

A Value Chain Analysis

SUSTAINABILITY, MORE CONSUMER AWARENESS, RESPONSIBILITY AND TRANSPARENCY IN TEXTILE SECTOR OF MYANMAR



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BACKGROUND AND OVERVIEW OF TEXTILE SECTOR IN MYANMAR



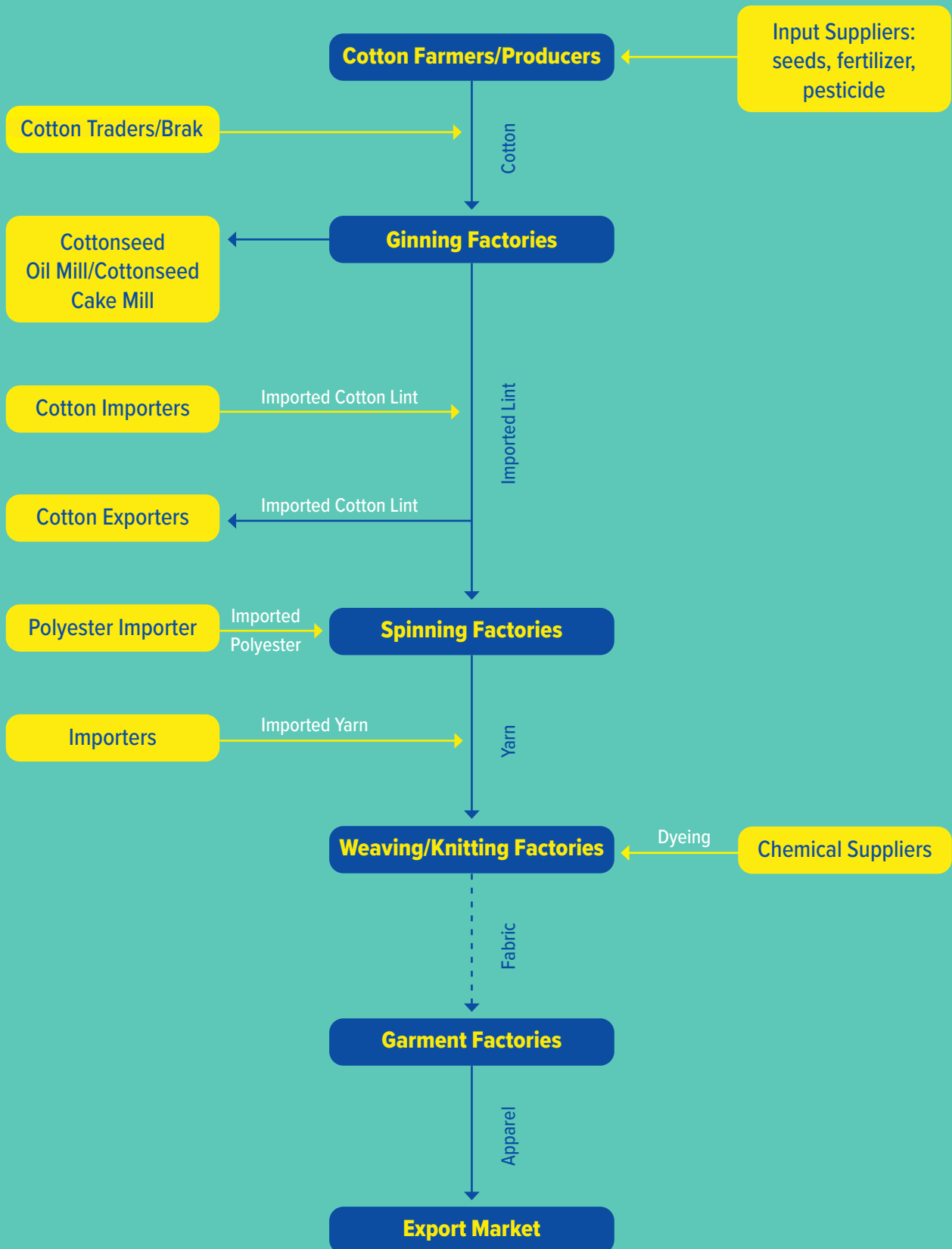
The textiles and garment industries are quintessential engines of industrial growth for many developing countries, providing an entry point for economic growth, employment generation, and poverty alleviation. The attraction of these industries to developing countries such as Myanmar includes low entry costs and availability of low-wage workers, often women and migrant workers. Foreign direct investment into these industries generates job opportunities for young workers, particularly from rural and migrant households. On the other hand, these jobs often lack decent work conditions while the industries have poor adherence to social and environmental standards. Therefore, this study investigates the value chain of textile industries in Myanmar to identify the gaps in working conditions, sustainability of production processes, and social challenges of producers and workers at the bottom of the chain. This study focuses more on the domestic value chain of the industries to understand the state of various stages of the textile value chain in Myanmar (see Figure 1.1) while exploring changes amid the ongoing crisis in Myanmar. This study used a combination of a quantitative survey of producers and qualitative interviews and discussions with key stakeholders in each segment of the chain from cotton production to ginning, spinning, weaving/knitting and dyeing sub-sectors.

Traditional textile production in Myanmar had existed since British colonial period, which introduced mechanized industrial.¹ However, the textile industry as such, producing textiles using modern spinning, weaving, and processing techniques, is a relatively recent phenomenon in Myanmar. Historically, this textile industry catered to domestic demands, characteristically known for producing traditional wears such as longyis (male sarongs) and htameins (female sarongs). It has only been recently, the mid-1990s onward, allowed the private sector to play a bigger role in the whole segments of the textile sector (ginning, spinning, weaving and dyeing) in Myanmar. However, due to low production capacity and inadequate technology, the quality of products falls below the level demanded by domestic and international buyers.

¹ Yang Naing Lin(2020). Transformation of Weaving in Myanmar from the Tradition to the Modernity and Its Impact. University of Mandalay.

<https://meral.edu.mm/record/5604/files/The%20Transformation%20of%20Weaving%20in%20Myanmar%20from%20the%20Tradition%20to%20the%20Modernity%20and%20Its%20Impact.pdf>

FIGURE 1.1 Stages of textile and garment value chain in Myanmar



The recently updated National Export Strategy took note of the importance of modernization and investment in integrating the textile sector into the garment value chain as the latter has already established strong connection with global markets. Such commitment was acknowledged in 2020 with the drafting of the National Textile Policy (NTP) that intends to provide a holistic policy approach to revamp the rest of the textile value chain; spinning, ginning and more capital-intensive facilities and processes. Despite of policy commitments to modernize the textile sector, Myanmar still relied heavily on imported inputs along the value chain process, such as synthetic fibre, dyeing chemicals, and quality and modern fabrics. Moreover, one of the widely acknowledged problems is that domestic cotton production cannot meet quality and price thresholds required to produce apparels and garments competitively even for domestic market. On the other hand, the cotton farmers have limited incentives to produce higher quality cotton while they can still sell low quality cotton to China, a value chain gap that can only be overcome by coordinated policy and development interventions.

Nonetheless, the opportunity remains attainable to establish strong linkage between garment sector and textile sector to improve the country's competitiveness of the integrated value chain, and offer a viable strategy for industry upgrading. –Since the industry includes a mix of state-owned enterprises, micro, small and medium enterprises (MSMEs), and foreign joint ventures, it is appropriate for the government to consider an integrated approach to uplift the industry.

In any scenario, the role of specialized private sector association is critical to upgrade the sector. Here, the Myanmar Textile Manufacturers' Association (MTMA) established in 2016 is yet to be fully capable of with an objective of mobilizing sector growth and professionalization. Its members include various actors involved in different segments of textile manufacturing process---spinning, weaving, dyeing and printing, and product manufacturing (garments, longyi, blankets). The MTMA also added regional or sub-sector associations in recent years to facilitate greater integration of these segments into mainstream production process. For instance, Mandalay Weaving Association (members include micro, small and medium weaving and dyeing enterprises) and Myanmar Cotton and Cotton Products Merchants and Manufactures (members include cotton farmers, ginning factories and spinning factories) are very active in supporting the needs of members and their relationship with other market actors.

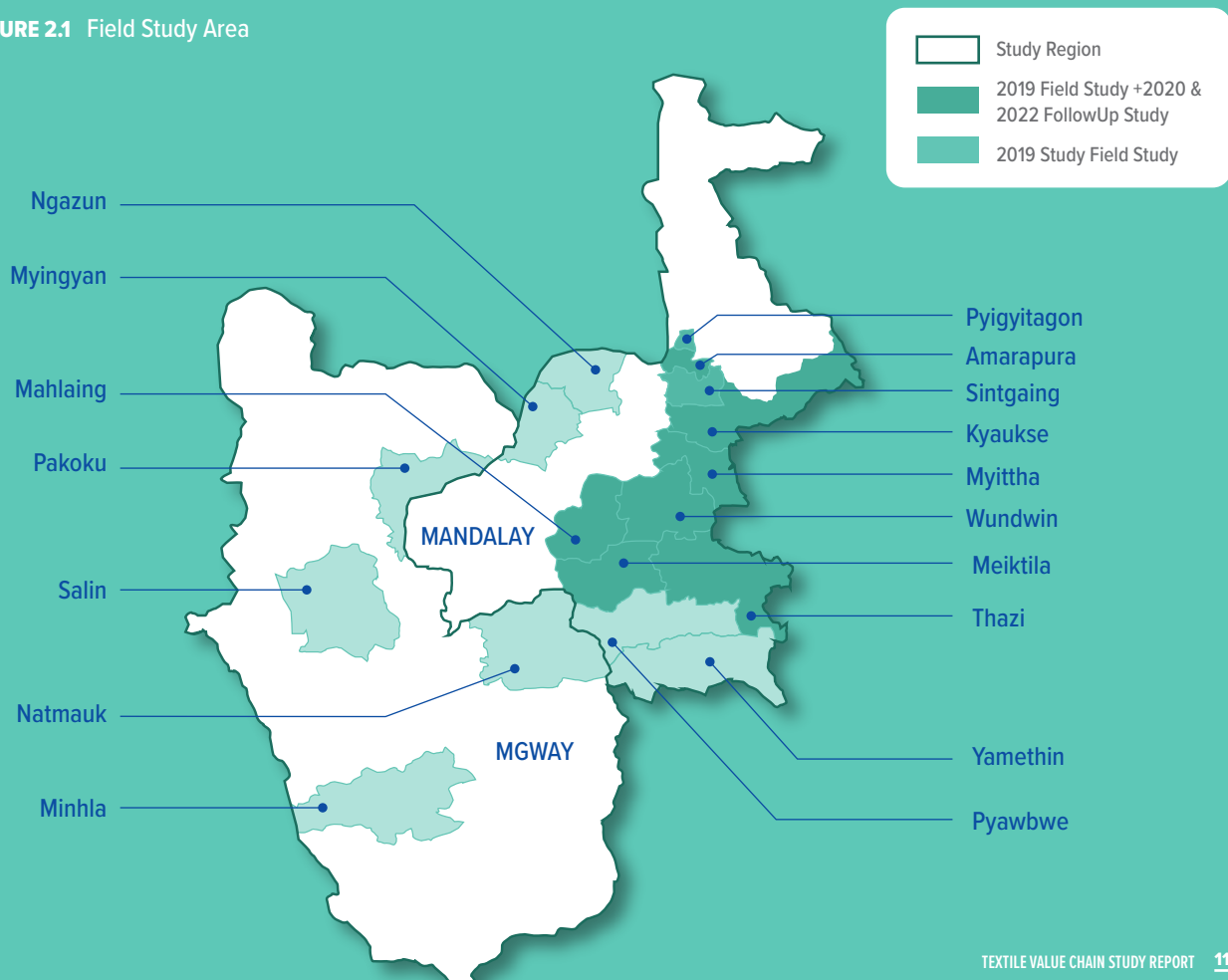
RESEARCH METHODOLOGY

2

This study uses a value chain analysis with a combination of both qualitative and quantitative research methods. An initial desk review of government data and other relevant reports was conducted to get an overview of the value chain and gathered additional information from different segments of the chain from the representatives of private sector associations. As shown in Figure 1.1, the textile value chain in Myanmar involves at least four sub-sectors of production—cotton production, ginning, spinning, weaving/knitting/dyeing sub-sectors—in making their final apparel products. It is worth noting that the garment industry is not necessarily linked to textile value chain in Myanmar context.

Primary data collection was conducted by means of quantitative surveys and qualitative interviews, key informant interviews, focus group discussions, farm visits and factory visits in 17 townships located in Mandalay and Magway regions throughout 2019 and early 2020. To understand the impact of COVID-19 and complex political emergencies, a follow-up study was conducted in mid 2022 with key stakeholders from different sub-sectors (cotton production, ginning, spinning and weaving/knitting/dyeing (see Figure 2.1). The details of the sampling and research approaches for each segment are described in the following sections.

FIGURE 2.1 Field Study Area





2.1 Cotton Production

To observe the process of cotton production, 78 cotton farmers in 2019/2020 and 8 cotton farmers for the follow up study in 2022 from three districts (eight townships) –Kyaukse, Mandalay and Meiktila of Mandalay region (see Table 2.1) were chosen based on snowball sampling method. Those three districts represent the major area of cotton planation in Mandalay region, which followed the nearby Magway region as the second largest area of cotton cultivation in the whole country. Since the size of cultivation areas and the process of cotton production are similar between two regions, the study chose to focus only on Mandalay region because the rest of the value chain segments -- ginning, spinning, and weaving factories -- are mostly located within Mandalay region than Magway. By observing the entire value chain in a single region, it allows the study to control exogenous factors external to the value chain and focus the interactions between upstream cotton farmers and their counterparts from downstream industries of ginning, spinning and weaving factories, who are supposedly working together in the same region. The study deploys a quantitative survey with the farmers through structured questions while conducting focus group discussions for in-depth and qualitative information about their perspectives on the dynamics of value chain.

TABLE 2.1 Respondents Numbers Participated In The Survey For Cotton Cultivation

Townships	Districts	Number of interviewees	
		2019	2022
Myotha, Ngazun	Mandalay	11	
Myint Thar	Kyaukse	11	3
Kume/Myittha	Kyaukse	4	
Wun Twin	Meiktila	7	1
Mahlaing	Meiktila	28	1
Tharse	Meiktila	17	1
Meikhtila	Meiktila		2

Note: Only interviewed non-organic cotton producers, thereby throughout the report, “cotton” will refer to this type unless otherwise specified.

2.2 Ginning

The study interviewed 25 ginning factories from Mandalay and Magway region in 2019 with the support of Myanmar Cotton, Cotton Products Merchants and Manufacturers Association. In 2022, four ginning factories from Mandalay region were interviewed (see Table 2.2). In addition, in-depth interviews with chairperson and secretary of Myanmar Cotton, Cotton Products Merchants and Manufacturers Association were also conducted to understand the issues in the sub-sector in depth.

TABLE 2.2 Respondents Numbers Participated In The Survey For Ginning Factories

Townships	Districts	Number of interviewees	
		2019	2022
Kume	Mandalay	2	1
Ma Hlaing	Mandalay	2	1
Mandalay city	Mandalay	5	
Myin Chan	Mandalay	2	
Myinthar	Mandalay	5	
PyawBwal	Mandalay	1	
Tharse	Mandalay	1	
Wundwin	Mandalay	1	2
Yemethin	Mandalay	1	
Minhla	Magway	1	
Salin	Magway	1	
Pakokku	Magway	1	
Natmout	Magway	2	



2.3 Spinning

There are only five state-owned spinning factories and six privately-owned spinning factories in Myanmar. In 2019, this study was carried out interviews with all six privately-owned spinning factories and two state-owned spinning mills under the Ministry of Industry. All eight factories are located in the Mandalay region. Furthermore, cotton lint importers and traders were interviewed to understand their perspectives on the value chain. In 2022, three private owned spinning factories were interviewed again to understand the changes between the two periods.

2.4 Weaving and Dyeing

TABLE 2.3 Respondents numbers participated in the survey for weaving and dyeing factories

Townships	Number of interviewees	
	2019	2022
Amarapura	6	6
Pyigyitagon	2	0
Wundwin	6	1

In 2019, this study interviewed small and medium weaving and/or dyeing factories from Amarapura Township, Pyigyitagon Township and Wundwin Township in 2019 (Table 2.3). Majority of the weaving factories in Myanmar are in those three townships. Additional in-depth interviews are carried out with a large knitting factory and a large dyeing factory in Mandalay region to understand the challenges facing modern industry operations and the opportunities emerging for local weaving factories to integrate with higher value chain processes. The qualitative interviews with government officials and Mandalay-based textile association were also carried out to understand the broader picture of the sector and the underlying issues. In 2022, the follow up study was carried out at seven weaving/dyeing factories and focus group discussions with ten representatives of Mandalay Weaving Association and with five representatives of a public company in Wundwin township.

FINDINGS OF TEXTILE VALUE CHAIN STUDY

3

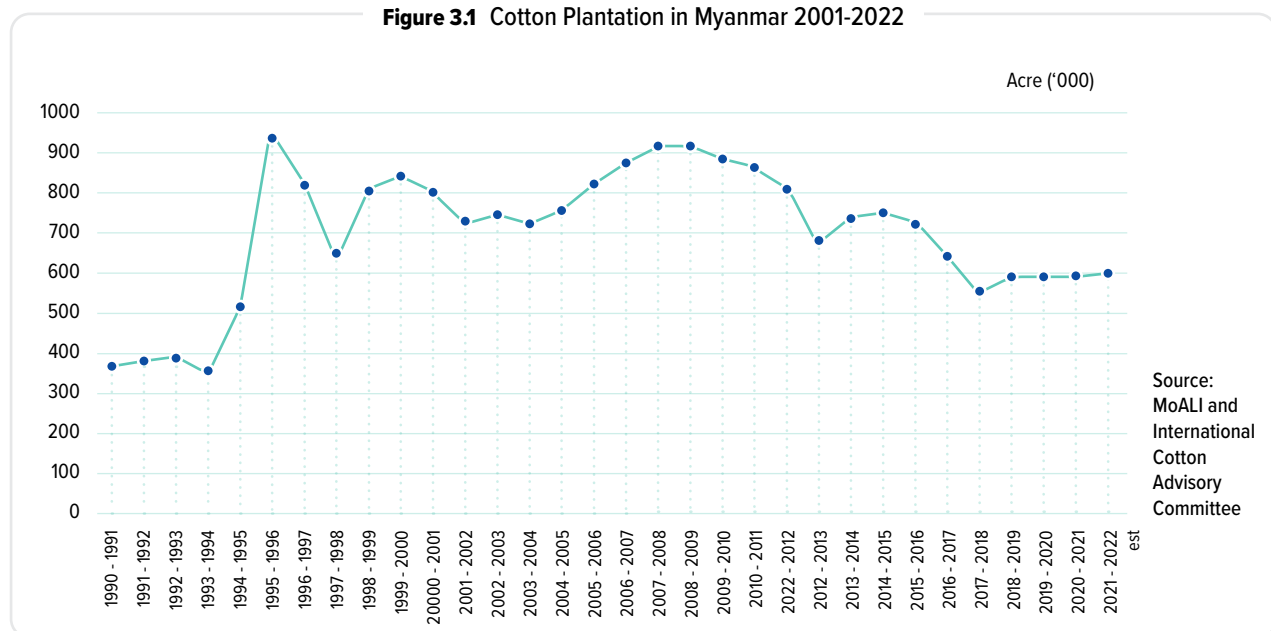
3.1 Cotton

3.1.1 Cotton Plantation in Myanmar

Cotton is a principal fiber crop of Myanmar and is well-suited to the climate in Myanmar, especially, dry zones have the most favorable climate for cotton plantations. It is mainly grown in Sagaing Region, Mandalay Region, Magway Region, representing nearly 95 percent of total cotton cultivation area and the small amounts of cotton are also grown in Shan State, Chin State and Nay Pyi Taw Council.² Two sowing seasons of cotton in Myanmar are pre-monsoon (February-March for sowing and June-July for picking), namely Moe-Kyo and late-monsoon (July-August for sowing and December-January for picking), namely Moe Hnaung. Cotton is currently cultivated by commercial farms, small holder farmers and public sector under rainwater and irrigated water supply.

