of major clothing are decreasing may indicate that clothing is produced and supplied in greater quantity compared to demand.

(2) Causes and Effects of Supply Volume Increase

Major causes that have produced the current situation of mass production of clothing are as follows.

In the 1980s, consumers purchased a large number of high-priced merchandise as symbolized by designer's & character's brand boom. Later, however, deflation accelerated as a result of the subsequent economic slowdown. In order to lower sales prices of their merchandise, apparel companies relocated their plants to other countries where labor cost was low. Products which prices were lowered through mass production were supplied to stores including department stores.

Stores displayed a large number of goods and held a wide variety of sizes and colors in stock in intention of avoiding opportunity loss due to items being out of stock.

Also, a large number of supply destinations, such as department stores and shopping centers, caused the increased supply to ensure a large assortment in each store.

In addition, the long period from planning to sales makes it difficult to predict the trend, weather and other factors concerning product planning. As a result, there is a potential to produce a large number of goods that are not purchased.
Because the products produced and supplied in a large quantity in this way are difficult to sell out at the net prices only, discount sales have become a common practice. As a result, consumers are hesitant to purchase at net prices. This caused a viscous cycle of increasing goods unsold at the net price and repeated discount sales.

(3) Policy Recommendation

(i) Utilization of Digital Technologies

Apparel companies that plan and sell merchandise are to play a central role in solving the problem. To avoid discount sales as far as possible, the merchandise content, quantity and prices for selling at the stage of planning and to ensure sales and stock management at stores, including online stores. In the light of the diversified sales channels, unified management of the information is not easy. To address this issue, the utilization of digital technologies, including an efficient understanding of information using RFID (Radio Frequency Identification) is considered effective. Activities to foster understanding of the technologies are required.

Purchase information are not sufficiently shared between department stores and apparel companies. Furthermore, information sharing is a burden due to different systems adopted among department stores. To address this situation, it is advisable to promote customer management and to understand consumption trends through standardization of purchasing data. Moreover, promotion to share the information among department stores is important.

(ii) Promote Customer-Centered Business Evolution

It is necessary to take measures against the practice of holding merchandise of various sizes and colors in each store in order to prevent opportunity loss due to items being out of stock. Today, when OMO (Online Merges with Offline) is advocated, there can be various measures to supply out of stock items in individual stores, including delivering item chosen at stores to each customer's home. In addition creating an environment that tolerates items being out of stock is important. Some enterprises only display goods and measures each size of the customer at real shops, and delivers the chosen product that best fits the costumer later. Establish new business models by using examples of these initiatives should be promoted.

In order to promote these initiatives, business development should be customer-centered rather than
giving first priority to exceeding the sales of the previous year. Not only selling goods out but also acquiring continuing followers of own brands will become important. This approach started to spread as the concept of Life Time Value (LTV,) which is not limited to pursuing immediate sales. Not only the management but also people in charge need to keep this in mind.

When sustainable relationships are built with consumers, online selling will be facilitated based on the knowledge of their sizes, purchase rate at net price will improve, and the company will be able to maintain relationships, including repair service after purchase. It is desired that these initiatives and approaches will be known widely.

(iii) Reformation of Production Process

Initiatives to shorten the production period are attracting attention. Because the production and procurement of cloth take time, generally, it is effective to hold a certain quantity of cloth for production. By holding cloth, the company can produce and sell new products of the best-selling color and produce them in a short period of time.

Another helpful example is the initiative of mass customization that produces and sells made-to-order one-of-a-kind items by using IoT to connect individual orders according to the customer's taste and body shape with the existing production system. For production and selling in a short period of time, it is also necessary to minimize transportation time. To this end, construction of a supply chain based on domestic production can become an effective means.

The industry should study ideal ways of domestic production and spread advanced cases.
5. Digitalization

(1) Background

In recent years, the development and spread of new technologies, including the Internet of Things (IoT), big data, and artificial intelligence (AI), has been astonishing. These technologies are expected to solve various problems.

It is beyond doubt that digital technologies will exert a far-reaching effect in operational efficiency and cost reduction. Furthermore, IoT, AI and other digital technologies are effective for stable equipment operation and overcoming labor shortages.

