

Assessment of Green Jobs and Decent Work Opportunities in the Textile/Garment Sector in Jharkhand State, India





International
Labour
Organization



Copyright © International Labour Organization 2023

First published 2023, on behalf of PAGE

The report is published as part of the Partnership for Action on Green Economy (PAGE) – an initiative by the United Nations Environment Programme (UNEP), the International Labour Organization (ILO), the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO) and the United Nations Institute for Training and Research (UNITAR).

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder, provided acknowledgement of the source is made. The PAGE Secretariat would appreciate receiving a copy of any publication that uses this publication as a source.

No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior permission in writing from the PAGE Secretariat.

Citation

PAGE 2023, Assessment of green jobs and decent work opportunities in the textile/garment sector in Jharkhand State, India
All photos © ILO, 2023

Disclaimer

This publication has been produced with the support of PAGE funding partners. The contents of this publication are the sole responsibility of PAGE and can in no way be taken to reflect the views of any Government. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the PAGE partners concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the PAGE partners, nor does citing of trade names or commercial processes constitute endorsement.

ACKNOWLEDGEMENTS

This report has been prepared for the ILO's Regional Office for Asia and the Pacific (ILO-ROAP) under the Partnership for Action on Green Economy (PAGE) India Project. PAGE gratefully acknowledges the support of all its funding partners: the European Union, Finland, Germany, Norway, the Republic of Korea, Sweden, Switzerland and the United Arab Emirates.

The report was prepared by Kavya Raman, National Consultant for PAGE-India, under the supervision of Cristina Martinez, Senior Specialist Environment and Decent Work of the ILO-ROAP; Kelvin Sergeant, Small Enterprise Development Specialist, Decent Work Team, ILO Country Office for India; Eric Roeder, Technical Specialist, Green Jobs, Climate Action and Resilience, Decent Work Team, ILO-ROAP; Tomas Stenstrom, Senior Specialist, Employment Intensive Investment, Decent Work Team, ILO Country Office for India; and Dr Samantha Sharpe, Associate Professor of the Institute of Sustainable Futures, University of Technology Sydney, as PAGE Asia Senior Consultant and knowledge partner.

We would like to acknowledge Syed Sultan Uddin Ahmmed, Pallavi Mansingh, and Meera Malhotra of the ILO Country Office for India, and Hongye Pei, Anjor Bhaskar, Wasana Sittirin, Amartuvshin Dorjsuren, Lailly Prihatiningtyas and Monty Chanthapanya for their contributions and support for the production of this report.

The report included extensive secondary research and in-depth stakeholder consultations. The PAGE team would like to extend sincere appreciation to the following individuals who participated in virtual/in-person interviews for their technical expertise, insights and valuable time in contributing to this study and making it worthwhile:

- To Mr Shamshad Alam, Director of Tasar Development Foundation (TDF), and Mr Dhirendra Kumar, founder of Abhinav Silk, ex-IFS Officer, ex-managing director of Jharkhand Silk Textile and Handicraft Development Corporation Ltd (Jharcraft), for sparing their time to provide their technical and managerial expertise in identifying green and decent work challenges and opportunities in the textile/garment sector in the state, facilitating access to pertinent stakeholders relevant to the research, and guiding our visit to the sector in Jharkhand. A special thanks to Mr Mahtab Ahmed from TDF for accompanying our visits to field locations and providing valuable assistance in data collection, and to Mr Ashish Chakravarty, Programme Lead at TDF, for helping us build a base understanding of the workings of the tasar sericulture sector.
- To focal points from central- and state-level government coordination bodies – Mr Hemant Kumar Nanda, Director at the central Ministry of Textiles; Ms Neetu Singh (Training and Production Head), Ms Ambika (Designer), and Mr Anand (Field Coordinator) from the Jharkhand State Khadi and Village Industries Board (KVIB); Ms Akanksha Ranjan, Managing Director at Jharcraft and Director of the Directorate of Handloom, Handicraft and Sericulture; Mr Manikanth Jha from Jharcraft; Mr Jitendra Kumar Singh (Director) and Mr Rajendra Prasad (Deputy Director) from the Department of Industry, Government of Jharkhand; Ms Pratibha Priya, Executive Consultant at the Jharkhand State Pollution Control Board; Mr Umesh Kumar, Mr Gopal Kumar (Chief Inspector of Factories), and Mr Pradeep Lakhra (Deputy Labour Commissioner) from the Department of Labour, Employment, Training and Skill Development, Government of Jharkhand; and Mr Ranjan Kumar Srivastav, Manager Finance and Investment at the Jharkhand Skill Development Mission Society – for giving their valuable time and inputs concerning the current situation of the textile/garment sector in Jharkhand; expanding upon their on-going work in the sector; describing barriers, enablers and challenges faced in programme implementation from an environmental and employment perspective; and providing recommendations that will help boost the sector's growth.
- To focal points from ILO's constituent trade unions – Mr Fahim Pasha from the International Trade Union Confederation (ITUC); Mr Sukhdev from Hind Mazdoor Sabha (HMS); and Ms Reema Nanavaty, Ms Jyoti Macwan, and Ms Mansi Shah from the Self-Employed Women's Association (SEWA) – for providing a critical representation of the decent work challenges faced by the workforce in coal mining regions as well as the textile/garment sector in Jharkhand.
- To focal points from cooperative societies and weavers in Jharkhand – Mr Anwar Ahmed Ansari (Chairperson) and the Board of the Chotanagpur Handloom and Khadi Weavers' Cooperative Union Limited; Mr Saleem

Ansari, Mr Khalil, and Mr Naeem Khan from Primary Weavers' Cooperative Societies (PWCS) in Irba, Uruguttu and Katamkuli, respectively; and Mr Vishnu Ram and Mr Suraj, master weavers in Bhagaiyya weaving cluster – for not only sharing their invaluable insights into decent work challenges and opportunities in the textile/garment sector in Jharkhand, but also for guiding and facilitating our field visits to weaving clusters and societies.

- To focal points from employers and entrepreneurs in the sector – Mr Chittranjan, Assistant Manager at Orient Craft Fashion Industries Limited; Mr Niranjana Upadhyay, Founder of Niranjana Textiles; and the team running the informal dyeing unit in Bhagaiyya cluster – for providing insight into the environmental and labour practices followed by their units, the challenges they face, and possible solutions.
- To the participants of ILO's tripartite validation workshop for the study held on 23 June 2023 and named the "Tripartite Workshop for the Validation of ILO's Assessment of Green Jobs and Just Transition Policy Readiness in India and Case Study on Assessment of Green and Decent Work Opportunities in the Textile/Garment Sector in Jharkhand", who engaged in constructive discussions and provided insights and inputs to improve the study's results.
- And finally, to colleagues from partner UN agencies – Ms Manisha Choudhary, PAGE India National Coordinator, and Mr Rene Van Berkel, Mr Suresh Kennit, and Ms Shraddha Srikant from the UN Industrial Development Organization (UNIDO) for their continued support and networking efforts.

CONTENTS

Acknowledgements	3
Lists of figures and tables	6
Executive summary	7
1. Introduction	15
1.1. About PAGE	15
1.2. Green jobs and Just Transition definitions	16
1.3. Report outline	17
1.4. Assessment method	17
2. Textile/garment sector in India – A brief overview	20
3. Jharkhand State	23
3.1. The coal sector in Jharkhand and plans for energy transition	23
3.2. Promotion of industrial activity in the state	24
3.3. The state of trade unions in Jharkhand	24
4. Textile/garment sector in Jharkhand State	26
4.1. Sector overview	26
4.2. Institutional mechanisms	26
4.3. Environmental and social focus	27
4.4. Geographic presence	28
5. Sericulture and handloom cottage industries	30
5.1. Sector deep dive	30
5.1.1. Profile of handloom workers (including cotton, tasar silk, wool)	30
5.1.2. Sericulture	31
5.1.3. Handloom (mainly cotton and wool)	32
5.2. Employment – Current and future scope	33
5.3. Environmental impact	34
5.4. Working conditions	36
5.4.1. Income and productivity	36
5.4.2. Income disparity in the tasar silk sector	37
5.4.3. Occupational safety and health	38
5.4.4. Other decent work indicators	39
5.5. Challenges	40
6. Textile/garment factories	43
6.1. Employment – Current and future scope	43
6.2. Environmental impact	44
6.3. Working conditions	44
6.4. Challenges	45
7. Recommendations and conclusions	48
7.1. Recommendations	48
7.2. Conclusions	50
References	52
Annex I. Photographs from the mission to Jharkhand’s textile and apparel sector (January – February 2023)	53

LISTS OF FIGURES AND TABLES

List of figures

Figure 1. District map of Jharkhand State showcasing the regional presence of different TAGS subsectors	28
Figure 2. Share of handloom workers by employment status and sales avenues	30

List of tables

Table 1. The step-by-step assessment methodology for the research	17
Table 2. Environmental impacts of the various stages of the handloom and sericulture sectors in Jharkhand	35
Table 3. Net income earned by producers in the tasar silk value chain through the NABARD-TDF project	38
Table 4. Employment and investment in current and upcoming textile and garment factories in Jharkhand State	43
Table 5. Plans and status of textile park projects in Jharkhand State	44

EXECUTIVE SUMMARY

According to the International Monetary Fund (IMF), India is shifting toward greater renewable energy generation while striving to improve energy access, affordability and security. India is also poised to be one of the fastest growing economies in coming years, which will, in turn, sharply boost energy demand (MacDonald and Spray 2023). The accessibility of reliable energy sources, such as coal, has been instrumental in India's development, but at the same time the country is striving to decouple its economic growth from emissions. As of February 2023, India has installed around 170GW of renewable energy capacity out of its 500GW goal for 2030, showing that India's energy transition is well underway. To ensure a Just Energy Transition, there is a need to identify coal-mining hotspots and manage the potential challenges posed to these areas by the shift towards renewable energy sources. The ILO does this by identifying and promoting low carbon industries within coal-mining regions that will support employment and economic development in the event of the transition away from coal. This study therefore zooms in on Jharkhand – one of India's largest coal-producing states – and assesses green jobs and decent work opportunities within the textile and garment sector (TAGS) – one of the state's "thrust areas" for upcoming industrial development. Through the study, it is noted that the TAGS sector in general has challenges with environmental sustainability and decent working conditions, and is not necessarily an alternative employment opportunity for coal miners, given the vast difference in their profiles compared to the workforce in the TAGS sector. Nevertheless, TAGS in Jharkhand is a growth sector that can generate new jobs as well as a sector where environmental concerns and challenging working conditions can be addressed, contingent to the implementation of social dialogue, which is currently lacking.