Cotton production by small-holding farmers suffer from inconsistent farming approaches. For instance, farmers do not consistently cultivate only one type of cotton in successive year while they also grow other crops such as chili, onions and beans alternately with cotton in different years. Some farms are located in distant areas and small plots in size; therefore, they may not be counted in the registered data. Some cases, the areas are estimated by the Ministry of Agriculture, Livestock and Irrigation (MoALI) for cotton plantation but in reality, the farmers did not plant cotton in certain areas. Therefore, the actual cotton plantation acreage may vary from year to year in various locations.

Figure 3.1 Cotton Plantation in Myanmar 2001-2022



² Myanmar Cotton Development Strategy (2019)

Myanmar grew cotton more than 800,000 - 900,000 acres of cotton yearly from the period of 1995/96 to 2008-11, it began to decline from 2012 to an average of 600,000 acres from 2018-19 onward (Annex 1). It is estimated that about 400,000 farmers are growing cotton with an average of 3-5 acres per farmer. Magway is the largest region of cotton plantation areas, approximately 200,000 acres³, followed by 180,000 acres in Mandalay region⁴, 74,964 acres in Sagaing region, and 1000 acres in Shan state. It is projected to grow between 550,000 to 700,000 acres across the country –in the coming years.

3.1.2 Types of Cotton Seeds and Prices

Access to good quality seeds is one of the most fundamental breakthrough factors for the entire cotton sector to produce commercial apparels. Until the last few years, importing foreign cotton seeds was restricted and seeds distribution was mainly controlled by the Myanmar Cotton and Sericulture Enterprise (MCSE), a government agency under the Ministry of Agriculture, Irrigation and Livestock (MoALI). The first cotton seed in Myanmar, Lunkyaw 3, was introduced in 1983, however, the seed was found to have low resistance to weather and insect pest. Later, the commercial cotton varieties, Ngwe Chi (2006), Shwe Taung 8 (2015) and Ngwe Chi 9 (2015)⁵, were locally developed by the Ministry of Agriculture, Livestock and Irrigation (MoALI). Another type of cotton seed widely used in Myanmar is Raka 666 hybrid variety, importing from India. Currently, the Department of Agriculture is planning to distribute Shwe Taung 8 and Shwe Taung 10 across the country by implementing the seed production area in Htee Hlaing Village, Wundwin Township, with cash and fertilizer supporting to farmers. Cotton grade of Shwe Taung 10 is B and C, cotton produced in the late season is mostly Grade C.

The cotton growers also prefer hybrid seeds imported from India compared to the local seeds produced by MoALI as the former can yield higher quality lint (around 20%). Hybrid seeds are also resistant to pest, requiring only one time of pesticide spraying, comparing to four to five times of pesticide spraying required by local seeds. Generally, only 20 % of cotton seeds are registered as certified seeds, of which, 10% are local seeds and 10% are imported hybrid seeds. The remaining 80% of planted seeds are unregistered seeds. As Raka hybrid seeds are expensive for its quality yield, most farmers could not afford to buy them. The prices of cotton seed imported from India was around Ks 30,000/kg (Ks 49,200/viss) in 2019 but increased to Ks 36,000/kg (Ks 59,000/viss) in 2022. Farmers need to spend around Ks 50,000 for seeds alone and have to spend cultivation cost of Ks 200,000 for a single plot of land with an average size of 4-5 acres. In this regards, most farmers are using 2nd generation of Raka seeds available from ginning factories, which costs Ks 15000/viss⁶, with a total cost of production around Ks 60000/acre. Other locally available seeds such as Ngwe-Chi 6 and 9, Shwe Taung 10 cost around Ks 4000/viss (Ks 2500/kg). MoALI is aiming to distribute Shwe Taung 8 and Shwe Taung 10 seeds across the country by implementing seed production area in Wundwin Township, Mandalay region. The quality of seed cotton is often determined by the level of moisture in raw cotton. Since farm-gate raw cotton prices is proportionately related to the total weight, farmers prefer to harvest it earlier than its maturity period in order to get higher price from heavier weight. In some cases, the farmers also refused to clean up foreign particles such as leaves, stalks, and residues in their final sale, taking advantage of buying practices on weight. However, the supply of such materials incur costly for collectors as they need to hire laborers to remove foreign objects and to dry the harvested cotton. Contrary to collectors and ginner, farmers have

³ <https://www.mdn.gov.mm/en/magway-region-plans-plant-over-3-million-acres-monsoon-crops>

⁴ <https://www.gnfm.com.mm/500000-acres-of-cotton-to-be-grown-across-nation-in-2022-2023fy/>

⁵ Myanmar Cotton Development Strategy (2019)

⁶ Interview with the farmers July 2022

several limitations to dry and store their cotton properly to fetch higher prices. As the cotton is produced in adjacent areas of central dry zone in similar agro-climatic conditions, their harvest season also falls in the same week or within a short period of time, pushing farm gate prices to the lowest offer due to large supply of cotton and the farmer’s inability to store and wait to sell. Lack of proper post-harvest methods, storage facilities, and drying techniques also affect final cotton quality. When farmers can harvest their cotton in the late monsoon, they can get good quality cotton because it is dryer than the cotton harvested during the rainy season and also gets higher price.

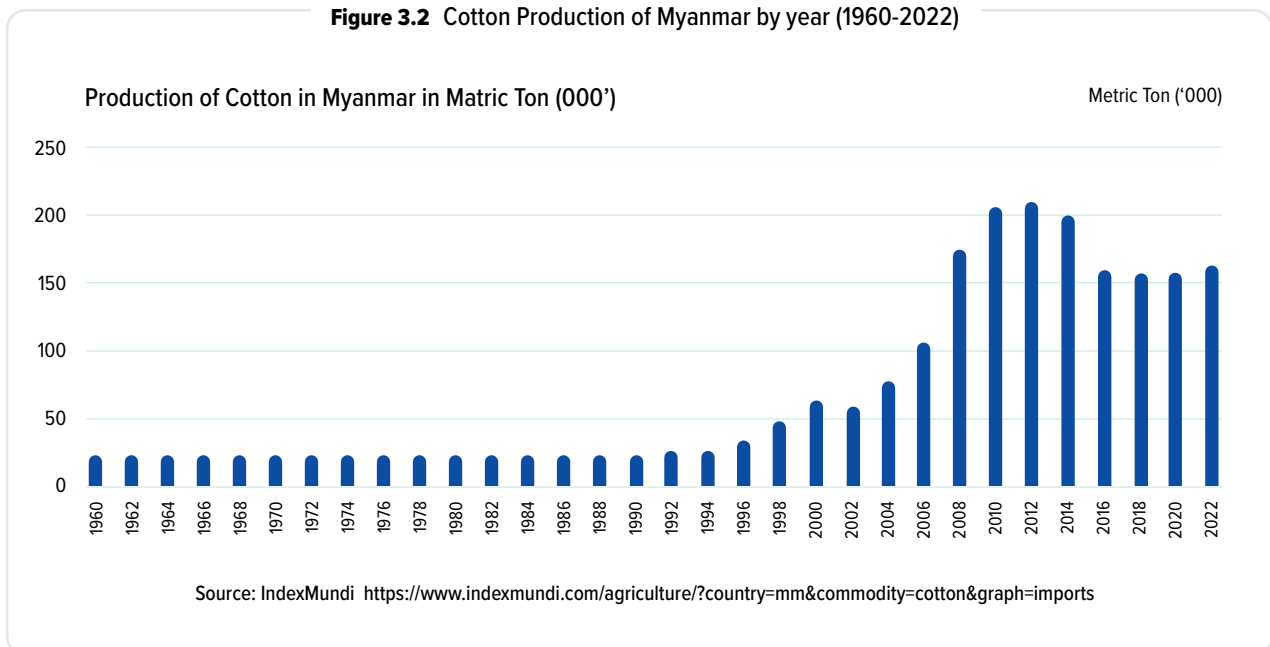
3.1.3 Types of Cotton Seeds and Prices

Farmers source the cotton seeds from various channels and majority of seeds are accessed via informal systems but they are easily accessible. Trust and accessibility are found to be the most important reasons for the farmers to use particular seed and supplier. Despite the fact that the MOALI produce cotton seeds, they are not easily available for the farmers. The source of seeds varies from place to place and year to year. According to the survey conducted, 39% of interviewed farmers sourced cotton seeds from the brokers, 18% from self-preserved stocks or those preserved by neighboring farmers, and 18% from MoALI farm and sale center.

3.1.4 Cotton Production in Myanmar

The cotton production in Myanmar was registered at 1.57 lakh MT (724,000 bales) in 2019, 1.52 lakh MT (700,000 bales) in 2020, 1.58 lakh MT (725,000 bales) in 2021, and the projection for 2022 is around the average of recent years.⁷ The cotton production attained a peak around the period of 2008 to 2014, approximately 1.69 lakh MT (780,000 bales) to 2.04 lakh MT (940,000 bales). The production has been flat from 2016 to 2022 (see Figure 3.2).

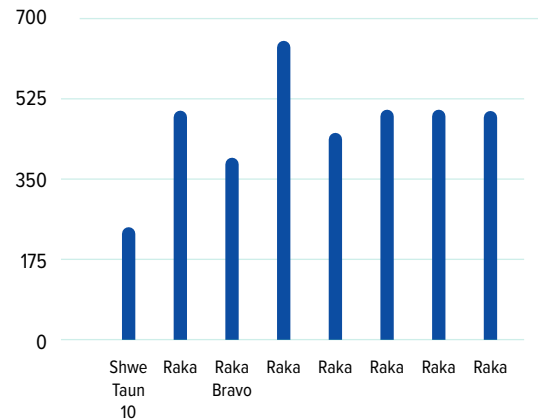
Figure 3.2 Cotton Production of Myanmar by year (1960-2022)



⁷ United States Department of Agriculture, <https://www.indexmundi.com/agriculture/?country=mm&commodity=cotton&graph=imports>

In terms of average yield per acre, it differs according to the types of cotton seed, its quality and the location of farm. Different yield per acre are attained by farmers. The survey finding reveals that the average yield per acre ranged from 250 (408 kg) to 650 viss (1061 kg) per acre, the farms using Raka seeds are found to produce higher yield though. The results differed from previous survey in 2019, which showed an acre of Shwe Taung 8 produced about 470 viss (767 kg) when Raka 666 produced only about 353 viss (576 kg) per acre. Part of the reasons that the farmers nowadays used less expensive locally available seeds while minimize the use of inputs to save costs in the wake of rising prices of inputs and seeds; therefore, they received less return from low investment in production.

Figure 3.3
Cype Of Cotton Seeds And Productivity Per Acre (Viss) In Myanmar, July 2022



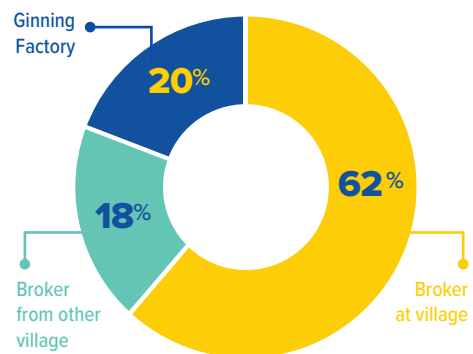
Source: Interview with farmers in Mandalay region, July 2022

For the same areas, MoALI officials estimated that the growers could yield 1000 viss per acre (1632 kg) ⁸. Since the access to good quality and yield seeds is limited in Myanmar, the farmers normally reused the seeds for several times. Depending on the performance and generation of seeds, there is a difference in yield. The cotton producers indicated that the demand of cotton for the private sector consumption is estimated around 10-15 million viss (16329 MT to 24492 MT) with potential production of 90 million (14696 MT). However, the government (MoALI) estimates the requirement of cotton to meet the local demand is more than 350 million viss (Approx: 5.7lakh MT), the count may consist of the demand of the state-owned textile factories.

3.1.5. Type of Buyers

Cotton brokers appear to have a high influence on the farmers’ cotton production and gain trust from farmers. Survey with farmers in Tharsi township, more than 60 percent of the surveyed farmers reported selling their cotton to brokers who come and collect cotton in the village, driven mainly by the saving of transportation cost to travel to the traders in the town. Through these intermediaries, the farmers are able to sell to have quick cash a more reliable income than other crops. Only 20 percent of respondents sell directly to ginning factory in the city despite of much higher price they could attain from the brokers who come and collect at their farms. Part of the reasons is rising price of transportation and fuels, which provided the scale for the collectors to go around the village to collect cotton. If farmers sell their cotton to traders from other villages or in the cities, it would also be difficult to get seeds for the next season. In this regards, only 18% of farmers sold their cotton to the brokers from other villages.

Figure 3.4
Type of cotton buyers (2019)



Source: Interview with farmers and local traders in Mandalay region, 2019

⁸ <https://www.gnlm.com.mm/cotton-crop-cultivation-succeeds-in-19-townships-of-sagaing-region/>

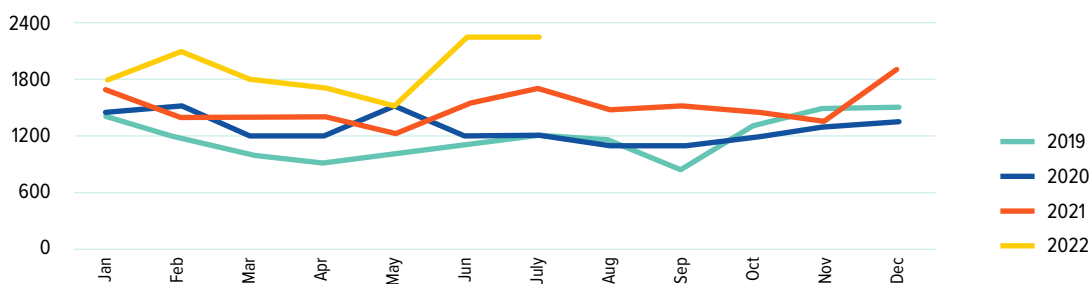
3.1.6. Cotton Quality and Price

The quality of raw cotton is traditionally observed in terms of its staple length, micron size, moisture level, residual content, and maturity.⁹ Whereby the price of cotton is determined by the score in the grading scale, ranging from A to C. As a rule of thumb when evaluating cotton quality, Grade A is generally white and 24mm longer-staple length, Grade B would be a soft pale yellow and a bit shorter in length, anything less would be Grade C. Despite the existence of this grading scale, most of the surveyed farmers were not aware of the existence of a grading system. Shwe Taung 10 seeds distributed by MoALI do not meet



grade A level, therefore ginning factories prefer Raka hybrid cotton seeds that can produce quality lint. Over the past years, the price of cotton was changing month to month and year to year. In 2019, the price ranged from Ks 1,100 to Ks 1,525 per viss (1.63 kg) and 2020 was the year of cotton falling price with a high price fluctuation, ranging from Ks 850 to Ks 1,500 per viss (1.63 kg) due to the pandemic in Myanmar. Globally, the cotton prices also sharp declined from USD 1.56/kg in 2019 to USD 1.40/kg especially after the pandemic was declared. Again, the price was picking up again to Ks 1,900 per viss (1.63 kg) at the end of 2021 due to high demand from China. The price gained 26% increase compared to the same period in previous year. The price of cotton under the last period of study (July, 2022) was Ks 2,230 per viss (1.63 kg), increasing 24% compared to last year¹⁰ (Annex 2).

Figure 3.5 Monthly price of cotton in Myanmar from 2019 to July 2022



Source: Interview with farmers and ginning factories, July 2022

⁹ Interview with U Zaw Oo, ginning factory owner at Kume Township

¹⁰ It should be noted here, exchange rate is a factor that always taken to be consideration when it comes to input price as majority of inputs are imported, reflecting the actual income of the cultivation. Therefore, when indicating periodical cotton prices in Myanmar, the influence of exchange rate has to be accounted. Roughly, in July of the mentioned years (2019 to 2022), the US dollar and Myanmar kyat exchange rates were 1,491 kyats (2019), 1381 kyats (2020), 1,626 Kyats (2021) and 2100 Kyats (2022) – existing government set the price, the market price is around 3000 – 3200 Kyats).

As the cotton is considered as a principal crop in Myanmar, the government somehow control the price of cotton as well. When the cotton farmers were selling their products to state-owned factories, they could get price set by the government at a significant price gap with prevailing market price. For instance, the government was procuring cotton from farmers at the price of Ks 1,700/viss while the market price was around Ks 2,300/viss. Therefore, the higher the market price, the greater the loss for the farmers to sell their cotton to the state-owned factories. For the last couple of years, China has been importing cotton from Myanmar without any concern of quality. In this regard, most of the cotton is being exported across China-Myanmar border informally. The trade is bound to increase with concerns around US-China trade war as China imports large volume of cotton from US. Increasing demand from China guarantee a rise of prices for cotton. However, the rise in cotton prices may not necessarily bring better times for the farmers because the increasing price of inputs offset the margins of profitability while the farmers are also facing higher inflation for their consumption.