While utilization of the digital technologies is considered for many situations, it is also useful in initiatives for sustainability.

Because initiatives for sustainability are wide-ranging, from environmental consideration to the improvement of working environments, their advancement requires collection, management and analysis of a large amount of information. For optimum-volume production, for example, efficient management of supply and inventory amount is important. Some companies are carrying out unified management and visualization of inventory information in multiple channels by using RFID and other systems.

The initiatives for sustainability we have studied above have a common factor: "managing the supply chain." For this purpose, it is necessary to understand what is happening and where in the supply chain, which includes working environments and materials used. Furthermore, in order to increase online sales and promote LTV, which focuses on longer relationships with customers, it is required to change the modality of contact points with consumers. For these initiatives, information management using digital technologies is extremely effective.

(2) Current Situation

Digital technologies have been introduced in many industries. However, digitalization of the textile and apparel industry is not sufficient. Even today, transactions are performed using facsimile or phone at the production stage. In this situation, it is difficult for apparel companies to grasp the entire supply chain. Online sales have increased as a result of the spread of the COVID-19 infection, but utilization of digital technologies at points of contact with consumers, which include measurement at the time of online purchase, is still in the process of development.
A large number of enterprises are considering to adopt digital technologies, but since it requires the ability to collect information on available technologies and services as well as judgment for choosing necessary technologies/services among multiple candidates, it is a high burden for SMEs, in particular.

Some textile companies started initiatives using digital technologies. In the future, it is desired that the whole industry will spread the initiatives. For example, METI and the TSE selects "Digital Transformation Stocks (DX Stocks)" for companies (including a textile company) that are working towards digital transformation to drastically change their business models, etc. based on digital technologies for new growth and enhancement of competitiveness. Below, we introduce advanced initiatives in the textile and apparel industry.

Demand forecasting was thought to be very difficult in the past textile and apparel industry. However, through SNS image analysis by AI, current trends of clothing are predictable. The data obtained in this way are used for improvement of the merchandise display at stores.

Initiatives for digital management of inventory of individual stores are also underway, which enables efficient execution of complicated management processes.

Utilization of digital technologies are also implemented at the planning and production stages. In the past, sample production was often repeated before commercialization, but sample production using digital systems has enabled product commercialization in a shorter period and with less resources.

[(Figure 12) Sample production on a system]

Source: Tokyo Fashion technology Lab
There is also a movement to digitally manage all production-related information: e.g. process management by each individual staff using a tablet device; machine condition management using IoT technology in the plant, and digitalizing communication with other companies in the supply chain.

Some manufacturers started direct selling to consumers (DtoC). Having contact points with consumers through digital technologies makes it possible to understand purchase data of individual consumers and reflect consumer opinions and needs in merchandise in a short period of time. Furthermore, a new business model of subscription service appeared to enable the use of clothing without owning it.

(3) Policy Recommendation

(i) Promote Understanding

Just introducing digital technologies is not enough: hence these are tools for achieving certain purposes. It is necessary to carefully study what to achieve with them. Furthermore, it is often required to introduce digital technologies to the entire company rather than a part of its business. Because the decision is to be made by the management, not only the people in charge but also the management need to understand digital technologies. It is important to promote understanding through industry
groups and others.

(ii) Expand Good Practices

For future advancement of the initiatives for sustainability in the industry, the utilization of digital technologies will become an important factor. Dissemination of good practices of utilizing digital technologies contributing to sustainability at the time of collecting and sharing good practices for sustainability is expected to vitalize efforts in the industry.

(iii) Disseminate Information on Support Measures

In addition to the support with the IT introduction subsidy for the introduction of IT tools (e.g. software, cloud service) by SMEs, METI under the DX certification program certifies enterprises that are developing strategies and a promotion system toward DX based on the Act on Facilitation of Information Processing.

This year, the Act on Strengthening Industrial Competitiveness was revised, incorporating a new scheme for the accreditation of plans as "response to digitalization." Specifically, company-level changes of the business model using digital technologies are designated as DX. When a company submits its DX plan to the competent minister (having jurisdiction over the business) and receives certification, digital investments (hard and soft) necessary for implementation of the plan are eligible for up to a 5% tax credit or 30% special depreciation and low-interest loan using funds under the fiscal investment and loan program. Dissemination information on these support measures is expected to further promote digitalization.
Conclusion

The textile and apparel industry has added color to our livelihood culture with clothes that people wear. Clothing is a core means for self-expression of individuals and continue to create diverse values.