Increased focus on environmental sustainability in India's textile and garment sector

India's textile sector accounts for 14 per cent of the country's manufacturing output and directly employs 45 million people (second-highest after agriculture) (IBEF 2013; India, MOF, Department of Economic Affairs 2023). Acknowledging the environmental impact that the sector has, both the public and private sectors are prioritizing sustainability through better effluent management, energy efficiency and circular design, among others. The Ministry of Textiles has a dedicated branch that will work on incorporating sustainability into their initiatives – they are currently mapping opportunities for greening across the value chain.

Overview of Jharkhand's textile and garment sector

Jharkhand's TAGS consists of the handloom and sericulture¹ cottage industries, as well as textile and garment factories. The state industrial policy not only identifies the TAGS as a thrust area for development but also provides incentives and subsidies to support the setup of handicraft industries and textile and garment factories.

Handloom and sericulture in Jharkhand are traditional handicrafts that provide low-carbon employment opportunities to thousands of tribal and marginalized communities in the state. The handloom sector includes mainly cotton and wool weaving, and is structured into roughly 162 Primary Weavers' Cooperative Societies across the state. The sericulture sector on the other hand is the most prominent subsector within Jharkhand's textile industry, since the state produced approximately 80 per cent of India's raw tasar silk between 2015 and 2019, and has developed the entire value chain for tasar silk starting from silkworm rearing to fabric weaving to dyeing and finishing garments. Both the handloom and sericulture sectors are considered environmentally friendly owing to their low energy consumption and use of nature-based raw materials. However, since these are mostly home-based industries with significant occupational safety and health (OSH) risks, there are concerns about the creation of decent work.

¹ Sericulture refers to the practice of cultivating silkworms for the purpose of making silk.

The textile and garment factories (mostly garment stitching units), on the other hand, have been set up in Jharkhand over the last four years since the introduction of the state's Textile Apparel and Footwear Policy 2016. Many of these factories are export-oriented and employ mainly locals and young women. Being garment stitching units, the environmental footprint of these factories is lower than others that include wet processing, and the State Government's Labour Department is working towards ensuring decent working conditions through the creation of "workers committees" in each factory. It is observed that these factories do not currently have trade unions present within them. The presence of such trade unions and functioning social dialogue are desired to truly promote and defend workers' rights.

In terms of institutional mechanisms, the Ministry of Textiles oversees India's textile industry, while various state departments promote subsectors such as sericulture, handloom and tasar silk. The Jharkhand Silk Textile and Handicraft Development Corporation Limited (Jharcraft) and the Khadi and Village Industries Board are marketing and promotional agencies for handloom and handicrafts; the Central Silk Board and the Central Tasar Research and Training Institute support research and development (R&D) in the tasar silk sector; and Weavers' Service Centres offer training, design inputs and market linkages to weavers. For the textile and apparel factories, the Department of Industries formulates policy, and labour and environmental compliance are audited by the Department of Labour and Employment and the State Pollution Control Board.

Assessment of green and decent jobs in the handloom and sericulture subsectors

- Employment:** The handloom and sericulture sectors in Jharkhand employ approximately 300,000 people, including 200,000 farmers (tasar silk) and 50,000 weavers, with the remainder being allied workers² (tasar silk/cotton/wool). The farmers belong to tribal communities, while the weavers are majority Muslim and from vulnerable sections of society, including Other Backward Classes, Scheduled Castes and Scheduled Tribes³. It is expected that a Mega Handloom Cluster will set up 25,000 looms and support the livelihoods of 100,000 weavers. This estimate can be realized only when market demand is increased accordingly.
- Assessment of environmental impact:** The pre-cocoon stages of the tasar sericulture sector are commonly considered to be environmentally friendly since: (i) the tree plantations for tasar silkworm rearing contribute to carbon sequestration; (ii) organic farming practices are prevalent in tasar tree plantations (the entire tasar silk value chain in Jharkhand was certified as organic by One Cert USA, making Jharkhand the sole supplier of organic tasar silk in the world); and (iii) the pre-cocoon value chain utilizes minimal amount of machinery and electricity. The post-cocoon stages of tasar sericulture can also be considered environmentally friendly in the way that majority of the yarn making and garment weaving is done by hand/on handlooms that do not use electricity. However, multiple opportunities exist for enhancing sustainable practices in the sector, including: recycling/re-use opportunities instead of disposing of nylon nets and plastic boxes used during pre-cocoon processes; switching from firewood to cleaner fuels to boil cocoons; avoiding stifling of moths within the cocoons through wider adoption of *ahimsa* silk (translates to "non-violent silk"); sustainable disposal options for textile waste; small-scale effluent treatment units for dyeing units; and the use of less chemical dyes and paints. Central and state government research agencies are working towards further improving environmental sustainability through the integration of decentralized solar power into the value chain, the elimination of inorganic chemicals in tasar plantations, and the development of waste-to-wealth technologies.
- Assessment of working conditions:** State government marketing agencies are unable to provide sufficient orders to the weavers associated with them. According to agency representatives, per piece rates are fixed through consultation with weavers and tailors, but weavers mention that the amount is insufficient due to the involvement of allied workers in the weaving a single garment. Most weavers today therefore work independently under master weavers/private traders. They consistently face issues such as low market demand for their products, outdated designs, insufficient working capital, scarcity of raw materials, and low bargaining power. This

² An allied worker is someone who undertakes only pre-loom and/or post-loom activities. Allied workers are found in both weaver households as well as in allied worker households.

³ Scheduled Castes, Scheduled Tribes, and Other Backward Classes were officially recognized and categorized in India through various acts and constitutional provisions over several decades. These categories were created to address historical disadvantages faced by marginalized communities, and to formulate affirmative action policies such as reservations in education, employment and political representation, that would promote social justice and equality.

translates into insufficient wages – almost 42 per cent below the state’s minimum wage for unskilled workers. The workforce also faces occupational safety and health risks, such as farmers’ exposure to extreme heat and weather conditions; exposure to suffocating conditions and harmful gases released in cocoon storages; weavers suffering from respiratory disorders, skin diseases, eye problems, tuberculosis and shortened life-spans; and sub-standard housing and common working facilities. Weavers do not have health insurance apart from that provided by the Ayushman Bharat national health scheme. While the sector sees nearly equal participation of men and women according to government national census data for the handloom sector, there is significant gender division within the activities, with most men being weavers and most women (wives of the weavers) being allied workers. Since weaving activities are primarily conducted at home, children sometimes assist their parents. Cooperative structures such as the regional handloom union provide social security benefits to associated weavers, and extending the number and reach of cooperative organizations could further help provide decent work opportunities. However, such cooperative structures are unable to provide enough work to weavers due to low market demand and high competition from the power loom sector.

- **Challenges:** Creating green jobs and decent work in the TAGS in Jharkhand faces several challenges, including the high cost of sustainable practices, lack of awareness and resources for adopting green technologies, low wages, high prevalence of informality and home-based work, insufficient health insurance coverage and other social protection provisions, difficulty in accessing benefits and finance, and low collective bargaining power and freedom of association in the absence of an organized workforce. Additionally, the scarcity of raw materials, low market demand, inadequate market-oriented designs, lack of working capital, and insufficient training and market exposure have caused a reduction in income and working days for weavers. Climate change is another factor impacting the survival of tasar silkworms and their host plants. An over-arching challenge lies in the lack of fair and transparent regulation among government coordination bodies, which has caused distrust and is creating an uneven playing field for all stakeholders in the sector.

Overall, it is seen that the handloom and sericulture sectors have low carbon footprints (with scope for even more environmentally sustainable practices) and offer livelihood opportunities to thousands of persons from vulnerable and marginalized communities, including tribal groups, but do not necessarily create decent working conditions. In its current state, the sector may not be able to contribute to large-scale employment and economic growth unless strategic planning, the development of recommended policy frameworks, and large investments are made to develop the sector.