3.1.7. Production Cost

The average cotton production costs among the surveyed farmers along the value chain includes the costs of land preparation, seeding, irrigation, weeding, spraying, fertilizing to the final stage of cotton harvesting and transportation. The costs also include hired labour (do not include family household labours). Among the surveyed farmers, the average total cost for producing cotton for a single harvest area was around Ks. 380,000 to Ks 513,000 ¹¹ (detailed cost breakdown in Annex), showing that the cultivation has become more expensive compared to previous survey in 2018-2019. The average cost of cultivation ranged between Ks 224,000 to Ks 362,206 in 2018¹² and it came around Ks 350,000¹³ per area in 2021 due to the increasing price of inputs and labour. The price for a sack of fertilizer was Ks 45,000 to Ks 50,000 in 2018 and it has increased to Ks 100,000, a whopping increase of price by 50%.

The survey indicated that fertilizing is the highest cost of total production, constitutes 38%, followed by spraying 16%, harvesting 14% and land preparation 13%. Breaking down the total cost of inputs and labour, fertilizer and labour costs are the highest accounting 35% each, followed by harvesting 17%, spraying 16%, and land preparation 15% (Annex 4). Among the labour cost, labour during the harvesting season is the most expensive part as picking is done manually and the whole process of harvesting is labour intensive (Annex 5). The farming labour costs were Ks 3000 and Ks 4000/half-day work for female and male workers in 2019, but it increases about 25% in 2022, to Ks 4000 and Ks 5000 respectively.

Comparing to the information gathered during the first-round survey in 2019, there were some changes across the production costs in 2022 (see Figure 3.6). Increased price of inputs more than double in 2022 was due to the increased price associated with depreciation of exchange rate and cross border restrictions for importation. Currently, although the inputs price remain high and production costs are hard to reduce for the farmers.

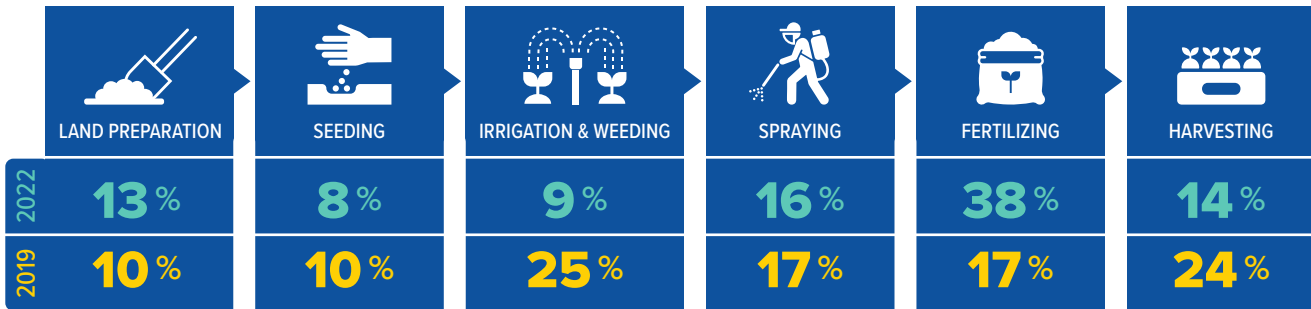
¹¹ Approximately USD 180-244 with exchange rate ¹ USD to Kyats 2100 (rate set by the government)

¹² CESD team first survey interview with the farmers in 2019

¹³ <https://www.mdn.gov.mm/en/cotton-prices-slide-year>



Figure 3.6 Distribution of production costs, 2022 and 2019



The average yield rates and price of selling cotton were slightly different among the farms, ranged from 250 viss (408 kg) to 650 viss (1061 kg) per acre. The net earning per acre depends on yield rate and selling price per viss. Survey reveals that the average net earnings per acre after deducting all expenses is ranged between Ks 138,000 to Ks. 500,000.

It should be noted here that despite the increasing market price of cotton for the farmers, it has not significantly improved final income of the farmers because of lowered margin of profits (rising costs of production) and high inflation. The farmers are much better off in case of sustained demand, stable price and low inflation settings, which is the period before the COVID-19.

3.2 Ginning

Ginning is the process of separating cotton fibers from the cotton seedpods. It is the first important mechanical process in countries where the cotton is hand-picked. While China holds a significant share in the ginning machine market due to vast concentration of textile manufactures and continuously upgrading its textile industry, Southeast and South Asia has positioned themselves as regional complementary players, with its growing shares and gradual upgrading of its textile industry capabilities. Despite of neighboring markets for cotton, cotton ginning in Myanmar is still a relatively domestic-oriented endeavor, relying on outdated ginners from the late 1900s, to the extent that a large number of manually-operated traditional wooden gins are still widely used in small, medium and family-owned enterprises. The ginning factories use short staple cotton while a handful of large-scale private ginners seems to possess adequate capacity gin higher quality cotton. In Myanmar, ginners normally conduct four levels of operation:

- 1) Purchase raw cotton from broker or directly from farmers
- 2) Separate the cotton into cotton lint and seed
- 3) Sell the processed cotton to local textile/garment industry (private or \ state-owned factories) or oil mills
- 4) Export the processed cotton, mainly to China (via traders)



3.2.1 Characteristics of the Ginning Factories

In Myanmar, ginning factories are the most critical linkage in the textile value chain, because of its direct relationships with farmers in the upstream, and traders and brokers in the downstream segments. Moreover, they have the power to control over cotton production of the chain, because they not only gin the cotton, but also provide essential inputs to the farmers, often in a subsidized or loan-in-kind arrangements (seeds, pesticides, fertilizers) as well as cash/advance payments to farmers. They also set the price for the rest of the value chain. The majority of private ginning factories and warehouses are located in Mandalay region, followed by some ginning factories in Magway region. There are 95 private owned ginning factories in Mandalay region according to the statistics from the Directorate of Industrial Supervision and Inspection (DISI), last collected in 2016 and 16 state-owned (SOE) factories under Ministry of Industry (Mol 2021). The SOEs ginning factories are not were operational at the time of report writing (see table 3.4).

Most of the private ginning mills surveyed in this study were established in late 1990s- early 2000s, mainly comprising of family-owned and medium sized enterprises, with about five to six ginning machines and with a lean workforce of less than 20 hired workers. Smaller or in-house mills generally have less than five ginning machines, while large factories possess more than 10 machines and often conduct more activities such as drying and packing facilities and employ more than 20 employees. Because Myanmar ginning factories have more ginning capacity than production capacity, the operations are run at harvest season only and uses temporarily hired laborers.

Given the limitation of access to loan and high cost of inputs, some ginning factories adopted a traditional-style contract farming scheme for the farmers as part of an off-take agreement to grow recommended seeds by the farmers, who in return, pay back with harvested cotton at the end of season. This is a profitable strategy for ginners given that they end up controlling the extent of cultivation and price of cotton. Moreover, they often served as trading houses that facilitate trading between farmers and local traders/brokers. The majority of interviewed ginning factories do not only rely on cotton bought directly from contracted farmers but also purchase from village collectors and brokers.



Interview with ginning factories in Mandalay region, July 2022



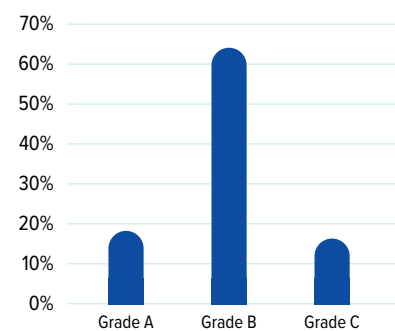
3.2.2 Cotton Quality and Grading

Ginning is the first stage to check the quality of raw cotton before any value-added processes. Mostly, ginning factories prefer to buy Grade A and Grade B cotton but, sometimes, there are also mixed Grade between Grade B and Grade C. There is some difference in the prices of different quality cotton fibers. As for productivity, most of mills gin at least 2 Grades whether Grade A and Grade B or Grade B and Grade C. Among interviewed factories, the share of each category of ginning is shown in Figure 3.8.

Since the farm gate price of raw cotton bought by the ginner is directly proportional to the total weight, farmers tend to harvest early to gain more weight of their stocks (albeit with high contamination of stalks, leaves and trashes) while the maturity level does not reach the quality standards. There is no testing equipment available to test the quality of raw cotton. On the other hand, farmers normally do not have knowledge about grading of the cotton. The ginning factory owner or an experienced ginning operator used their hands and eyes to ascertain the quality of raw cotton and needs to provide the spinning factory according to the required Grade (A and B). Given the quality of the cotton ginner receive, its preservation during the ginning process requires specific methods and technology in order to maximize the raw cotton's end-stage quality.

Figure 3.8

Grade category of ginned cotton



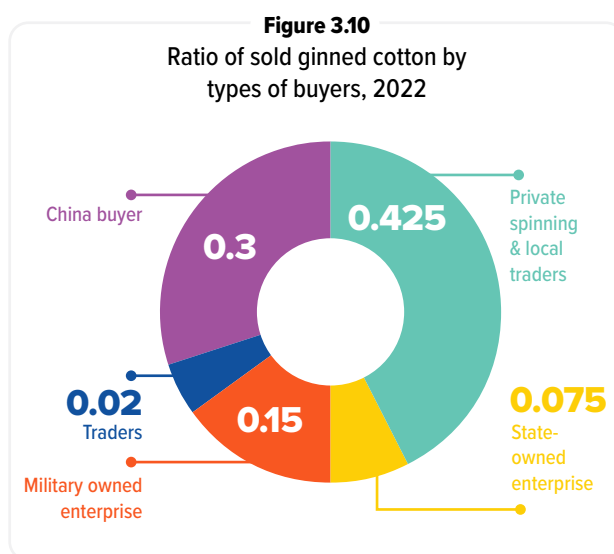
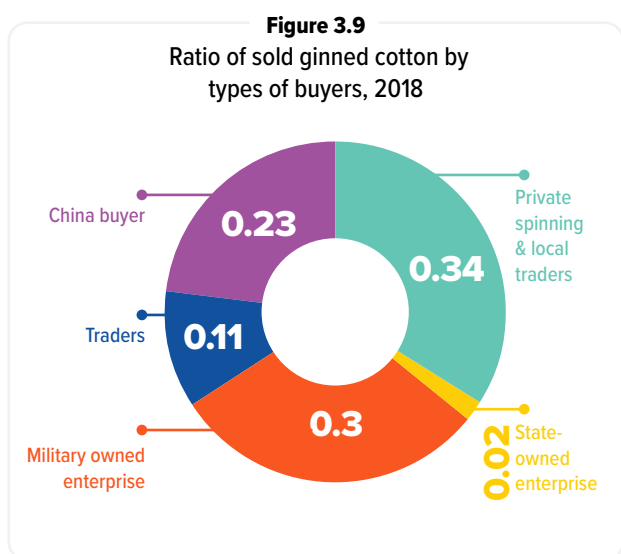
Source:
Interview with ginning factories in 2019

3.2.3 Market

The market where ginning factories sell cotton is changing from time to time. Generally, the processed cottons are sold to: Tatmadaw-owned textile mills, War Zi printing factory (War Zi demand is around 30% and required the best quality (Grade A and B), Ministry of Industry (1) textile factories, private spinning factories and exporters/brokers connecting to export market destinations. Most mills generally sell their cotton lint to two and more destinations. Among the possible domestic avenues for this product, Grade A and B cotton lint bales are sold to either to state-owned mills through a tender system or private large domestic spinning factories. Grade C cotton lint is mainly sold to small and medium traders and local spinning markets, mainly on making candles or require it for inner cotton fillings. Any grade of cotton can also be sold to China Market.



According to the survey’s findings, some ginning owners as well as traders/brokers export lint cotton to China by directly by forward contacting with Chinese counterparts. To the extent that among the surveyed respondents in the first-round survey in 2019, nearly 70 percent of them engaged with Chinese buyers or their representatives, which represents 23 percent of overall production of the interviewed ginning factories output (see Figure 3.9 & 3.10). On the other hand, 34 percent of production output was consumed by domestic private spinning factories, followed by state-owned enterprises with 30 percent. In the second-round survey in 2022, the sale of cotton to private spinning and local traders increased to 43 percent due to the decreasing purchase from state-owned factories and the difficulties of exporting to China due to the COVID 19-related border closures. In 2022, the resumption of some factories under Ministry of Industry (1), sales to those factories increased to 8%.

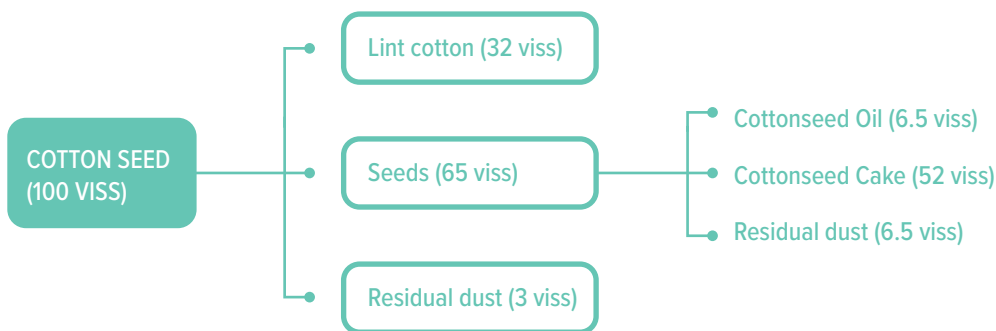


Source: Interview with ginning factories 2019 and July 2022

3.2.4 Value Addition of the Processed Cotton

The ginning factories interviewed for the value chain analysis operate¹⁴ at the capacity of 70-90 labour and 20 machines (but only 10 machines are fully functional) produced around 115,000 to 150,000 viss of cotton (40 viss in one bale) in monthly average between 2019-2021. The raw cotton were mixture of 80% Raka and 20% other local cotton. The extraction of one hundred viss of cotton seeds (163 kg), Ginning Out Turn (GOT¹⁵) was 32%: 65 % of cotton lint and seeds, and 3% of waste. From the 65 viss of seeds obtained, some seeds are sold back to farmers for the next year's harvest, however, the majority is utilized for seed cake and a small amount is sold to later be refined to create cotton seed oil (see Figure 3.11).

Figure 3.11
Value addition of a cotton seed



Source: Interview with private ginning factories in Kume and Meikhtila Township

¹⁴ Interview with the largest private ginning factory in Kume Township

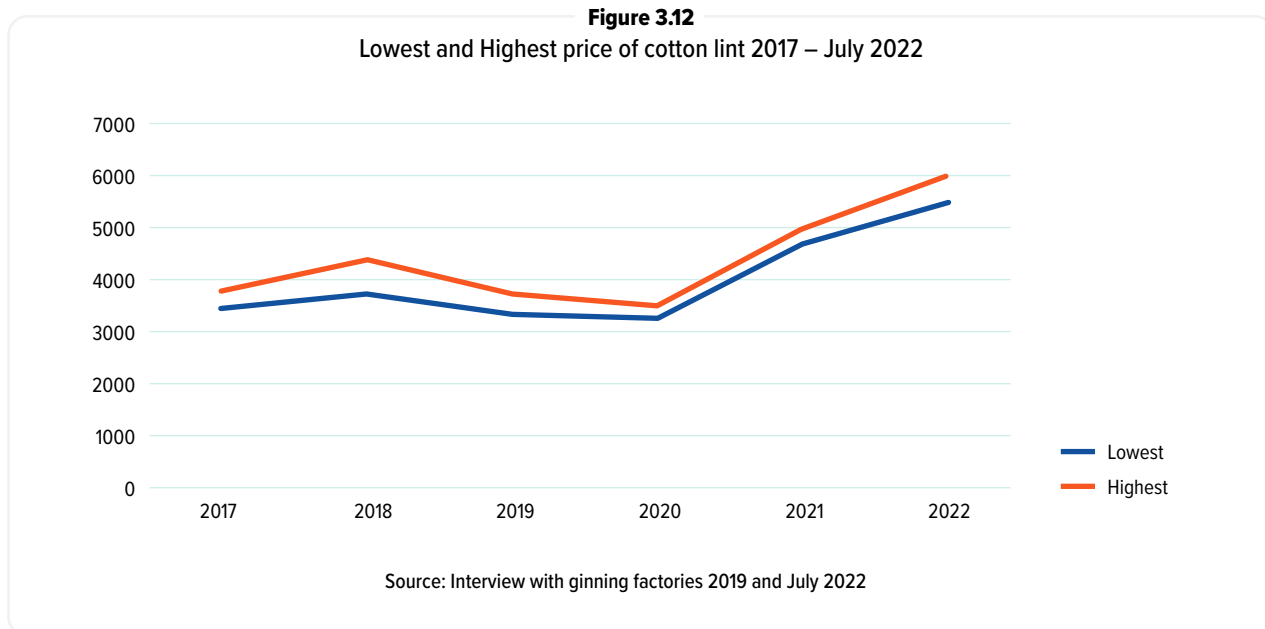
¹⁵ GOT - yield of cotton lint in the process of ginning

3.2.5 Price of Processed Cotton and Price of By-products

Price of Processed Cotton

The price for processed cotton varied across the years. Cotton price selling to state-owned factories is set by the government which is much lower than the market price, approximately only half of the market price in recent years.¹⁶ The price in domestic market is also much lower than the international price, depending on the demand plus transportation costs or sometimes the Chinese traders offset the prices to cover losses caused by fluctuating exchange rates. The price of cotton lint across the years were fluctuated and but the trend found to be increasing. Though the prices fell in 2019 and 2020, it rebounded by 30% in 2021. The prices rose to Ks 4,700-5,000 in 2021 and Ks 5,500-6,000 per viss in 2022 July due to the higher demand from China (see Table 3.12).

There are some price dispersions among the geographical locations. Cotton prices vary slightly among the geographical locations and are depending on the size of the local market, the quantity can be sold and the demand of the procured factory. For example, the price in Mandalay is a bit higher than Meiktila and Kyaukse. Farm gate price of cotton lint in Myanmar is determined by the ginners on their reference to India market price while taking into account of prospective demand from China.¹⁷ Though processed cotton prices fluctuates up and down, the farm gate prices fluctuate more than the processed cotton, usually suppressing the income of farmers. The reasons are related the farmer’s inability to store the cotton, leading to immediate sales during the harvest time and also the pressure from debtors to recollect the loans taken in the farming season. The respondents suggested that increasing warehousing capacity of cotton ginning producers will improve their competitiveness as well as their offer of price to the farmers.



¹⁶ Interview with the largest private ginning factory in Kume Township. For example, the government set the price for process cotton at Ks 2,500/viss only when the prevailing market price was Ks 5,000/viss in 2022. The price of cotton in China is around 11,000 MMK but traders buy around 5,500 MMK in local market.