However, when resources are limited, producing clothing with a big burden on the environment and the producers should be avoided. Not only enterprises but also consumers need to advance initiatives toward resource circulation.

In future business activities, not only the provision of products and services but also the creation and provision of "value" are considered to increase importance. Creating and providing initiatives for sustainability as a value will lead to obtaining new markets. Therefore, creating a vision of the ideal state from a long-term perspective, furthermore studying what to do based on the vision, and formulating strategies and plans is important. Now initiatives for sustainability are advancing through SDGs and ESG investment. We expect that similar initiatives will be sophisticated in the industry.

Active understanding and decisions by the management are essential for individual companies to advance initiatives for sustainability. This means that companies need to further enhance their governance.

There has not been much progress in initiatives to manage the long and complicated supply chain of the industry. However, responsibility for end products will be considered as a given, and apparel companies, in particular, need to have a sure grasp of their materials, working environments and production quantity, for example. In order to advance these initiatives, cooperation of the companies in the supply chain, including big, medium and small companies from upstream to downstream is necessary.

Efforts for sustainability are required not only from enterprises but also from consumers since advancing these initiatives without changing how each merchandise are purchased which influence corporate activities is difficult. Consumers’ cooperation to effectively utilize resources and consume merchandise is urgent.
Japanese people have had a culture to use clothes for a long period. Kimono out of use were remade for children and finally used as wiping clothes. People used limited resources effectively. Along with food and housing, clothing is indispensable for living.

We expect that this report to become as a blueprint toward a new era for various readers, from enterprises to consumers.
List of the members

(In the order of the Japanese syllabary. Titles omitted)

<Members>

IRIYAMA Akie Professor, Graduate School of Business and Finance, WASEDA Business School

OHARA Yoko Founder & Honorary Chair, Women's Empowerment in Fashion

KAMIYAMA Kenji Director, Japan Apparel Fashion Industry Council.

SATO Izumi Lawyer, Law Office of Izumi Sato

SHINTAKU Junjiro Professor, Graduate School of Economics, Faculty of Economics, The University of Tokyo [Chair]

TOMIYOSHI Kenichi Vice chair, Japan Textile Federation / Full-time Vice Chair, Japan Chemical Fibers Association

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OKANO Takahiro Leader of "Fashion and Environment" Task Force, Ministry of the Environment

FURUYA Masahiro Managing Director, Japan Council of Shopping Centers

YASUDA Yoko Managing Director, Japan Department Stores Association

<Secretariat>

Lifestyle Industries Division, Manufacturing Industries Bureau, METI
Meeting Record

(In the order of the Japanese syllabary. Titles omitted)

Relevant experts were invited as guest speakers to each session.

1st session (February 25, 2021)
- FUKUDA Minoru Partner, Roland Berger

2nd session (March 29, 2021): Supply Structure
- KAWAI Taku CEO, Taku Kawai Consulting
- SADASUE Nanako Representative Director, Maker's Shirt KAMAKURA
- MATSUO Norihisa Deputy Director, Japan Apparel Fashion Industry Council

3rd Session (April 9, 2021): Attention to the Environment
- KUBOTA Yasufumi Vice president, Nakano Co., Ltd.
- SHINO Kenji Brand Responsibility Manager, Social & Environmental Responsibility, Patagonia Japan
- TAKAO Masaki CEO, JEPLAN, INC.

4th session (April 23, 2021): Responsible Supply Chain / Gender Equality
- INAGAKI Mitsuya Director, Material Sustainable Institute
- YOSHIKAWA Minako Senior General Manager, Sustainability Division, ASICS Corporation

5th session (May 18, 2021): Promotion of Digitalization
- ICHIKAWA Yuji Representative Director, Tokyo Fashion technology Lab
- HAN Zhou COO, Neural Pocket Inc.
- MORI Yuhichiro CEO, FABRIC TOKYO Inc.

6th session (June 25, 2021)