Assessment of green and decent jobs in textile and garment factories

- **Employment:** The 15 textile and garment factories currently set up in the state have created 12,500 jobs, and a total of 42 factories are anticipated to be set up over the coming years, creating 43,000 jobs overall. Wage subsidies and capacity-building subsidies provided by the Department of Industries, coupled with skills provision by the Skill Development Mission Society are significant drivers for employment creation.
- **Assessment of environmental impact:** Since the factories in Jharkhand are mainly garment stitching units, they fall under the “white zone” of industries, which mean they are practically non-polluting. Although no environmental issues have been flagged by the Jharkhand Department of Industries and the State Pollution Control Board around effluent generation from textile and garment factories, an in-depth environmental assessment of factories in the state is required to arrive at a conclusion about the environmental friendliness of the sector. Export-oriented factories are audited on environmental and social compliance for international buyers by a third-party organization, following the Global Organic Textile Standards. In order to increase the environmental sustainability of these factories, the adoption of renewable energy and electric vehicles can be explored, energy and resource efficiency can be monitored and improved, textile waste disposal can be made scientific, and wastewater treatment can be conducted.
- **Assessment of working conditions:** According to representatives of the Department of Labour and Employment, no major issues have been flagged regarding wages and working conditions in the factories – wages are based on the minimum wage mandate of the State Government and paid on time (accounts are verified by the Labour Department), and working conditions in most of the factories seem to be decent (sufficient ventilation,

availability of food at the cafeteria, separate toilets for men and women). On paper, wage setting needs to be done through a tripartite advisory committee, but this could not be verified due to the lack of trade union presence for TAGS in Jharkhand. On instruction from the Government, the state's Labour Department is in process of creating "worker committees" in each factory, and have also provided an online portal and toll-free number for workforce grievance redressal. Most of the employees in the factories are women – many have reverse migrated from factories in South Indian states or have been rescued. As of now, there is no trade union for the TAGS within the state, but welfare officers are assigned in some factories to address workforce-related issues. Moreover, the opening up of TAGS factories in the state aims at incentivizing reverse migration and local employment of many young women who left Jharkhand to work in the TAGS sector in southern states of India. Their change in working conditions needs to be assessed.

- **Challenges:** Major challenges in green and decent work creation in TAGS factories in Jharkhand include the lack of trade unions addressing the challenges faced by TAGS factory workers (particularly women workers), lack of government incentives to adopt green technologies, shortage of skilled workforce during high-demand for exports, lack of data on OSH risks and issues faced in factories, lack of land availability for setting up factories, deficiency of locally procured raw materials and machinery, and delays in provision of clearance through the "single window" system since inputs are required from multiple departments. For export-oriented TAGS factories, international environmental and social standards are mandated by the buyers and third-party audits are conducted on the factories. However, trade unions argue that these audits do not necessarily capture the on-ground picture and do not ensure green jobs and decent work creation.

Overall, the TAGS factories in the state, since they are mainly garment stitching units, have the scope to be environmentally sustainable but cannot guarantee decent work creation until the formation of tripartite committees at the state and factory unit level and the establishment of representation through trade unions. In the context of the transition away from coal in Jharkhand and the associated job and economic losses that the state may face, the state's existing and upcoming TAGS factories are expected to generate significant new employment opportunities (about 30,000 jobs) and revenues. It must be noted that since the demographic profiles and skill sets of coal miners is different from that of TAGS workers, the current and upcoming jobs in the TAGS factories will not automatically solve the issue of layoffs in coal mines. Also, since the TAGS factories are privately owned, there is a need for tripartism as well as strict implementation and monitoring of OSH guidelines, social security provisions, and other decent work indicators – such as ensuring equal opportunity for men and women – to ensure that decent work is created.

Recommendations

The following recommendations will help create more green and decent jobs in the TAGS:

- 1. Accelerate sustainability efforts.** Efforts to promote environmental sustainability should include capacity-building, financial support for adopting modern technologies, and R&D on sustainable technologies in order to increase the adoption of practices such as organic farming, natural dyeing, effluent treatment, increased use of *ahimsa* (or non-violent) silk, use of renewable energy both in handloom and factories through the provision of government incentives. Focus should be on implementing and scaling the developed solutions and learning from best practices.
- 2. Facilitate more work for weavers.** Government institutions can develop a strategy to increase demand for handloom and silk products by engaging freelance designers for market research and model designs; hiring marketing professionals to create awareness and explore sales avenues; securing regular orders from government agencies; and ensuring weavers' easy access to raw materials.
- 3. Increasing the production of and access to raw materials for weaving.** Weavers stress that lack of raw material availability is a major impediment to maximizing their productivity and number of work days. For sericulture, government agencies should set up cocoon banks close to weaving clusters to improve access and encourage village level production and marketing of cocoons. Policy is required to boost the state's quantity and quality of disease-free laying (DFL) or seed production to create more work since central and state government agencies are unable to provide enough cocoons to bridge the gap between supply and demand. There are multiple

reasons for this, including: the fact that tasar silk is a seasonal product with a harvest season of just 3 months each year (October to December); adverse climatic conditions and erratic rainfall during crop season (India, Ministry of Textiles 2023); and the limited production capacity of the Central Silk Board, given that they need to support multiple tasar-producing states, including Jharkhand. Therefore, it is suggested that DFL production and storage be opened up to private players. For the cotton weavers, procurement of cotton yarn needs to be made more convenient by ensuring timely delivery of the yarn and by splitting up the upfront payment for raw materials into instalments.

4. **Increase the earnings of tasar farmers/weavers.** Year-round income opportunities can be explored for tasar farmers through other activities like vegetable cultivation as inter-crops on host tree plantations. For weavers, raw material prices need to be subsidized when they are higher than usual; government-set wage rates need to be increased based on tripartite consultation while taking into consideration the involvement of allied workers in the weaving process; and technologies that increase productivity and wages, such as more efficient automatic reeling machines should be piloted and scaled. A policy framework should be created to provide weavers with access to working capital since a group of 20 women working on tasar reeling require an investment of 6–8 million rupees in a year to procure sufficient raw materials, and a single weaver requires an investment of 300,000–400,000 rupees every six months to purchase raw materials and maintain the loom before they can sell their garments.
5. **Creating decent working conditions.** R&D and uptake of automated reeling machines needs to be ensured among women in weaving clusters to eliminate the practice of thigh-reeling; this should be achieved by incorporating their feedback on their experiences with the machines. For workers across the supply chain in handloom and sericulture sectors as well as TAGS factories, occupational safety and health risks need to be measured and mitigated, particularly in informal dyeing facilities. In TAGS factories, transportation facilities should be arranged for the drop off and pickup of women workers, and overtime rates should be increased. The opening up of TAGS factories in Jharkhand has reduced migration of women to other states, according to the state's Labour Department – assessments can be undertaken to quantify the differences in TAGS workers' working conditions outside the state versus within the state. There is further need to: assess the gender pay gap in the sector; make large-scale efforts to include women across the value chain; promote women-owned cooperative groups; conduct technical and managerial skill building for women; and provide women with access to finance and markets, in order to create equal opportunity for women to participate in the sector.
6. **Improving social security.** Efforts to improve social security for weavers and allied workers should include providing health insurance for occupational health risks, providing a pension, increasing coverage of issuing weaver identity cards, supporting home renovation/purchase for weavers, and assessing occupational safety and health risks. Awareness on relevant social protection schemes must be raised among weavers, and processes to avail oneself of the schemes must be made more weaver-friendly.
7. **Build/strengthen workers' organizations.** This needs to be done in both the sericulture and handloom sectors, as well as in TAGS factories in order to enable collective bargaining and highlight workforce issues. However, since unionization in informal sectors is challenging, a Jharkhand state-level tripartite body must be instituted, building over existing mechanisms.
8. **Repurpose closed coal mines with tasar silk plantations and other employment opportunities that support these plantations.**
In addition to the above, the following recommendations from stakeholders will revitalize the TAGS:
9. **Conduct more deliberate training.** Conducting longer and more comprehensive trainings for weavers, including on design, modern loom use, IT skills (online marketing and sales), financial literacy, and quality assurance, with the aim of achieving high-quality designs and improving productivity. Trainings can be facilitated by government bodies like Jharcraft and KVIB and done in collaboration with professional designers and private garment companies to enable guidance on demand-based designs. A paid training and handholding period of at least 6 months should be made mandatory for master trainers to grasp the latest design skills and to teach them to the weavers. For TAGS factories, short-term workforce estimates should be made and demand-oriented trainings should be designed and conducted through feedback obtained from employers.
10. **Identify and support enterprises.** Currently, many small and informal enterprises in the handloom and sericulture sectors are unregistered due to the lack of knowledge and exposure of the benefits of registration. These enterprises can be identified, supported and revitalized through various measures such as registration,

need-based capacity-building, financial support, awareness-raising of occupational safety and health risks, and introduction of protection measures. This can be initiated by registering the enterprises on the Ministry of Micro, Small and Medium Enterprises' "Udhyam" platform, which will help them access various benefits and support offered by the Ministry.

- 11. Facilitate networking and exposure for the workforce.** Weavers' groups should attend exhibitions to sell their products, receive feedback and improve their designs; attend annual technological exhibitions; and become aware of various dyeing/finishing/printing units operating in the state to avail themselves of services within Jharkhand. This can be facilitated through collaboration – government agencies such as Jharcraft and KVIB can provide information about where and when various exhibitions are being conducted, while weavers' cooperatives can obtain the slots and nominate master weavers/weavers to attend the exhibitions through a transparent and democratic selection process that maximizes the number of weavers who are able to gain exposure and make sales. This process could be ensured by publicly displaying the names of weavers who attend the exhibitions.
- 12. Create craft villages.** The Bhagaiyya tasar weaving cluster could be developed into a craft village for tourism to promote tasar handicrafts, provide additional income to weavers, and improve living conditions and infrastructure. Such craft villages are comparable to the "One Tambon One Product" project undertaken by the Government of Thailand to encourage each local community to use local wisdom for the development of local products for domestic and global markets to improve self-reliance.
- 13. Improve transparency and accountability of responsible government agencies.** Within the handloom and sericulture sectors, government agencies' payments to workers are often delayed and raw material availability is uncertain. Government agencies must create transparency in their operations across the value chain to gain the trust of the workers and to ensure that a level playing field is being created for all without the negative impact of middlemen. In government agencies supporting the TAGS sector, such as Jharcraft and KVIB, there is a need to assess the adequacy of staff, the adequacy of compensation/staff salary, and the regularity and amount of travel reimbursement provided to staff to conduct field visits to farms and weaving clusters. The above being inadequate could contribute to ineffective institutional performance.