¹⁷ Interview with U Zaw Oo, Gin owner in Meiktila Township

Cotton By-Product Prices

Cotton seed by-products have enjoyed growing market opportunities and are potentially an important supplementary source of income for the cotton farmers. The value addition of cotton can be achieved to a large extent by processing efficiency of cotton and increasing the use of byproducts. However, the majority of the private ginning factories in Myanmar are small with low capacity, they could only perform cotton ginning without adding values to the seeds for oil extraction. Cotton-seed mills and oil extractors can incur heavy capital investments and limited market opportunities in Myanmar. According to our survey, only 38% of respondents are processing cottonseed oil commercially while 61% do not operate and others do not answer (2019). Labor shortage and the odor of the cotton-seed oil is a major barrier for the value-added activity to take off. The price of by product cotton seeds ranged between Ks 950 – Ks 1,525 and the finished cotton-seed oil was Ks 1,200 – Ks 1,525 (2019). Cotton seed cake are sold to the food processing and livestock breeding industry while the (edible) cotton seed oil is mostly sold as frying oil for the bean snack industry in Mandalay, Banbaw, Loikaw, and Kyaukpadaung. The remaining thick oil which is not edible is sold to soap makers.

TABLE 3.1 Price of farm gate cotton price and processed cotton after ginning of cotton (2018-July 2022)

Price (Kyats per viss)	2017	2018	2019	2020	2021	2022
Lowest and highest of farm gate cotton prices as raw material inputs to ginners	1000 - 1200	1550 - 1600	1100 - 1525	850 - 1500	1250 - 1900	1800 - 2400
Lowest and highest of cotton lint prices after ginning (Processed cotton)	3500 - 3800	3700 - 4350	3350 - 3750	3300 - 3500	4700 - 5000	5500 - 6000

Source: Interview with ginning factories 1st round in 2019 and 2nd round July 2022 (the indicated amounts are based on the prices indicated by farmers and ginners interviewed. Therefore, data may differ from some observations. The prices indicated are lowest and highest.

The cost of ginning is vital for the producers to upgrade value addition process, and generally consists of the cost of buying raw cotton seeds, electricity, labour (both fulltime and seasonal), packaging, maintenance and transport. The cost of labour normally determines the financial cost. Cost of labour per day is depending on the skills and operational works needed. Labour costs ranged Ks 5,000-5,500 for female and Ks 7,000-12,000 for male labours (2022). Compared to 2020, labour costs increased 12.5 % in 2021 and 33% in 2022. Although an increase in the price of cotton raw material is beneficial for the farmers, it drives up costs along the entire value chain. The average farm gate price of cotton increased 16% in 2021 and 21% in 2022. As the cotton ginning is energy intensive, the productivity has been adversely affected by electricity outage, which becomes a considerable concern for all ginning factories interviewed recently. All respondent factories revealed that they used to operate two shifts in the past, but now they could only work one shift per day only when the electricity is available, causing the productivity declined around 50%.

The survey revealed that net profit after deducting the cost of ginning was 2-3% of total cost in 2018-2019 and the profit margin increased to 5% in 2021-2022 because cotton price in international market is rising higher¹⁸ the past average. However, the profitability remains unsustainable due to fluctuations in input prices as well as policy restrictions over trading of cotton.

¹⁸ It is difficult to obtain detailed information from the ginners to calculate itemized breakdown cost but they responded the average percentage of the profit.

3.2.6 Import and Export of Processed Cotton

Myanmar imports and exports of cotton. Despite Myanmar imports significant volume of cotton lint from other countries (mainly India), many interviewed factories engaged with China for the export of cotton lint. Statistically, a total of 1.6 tones (US\$3.5 million) in FY 2013-2014 was exported while export volume was increased to 487.5 tones (\$21.073 million) in the 2017-2018 fiscal year. Myanmar Exports of cotton was US\$21.97 Million during 2021 of which USD 20.75 million was received from the export to China (UNCOMTRADE 2022)¹⁹. Since most of the cotton is being exported across the border informally, the actual figure may be higher. Import of cotton to Myanmar was 24.46 tones (US\$ 0.08 million), in FY 2018-2019 and was increased to 116.04 tones (US\$ 0.2 million) in FY 2020-2121. The export market prices for Myanmar cotton have varied across the year. Export price in 2019 was US\$ 3.44 per kg, increased from US\$ 3.27 in 2018. In 2022, the price of cotton export is US\$ 3.44 per kg.²⁰

The government recently listed the cotton as a restricted commodity²¹ which prohibits export with raising price in the international market and stockpiling for the purpose of inflate or profiteering. It is viewed by the stakeholders as counterproductive for the farmers, as they will be forced to sell cotton at a reduced price in both domestic or international market. Currently, factories are allowed to export and obtain license only if they sell to a government factory whereas the prices were set by the government. Stakeholder revealed that restricting on cotton export will become lose-lose situation because the demand of cotton from domestic private textile mill is around 20% of total cotton production in Myanmar. If China and India re-open the market, private local textile mills will have a major hurdle to overcome these restrictions. In the previous era, cotton lint are exported to China and yarn are imported from India with competitive price and market, and the domestic industries can survive as trading was not restricted.

Although the government is working to expand cotton acreage to meet demand, the farmers and ginning factories have concerns that the current policy is discouraging the farmers to expand their cultivation and production activities. There is also a policy friction between government agencies over cotton production, as the Ministry of Agriculture, Livestock and Irrigation and the Ministry of Commerce on one hand is supportive of further liberalizing the cotton production to improve farm incomes and to promote export earnings while the Ministry of Industry, the supervisor of the state-owned textile mills wants to impose trade bans and state procurement to sustain their loss-making state-owned factories.

¹⁹ <https://tradingeconomics.com/myanmar/exports/cotton>

²⁰ <https://www.selinawamucii.com/insights/prices/myanmar/cotton/>

²¹ Ministry of Commerce dated 8.4.2022 <https://www.commerce.gov.mm/>

3.2.7 Salient Changes Under Ongoing Crisis

Over the last two years, the ongoing effects of COVID-19 pandemic and complex political emergencies in Myanmar hit very hard on both cotton farmers and textile factories across the country. For the cotton farmers, the impact of the pandemic was highest in 2020 when the seeds were already planted at the peak of the pandemic but the farmers and labours could not go to the farm for spraying, weeding and cotton picking on time. As a result, the yields dropped by 25% at that time. The increase in input prices and restrictions against cross border trade and power outages remain major challenges for both cotton farmers and producers. During the first round of survey in 2019, around half of the surveyed stated their ginning business in the past year (2019) had remained the same as the previous year, while 40% stated conditions improved. Only 12% stated a reduction in business. The 2022 survey, smaller factories experienced 40% drop in sales over the past two years. In addition to the increase in the price of raw material made the profit margins narrower for smaller factories, their inability to work two shifts due to power outages and disruptions by the growing conflicts in nearby areas add troubles to the industry. However, the large factory interviewed saw a 25% increase in sales instead, suggesting their better ties to China export market and economy of scale.

Currently, the development of cotton production and ginning industry in Myanmar is subject to considerable conditions of cross-border trading, particularly at China-Myanmar border. This situation was further compounded by depreciation of kyat which impacts negatively on local cotton producers. For example, the cotton lint price was dropped to 5,500 MMK per viss in July 2022 from 6,000 MMK per viss immediately after regulations of the Central Bank of Myanmar to require all traders to settle the trade earnings at a fixed exchange rate. In addition, CBM's another regulations on the exporters requiring advance payments from overseas buyers before applying export license caused disruption on trading.

Despite many challenges, the continuing rise of demand not only in domestic market but also China market is an important driver for growth in cotton and ginning segments. Myanmar cotton producers are still able to access these market opportunities and to enjoy potentially higher price. In their opinion, market access is not a major concern but political and policy factors are of major concerns for cotton farmers and producers. Now the government is focusing on expanding cotton cultivation areas to boost the production and to supply the domestic market with cheap cotton, however it is not easy for cotton farmers and producers to work under such schemes. In some areas, local authorities imposed mandatory requirement to sell certain volume of cotton on the tender price (lower than market price) to the state-owned textile mills.

Since the production and ginning segments are two most important segments in the entire textile value chain, misguided public policies can further choke the upstream of the chain. The successive governments have tried the state-owned enterprises factories to be competitive, as there is no effective mechanism to subsidize the raw material inputs to these factories. A more viable policy option is for the government to upgrade their state-owned factories, not just in terms of machines and materials but also the management to design, develop and deliver quality products to local consumers who buy mainly of imported clothings and apparels.

3.3 Spinning

3.3.1 Background

Before mid- 1990s, the spinning industry was mainly dominated by the State-Owned Enterprises (SOEs).²² State-owned spinning mills have been operating since 1970s, in large part built and developed with technical assistance from Japanese official development assistance. But the private companies were allowed to operate in Myanmar only around in the mid-1990s, whereby by 1999, four private spinning factories in Myanmar were established (Table 3.5). According to the official data, there are 16 SOEs textile factories (spinning and/or weaving (or) knitting) across the country (Table 3.4). However, during the study, it was observed that more than half of those factories were not operating at their full capacity or none at all. In addition, about a quarter of machines from visited spinning SOE factories for this study were not running. The JICA (2013) report on SOEs expressed that the purpose of establishment of textile SOEs in Myanmar were to provide employment in rural areas but not necessarily taking into account of producing demand-driven marketable goods and sustaining its market competitiveness.²³

There are also some micro-scale home-based hand spinning facilities, especially with short staple cotton growing rural areas such as some places in southern Shan State and some in Sagaing Region.²⁴ However, those traditional home-based hand spinning activity has been sharply declining amid the gradual liberalization of the sector. The first textile zone in Palate, Mandalay was supposed to develop in time of garment industry boom, led by Panda Textile Company. While waiting for permission from authority, this privately-owned local textile company was discussing with foreign investors to develop the textile zone to facilitate the whole modern textile value chain, producing fine fiber textile, dyeing and weaving activities. Unfortunately, the zone was never developed until now due to the distortions caused by state-owned enterprises. Apart from locally produced yarns (mainly cotton), Myanmar imported significantly volume of yarns from other countries, mainly from India.

²² Interview with a spinning factory in 2019

²³ JICA (2013). Myanmar Data Collection Survey on State-Owned Enterprises in Myanmar - <https://openjicareport.jica.go.jp/pdf/12110888.pdf>

²⁴ Focus Group Discussion with spinning factories in 2020 and discussion with textile stakeholders in 2019

TABLE 3.4 List of SOEs (factories) under the Ministry of Industry

	Factory	2018	2019
1	No.1, Shwedaung Branch	Pyay, Bago	Yarn, Fabric
2	No.1, Mayangone Branch	Mayangone, Yangon	Yarn, Fabric
3	No.2, Paleik Branch	Sinkkaing, Mandalay	Yarn, Fabric
4	No.2, Myingyan Branch	Myingyan, Mandalay	Yarn, Fabric
5	No.3, Sagaing Branch	Sagaing, Sagaing	Yarn, Fabric
6	No.3, Sagaing Branch	Sagaing, Sagaing	Garment
7	No.4, Pwintphyu Branch	Pwintphyu, Magwe	Yarn, Fabric
8	No.5, Pakokku Branch	Pakokku, Magwe	Yarn, Fabric
9	No.6, Sarlingyi Branch	Sarlingyi, Sarlingyi	Yarn, Fabric
10	No.6, Monywa Branch	Monywa, Sagaing	Yarn, Fabric
11	No.7, Myitthar Branch	Myitthar, Mandalay	Yarn
12	No.7, Wundwin Branch	Wundwin, Mandalay	Yarn, Fabric
13	No.8, Pyawbwe Branch	Pyawbwe, Mandalay	Yarn
14	No.8, Yamethin Branch	Yamethin, Mandalay	Fabric
15	No.9, Kyaukse Branch	Kyaukse, Mandalay	Knitting
16	No.9, Insein Branch	Insein, Yangon	Knitting
17	No.10, Taungtha Branch	Taungtha, Mandalay	Knitting
18	No.11, Pakokku Branch	Pakokku, Magwe	Garment

Currently, there are only six private spinning factories in Myanmar (see Table 3.5). These private spinning factories, largely clustered in Mandalay and owned by Myanmar nationals, cater mainly to domestic market and supply around 30-40% of the domestic yarn demand. Most of the machinery of those factories, including spindles, is outdated. The average age of the spinning machines used in these factories were 24 years old. Those factories' spinning capacity is at about 96,800 spindles. None of those factories can't produce beyond 40s count yarn (also called 1/40 yarn). The total installed spinning capacity of SOEs is higher than private sector. However, some private spinning factories stated that in general, SOE spinning factories have better machineries and technology compared to private spinning factories to produce better quality yarn.²⁵ Due to mismanagement of SOE, all interviewed SOE spinning factories were not making profits and their productivity was below the level of private factories. Comparing the actual output of production between a private and a SOE with the similar spinning capacity in 2019, it was observed that a private owned spinning factory produced 41 percent higher than that of SOE. As a result, the interviewed SOE spinning factory lost around 780 MMK for a pound of yarn production in December 2019.²⁶

The total daily average yarn production of private factories in Myanmar is 22.8 ton in 2019, before COVID-19 crisis (Table 3.5). The production level of these factories was dropped almost 50 percent in 2021 due to the ongoing political crisis; however, yarn production rebounded 26% again in 2022. Prior to COVID-19 pandemic, most of those six private spinning factories run three daily shifts all day, six days a week. However, out of six, at least three private factories operate only two shifts in 2021 because of curfew restrictions, which was the main reason why yarn production recovery was slow to reach the previous production level in two year period.

TABLE 3.5 Characteristics of interviewed private spinning factories (2019)

Spinning Mill	Spindles	Yarn Type	Yarn production per day (average)	Established in
Sein Kabar	15,000	1/40, 1/32, 1/21	2.5 ton	1998
Aung Sein	15,000	1/32(Polyester), 2/26 (Polyester)	4.5 ton	2001
MDY textile 1	15,000	1/21	2.5 ton	1996
MDY textile 2 (Htan Zal)	15,000	1/21, 1/10	2 ton	1998
CYT 1 and CYT 2	15,000	1/40, 1/21, 1/10	5.5 ton	1997
Panda	15,000	1/40, 1/32, 1/21	5.8 ton	2016

Source: Factory survey (Spinning) in 2019

²⁵ Interview with spinning factories in 2019 and interview with a SOE spinning factory

²⁶ Calculated based on waste ratio and cost structure provided

3.3.2 Workforce and Wages

In the spinning factories, the majority of the floor production line is filled with female workers. Among interviewed six private spinning factories, the average number of workers is 695 in 2019 and 80% are female. On the other hand, almost of all mechanics are male workers. In terms of educational attainment, 83% of the labor force's highest education level in the private spinning factories was middle-school level at 8th grade and below (see Figure 3.13).

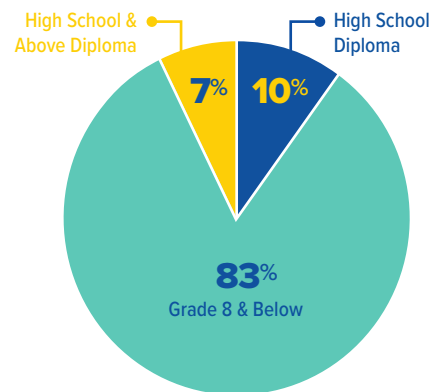
Similarly, the percentage of female workers among interviewed SOE spinning factories shared the same pattern with 80% of female workers while male dominated mechanical-related works. The average age of those workers from SOE factories was 40+, had lower educational levels (majority are less than 8 grade), and had limited working experience elsewhere than their private sector counterparts.

Very few interviewed factories (both private and SOE) stated they provide in-house training when it comes to up-skilling the textile workers. When the employers had to organize training programs, the contents were mainly related to specific lines of design or operations, which are not so useful for the workers to apply in other factories. Interestingly, a few private spinning factories brought experts from China to the factory in case of technical problems and major maintenance issues while many rely on in-house mechanics or local experts from outside.

On the other hand, the interviewed SOEs spinning factories also faced with hiring challenges because the employees were civil servants who had been working for many years in the same factory and were not incentivized to improve productivity. Again, according to the civil servant regulations, it is extremely difficult to terminate the workers although their performance is unsatisfactory. It must be noted that these SOE factories were not making profits and had not been upgraded the process and skills of human resources for many years, thereby contributing to the low productivity of the factor as a whole.

Figure 3.13

Education level of workers at private spinning factories (2019)



Source: Interview with spinning factories in 2019

3.3.3 Spinning Process and Production

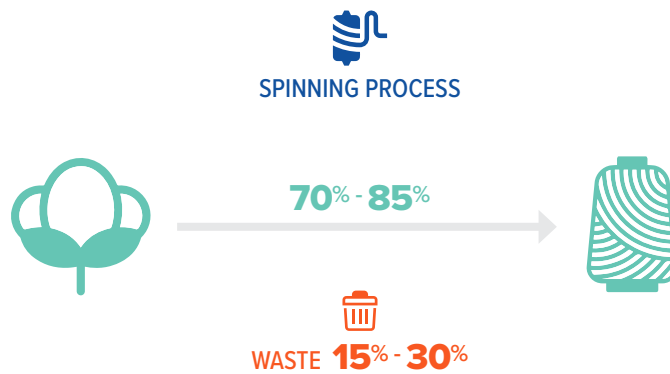
Spinning is the process of turning lint cotton into workable yarn or thread, key to this are the individual spinning machines called spindles, that twist the cotton fibers to convert them into yarn. While, generally, the higher the yarn count the finer and higher quality the yarn produced, it greatly varies according to the final use of the thread. Figure 3.14 illustrates the process most commonly used in Myanmar spinning factories.

Figure 3.14
Production process of 1/32s & 1/40s yarns (Combing process)



As mentioned earlier, the cotton from Myanmar lint cotton predominantly produces yarn of 1/40, 1/32, and 1/21 thread count. Due to unstable cotton staple length, domestically sourced raw and ginned cotton are not enough to cater to the spinning industry demands in terms of quality. In addition, interviewed factories expressed that domestic raw cotton is often mixed with trash such as plastic sack, affecting cotton quality and increasing pre-production costs. For these reasons, some spinning factories partially use imported cotton from India, which is more expensive (around 10% in general) than Myanmar cotton but with guaranteed quality and purity. It was observed that domestically sourced lint cotton produces 1/40 thread yarn containing at least 15% of cotton lint waste. Among interviewed factories, only one factory produces synthetic yarn (polyester yarn) for domestic market by importing synthetic fibers from Thailand, China and Korea.

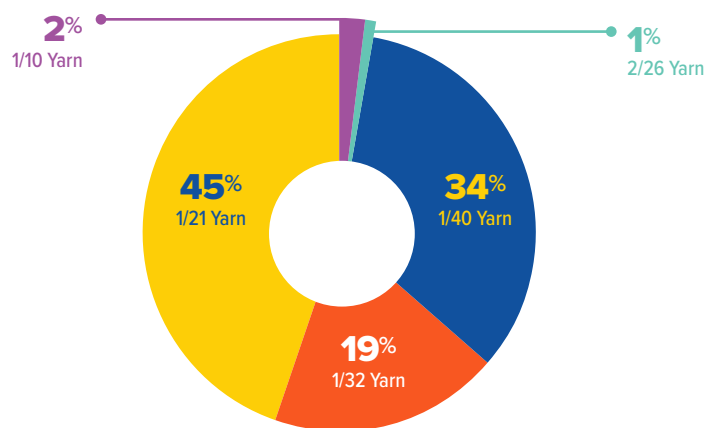
Figure 3.15
Waste/loss of spinning



Source: Interview with private and SOE spinning factories in 2019

Among the private spinning factories, 1/40 and 1/21 yarn shared the largest portion of the domestic yarn production (see Figure 3.16). Surprisingly, production of 1/40 yarn shared only 34 percent of total yarn production by private spinning factories. It is worth to note that 1/40 yarn is the best quality that can produce in Myanmar so far. Few spinning factories also have combined activities of dyeing and weaving in the same location. Out of 6 spinning factories interviewed, apart from spinning activities, Aung Sein engage in dyeing activities and Panda covers both dyeing and weaving activities [discussed about dyeing and weaving activities in latter session].

Figure 3.16
Type of Yarn produced in private spinning factories (2019)



Source: Interview with spinning factories in 2019

3.3.4 Yarn Prices and Domestic Market

One of the most challenging aspects of the segment of the value chain is the absence of a standardized and universalized industry-specific grading system. The lack of industry standards exacerbates the price incentive problem for the producers to switch to better quality cotton. The unstable cotton quality and improper ginning techniques further downgrades the quality of the domestically produced lint which in turn impacts the spinning factory’s production, impacting the downstream activities of the cotton supply chain. Majority of the spinning factories consumed mostly domestic cotton lint for yarn production. Occasionally, some factories use imported ginned cotton from India, when the imported cotton lint price is not much different with local cotton lint price.

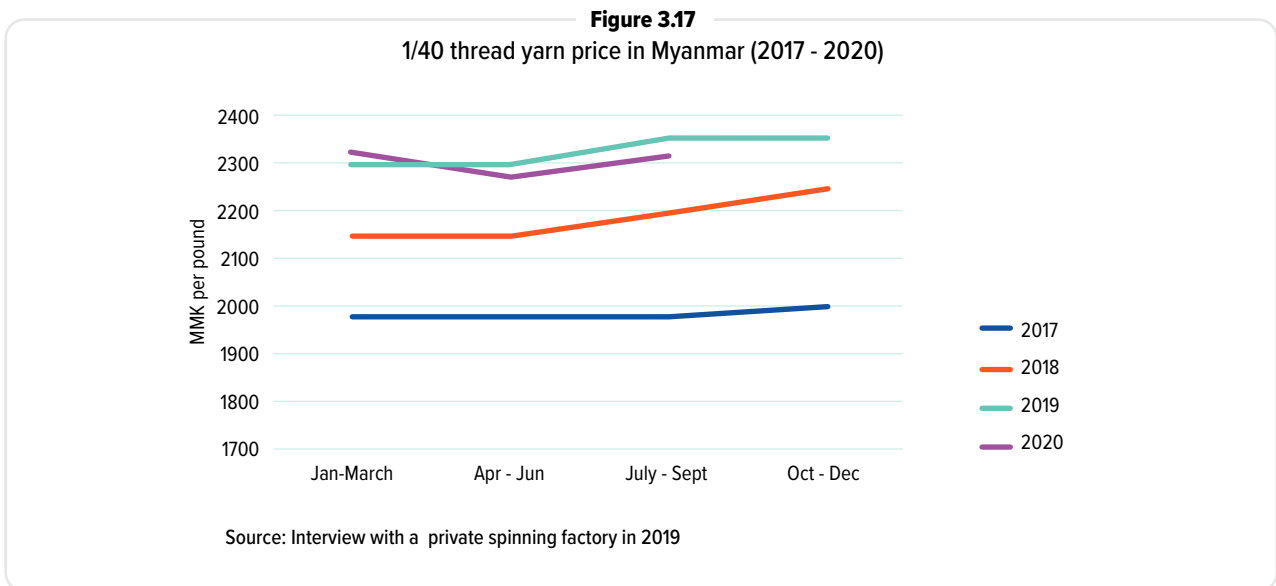
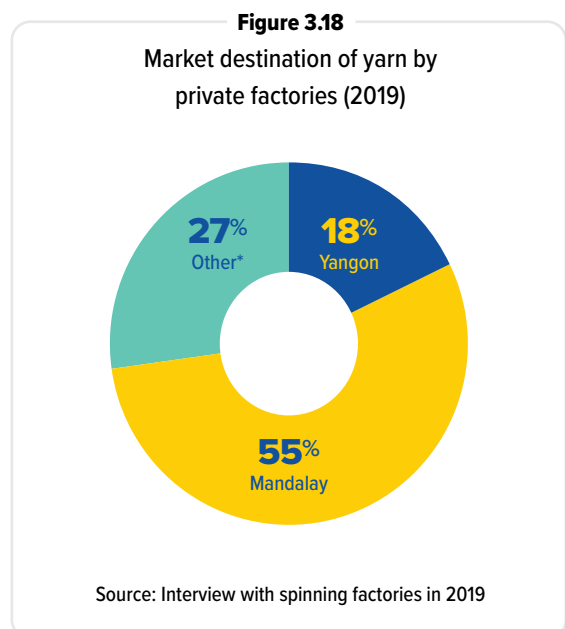


Figure 3.17 illustrates that how yarn prices for 1/40 thread yarn change year by year. Interestingly, it was observed that due to the COVID-19 pandemic, the yarn price dropped only by 1 percent compared to 2019 while the cotton lint price decreased 6 percent in 2020. The interviewed trader expressed that the price volatility of cotton yarn is not high as domestic lint price in general. In order to maintain yarn prices, profit margins and ensure the availability of cotton, normally the spinning factories buy and store a year’s worth of raw material upfront because they are worried about the price fluctuations. Besides, some interviewed private spinning factories have reduced the production level collectively when the whole industry expected lower returns. Normally, the cotton yarn price that domestically produced was lower than imported yarn price. As shown in Figure 3.18, the spinning factories transported their products mainly to Mandalay region, where weaving hub is located, especially the Wundwin, Amarapura and Pyigyitagong township in Mandalay. On the other hand, SOE spinning factories mainly use the yarn for own weaving activities or distribute to the other SOEs that engage in weaving activities. It was observed that small portion of produced yarns from SOEs were also sold into the market through brokers.



3.3.5 Salient Changes Under Ongoing Crisis

As mentioned earlier, locally produced cotton yarn is not sufficient to supply the demand of domestic market and significant amount of yarns is needed to import from other countries especially from neighboring India. According to UN comtrade data, the total cotton yarns²⁷ import value from India to Myanmar in 2021 had dropped to US\$ 30,33 million from that of US\$ 41.41 million in 2019 (-27%). During the early period of 2020, the drop was mainly due to logistic disruption and covid-19 transmission in India. Later, it was mainly due to high price of imported India yarns (1/40), increasing from 2,300 MMK per pound in 2019 to 5,500 MMK per pound in 2022 (+139%). Similarly, locally produced yarn (1/4) price also increased by 150 percent in 2022 compared to 2019. All three interviewed spinning factories expressed that their net profit has increased to around 10 percent in 2022. Normally private owned spinning factory's net profit margin is around 1-3 percent (annex 6). However, factories did not expect this circumstance (high net profit margin) can be sustained for medium and long terms.

When it comes to production level, the interviewed factories reported that their production level decreased 20 – 30 percent in 2022 compared to 2019. Due to curfew orders and travel restrictions in Mandalay and Sagaing regions, all private spinning factories can operate only two shifts since the first quarter of 2021. Cotton lint shortage in domestic market because of high cotton demand from China in late 2021 and electricity shortage were also other factors for the reduction.

This study did not find any significant workforce reduction in this segment between two periods from 2019 to 2022 among interviewed factories. In addition, the workers' average wage is almost the same in between 2019 and 2022 for all visited factories in 2022 – basic pay 144,000 MMK plus regular attendance bonus 10,000 MMK for a female operator for eight working hours. It was noticed that labour turn over rate was higher in 2022 compared to 2019 as significant workers (especially young workforce with one- or two-year experiences) left the job due to the security reason or intention to migrate other countries (especially China-Myanmar border area and Thailand).

²⁷ HS Code: 5205(Cotton yarn (other than sewing thread), containing 85% or more by weight of cotton)

3.4 Weaving and Knitting

3.4.1 Background and Main Characteristics

Myanmar has a long renowned tradition with fabric hand-weaving, dyeing and embroidery since before the colonial period. Amarapura, Mandalay, has been a famous town for textile and weaving activities. The materials that have been traditionally used for weaving range from cotton to silk and precious lotus bud silk. In addition, different ethnic groups have practiced unique waving design patterns to differentiate their markets. For local and traditional weavers, the Saundar Weaving Institute established in 1914 at Amarapura, Mandalay, provided skill and design training to teach weavers how to use the machine loom technique and formulate the unique design patterns. Later, the institute established weaving schools in many district towns of Myanmar with the support of government intending to modernize and develop the weaving industry.²⁸

The weaving industry has a long history of evolution. Established around 1921, there had been over 500,000 looms across Myanmar and the small number of machine looms also have been operating for commercial weaving activities since then.²⁹ Around 1954, there were around 250,000 hand looms in Myanmar while 200 machine looms are operated by private and another 200 machine looms was under the government.³⁰ Mandalay region has the highest number of weaving factories in Myanmar. Based on the Mandalay Directorate of Industrial Supervision and Inspection (DISI)'s statistics, this study carried out interviews with 14 large and medium-sized weaving factories from Amarapura, Pyigyitagoun and Wundwin Townships through the networksampling technique.

The table 3.6 described the characteristics of those interviewed factories. As of 2019, there are 1,238 weaving enterprises registered³¹ under the Mandalay DISI, which comprises of 18 large scale, 303 medium scale and 917 small scale factories. Consequently, most of Myanmar's traditional industrial textiles and fabrics come from the Mandalay Region, particularly Amarapura, Pyigyitagoun and Wundwin Townships. With regards to the micro enterprises category, while there is no official estimate of them, according to the surveyed factories, there is a vast network of these types of micro enterprises scattered across Mandalay region. Estimated that at least there are over 10,000 machine looms in Amarapura township and another over 10,000 machine looms in Wundwin township.³² In addition, there are hundreds of weaving sub-contractors (called "Bay Dan") across Mandalay and Sagaing regions, especially in rural areas.

²⁸ Yang Naing Lin(2020). Transformation of Weaving in Myanmar from the Tradition to the Modernity and Its Impact. University of Mandalay.

<https://meral.edu.mm/record/5604/files/The%20Transformation%20of%20Weaving%20in%20Myanmar%20from%20the%20Tradition%20to%20the%20Modernity%20and%20Its%20Impact.pdf>

²⁹ <https://meral.edu.mm/record/5604/files/The%20Transformation%20of%20Weaving%20in%20Myanmar%20from%20the%20Tradition%20to%20the%20Modernity%20and%20Its%20Impact.pdf>

³⁰ https://www.nathaninc.com/wp-content/uploads/2017/10/Economic-and-Engineering-Development-of-Burma-1953-weboptimized-Vol-2_Part2.pdf

³¹ Registered under "clothing apparel and wear" from the DISI categorization criteria. Retrieved from: <https://www.disi.gov.mm/index.php/qna/RD.html>

³² Mandalay Weaving association and Wundwin Weaving Association

Normally, weaving sub-contractors owned less than five hand or machine looms. Most weaving machine in Myanmar are quite outdated or refurbished ones from imported from Japan in 1950s. These days, the number of hand loom for weaving is very minimal compared to machine loom. It was noticed that hand loom uses mainly to weave natural silk-based fabric (such as lunyarkaw-kyogyi) and lotus fabric. There were 16 silk-based weaving firms in Amarapura township in 2016.³³

The weaving factory survey in 2019 reported that most of the weaving factories stated not having access or unable to afford new machines for upgrading their businesses. As a result, the average lifetime of machine looms in Amarapura, Pyigyitagoun and Wundwin is 29 years old, which are designed based on imported Japan weaving machine in 1950s and earlier 1960s.

TABLE 3.6 Characteristics of interviewed weaving factories (2019)

Townships	Average years of establishment	Workforce in 2019 per factory	Number of loom per factory
Amarapura	29.3	35.6	22.8
Pyigyitagoun	12	30.5	25
Wundwin	49.8	62.1	24.2

3.4.2 Labor and Skills Training

The average total workforce of the weaving factories surveyed in 2019, including management, was 52 employed workers in a factor that worked in two daily shifts, with an average of 17 percent labour turn over. On average more than half of the workforce is female; however, newer factories rely more than 80% of female laborers. the educational status of weavers, the main bulk of employed workers in weaving factories, nearly 80 percent have middle school education below grade 8 (primary education), see Table 3.7. Among surveyed factories, almost, all of their workers did not have experience with formal weaving trainings despite there are formal weaving training schools such as Saundar Weaving Institute and its branches in Mandalay. Thus, at the beginning of their employment in weaving industry, those workers relied on on-the-job learning, learning-by-doing, or informal mentorship from more experienced workers. The lack of sustained capacity building activities in weaving industries was a serious constraint to the value chain development and a surprising finding given the longstanding weaving tradition in the country.

Many factories expressed that getting skilled worker was a challenge because young generations of potential weavers are more interested in finding higher income job opportunities in other sectors such as service sector. Thus, some factories paid the wages in advance to their skilled workers or loaned workers money in emergency times, to keep the workers in their factory.

³³ Win Thida et.al.,(2019). Silk Fabrics Factories in Amarapura. Yangon University of Distance Education. <https://meral.edu.mm/records/7158>

Our survey findings reveal that the sector does not have formal skill requirements or standards of qualification. Whereby, employment relations are based on trust, only 10% of the surveyed workers stated to have a formal employment contract.³⁴ Moreover, only administration and management staff are stable salaried workers, rather the majority of workers in the production floor rely solely on daily piece-rate wages.

The weaving factories appear to have three different three payment schemes for different categories of workers, namely, daily-wage unskilled workers (i.e., folders and cutters) and monthly salaried workers (i.e., administration and management staff) and piece-rate wages that are paid on daily or weekly basis to skilled weavers (see Table 3.7). Normally, weavers' income fluctuated depending on the number of pieces they produced and the number of working days. On average, the working hours of weavers was about 10 hours per day and needed to work 6.1 days per week.

Table 3.7 Characteristics of workers at interviewed weaving factories (2019)

Education levels (%)	
Below Grade 8	78.75
High school	18.75
Above high school	2.5
Piece-rate wages (MMK)	
Skilled worker*	9,286
Semi/Unskilled worker	7,460
Working hours	
Weekly working days	6.1
Daily working hours	10

Figure 3.19
A female worker at a weaving factory



³⁴ A finding that was stated by various factory owners interviewed.

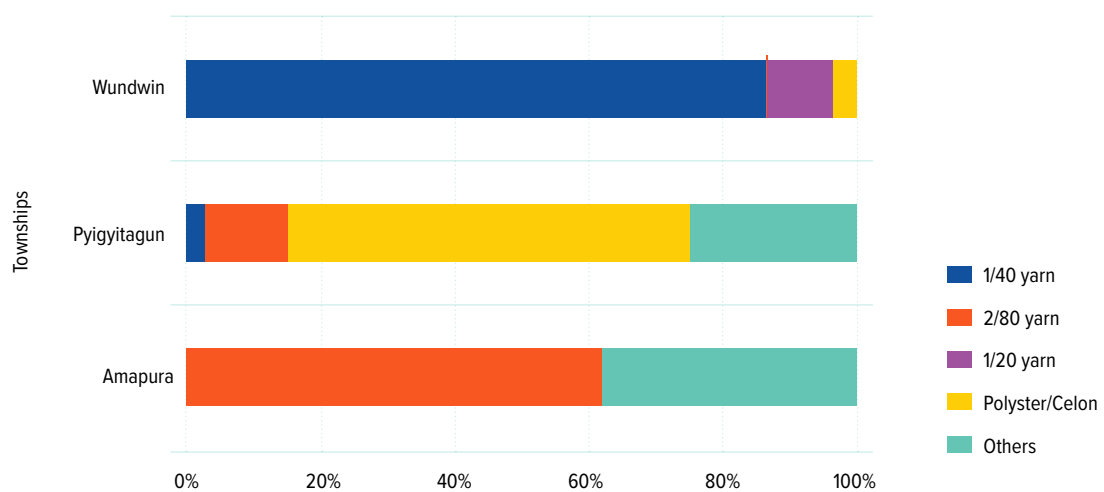
3.4.3 Production Process and Type of Yarns Used

Most of the weaving factories in Myanmar focus on producing traditional wear, “Longyis (Sarong)” and “Eingyis (blouse or shirt)”. Very few factories produce fabrics to compete imported fabrics in local market (for example - Panda textile factory) and to export international markets (for example- Magic link knitting factory, see a case study). The type of yarns used for weaving in Myanmar varies to some extent depend on graphically as specialization (design).

In common, before weaving activity, the preparation process involves dyeing tread, transferring yarn from a swift to a reel and winding tread onto the bobbin/spool. And then transferring tread onto big swift (called Chapope). Interestingly, the stage of transferring tread onto big swift (Chappoe) is dominated by male while other processes are mainly carried out by female workers. Weaving factories in Amarapura and Pyigyitagun township less engage in dyeing tread activities compared to factories in Wundwin township.

As described in figure 3.20, the weaver in Wundwin/Thaedaw areas in Meiktila district mainly rely on 1/40 and 1/20 yarns. On contrary, the weaver in Amarapura use mainly 2/80 yarns, which is solely imported from abroad (especially from India) and other yarns (such as silk) which is mainly imported mainly China and Thailand. It is worth to note that there is no spinning facilities in Myanmar to produce 2/28 type of cotton yarn. The weavers in Pyigyitagun use more synthetic yarns compared to weavers in Amarapura and Wundwin. In general, the weaved products done in Wundwin/Taedaw areas focus rural area or working population while Amarapura target more quality or high-end traditional wear. It was also observed that some textile products from Amarapura export to Thailand and Lao PDR through border trade.