ABBREVIATIONS AND ACRONYMS

CTR TI	Central Tasar Research and Training Institute
DoI	Department of Industries, Government of Jharkhand
GoJ	Government of Jharkhand
GOTS	Global Organic Textile Standards
Jharcraft	Jharkhand Silk Textile and Handicraft Development Corporation Limited
KVIB	Khadi and Village Industries Board
NABARD	National Bank For Agriculture And Rural Development
OSH	occupational safety and health
PAGE	Partnership for Action on Green Economy
PRADAN	Professional Assistance for Development Action
PWCS	Primary Weavers' Cooperative Society
TAGS	textile and garment sector
TDF	Tasar Development Foundation
UNDP	United Nations Development Programme
WSC	Weavers' Service Centre



INTRODUCTION

1

1. INTRODUCTION

1.1. About PAGE

The Partnership for Action on Green Economy (PAGE) was launched in 2013 as a response to the call at Rio+20 to support those countries wishing to embark on greener and more inclusive growth trajectories. PAGE brings together five UN agencies – UN Environment Programme (UNEP), International Labour Organization (ILO), UN Development Programme (UNDP), UN Industrial Development Organization (UNIDO), and UN Institute for Training and Research (UNITAR) – whose mandates, expertise and networks combined can offer integrated and holistic support to countries on inclusive green economy, ensuring coherence and avoiding duplication.

ILO's activities within PAGE focus on green jobs and ensuring a Just Transition, one that manages workplace changes as a result of the impacts of climate change and climate action. In both cases, coherent and consistent policy frameworks are needed, as well as an understanding of how policies will be implemented and change workplaces, behaviours and activities at both the organizational and individual level.

After recording GDP growth of around 7–8 per cent for several years, India's economy has started to slowdown. The country is also facing acute environmental challenges, including climate variability, poor air quality, over-exploitation of groundwater, water scarcity, increasing inland and coast salinity, land degradation, and increased intensity of climate extreme events. These have adversely affected economic performance and resulted in increased poverty, unemployment and poor health. India has made significant efforts to tackle this through several policies and programmes, including, the National Policy on Biofuels, the National Clean Environment Fund, the Smart Cities Mission, the Green Hydrogen Policy, and concerted efforts to achieve its Nationally Determined Contributions as well as Sustainable Development Goals.

India joined PAGE in 2018 to catalyse action and enhance cooperation on existing initiatives on national and sub-national levels. The Government's focus on increasing resource efficiency through the National Resource Efficiency Programme (under finalization) provides a specific entry point for PAGE support. Support areas being explored:

- Enhancing national initiatives on **resource efficiency**;
- Providing support for the implementation of India's **resource efficiency roadmap**;
- Supporting national priorities pertaining to **sustainable public procurement** and **eco-labelling**;
- Supporting the **modernization of micro-small- and medium-sized enterprises**, particularly in the manufacturing sectors; and
- **Building synergies** with other green economy-aligned initiatives.

Given India's emphasis on green policies and initiatives, and international commitments towards climate action, the ILO deems it necessary to look into employment aspects of greening. Through this research note, ILO builds upon an existing national level study on green jobs and Just Transition policy readiness in the energy sector (2022) which highlights the employment implications of India's energy transition away from coal. A particularly relevant aspect of this transition is the geographic distribution – the states with high solar power generation capacity are in the west and south of the country, while the coal-rich states are predominantly in the centre and the east. This difference in geographic distribution raises important implications for how local-, state-, and national-level agencies need to manage employment implications such as workforce migration, and the impact of the transition on the regional economy (CIF, n.d.).

This study attempts to contribute to Just Transition planning of Jharkhand State, which is one of the highest coal-producing states in India. Though the Government reports suggest that coal requirements in India will keep rising till 2030, a coal phase down is expected and is imminent. Another issue is that of unprofitability of mines – a majority of Coal India Limited's (the world's largest coal mining company that produces 80 per cent of India's coal

output) mines are either making losses, are on artificial support, or are making very low profits. Underground mines are very labour intensive, making them unprofitable to operate. An Ernst & Young, SED Fund and FICCI (2022) report discusses that 23,000 jobs of underground mine workers in Jharkhand are potentially at risk of being lost and must be considered for Just Transition planning.

This study looks to assess if employment and economic development in the Jharkhand region can be shifted towards alternative low-carbon industries that provide decent work. We therefore assess the scope for green job and decent work opportunities within the textile and garment sector (TAGS) in the state, since this sector is identified as a “thrust area” in the industrial development plans, and is being promoted through the industrial policy to attract investment and enterprises.

1.2. Green jobs and Just Transition definitions

Green jobs: According to the ILO (2016), green jobs are decent jobs that contribute to preserve or restore the environment, be it in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency. Green jobs help improve energy and raw materials efficiency, limit greenhouse gas emissions, minimize waste and pollution, protect and restore ecosystems, and support adaptation to the effects of climate change.

At the enterprise level, green jobs can produce goods or provide services that benefit the environment, for example green buildings or clean transportation. However, these green outputs (products and services) are not always based on green production processes and technologies. Therefore, green jobs can also be distinguished by their contribution to more environmentally friendly processes. For example, green jobs can reduce water consumption or improve recycling systems. Yet, green jobs defined through production processes do not necessarily produce environmental goods or services.

The ILO’s focus is on ensuring that these green jobs are quality jobs in line with the four strategic objectives at the heart of the ILO decent work agenda, which seek to:

- set and promote standards and fundamental principles and rights at work;
- create greater opportunities for women and men to obtain decent employment and income;
- enhance the coverage and effectiveness of social protection for all; and
- strengthen tripartism (government, employers’ organizations and workers’ organizations) and social dialogue.

There is no universal definition or accepted way of categorizing and counting green jobs. Most definitions of green jobs consider greening on a spectrum with some jobs being classified as directly green, and other indirectly.

Just Transition: For most of the workforce, greening will change their work by only a small amount. For other occupations, greening will change them significantly, new occupations will be created, and other occupations will diminish/be phased out. According to the ILO, a Just Transition means greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind. It ensures that in the process of transitioning to a green economy, people in jobs and occupations that are reduced and phased out have pathways to transition to other viable employment, and have social protection on this pathway.

A Just Transition is possible only with tripartite social dialogue and engagement between government, employers and workers, along with other relevant stakeholders to a particular industry in question. According to the ILO, 40 per cent of the world’s employment – 1.2 billion people – relies directly on a healthy and stable environment, and COVID-19 has created a labour market crisis that the world has not recovered from. Tackling the environmental and employment challenges simultaneously now is a necessity.

At the outset, climate action and Just Transition do not come cheap. But the cost of inaction is far greater than the cost of action, given that 23 million working-life years have been lost to natural disasters every year since 2000. In India, natural disasters cost a whopping \$80 billion in the 20-year period between 1998 and 2017. In the year 2020 alone, super cyclone Amphan and floods across the country resulted in damages worth \$23 billion. Exploring how a Just Transition can be financed, and by whom, must now be a key focus area for countries. Just Transition may look different for different countries, and these plans need to be developed with country-specific context.

1.3. Report outline

The research note starts by stating the context and overview of the textile sector in India, and the coal transition and industrial development plans of Jharkhand State.

It then provides the background, institutional structure, and geographic presence of the TAGS across Jharkhand State. The report splits into two parts – one focusing on the handloom and sericulture⁴ subsectors, and the other on the textile and garment factories in the state.

Within each of these subsectors, the report showcases a deep-dive into the workings of the sectors, impactful institutions, the current and future scope for employment, the environmental implications, the status of decent work creation, and the challenges faced.

Finally, the report provides a list of recommendations that will contribute to increasing employment, environmental sustainability and decent working conditions within the sector. The conclusion of the report addresses the key question the report is trying to answer – what is the status of green job and decent work opportunities in Jharkhand's TAGS, and can this sector serve as a medium of economic diversification and employment creation during the state's energy transition away from coal?

1.4. Assessment method

Table 1. The step-by-step assessment methodology for the research

Activity	Details
Desktop analysis (Sep 2022)	Extensive secondary research was undertaken to gain a preliminary understanding of the structure and priorities of the TAGS in India and in Jharkhand, and to map out the key stakeholders who needed to be interviewed for further inputs. The secondary research included going through the: <ul style="list-style-type: none"> • Ministry of Textiles' Vision Document 2015; • Jharkhand's Industrial and Investment Promotion Policy 2021; • Jharkhand's Textile, Apparel and Footwear Policy 2016; • National Silk Policy 2020; and • annual reports of relevant agencies, including the Ministry of Textiles, Central Silk Board, Central Tasar Research and Training Institute, among others.
Intermediate findings and questionnaire development (Oct 2022)	Findings from the desk study were summarized into a draft report, with the list of stakeholders to be interviewed and the final scoping of the study based on information collected. A detailed questionnaire was developed for each stakeholder group, to assess green jobs and decent work opportunities in the sector.

⁴ Sericulture refers to the practice of cultivating silkworms for the purpose of making silk.