Figure 3.20
Type of yarns used for weaving (%) (2019)



Source: Interview with weaving factories in 2019

3.4.4 Subcontracting (Bay Dan) Dynamics

Subcontracting in weaving industry is a dominant business model. To the extent that Wundwin township alone there are more than 200 weaving subcontractors.³⁵ According to the survey findings, it appears that subcontracting occurs regardless of factory location and product focus (inferred by the yarn used in production), production volume and number of looms in the factory (i.e. both larger and smaller firms appear to subcontract out part of their production). Out of 14 interviewed factories, 7 factories subcontracted part of their production, the number of subcontracting relationships ranges from two to eight subcontractors at a time and about 43 looms on average were being subcontracted by those interviewed factories in 2022.³⁶ It must be noted that only looms are subcontracted, whereby there is no contract for employing the subcontracted laborers. These subcontracting arrangements are increasingly formalized and are managed by consignment basis. The process flow of such arrangement described by one interviewee, for instance, is that the main factory would provide and pay for the 110 pound of dyed thread for warp, which would produce 390 longyi in 1.5 months. The subcontracted individuals/firms pay the labor costs and transportation costs of the final goods. Depending on the type of relationship between the main factory and subcontractors, the payment for the order can either be settled within one-month of post-production or partially paid in advance. Yet the piece-rate price is determined in advance. Following this example, the profit (wages) for the subcontracted weaver is 180MMK per longyi, whereas the profit for the main factory is 700 MMK per longyi.

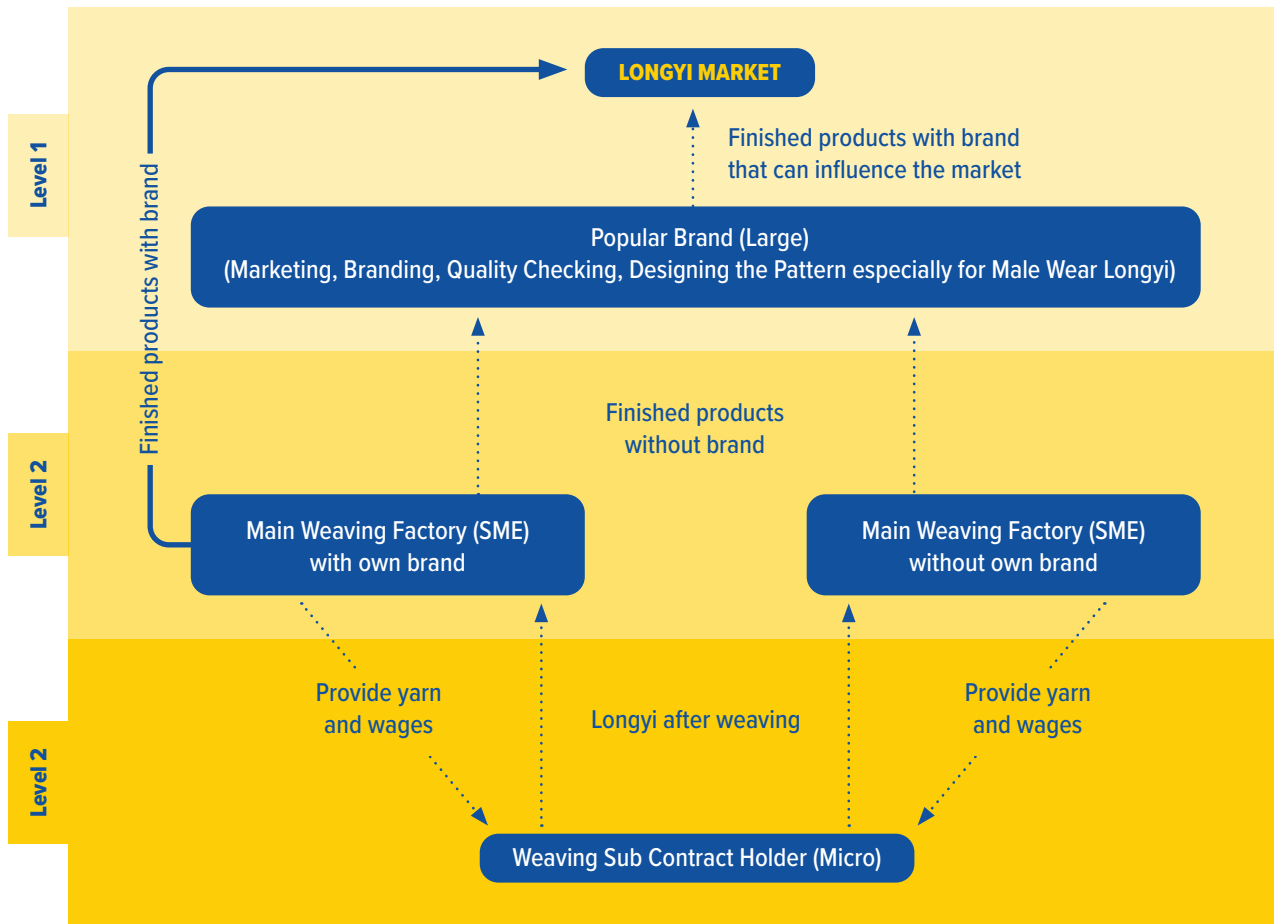
As Figure 3.21 reveals, Level 1 involves the brand or main factory, which pays and provides for the yarn. They decide the price of the finished goods in advance. Some of these actors do not engage in the weaving process and stand as brand owners (for example, the practice used by locally popular U Gyan Brand). Level 2 actors are mainly small and medium factories (SMEs) that have looms in-house. They incur all the production costs, ranging from wages, utilities, looms, and transportation costs. These SMEs can either have their brand (thereby also have market distribution avenues) or solely focus on producing for Level 1 actors. Level 3 comprises micro-enterprises, largely located in rural areas, sometimes forming cooperatives that either has their own loom or renting loom(s) from SMEs from level 2 to work on specific assignments. For the latter, a contract is drawn to grant “access” to the loom, this contract also includes production exclusivity to the SME sub-contractor. These Level 3 actors mainly operate as unregistered businesses.

Among interviewed small and medium factories, only 65 percent of factories sold some percentage of their products produced with own brand in the market. According to interviewed factories, despite many factories have their own brand, many of them still rely on wholesale intermediaries instead of direct selling to customers or through sale shops. It is for this reason that the dominant arrangement in the weaving industries follows a consignment business model: total payment of the product is collected only after the product is sold and distributed.

³⁵ Figure stated in the various factory interviews in the region. A subcontractor owned at least more than one machine loom.

³⁶ It must be noted that one factory that subcontracts stated 450 machines were being subcontracted to multiple subcontractors, thus given it is an extreme outlier, it was dropped when computing the average.

Figure 3.21
Relationship diagram of a local brand, main weaving factory and weaving sub-contract holder



Source: Interview with weaving factories and top brands in Myanmar traditional wears in 2019



CASE STUDY: A FOREIGN OWNED MODERNIZED KNITTING (DYEING AND KNITTING) FACTORY

The factory was established in 2014, 35 years land lease contract until 2039 from No (3) Heavy Industry, No (9) Garment Factory, Kyaukse Township. It is 100% foreign owned and machines such as air-jet looms and dyeing machines are imported from China to produce knitted fabrics for CMP garment factories in Inntakaw (Bago Township), exporting to international (European) fashion brand.

Imported raw materials such as cotton yarn count 1/40, 1/32, 1/6, 1/72 (polyester yarn) and organic cotton yarn from India and China have been bought by partner foreign company (A) in Yangon and sent to the factory. The factory conducts weaving with air-jet looms to produce (finished dyed) knitted fabrics.

Depending on the order, factory produces 10,000 lb to 38,000 lb of final products. Although the system is FOB system, actually the factory only receives CMP fees and all expenses including transportation costs and customs clearance are incurred by the partner companies. Although both knitting factory and garment factories are located in Myanmar, knitted fabrics cannot be sent directly to the CMP garment factories because of the policy restrictions on CMP status provided only to imported goods and other regulations. Therefore, fabrics have to be exported to Myanmar-Thailand border and then re-imported through Myawaddy to get the tax exemption. Sometimes, fabrics have to be exported to Myanmar-Chin border and then re-imported to Myanmar. In order to enjoy the tax exemption status of CMP, those fabrics are sent directly to garment factory (1) in Helegu and garment factory (2) in Inntakaw (Bago) under the arrangement of partner foreign company (B). This factory presents a highly potential business model to connect a missing link between textile segment and garment segment along the value chain. The fact that the factory has been viable despite of cumbersome and costly export-import requirements for tax exemption proved that such potentials are real.

The factory also serves as a role model for successful transition from a state-owned factory to a privately-owned commercial factory in various stages. Around 211 government staff/workers were employed in 2019 and it was reduced to 20 staff in 2022 as most government staffs/workers were paid adequate compensation to retire during the COVID-19 pandemic. The salary for workers were also adjusted as the government staffs/workers received monthly salary according to their civil servant compensation range while company recruited production workers received the competitive rate above the minimum wages (4,800 MMK per day) with additional performance bonus.

According to the interview with factory manager, the factory has faced many challenges since 2014 such as difficulties in managing government staffs, poor water quality affecting the fabrics quality, irregular accessibility of electricity, poor road condition, difficulty in finding competent third party consultant for developing EIA and long processing and obtaining approval from Environmental Conservation Department. The other challenges facing in 2022 are electricity outage, water shortage, increasing commodities prices, unavailability of gas, increasing container fees (about 3 times higher than before) and long duration of raw materials import via Yangon instead of importing from Muse border. It takes 45 days in 2022 in comparison to 14 days in 2019 for raw materials import.

3.5 Dyeing

3.5.1 Background and Characteristics of Dyeing Sector

In the past, in Myanmar, hand dyeing was done by pounding and mixing of natural barks, leaves, flowers, fruits, roots, and tubers on a micro-scale traditional weaving. However, nowadays, natural dyeing can only be found at teaching programs of Saunders Weaving School and in small scale dyeing business of cottage industry because of time-consuming and difficulties of getting raw materials for producing large quantity of naturally dyed cotton yarn/fabrics.³⁷ Majority of the traditional weaving industry are carrying out chemical dyeing of cotton yarn and silk yarn by hand although there are only a few modernized machines dyeing factories which are conducting chemical dyeing of cotton yarn, acrylic fiber, knitted fabrics and printing on cotton fabrics. Different dyeing methods mostly conducted in Myanmar are described in Figure 3.22. Both hand dyeing and machine dyeing processes of the textile sector are wet processing. Study area of dyeing sector mainly focused on Wundwin Township and Amarapura Township where weaving factories are located.

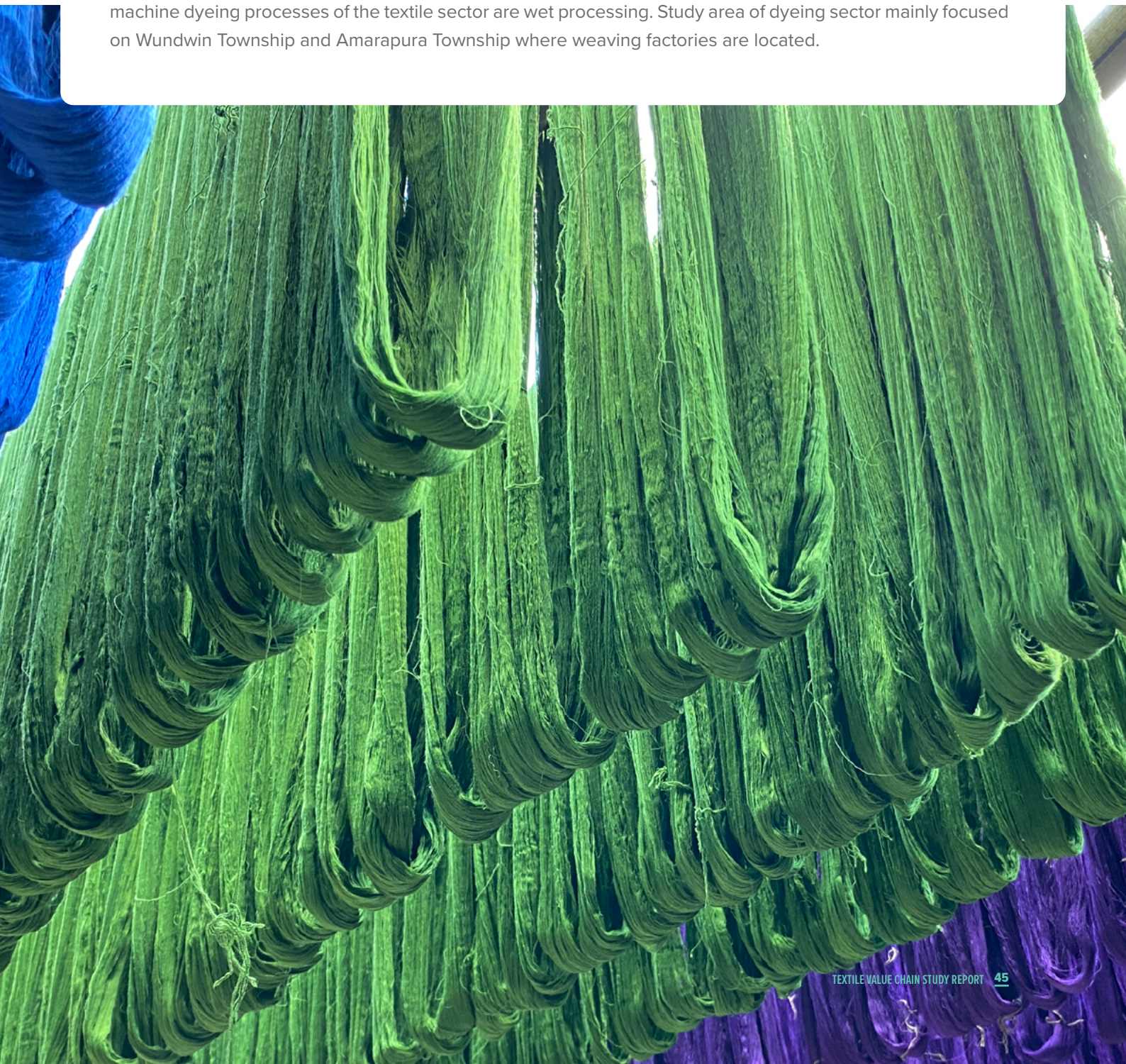
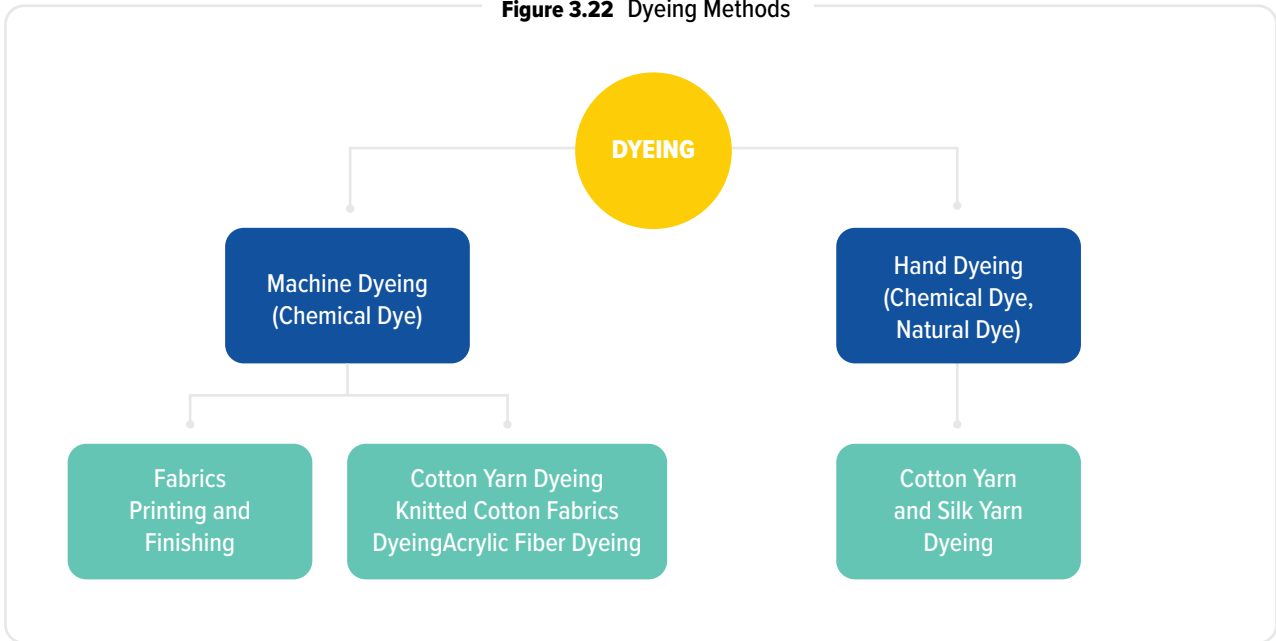


Figure 3.22 Dyeing Methods



3.5.2 Hand Dyeing Facilities

The majority of dyeing process deployed in the surveyed area is hand dyeing by using chemicals. The operation process of hand dyeing is simple and small scale. Firstly, yarns are soaked into the cold water for a night and then boiled and dyed with hot colored fluid in a large iron sauce pan for about an hour (as shown in the Figure 3.23, around 60 lb of yarns can be dyed in one pot). After bleaching or dyeing, cooling and dehydration are manually undertaken. Finally, those colored or bleached yarn threads are dried under the sunlight for half-day or one day. Depending on the weather condition, it takes around 1 or 2 days to get finished dyed yarn.

Figure 3.22 Hand Dyeing Process



³⁷ Tha Bar Wa Soe Say cotton fabrics which are becoming popular in traditional dress local market.

Hand dyeing is conducted by using reactive dye and wet dye. Chemicals are available from local shops and domestic companies/distributors imported from China and India, depending on color availability. Mostly used chemicals are caustic soda, hydrochloride, ah mae, nitrate, sodium sulfate, etc. Bleaching powder is mainly used to get a clear white color. Chemicals prices increased around 50% in 2022 compared to 2019.³⁸ Color creation and chemicals combination are based on the knowledge and experience of workers and shared by experienced workers with others which mean that there is no formal training for dyeing activities.

Figure 3.23 Chemicals storage of hand dyeing facility



The number of labors employed for dyeing activities is from four to seven and they need to work only one shift in the daytime. Relating to the occupational health and safety of workers, most of the workers from interviewed factories are not aware of chemicals safety, risks, and concerns on their health issues. They do not wear any personal protective equipment (PPE) such as masks, gloves, safety glasses, boots, etc. Even though some employers provide gloves, boots, and masks, workers do not want to wear PPE as most of them do not have formal education and awareness about health problems caused by dyeing chemicals.

Hand dyeing facilities can be found as part of the weaving factories, especially in Wundwin Township while weaving factories in Amarapura Township are used to outsourcing other dyeing facilities.

Figure 3.24 Dyeing workers in a weaving factory



³⁸ Interview with dyeing facility owner in Kan Taw village, Amarapura Township, 2022.