<p>Stakeholder interviews (Dec-Feb 2022)</p>	<p>Virtual and in-person interviews were conducted with over 21 stakeholders. In-person interviews were conducted in New Delhi and Jharkhand. The stakeholders included relevant personnel from:</p> <ul style="list-style-type: none"> • central government agencies (Ministry of Textiles); • state government agencies (Directorate of Handloom, Sericulture and Handicraft; Department of Industries; Jharkhand State Pollution Control Board; Department of Labour and Employment; Jharkhand Skill Development Mission Society); • statutory government bodies in the TAGS (Khadi and Village Industries Board, Jharkhand Silk Textile and Handicraft Development Corporation); • NGOs (PRADAN, Tasar Development Foundation); • trade unions (Hind Mazdoor Sabha, Self-Employed Women’s Association, International Trade Union Congress); • weavers’ cooperative societies (Chotanagpur Handloom and Khadi Weavers’ Union, Primary Weavers’ Cooperative Societies at Irba, Pithoria, Uruguttu and Katamkuli); • dyeing units (Niranjan Textiles); • master weavers; and • entrepreneurs in the Bhagaiyya weaving cluster.
<p>Report compilation and tripartite validation workshop (June 2023)</p>	<p>The findings from the desktop analysis and stakeholder interviews are analysed and compiled into this report, and validated through a tripartite workshop consisting of ILO constituents as well as all the stakeholders who participated in the interviews.</p>



TEXTILE/GARMENT SECTOR IN INDIA – A BRIEF OVERVIEW

2

2. TEXTILE/GARMENT SECTOR IN INDIA – A BRIEF OVERVIEW

One of the first industries to come into existence in India, the Textile industry accounts for 14 per cent of the country's manufacturing output (IBEF 2013), 10.5 per cent of India's total exports share, and 4.6 per cent share of global trade in the sector (India, Ministry of Textiles 2023). In 2020–21 the industry was valued at US\$103.4 billion, and is estimated to reach US\$190 billion by 2025–26 (Hari and Mitra 2022). The sector employs 45 million people directly, including a large number of women and rural population (India, MOF, Department of Economic Affairs 2023). Traditional sectors like handloom, handicrafts and small-scale power loom units are the biggest source of employment for millions of people in rural and semi-urban areas, being a large employer of women workforce.

However, the industry has significant environmental implications – effluents from the industry pollute water bodies, ground water and soil, and large amounts of water are used for production of textiles – between 50 and 100 litres of water for handling just one kilogram of garment. The Government has taken cognizance of this impact and has taken steps towards minimizing it. The National Textile Policy (2000), though dated, focuses on developing state-of-the-art manufacturing facilities in conformity with national and international environmental standards, alongside welfare measures and social security for weavers in the handicraft and handloom sectors.

The textile industry is increasingly focused on adopting green policies in four areas: pollution reduction, circular economy, energy efficiency, and research and development (R&D). The Government has introduced schemes to support this effort:

- Effluent treatment is strictly mandated through the Ministry of Environment, Forest and Climate Change's Zero Liquid Discharge (ZLD) policy – large textile clusters in Tamil Nadu and Gujarat are practicing ZLD
- Schemes by the Ministry of Textiles and the Khadi and Village Industries Commission such as "Solar Energy Scheme for Power Looms" and "Solar Charkha Mission" are supporting last mile communities in greening their equipment. The Ministry of Textiles is also developing national craft villages to promote craft and tourism as a sustainable livelihood option.
- Working together with the private sector, the Ministry of Textiles in 2019 launched Project SU.RE. – Sustainable Resolution, a commitment by 16 of India's biggest garment brands to establish a sustainable pathway for the fashion industry. This in conjunction with the Government's initiative to launch seven Mega Investment Textiles Parks will create many sustainable jobs.
- Among private companies, Indian clothing brands are shifting towards sustainable raw materials, designing for higher durability and refurbishment, increasing resource efficiency, sustainable packaging and effluent management. Companies like Levi's, Marks & Spencer, and H&M are working towards resource efficiency and waste management initiatives, while IKEA and Marks & Spencer are promoting better agricultural practices for cotton production.

Recently, the Ministry of Textiles has instituted a sustainability vertical focused on mapping sustainability and circularity needs within the textile value and introduce policies to ensure sustainable production. A few key observations have been – sustainable textiles are enabled by consumer demand (mainly exports); textile waste generation needs to be mapped at both pre- and post-consumer stage; focus will be on circular design of fabrics for easy material recovery; sensitization for the Indian consumers is necessary to drive responsible consumption.

In terms of working conditions within the sector, the ILO has identified key concerns in the TAGS sector in India (in selected regions/factories) as low wages, long working hours and overtime to meet production targets, poor working conditions with lack of proper lighting and ventilation and safety measures, exploitative labour practices, gender discrimination, issues of contract labour, lack of collective bargaining power, and lack of OSH and social security benefits, especially with regard to post-retirement provisions for the workforce. Occupational safety and health (OSH) risks exist in textile and garment factories especially during wet processing due to the use of chemicals, while on the other hand there is minimal understanding of OSH risks within the handloom sector.

The Ministry of Textiles is keen on understanding the opportunities and gaps in green jobs and decent work creation in the TAGS in Jharkhand, and identifying the policy imperatives to design frameworks that promote sustainability and decent work creation.



JHARKHAND STATE

3

3. JHARKHAND STATE

Jharkhand is one of India's newest states formed in 2000. The state's proximity to ports makes it an attractive location for Export Oriented Units (EOUs). With enormous potential for industrialization and 40 per cent of India's mineral wealth, Jharkhand forms a launching pad for many industries and is the largest producer of tasar silk, coal, mica, kyanite and copper in India. The state is rich in forests and minerals, and has a vibrant tribal culture, arts and crafts.

The Jharkhand Government is working towards improving exports, skill development, mineral based products, handicrafts, handlooms, agriculture and processed food products to increase industrial development in the state.

In order to develop an investor-friendly environment, the state has introduced Jharkhand Investment Promotion Board, single window clearance, online payments, third party certifications, SOPs etc for adoption by various departments and govt agencies.



3.1. The coal sector in Jharkhand and plans for energy transition

India is the second largest producer of coal in the world, with Jharkhand being one of the largest coal producing states. In all, 8 per cent of the State Government's revenue comes from coal mining taxes and royalties. The sector generates employment in mining and related industries including iron and steel, thermal power plants etc. Coal India Limited (CIL) is the Public Sector Undertaking under the Ministry of Coal, which is responsible for coal mining activities in the country – three of its subsidiaries work in Jharkhand, namely Central Coalfields Limited, Bharat Coking Coal Limited, and Eastern Coalfields Limited. They collectively employ a workforce of about 75,000 formal workers and an almost equal informal workforce.

Over 50 per cent of the coal mines in Jharkhand are closed and of the operational mines, half are unprofitable (iFOREST 2021). Coal mining is getting privatized, and trade unions anticipate that the sector will be completely privatized in the coming years. This has multiple effects:

- Employees from the organized sector who lose their jobs due to mine closure are absorbed into nearby mines or other roles within the organization. Employees from the unorganized sector either find work in other mines, or migrate to other jobs/geographies in search for work. This is where Just Transition planning is crucial for protecting those who will be negatively impacted by the energy transition.
- Privatization of mines also means increased vulnerability of the workforce, because contractual workers are made to work over-time, earning half of what government sector employees earn for the same work, they are not given any benefits such as provident fund, and there is no focus on occupational safety and health.

Though the Ministry of Coal has instituted a Just Transition Cell in 2022, coal trade unions have not been consulted for Just Transition discussions yet. The planning commission NITI Aayog acknowledges the need for Just Transition planning in the region to ensure re-skilling, social protection, and alternate livelihood opportunities for those who lost their jobs, while also ensuring that economic development is not affected. Approximately 23,000 jobs of underground miners in Jharkhand are estimated to be at risk within the purview of a Just Transition (Ernst & Young, SED Fund, and FICCI 2022).

Trade unions believe that the coal sector will continue to run for at least another 50 years, with companies like Tata, Birla, Jindal and Adani taking over coal mining operations. It is imperative to start planning the development of other sunrise sectors in the state, such as tourism, food processing, and textiles, in order to ensure that employment and economic development are not negatively affected. In transitioning the coal mining workforce to other industries, there will be a major change in skillsets, working conditions and work culture overall.

In addition to coal, Jharkhand is also home to employment-intensive mining of resources such as iron ore, uranium, bauxite, mica and others. These sectors also provide an opportunity for Just Transition planning to create green and decent work.

3.2. Promotion of industrial activity in the state

Jharkhand is actively seeking investment avenues to build a robust infrastructural backbone to provide a conducive environment for a multisectoral economy. In the recent Jharkhand Industrial and Investment Promotion Policy 2021 (Jharkhand State Department of Industry 2021), seven identified focus sectors are – textile and garment, automobile, auto components and electric vehicles, agro-food processing, meat processing industries, pharmaceuticals and electronics system design and manufacturing.

Jharkhand has reported the potential of leveraging private and public investments for over 500 large scale infrastructure development projects across multiple sectors, of more than 3.75 trillion rupees, which places a positive premise for job creation potential in the state. The key districts that stand to benefit through these planned investments are Ranchi, Dhanbad, Seraikela Kharsawan, West Singhbhum, Hazaribagh, and Ramgarh (Ernst & Young, SED Fund, and FICCI 2022).

The rest of the report focuses on assessing the green job and decent work opportunities within the TAGS in Jharkhand to understand whether it can contribute to employment generation and economic development in light of privatization of coal mining and the shift away from thermal power towards renewable power in the state.

3.3. The state of trade unions in Jharkhand

According to Central Trade Union AITUC, registrations of 980 trade unions in Jharkhand State have been cancelled by the Government of Bihar (Jharkhand's parent state before separation in the year 2000), and was not contested by the Government of Jharkhand. The Department of Labour mentions calling Tus for registrations but received little response on this. Currently, the Department of Labour has stated that Tus wishing to register themselves could contact the department for inquiries and support in the matter.

In the state of Jharkhand, union-busting and low involvement of trade unions in the Government's decision-making processes has been observed, leading to gaps in decent work creation within the state. Trade unions recommend the State Government to set up/activate a state-level tripartite body consisting of the government, employers' organizations and workers' organizations (Central Trade Union) for planning and decisions around labour-related matters.



TEXTILE/GARMENT
SECTOR IN
JHARKHAND STATE



4

4. TEXTILE/GARMENT SECTOR IN JHARKHAND STATE

4.1. Sector overview

Jharkhand in its Industrial Investment Promotion Policy 2021 declared textile as a “thrust area” for economic development. Jharkhand’s TAGS can be broadly classified into two parts – (1) sericulture (silk) and handloom cottage industries, and (2) textile and garment factories/industries. Jharkhand’s textile sector primarily thrives on tasar sericulture, given that the state has an abundance of host trees and conducive temperatures that support the rearing of silkworms, and has also developed the complete supply chain to produce tasar silk products from silkworm farmers to fabric weavers and sellers. Though sericulture has been practiced for centuries, in the recent years the state has emerged as India’s largest producer of tasar silk, with close to 80 per cent share of India’s raw tasar silk production between 2015 and 2019 (Rai and Satyanarayana 2022). Jharkhand primarily exports tasar silk to the United States, the United Kingdom, Germany, France, Türkiye, Japan, Australia, Sweden and Switzerland. In addition to silk weaving, the State has taken adequate measures for the revival of cotton wool weaving. The handloom industry focuses on cotton weaving and gained momentum during the 1980s with the formation of many Primary Weavers’ Cooperative Societies (PWCSs) across the state. The prevalence of the sericulture and handloom sector in the state not only provides local employment to thousands of tribal and marginalized communities, but also causes minimal environmental damage given that the sector is non-industrial, home-based, and handloom-based. The scope to make the sector greener and more decent, and contribute to the state’s just energy transition is discussed in sections 4.3 and 4.4.

On the other hand, the Jharkhand Government’s Department of Industries released its Textile, Apparel and Footwear Policy in 2016, the incentives of which have attracted many private apparel companies to setup their factories in the state over the last four years, generating employment and boosting the region’s economy. Given that many of these units are export-oriented, they are audited by a third party against strict social and environmental mandates by the Global Organic Textile Standards (GOTS), creating scope for creation of green and decent work. This has been further analysed in sections 5.2 and 5.3.

4.2. Institutional mechanisms

The Ministry of Textiles is the national agency responsible for the formulation of policy, planning, development, export promotion and regulation of the textile industry in India. At the state level, multiple departments are looking at the different subsectors in the TAGS.

The cottage industries of sericulture and handlooms are being looked after and promoted by the state’s Directorate of Handloom, Sericulture and Handicraft. This department works closely with Jharkhand Silk Textile and Handicraft Development Corporation Ltd, commonly known as Jharcraft, founded in 2006 as the marketing/promotional body for handicraft, handloom and sericulture enterprises. Jharcraft implements government-funded schemes while providing design, raw material, training and marketing support within the sector. Jharcraft as a brand supports 300,000 artisans, weavers, and others in handicrafts, handlooms and sericulture. In 2004, the Khadi and Village Industries Board (KVIB) was established in the state to promote the handicrafts and handloom sector, particularly cotton weaving activities. KVIB’s focus is to introduce, train and support women in the handloom sector in Jharkhand.

The Central Silk Board established in 1948 is the prime government institution looking after the development of the silk industry. The mandated activities of the Central Silk Board are research and development, maintenance of four tier silkworm seed production network, leading commercial silkworm seed production, standardizing and

instilling quality parameters in production processes, and advising the Government on all matters concerning sericulture and silk industry. These mandated activities of Central Silk Board are being carried out by 160 units of the Central Silk Board located in different States through an integrated Central Sector Scheme viz., “Silk Samagra-2” for development of silk industry (India, Ministry of Textiles, Central Silk Board 2022).

Under the patronage of Central Silk Board, the Central Tasar Research and Training Institute (CTRTI) was constituted in 1964 in Ranchi, the capital of Jharkhand, to accommodate the needs of tasar silk industry in the state. Its primary objective is to provide the R&D support to this agro-based industry in Jharkhand. It also provides for human resource training and formulating social developmental programmes. It has enormously contributed to the development of tasar sericulture in this state by providing improved technology and handing it over to the field, and provides training to the tribal and rural farmers and unemployed youth to help them become better entrepreneurs.

Since the sericulture industry is agro-based and mainly practiced in rural areas, the Ministry of Rural Development has designed schemes for the sector under the National Rural Livelihood Mission. The Ministry of Agriculture and Cooperative Societies also works towards setting up Primary Weavers Cooperative Societies in the state.

Jharkhand State Government’s Department of Industries (DoI) is responsible for formulating policy to create a conducive environment for textile and garment factories/industries to flourish in the state. Jharkhand Industrial Infrastructure Development Corporation (JIIDCO) facilitates investments for industrial growth within the sector. The Department of Labour and Employment looks after the factories’ compliance with labour laws, while the Jharkhand State Pollution Control Board ensures that environmental regulations are being followed in the factories.

Weavers’ Service Centres (WSCs) play a pivotal role in skill up-gradation, capacity-building and the dissemination of technological interventions for reducing the drudgery of handloom weavers and increasing productivity, thereby improving the earnings of weavers. The WSCs provide design inputs to the weavers through their designers, arrange training programmes in various pre-weaving, weaving and post-weaving disciplines. The Centres also sponsor weavers in various trade fairs and expos to help them in establishing direct market linkages.

Agencies like Jharcraft and the WSCs facilitate cluster-level and need-based handloom and sericulture trainings, ensuring that the trainers (commonly known as “master weavers”) are compensated roughly 18,000 rupees per month, with trainees provided 300 rupees per day. The training period generally lasts 45–60 days. To ensure the effectiveness of the training, Jharcraft introduced an alternate payment structure in which trainees would be paid the last month’s stipend only after working productively to weave/stitch clothes for a month post-training.

4.3. Environmental and social focus

In general, the cottage industries generate less pollution, given that they are based on mechanical work done by the weavers and allied workers, and they use minimal energy in the various processes. The tasar sericulture industry being a forest-based sector contributes positively to the environment by virtue of requiring large tree plantations to rear silkworms on.

The Jharkhand State Textile, Apparel and Footwear Policy 2016 acknowledges consumer shift towards environmentally friendly goods, with a focus on meeting international standards to increase credibility for exports. It suggests the following interventions for greening the industry (Jharkhand State Department of Industries 2016):

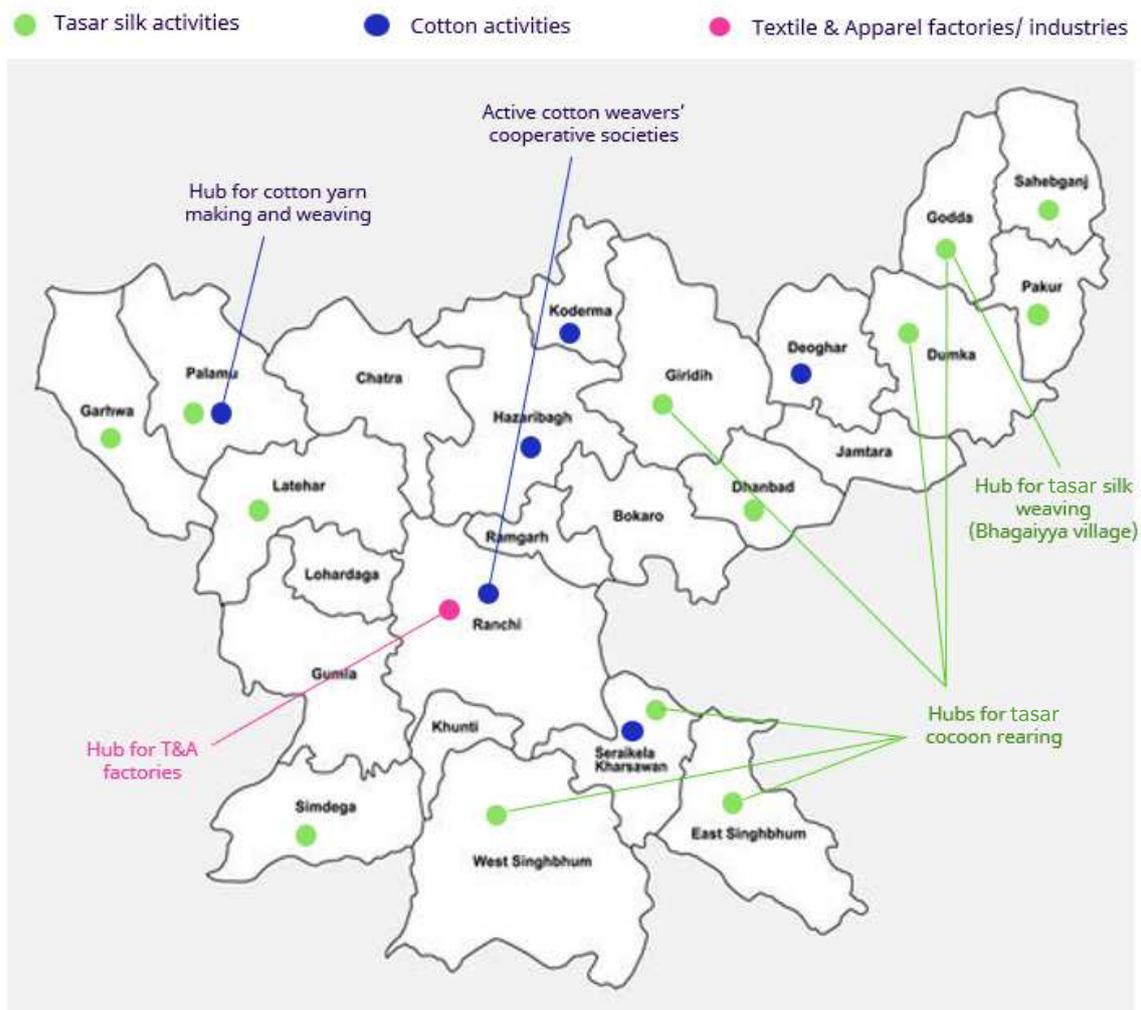
- Evaluation of each stage of supply chain and production cycle to minimize environmental hazards
- Using dyes with low formaldehyde content, and that are free from pesticides and heavy metals
- Getting certifications/eco-labels to ensure that global standards of organic production/processing are met; Promoting projects/companies complying with certain standards of organic production/processing
- Including in infrastructure facilities water supply, biological/chemical effluent treatment plants, alternative electricity supplies, steam and compressed air designed to include energy-saving processes

The State Government has taken the following steps to promote environmentally friendly practices in the sector:

- Textile and garment parks will be set up in the state over more than 75 acres, following international environmental and social standards
- The State Government is providing assistance at a level of 50 per cent up to a maximum expenditure of 1 million rupees to obtain certifications which include ISO 14000 for Environmental Management Systems
- For disbursement of incentives to micro, small, and medium enterprises (MSMEs) under this policy, applications will be sanctioned through a “Single Window Clearance” system in which applications will be vetted by a committee consisting of representatives from Ministry of Environment, Forest and Climate Change, water resources, Jharkhand State Pollution Control Board, Department of Labour Employment and Training, and the Department of Energy

4.4. Geographic presence

Figure 1. District map of Jharkhand State showcasing the regional presence of different TAGS subsectors



T&A = textile and apparel.