As shown in Figure 3.25, the 2019 survey result shows that 57 % of the weaving factories do not conduct dyeing activities since they are located in the city municipal area (Amarapura, Mandalay) and they only conduct weaving in their factories, while 43% of the surveyed factories located in Wundwin, where dyeing activities are allowed for the weaving. Most of the weaving factories in the city center of Amarapura provide the yarns and labor cost to hand dyeing facilities near Taungthaman Lake. Those -scale dyeing facilities workers receive the wages for dyed yarn packages according to the piece rate. Piece rate of finished dyed yarn was 1500 MMK per package (10 lb of cotton yarn) in 2019 and has increased to 20000 MMK per package in 2022³⁹. According to the interview with weaving factory owners in the villages of Amarapura Township, outsourcing of dyeing is given when order is high and they need to finish order on time because it takes only 2 days to receive large quantity of dyed yarn.

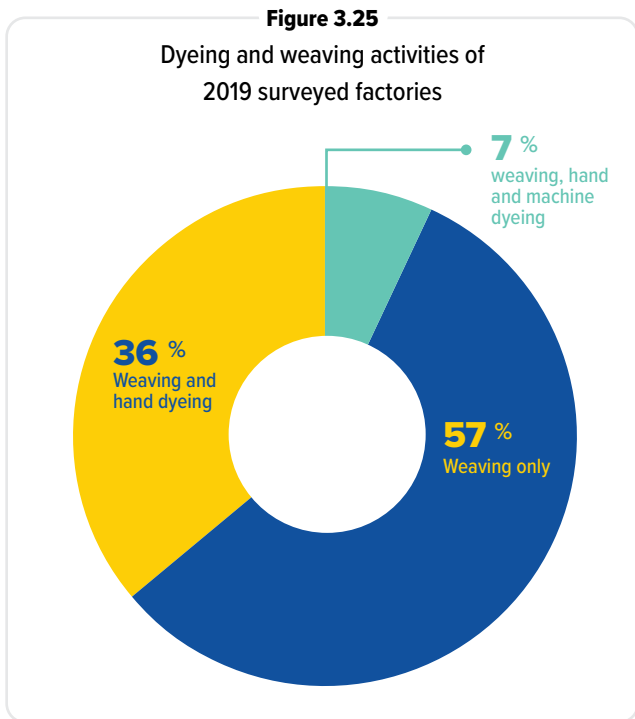


Figure 3.26 Water pollution in Wundwin Dam due to dyeing waste water discharges

Wastewater discharged from hand dyeing facilities cause water pollution in the river, lake, and dam close to the dyeing factories. In the cases of Amarapura and Wundwin, there is no proper wastewater treatment facilities or system before discharging into the lake and dam. The following Figure 3.26 shows that water pollution in the Wundwin dam is due to the wastewater discharged from dyeing activities of weaving factories in Wundwin where about 600 weaving factories cover 70 percent of traditional longyi production of the country.



3.5.3 Machine Dyeing Factories

Machine dyeing of cotton yarn is conducted in local owned factories in Wundwin and Sagaing Townships. Dyeing factory in Wundwin distributes finished dyed yarn to weaving factories in Wundwin and one of the largest male wear longyi brands influences the finished dyed yarn market of dyeing factory in Sagaing⁴⁰. One of the privatized SOE factories in Kyaukse is also undertaking machine dyeing of knitted fabrics and another privatized SOE textile factory in Paleik in, Sintgaing township is conducting printing and finishing of cotton fabrics.

³⁹ Interview with weaving factory owner in Kan Taw Village, Amarapura Township, 2022

⁴⁰ Interview with weaving factory owner in Amarapura Township

Machine dyeing of acrylic fiber can be found in one of the spinning factories in Pyigyitagon. According to the interviews, these dyeing factories have already developed proper wastewater treatment system according to environmental management plan which has been submitted to the Environmental Conservation Department. Due to the limitation of data, this study will describe the case studies of machine dyeing factories in Wundwin and Kyaukse in the following sections.

CASE STUDY: A LOCAL-OWNED MODERNIZED MACHINE DYEING FACTORY

A private modernized machine dyeing factory was established in Wundwin Township in 2016. The factory is under the management of shareholders who are conducting weaving businesses in Wundwin. The factory aims to produce environmental-friendly quality dyed yarn in order to distribute their brand into the market along the textile supply chain after fulfilling the demands of partner weaving factories. The company was established in 2016, factory production started in 2019. Production lines are running one shift with 24 workers who are salaried employees. The minimum salary is 150000 Kyat per month.

Since 2019, dyeing processes have been running by modern dyeing machines such as winding machines, dyeing machines, hydro-extractor and drying machines which were imported from China and Italy. Machines are operated under the supervision of Indian and local technical experts. Color creation is made by computer programming. Raw materials both yarn and chemicals are purchased from local companies imported from India. Rice hulls are used as fuel for the boiler machine which was imported from India.

Rice hull ash is reused as activated carbon in the sedimentation ponds to filter the chemicals from wastewater. After filtering the effluent in the six filtration ponds, wastewater is pumped out along the underground pipeline and treated in the constructed wetland as a biological wastewater treatment system. The initial environmental examination (IEE) including environmental management plan (EMP) has been developed and submitted to Environmental Conservation Department.

In 2019, factory started producing 1 ton of dyed yarn (yarn count 1/20, 1/40, 2/80, 2/100) per day which were mainly distributed to the shareholders' weaving factories. Although the factory planned to increase their production to 3 tons by running 2 shifts, production still remains 1 ton in 2022 and could not increase the production because wages for new employment and investment for machines could not be afforded with increasing raw materials prices (due to increasing dollar price) and shipment difficulties due to the political instability and electricity shortage in 2022.

Long term plan of the factory is not only to increase the production of dyeing but also to implement the cotton cultivation, ginning and spinning mill to produce quality yarn. In 2019, factory's challenges were limited access to business loan, tax exemption, high electricity cost, technological barriers, and limited access to technical experts for the installation and design of electricity line, for maintenance of machines. However, factory is still struggling to keep the existing production due to political instability in 2022 and could not implement its plan. This study revealed a viability of modern dyeing factory that was able to sustain its operation throughout the ongoing crisis; however, it urgently requires concerted policy reform to provide an enabling environment for the firms like this.

3.5.4 Change in time of Double Crisis (Weaving and Dyeing Sector)

Among interviewed factories in 2022, Compared to 2019, the number of active machine looms was reduced by almost half; consequently, the total number of Longyis (Sarong) produced in 2022 dropped about 58 percent. In addition, the number of workforces also reduced about 43 percent in 2022. Less on demand in the domestic market and security concerns for the business environment are major causes of the downward trend. Also noticed that some employers in both Amarapura and Wundwin were reluctant to operate their firms amidst active conflicts although there was a significant demand. Some also viewed that operating the business and engaging the activities, as usual, is not ethical while the country is going through difficult periods.

Between 2019 and 2022, there was a great decline in the number of machine looms (-70%) that are being subcontracted or owned by sub-contractors. At the same time, some employers shared that they will engage more in subcontracting activities rather than expanding in-house operations when the market demand is increased since it is hard to recruit trusted and politically neutral workers. Otherwise, the whole business could affect negatively. The piece rate wages for weaving per longyi is almost the same in 2022 compared to 2019 (e.g. 500 - 600 MMK per piece for both 2019 and 2022 surveys) despite the inflation rate at 17.78 percent in April 2022, up from 4.01 percent in April 2021. There was also a slight decline (-16%) in the daily income of piece-rate-based production workers between 2019 and 2022 because of disruption caused by electricity blackout as one of the main reasons for the decline. Some factories shared that they recently increased the salary scale slightly for monthly salary-based workers (for example - 100,000 per month to 120,000 per month for junior office staff) to reflect the increase of commodities prices. However, all employers agreed that the income level of many workers did not enable them and their families to afford a decent living standard.

Interestingly, it was observed that some weaving factories in Amarapura sold some of their machine looms (around 200 to 500 looms within 2022) to Inle lake and Nyaung Shwe area in Shan State, another famous place for its weaving activities. One interviewed employer shared that the security and business environment in Shan State is relatively stable compared to Mandalay and Sagaing regions. However, he did not seem Inle lake and Nyaung Shwe will replace Amarapura as a hub of traditional wear production since the required skills and supply chains is well established in the Mandalay region.

Due to COVID-19 and current political conditions, chemicals for dyeing prices have been increasing caused by transportation disruption, border closures and the fluctuation of the exchange rate compared to 2019.

3.6 Challenges to Business Environment and Operations

The first COVID-19 was detected in Myanmar in March 2020 and experienced the consequences of the COVID-19 global pandemic. Once again, Myanmar's political landscape has changed due to the military coup on February 1. As discussed earlier, each sub-sector experienced somehow differently during this double crisis period. This section explores the challenges faced the textile industry in general and its sub-sector. Due to data limitations, some areas are discussed based on quantitative data, while others are identified from qualitative information.

3.6.1 Major Challenges in 2019

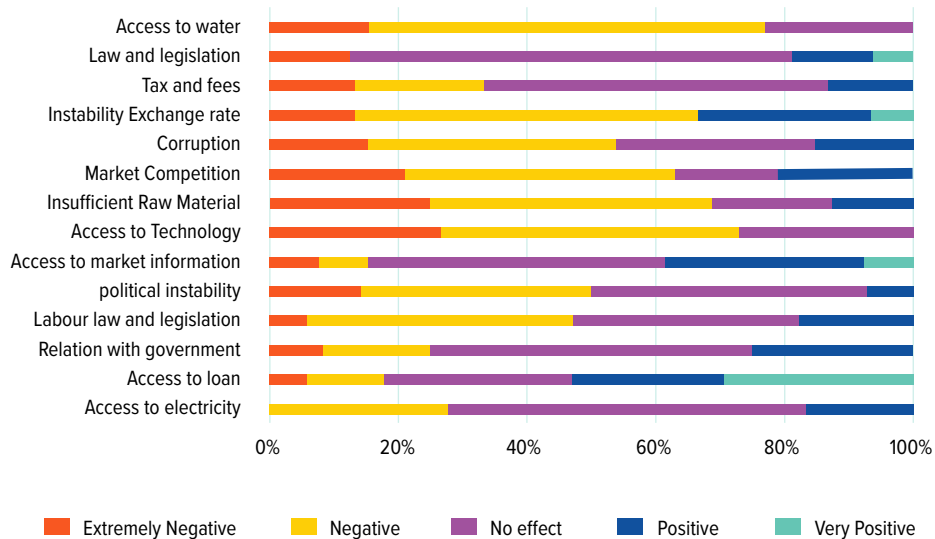
The factory survey in 2019 for spinning and weaving identified the challenges faced by spinning and weaving factories (see Figure 3.27). Among those, the issues of market competition, raw materials and access to technology affected the factory's operation the most negatively.

The limited existing current technological and production capabilities of weaving factories cannot meet the current clothing domestic market trend. Competition with cheap and reasonable quality clothes from China was becoming a threat to domestic weavers. Similarly, spinning industry also shared concerns about competition with imported cotton yarns from India due to the quality and price level.

Some factories shared that sale prices cannot increase due to the limited purchasing power of its customer base and the price level of imported products. Moreover, an underlying negative trend shaking the domestic weaving sector at its core is the changing clothing style among the youth.

To become a stronger up-to-date sector, production and quality technological upgrading is critical, yet to do so, access to competitive credit schemes is paramount. More than half of the factories interviewed did not rely on external formal credit schemes to fund their operations. In addition, getting a loan from a bank are complicated, and the SMEs loanable amounts from banks are too low to meet the up-front investment capital required to upgrade.

Figure 3.27
Factors affected the factory’s operation in 2019 (Spinning and Weaving/dyeing)



Source: Interview with spinning and weaving/dyeing factories in 2019

3.6.2 Major Challenges in 2022

Weaving and Dyeing

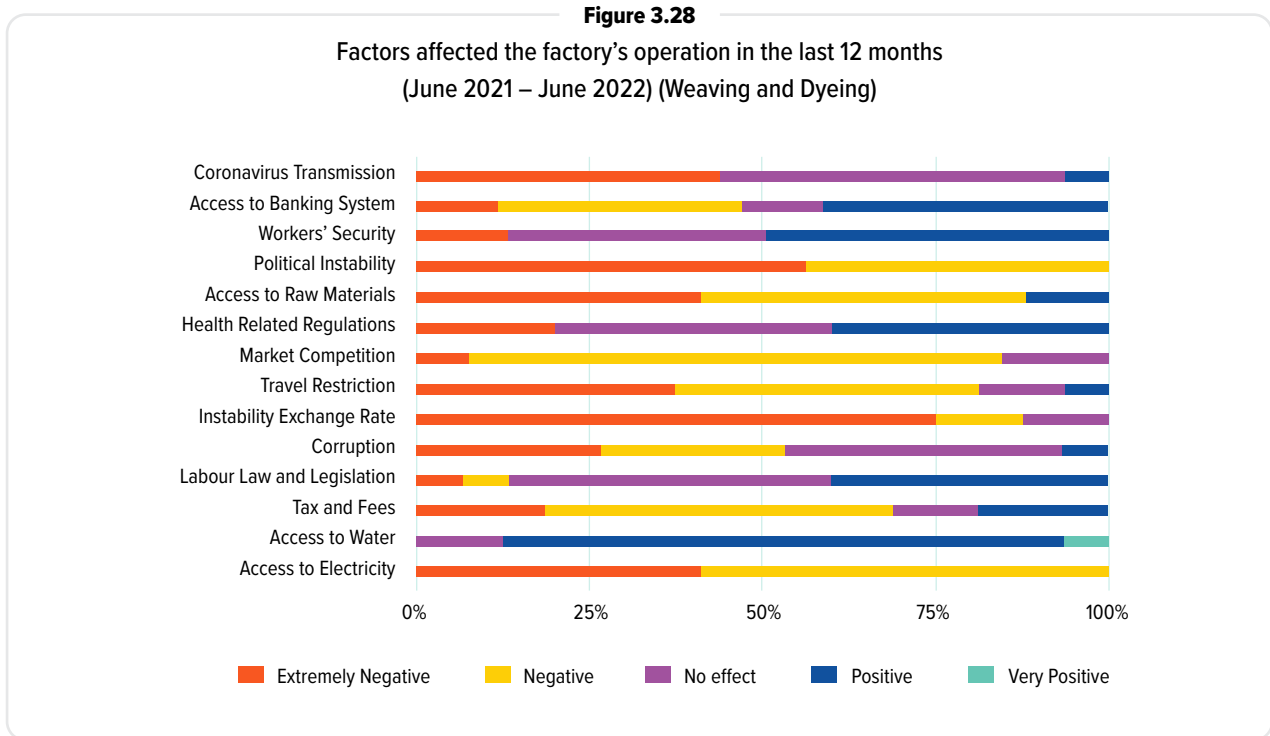
Factory surveyed in 2022 for weaving indicated a number of challenges that affected their operations (Figure 3.28). Among those, the most challenges are (1) political instability, (2) electricity shortage and (3) exchange rate instability.

Most factories indicated that political instability after February 1, 2021, negatively affected factories’ ability to do business. As mentioned in the previous section, some weaving factories share their concerns about running the business in a local market, their reputation and busieness can be damaged if they conduct business as usual or expand their business operations. Interestingly, some also thought that operating the business for profit under the military regime was unethical.

The second reason reported by the factories was the challenge of getting regular electricity. The fuel price in Myanmar has increased more than double in 2022 compared to early 2021. Due to the hike in fuel price, interviewed weaving factories had to reduce their operations when the electricity from the government supply was cut off. This circumstance affected the factory’s production level and workers’ total income. Most weaving workers’ wage arrangement is based on piece per item produced.

Thirdly, instability of exchange rate becomes more problematic in 2022 and Myanmar’s currency value depreciated more than 163 percent (1330 MMK vs 3500 MMK/USD) in 20 months since February 1, 2021. This exchange rate condition affected badly to weaving and dyeing industry since some production inputs are imported from other countries.

Interestingly, in 2022, respondents shared more concerns about corruption compared to 2019. In addition, no one shared that COVID-19 pandemic affected their factory’s operation extremely, while more than half of the respondents expressed that their operation was badly affected by political instability.



Source: Interview with weaving and dyeing factories in 2019

Another major challenges of hand dyeing facilities are scarcity of raw materials to produce organic dyed yarn, outdated dyeing facilities, traditional ways of chemical dyeing methods, difficulties in getting consistent color, poor quality of local yarn, and limited usage of dyed materials. In addition, the availability of chemicals, compliance and awareness on occupational health and safety measures of dyeing workers and wastewater discharge without proper treatment system are serious gaps in the segment.

Regarding to the environmental problems, the government issued the notification in 2019 that nine prioritized industrial sectors have to develop an environmental management plan (EMP). In that notification the government ruled that textile and dyeing facilities which produce 1 ton of yarn and above per day have to develop EMP within 6 months. According to the in-depth interviews with the machine dyeing factories, developing EMP is one of the challenges for them because it is costly in terms of monetary and time, and it is difficult to find competent but affordable third-party consultants. Moreover, unclear government regulations and direction and long processes to obtain the approval.

Spinning

Compared to the weaving and dyeing sector, the spinning sector did not significantly affect the net profit margin significantly. Based on the interview with factories, this study identified three major issues:

Quality of cotton lint: With Chinese demand for all types of lint cotton bales are on the rise, their bulk demand with a fixed price of any quality or grade forced the farmers and ginning factories to invest in any upgrade of their segments to produce higher quality cotton. This preposterous market incentives for low quality cotton suppressed any efforts on the upstream production of quality cotton and yarns, consequently impacting the downstream activities of the textile supply chain.

Electricity shortages: Due to frequent electricity outages, the factories rely on diesel power generators to avoid production disruptions, which increased their production cost. Due to the uncertainty of electricity supply and high costs for alternative energy, all interviewed factories are desperate to cut the costs and the workers' wages were not increased in 2022.

Martial law orders and travel restrictions: Due to the travel restrictions between Mandalay and Sagaing regions and martial law orders, the factories can operate only two shifts instead of three shifts in the past although there is market demand to produce more with three shifts.

Cotton Production

Based on the interview with farmers in 2022, this study identified four major issues for the cotton cultivation:

Lack of Quality Seeds – Local seeds are cheap but not readily available. In addition, the quality is not up to the imported hybrid seeds. On the other hand, imported seeds are expensive, therefore, they are reused a couple of times resulting in lower yield and lower quality. Sometimes farmers faced fake seeds, mixed with different varieties, which affect the yield.

Price of inputs – Due to the import controls, long closure of China-Myanmar border, unpredictable situation of cross border trading, and unstable exchange rate are all pushing input prices up constraining farmer's ability to achieve their productivity.

Climate change – Severe challenges of climate change, particularly of heavy rains damaging cotton harvesting or droughts affecting cultivations, pose major challenges for cotton farmers.