Source: Created by the author using data from Jharcraft (n.d.) and inputs from stakeholders in the Jharkhand State Department of Industries and the Jharkhand State Khadi and Village Industries Board.



SERICULTURE AND HANDLOOM COTTAGE INDUSTRIES



5

5. SERICULTURE AND HANDLOOM COTTAGE INDUSTRIES

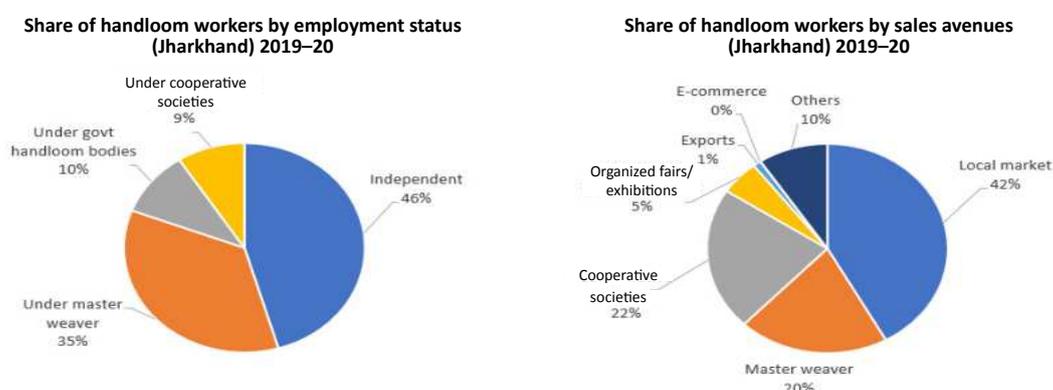
5.1. Sector deep dive

5.1.1. Profile of handloom workers (including cotton, tasar silk, wool)

Below is the generic profile of Jharkhand's handloom workers, based on the Fourth All India Handloom Census 2019–20 (India, Ministry of Textiles 2019):

- **Demographics:** Majority of handloom workers come from rural areas (80 per cent), are Muslim (78.3 per cent), belong to vulnerable communities such as Other Backward Classes (70 per cent) /Scheduled Castes (12 per cent) /Scheduled Tribes (18 per cent). Jharkhand ranks third in the country in its high share of tribal communities engaged in this sector (17.9 per cent). Over 80 per cent live in *kuccha*⁵ or semi-*kuccha* settlements.
- **Gender:** The gender split of the workforce is almost equal, however, there is a significant gender division in the activities – majority of the weavers are male (62 per cent), while majority of the allied workers are female (69 per cent).
- **Type of work/raw materials used:** Weavers in the state use 12.7 per cent of the country's tasar yarn, ranking third in the country. About 12,000 handloom households use cotton yarn, and 11,467 use silk yarns including tasar, eri, muga and mulberry. Yarn is primarily sourced from the open market, dyes/chemicals from National/State Handloom Development Corporation. Majority of the dyes are natural dyes (60 per cent).
- **Earnings:** Overall, 68 per cent of handloom households earn below 5,000 rupees per month from *all* income sources, 97 per cent earn below 5,000 rupees per month from *only handloom activities* – 42 per cent below minimum wages for unskilled work.
- **Working days:** Annually, weavers are engaged for 206 days, allied workers are engaged for 177 days. Jharkhand has 1.28 allied workers per handloom worker household, ranking fourth-highest in the country, and 71.5 per cent are full-time workers.
- **Social protection, freedom of association:** While almost all handloom weavers have Adhaar cards, 74 per cent of do not have bank accounts. Twenty-two per cent are associated with cooperative societies, and 15 per cent with self-help groups/joint liability groups.

Figure 2. Share of handloom workers by employment status and sales avenues



Source: Created by the author using data from India, Ministry of Textiles 2019.

⁵ A *kuccha* house is made of unbaked bricks, bamboo, mud, grass, reeds, thatch, loosely-packed stones, and so on. These are non-permanent houses found mostly in remote villages.

5.1.2 Sericulture

The sericulture sector in Jharkhand undertakes traditional rearing of wild silkworms which feed on Arjun, Asan, and Sal trees found in the forests of Jharkhand. Tasar silk is therefore classified as a forest product under the category of “Vanya silk”. Tasar silk is not only known for its charm, texture, and natural golden colour, but also for its high ethical value. It is known as *ahimsa* silk (translated to non-violent silk) as silkworms are not killed through the boiling of their cocoons, for the most part. The fibre in this type of silk is extracted only after the silkworm have naturally left the cocoons. The state has subsequently developed the complete value chain of tasar silk with forward and backward linkages including silkworm rearing, cocoon production, reeling/spinning of yarn, fabric weaving and garment making. The entire tasar silk value chain was certified as organic by One Cert USA, making Jharkhand the sole supplier of organic tasar silk in the world (Jharcraft, n.d.).

The different activities comprising tasar sericulture

Tasar sericulture can be understood through pre- and post-cocoon activities:

Pre-cocoon activities include silkworm rearing in the year’s first crop in July, seed production in “grainages” and testing of the eggs for diseases during the month of August, followed by commercial silkworm rearing with disease-free layings (DFLs) in the second crop from September to December which produces the final set of cocoons for the year. Pre-cocoon activities provide a short duration of employment but with high income per month since they require high level of attention and care to rear healthy silkworms which produce good quality cocoons. These activities usually engage people from tribal communities since rearing is done in the forests.

Post-cocoon activities include boiling of cocoons to soften them, reeling or spinning of boiled cocoons into yarn (spinning is done for whole cocoons which contain the butterfly, while reeling is done for cut cocoons out of which the butterfly has flown away), weaving of the yarn into fabric, and dyeing/finishing/stitching the fabrics. Post-cocoon activities provide year-round employment with lower monthly pay than in pre-cocoon activities. These activities usually engage people from Muslim communities who are traditional reelers/weavers and who do not own farmlands. Traditionally and even today, majority of spinning and reeling is done by women while majority of weaving and other dyeing/finishing activities are done by men.

Multiple efforts by the Central and State governments have created replicable models to accelerate the growth and productivity of the sector.

- From 2000 to 2003, the **UNDP** implemented projects to decentralize private grainage for seed production and made host plantations on private lands.
- From 2003 to 2008, the **Special SGSY (Swarnajayanti Gram Swarozgar Yojana)** project of Ministry of Rural Development and the Central Silk Board (Ministry of Textiles) was implemented by NGO PRADAN in Jharkhand and Bihar. The project almost doubled the volume of tasar silk produced by the states by creating a value chain for good quality disease-free layings (DFLs) of silkworms, planting host trees on private lands on a large scale, training tribal youth as grainage entrepreneurs, and establishing people’s institutions. About 9,500 families were benefitted with an increased income of 12,000–15,000 rupees.
- From 2008 to 2013, a **NABARD-Tribal Development Fund project** was implemented to link tasar plantations into agricultural interventions that would generate year-round employment for tasar farmers, enhancing their annual income by 25,000 rupees.
- From 2012 to 2016, the **“Promotion of Large-Scale Tasar Sericulture based Livelihoods” under the Mahila Kisan Sashaktikaran Pariyojana – Non-Timber Forest Produce (MKSP-NTFP) project** was implemented. This project implemented large-scale plantations, cocoon banks, Basic Seed Production Units, and community-based organizations. It played a vital part in training and bringing women into the pre-cocoon processes in the tasar silk value chain.
- State agency Jharcraft is heavily focused on promoting organic farming practices across the tasar silk value chain, collaborating with educational universities to improve designs, marketing, and consumer awareness on handicrafts, building a one-stop ecosystem for tasar silk to ensure quality standards are met, and training and empowering women within the weaving sector.

Driver of Jharkhand's sericulture sector – The Bhagaiyya weaving cluster

A critical location for sericulture activities in Jharkhand, Bhagaiyya village is the state's largest cluster for tasar silk activities. It has an estimated 700 families or 7,000–8,000 people involved in tasar yarn making and fabric weaving and is known for housing end-to-end post cocoon value chain processes. Most of the activities are done at the household level, with 2–3 people from each family involved in weaving and related processes. Women are engaged in reeling/spinning of yarn while men are engaged in weaving and post weaving activities.