Labour scarcity – Labor shortages undermined farm production, as new generation rural youths are more willing to work in overseas job markets instead of local agriculture sectors. Most of rural farm workers, sometimes the whole family, move to work in neighbouring economies. Therefore, cotton growers are facing difficulty in finding labour.

Ginning Industry

The interviewed with the stakeholders in 2022 identified three major issues for ginning industry.

Increased input price (farm gate cotton price) - High input prices become a challenge for cotton farmers, the same time, higher farm-gate cotton price also raises operating costs for ginners.

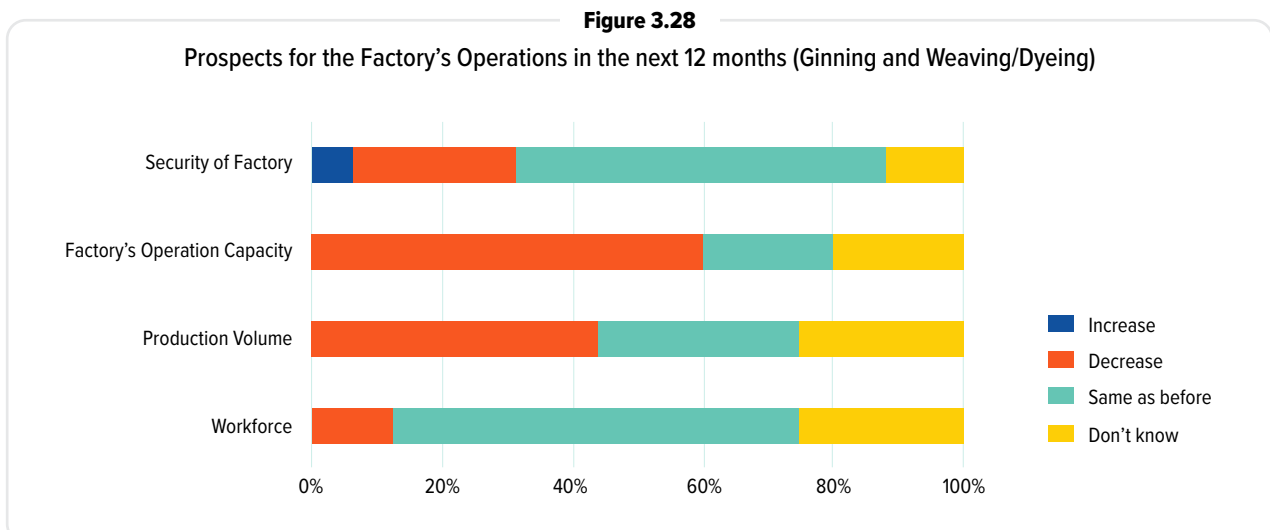
Electricity outage – Long hours and frequent disruptions in the power supply affects the operation costs of ginning factories. Some medium- and large-sized ginning factories used generators in the past, but it becomes very costly for doing business due to the rapidly rising fuel price in 2022.

Government policy – Compared to other agricultural products, cotton is highly regulated because of state-owned textile factories that rely on domestic supply, particularly on setting the price and restricting for both domestic sales and export market. It is a major challenge for cotton farmers and ginning factories.

3.7 Perspectives on the Horizon

The factory survey in 2022 focused on in-depth interviews with ginning and weaving/dyeing factories' owners or managers and collected their perceptions of future business trends. As shown in Figure 3.29, most respondents share their bleak outlook of future business prospects, although a few have acknowledged that security dynamics surrounding their operations, stemming from active conflicts in neighboring Sagaing region, have improved. Half of the respondents believed that their factory's running capacity and production volume will decrease in the coming 12 months. However, many respondents indicated that their workforce would be the same as before.

To understand the views of other two sub-sectors, similar questions were asked to spinning factories and cotton farmers. The spinning factories expressed that the overall scale of their business operation for 2023 would be the same level as 2022. However, cotton farmers in general seemed to be more optimistic about their cultivation growth for 2023 due to high cotton prices in 2022 compared to previous years.



Source: Interview with ginning and weaving/dyeing factories in 2019


CONCLUSION AND RECOMMENDATIONS

4

4.1 Conclusion

The textile Industry plays an important role in Myanmar for supporting rural livelihood of thousands of farmers engaging in cotton cultivation and its potentials for adding economic value to the existing textile value chain for domestic supply of high quality apparel as well as the adjacent garment value chain for providing quality raw materials. As in many other developing countries, Myanmar's textile value chain faces a set of distorted market incentives to become entrapped in a low quality agriculture production cycle while missing the opportunity to link up with rising industry of garment and apparel sectors.

The purpose of the study is to apply an evidence-based value chain approach to identify the gaps and missing links in the value chain while collecting key stakeholders' views on priority actions to be taken to address these gaps and to achieve competitiveness and sustainability of the textile industry. There are many challenges facing the private sector to upgrade the value chain by its own means; therefore, the role of government is critical for eliminating policy distortions and addressing the market gaps. Successive governments have tried to energize the sector but failed to take into account of the challenges and gaps facing the entire value chain. Previous government, for example, adopted Textile Industry Policy favoring rapid privatization of state-owned industries and allowing the market to determine the fate of the sector without paying attention to the potential benefits from linking the textile to garment value chains, which require many concerted efforts to fill the gaps. The current government adopted several initiatives to expand cotton cultivation areas to boost domestic production but failing to correct the policy distortions that favor the protected, state-owned industries and low-quality cotton export. Both governments failed to address pressing social and environmental challenges along the value chain while demanding unrealistic social and environmental safeguards from the private sector to fulfill.



All in all the entire industry is still recovering from serious impacts of COVID pandemics and disruptions from ongoing political crises. However, the bright side of the value chain is that there are increasing prospects of higher demand from China for raw cotton. It should be entirely possible to find the market niche of supplying high quality cotton to China market, which could incentivizes local production of high quality cotton that can supply both China and domestic markets. There are several steps in fixing this missing link. First, the government must remove trade restrictions on cotton export in order to allow the farmers to fetch premium price so that they could sustain their investment in productivity of cotton farming. Second, the government should encourage the business entrepreneurs to invest in FOB process for garment and apparel manufacturing where sourcing of fabrics and cotton can be localized. It should not only helped these local entrepreneurs who started such pathways and got stuck with unworkable policy of tax treatments but also sought foreign direct investments that will follow a similar path.

Last but not least, the government must invest in the production, certification and distribution of high-quality cotton seeds, which essentially locked the farmers in a low equilibrium trap. Although the government can nurture proper steps of R&D activities in finding the right seeds for the farmers, it can also rely on private sector to qualify already tested brands of imported seeds and have a fast-track approval for introducing and distributing in suitable areas of cultivation.

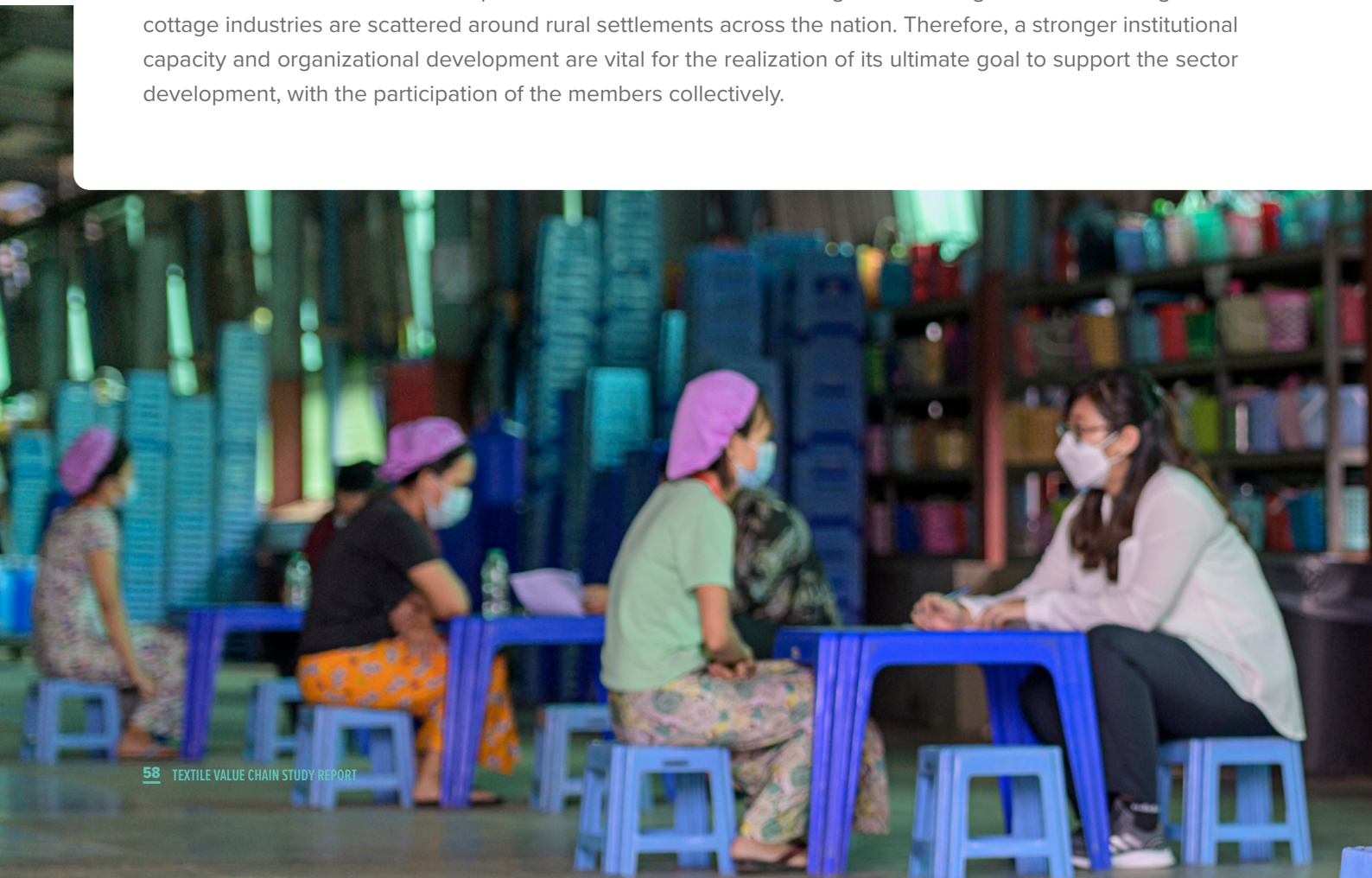
The textile and apparel sectors have diverse market opportunities and could create high employment and generate income particularly for rural populations. Therefore, it is important for the international community to support the industry.

4.2 Recommendations for Potential Support to the Textile Value Chain

In the light of current political situations, it would be difficult for the international community to support any policy reforms in a realistic way, there are several areas where the international community can prioritize in addressing specific value chain gaps facing the private sector in the following areas:

Environmental awareness training: The textile industry has a serious implications on environmental impacts, particularly in conventional dyeing process and the treatment of wastewater in dyeing industry, where massive concentrations of chemicals can cause damaging pollution of community water resources. The study already identified the early effects of irreparable consequences in the communities of Amarapura and Wundwin townships where most dyeing industries are located. In the light of such consequences, the popular tourist destination such as Inle lake should also pay attention to early adoption of environmental safeguards and management plans due to recent relocation of dyeing and weaving activities into the area. Support of technical and awareness training on water usage, chemical usage, waste water management and solid waste management are vital for the sector.

Technical assistance for organizational development of the textile private sector associations: The textile industry in Myanmar is very broad in its scope, with high geographical diversity in upstream production as well as downstream industries spread between the states and regions. The organized and unorganized cottage industries are scattered around rural settlements across the nation. Therefore, a stronger institutional capacity and organizational development are vital for the realization of its ultimate goal to support the sector development, with the participation of the members collectively.



Building network among different stakeholders: Modernized large factories rely upon yarns and other inputs solely from overseas instead of using local raw materials. Currently, there is very limited relation between large and SME stakeholders or between different segments. The support can be made in connecting stakeholders with objective to collectively upgrade the whole value chain.

Building seed supplier/seed importing companies networking: There is no official agreement between Myanmar and India on the basis of partnership on for cotton seed development. Therefore, cotton seeds are still being imported while it can be easily developed, nurtured and distributed locally in Myanmar. The support can be made connection between seed importing companies and farmers, cotton producers and the Cotton Association.

Ginning efficiency training: Most of the private ginning factories are still using old machinery and equipment. Under circumstances, it is difficult investments replace new machines. Support can be made for achieving energy efficiency, waste management and process efficiency, which will save much of operational costs.

Making Inputs accessible: Currently, the cotton farmers do not receive effective assistance from any private sector organizations as well as from the government in terms of accessing affordable and reliable inputs. Therefore, providing high quality seeds with inputs (fertilizer and peptide) to the farmers together with providing proper training for input utilization technique (fertilizer feeding, spraying pesticide) is the effective way for higher productivity and increase earnings at the farm level.

Rain water saving system: Cotton cultivation is dependent on rain-fed and irrigated water. Due to climate change, cotton farming is frequently disrupted by too little rain and sometimes too much rain. Since this climate change condition will continue to affect cotton production in the future, it is important to train the farmers to be resilient towards climate change effects. Most of the farmers are still unable to properly store rainwater. Support for proper rain water saving system will be great help for the cotton farmers while meteorological services for extreme weather conditions can also become critical for the farmers to avoid crop damages.



Annex:

Annex 1 :

Cotton Plantation area in Myanmar 2001-2002 to 2021-2022

S.No	Season	Area (000' ha)	Area (000'Acre) * 2.47105
1	2001-2002	295	729
2	2002-2003	302	746
3	2003-2004	292	722
4	2004-2005	306	756
5	2005-2006	332	820
6	2006-2007	354	875
7	2007-2008	368	909
8	2008-2009	367	907
9	2009-2010	359	887
10	2010-2011	351	867
11	2011-2012	326	806
12	2012-2013	278	687
13	2013-2014	299	739
14	2014-2015	304	751
15	2015-2016	291	720
16	2016-2017	260	643
17	2017-2018	225	555
18	2018-2019	239	591
19	2019-2020	239	591
20	2020-2021	239	591
21	2021-2022 est	239	595

Source: a) Ministry of Agriculture, Livestock and Irrigation, b) International Cotton Advisory Committee
<https://icac.org/DataPortal/ProductionDetails?country=MMR#Area>

Annex 2 :**Monthly price of cotton 2019 to July 2022**

Month	2019	2020	2021	2022
	Price/viss (Kyat)	Price/viss (Kyat)	Price/viss (Kyat)	Price/viss (Kyat)
Jan	1450	1400	1675	1800
Feb	1525	1175	1400	2075
Mar	1200	1000	1400	1800
Apr	1200	900	1400	1700
May	1500	1000	1250	1500
Jun	1200	1100	1525	2237
Jul	1200	1200	1700	2230
Aug	1100	1150	1475	
Sep	1100	850	1525	
oct	1175	1300	1450	
Nov	1300	1470	1400	
Dec	1350	1500	1900	

Source: Interview with ginning factories July, 2022

Annex 3:

Type of cotton seeds and productivity, July 2022








S.No	Main type of seeds	Interviewed Area	Productivity per acre (viss)
Farm A	Shwe Taung 10	Meikhtilar, Mandalay region	250
Farm B	Raka	Thar Si Township, Mandalay	500
Farm C	Raka Bravo	Ma Hlaing, Mandalay	400
Farm D	Raka	Meikhtilar, Mandalay region	650
Farm E	Raka	Wundwin, Mandalay	450
Farm F	Rake	Myittha Township, Mandalay	500
Farm G	Raka	Myittha Township, Mandalay	500
Farm H	Raka	Myittha Township, Mandalay	500

Source: Interview with farmers July, 2022

Annex 4 :

Distribution of production costs (including labour) per acre July, 2022

Kyats

	Farm A	Farm B	Farm C	Farm D	Farm E	Farm F	Farm G	Farm H
 LAND	30000 7%	24000 6%	45000 9%	85000 18%	70000 19%	70000 16%	85000 21%	40000 8%
 SEEDING	20000 5%	49000 12%	53000 11%	38000 8%	32000 8%	20000 4%	32000 8%	28000 5%
 IRRIGATION & WEEDING	50000 12%	25000 6%	24000 5%	44000 9%	70000 19%	31000 7%	30000 7%	30000 6%
 SPRAYING	138000 33%	60000 14%	95000 20%	114000 24%	29500 8%	40000 9%	40000 10%	60000 12%
 FERTILIZER	125000 30%	225000 54%	158000 33%	138000 29%	116000 31%	280000 62%	60000 15%	230000 45%
 HARVESTING	24000 6%	25000 6%	80000 17%	28000 6%	50000 13%	9600 2%	150000 37%	125000 24%
 TRANSPORTATION	25000 6%	10000 2%	20000 4%	32500 7%	9000 2%	0 0%	10000 2%	0 0%
TOTAL COST PER ACRE	412000	418000	475000	479500	376500	450600	407000	513000

Source: Interview with farmers July, 2022

Annex 5 :

Distribution of production costs per acre (Labour and inputs), July 2022

Kyats

	Farm A	Farm B	Farm C	Farm D	Farm E	Farm F	Farm G	Farm H
 LABOUR	124000 30.1%	110000 26.3%	185000 38.9%	182000 38%	62000 16.5%	128600 28.5%	266000 65.4%	195000 38%
 INPUT - SEEDING	5000 1.2%	24000 5.7%	0.0% 0.0%	10000 2.1%	8000 2.1%	0.0% 0.0%	16000 3.9%	8000 1.6%
 INPUT - SPRAYING	88000 21.4%	40000 9.6%	75000 15.8%	90000 18.8%	29500 7.8%	30000 6.7%	25000 6.1%	50000 9.7%
 INPUT - FERTILIZER	120000 29.1%	210000 50.2%	150000 31.6%	130000 27.1%	116000 30.8%	250000 55.5%	50000 12.3%	220000 42.9%
 MACHINERY	75000 18.2%	34000 8.1%	65000 13.7%	67500 14.1%	161000 42.8%	42000 9.3%	50000 12.3%	40000 7.8%
TOTAL	24000	25000	80000	28000	50000	9600	150000	125000

Source: Interview with farmers July, 2022

Annex 6 :

Private owned spinning factory's profit and loss calculation for producing 1/40 yarn in December 2019

Items	Cost (MMK)	
Direct labour cost	250	11%
Direct raw material cost	1373	63%
Variable overhead cost (such as maintenances, electricity bill and SSB)	300	14%
Fixed overhead cost (such as insurance, gasoline and depreciation)	150	7%
Commercial tax	113	5%
Total Production Cost (1/40 yarn per pound)	2185	
Selling Price (1/40 yarn per pound)	2250	
Profit/Loss	3%	



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