Bhagaiyya has been a hotbed for small enterprises – youth have identified opportunities to localize value addition services on fabrics, and have established in-house screen printing and dyeing units to improve profitability. Such enterprises have immense scope for incorporating environmental sustainability (for ex. using clean fuels, treating waste water before disposing) and creating safer and healthier working conditions (for ex. using modern machinery, protective gear), given that the entrepreneurs are provided with adequate trainings and resources.

In the past, the weavers of Bhagaiyya were highly dependent on Jharcraft to bring them orders for their products. However, over the last 5 years due to lesser demand coming in from Jharcraft, many weavers have started functioning independently or under master weavers in the village (locally known as *mahajans* which translates to merchants). Master weavers act as a link between the weavers and the bigger private companies/markets – each master weaver works with about 10–12 weavers under them. Working mostly on commission, master weavers are said to exploit the weavers but at the same time provide them with the guarantee of purchasing their products and providing them with a livelihood. On the other hand, many weavers of Bhagaiyya village are leaving their profession due to lack of financial viability resulting from low income and lack of working capital. The weaving profession is not attractive to the younger generation – they focus on studying and getting jobs outside of the state.

The Bhagaiyya cluster not only preserves the age-old handicraft of tasar weaving but also generates massive revenues each year. With bustling weaving work and active looms in almost every household, Bhagaiyya could be developed into a craft village that hosts tourists and handicraft enthusiasts. However, it is critical to assess and address decent work creation in Bhagaiyya, which is often violated by low wages, poor occupational safety and health conditions, lack of collective bargaining power due to private buyers, low exposure to modern technologies, and lack of skill upgradation. Transforming the Bhagaiyya weaving cluster into a craft village requires addressing of these points, along with a major revamp of the village infrastructure including the approach roads, sanitation facilities, and hygiene and waste management. Such craft villages are comparable to the OTOP (One *Tambon* One Product) project undertaken by the Government of Thailand – the term *tambon* referring to a sub-district – to encourage each local community to use local wisdom for the development of local products for domestic and global markets to improve self-reliance (Thailand, MOI, Community Development Department, n.d.).

5.1.3. Handloom (mainly cotton and wool)

The handloom sector in Jharkhand came to prominence in 1946 when Jharkhand was still a part of the Bihar state. A visionary leader in the state, Late Abdur Razzaque Ansari established the first weavers' cooperative society in Irba village that year to provide employment and social rights awareness to cotton weaver communities. The Government of Bihar then formed six Regional Handloom Units to support handloom weavers with raw materials and marketing/selling of their products. In 1978, Jharkhand's apex weavers' society was established – now known as Chotanagpur Regional Handloom and Khadi Weavers' Cooperative Union Limited – it works with smaller weavers' societies across the state, commonly known as Primary Weavers Cooperative Societies or PWCS. These bodies are autonomous, consist of about 100–120 members each, and are formed at village-cluster level. They work towards producing, marketing and distributing khadi products. Though a thriving apex cooperative society for handloom weavers in the past, the Union today is unable to generate sufficient work to engage even 50 per cent of associated weavers.

The establishment of the Jharkhand Khadi and Village Industries Board (KVIB) in 2004 and Jharcraft in 2006 revived and further boosted the handloom sector. Jharcraft developed 21 handloom clusters in the state with the help of the National Bank for Agriculture and Rural Development (NABARD) and funding from the state and the centre. Both Jharcraft and KVIB work closely with the Regional Handloom Union as well as PWCS. To ensure the relevance of this industry by creating designs based on customer demand, there was a proposal to open Jharkhand Institute of Craft and Design with the help of National Institute of Design, Ahmedabad.

KVIB has been successful in training and engaging women to spin cotton yarn and weave cotton fabric, the latter being a role played mostly by men in the past. The possibility to weave and stitch garments from home helps women independently make clothes for their families and also earn an extra income by catering to local demand. A challenge persists as many women do not pursue work after getting trained – this prompts the need for women empowerment programmes that sensitize entire communities to support and encourage women in handloom.

Driver of Jharkhand's handloom sector – Weavers' Cooperative Societies

The Chotanagpur Regional Handloom and Khadi Weavers' Cooperative Union Limited, locally known as the "Regional Handloom Union", currently has 72 PWCS as members with 10,000–14,000 associated weavers. It plays the role of providing cotton yarn and designs to the weavers, facilitating weaver trainings, creating value additions such as dyeing/block printing/finishing of woven products, and marketing and selling the products. The union has its own centralized fabric production, dyeing and block printing unit consisting of 14 handlooms and 3 power looms, and is working towards setting up a digital printing house.

The union provides various benefits to associated weavers – including setting up of the state's first weavers' specialty hospital, providing scholarships for technical education of weavers' children, and partially funding the weddings of weavers' daughters. The union's board consists of weaver representatives from PWCS of different regions. Wages are set through a committee called the Dar Nidaran Samiti which consists of board members representing the different weavers' societies along with a government representative. The board expressed that the Government's minimum wages are not sufficient for the weavers, since weaving processes involve family members too. At the union, wages are revised frequently and money is given to the weavers based on requirement and not only at a fixed time.

Multiple PWCS in the state are not functioning on full capacity. On visiting four PWCS' in Ranchi district, it was seen that many looms in common facilities are defunct and very few weavers are currently employed compared to the number of looms in the unit. Weavers from these societies have expressed that they are not finding productive, consistent, and well-paying opportunities within the sector since the last 4–5 years, because of fewer orders coming in from the government marketing agencies, dip in local market demand for cotton products, low wages, and need for better trainings.

One of the most productive and active Primary Weavers' Cooperative Societies is the one at Uruguttu in Ranchi. Mr Khalil, head of the PWCS, mentioned that the society has 50–60 looms in their facility and used to employ between 70–80 people consistently, but now are able to provide consistent work to only 10–15 persons regularly. Mr Khalil actively brings in orders for handloom products so that he can maintain the livelihoods of the weavers in his PWCS. The rising prices of cotton yarn are hampering his ability to procure enough yarn.

5.2. Employment – Current and future scope

The handloom and sericulture sectors cumulatively employ approximately 300,000 persons. Stakeholders in the sector mention that more than 200,000 people are engaged in silk farming, roughly 50,000 in weaving (split almost equally between handloom and sericulture sectors), and the remaining in allied work. Official estimates differ – the Fourth All India Handloom Census says that Jharkhand has 16,478 handloom households translating to

approximately 22,500 weavers and allied workers. These estimates are lower than stakeholder inputs above since they include only weavers who have been issued ID cards called “Bunkar Cards” – many weavers are yet to be issued these cards, and will not be covered under handloom census until then.

For ease of understanding, further employment data is split into the cotton/wool and the tasar sectors.

Cotton/wool sector: In the cotton sector, yarn is obtained mostly from the open market in other states and from the National Handloom Development Corporation therefore very few people within the state – to the tune of 100s – are engaged in spinning cotton yarn. Cotton weaving mainly involves the Primary Weavers Cooperative Societies. According to estimates, about 12,000 households in the state use cotton yarn for weaving (India, Ministry of Textiles 2019). However, the Regional Handloom Union expressed that the current state of employment is low – skilled weavers are preferring to work on power looms or in a different field of work. A Mega Handloom Cluster across six districts has been sanctioned (831.9 million rupees) to setup 25,000 handlooms, supporting 1,00,000 weavers (Jharkhand State Department of Industries 2021). Jharcraft is currently looking for an implementation agency to take over the day-to-day operations of the cluster before it becomes functional. Apart from these, the Government is planning for 15 cluster development schemes and 35 mini handloom clusters which will result in the employment of 9,000–10,000 weavers.

Silk sector: The entire tasar silk value chain can be found in the state. Over 200,000 tasar farmers are registered with the Jharkhand Directorate of Handloom, Sericulture and Handicraft and 11,467 households conduct post-cocoon silk activities (including tasar, eri, muga, mulberry) (India, Ministry of Textiles 2019). The draft Vision Document on Sericulture for the 12th Five-Year Plan (2012–17) ambitiously estimated that with an investment of 33.566 billion rupees, 1,044,000 livelihoods can be created in host plantations (100,000), rearing (400,000), reeling and spinning (54,000), weaving (160,000), surface ornamentation (300,000) and garment stitching (30,000) in the tasar silk segment. While the document detailed out implementation aspects, funding requirements and sources, and institutional mechanisms that could support scaling up of the tasar sector, the targets could not nearly be realized owing to lack of effective on-ground implementation of the vision document that could be due to changes in leadership in Jharcraft. Further data suggests increasing employment prospects in the sector – experts have forecasted the doubling of tasar raw silk production quantities in India from 2017–18 to 2029–30. Given that Jharkhand produces over 80 per cent of India’s raw tasar silk, employment prospects for tasar farming in the state see a steep upward trajectory (Rai and Satyanarayana 2022).

According to a sectoral expert from Tasar Development Foundation, farming tasar silkworms on just 1 hectare of land can provide livelihoods to 67 persons across the value chain. While not all will have livelihoods all year round, they will have a supplemental livelihood option. Experts suggest that tasar plantations could be done in abandoned/used coal mines to rehabilitate the land while creating jobs in a low-carbon sector.

5.3. Environmental impact

Handloom and sericulture in Jharkhand are both nature-based, home-based industries. The sericulture sector in the pre-cocoon stages involves thousands of hectares of plantations which efficiently sequester carbon, and both cotton and sericulture weaving is majorly done on handlooms with minimal use of power, making it a low-carbon sector. In addition, organic farming is being practiced and promoted across the tasar value chain, increasing its competitiveness for exports. This environmental-friendliness is instrumental in enabling green job creation within the sector. However, some parts of the value chain employ unsustainable or polluting mechanisms due to the lack of resources/awareness/capacities to switch to more “green” alternatives.

Given below is a table capturing the stage-wise environmental implications of the handloom and sericulture sectors, existing/possible solutions, and best practices. The inputs for the table have been obtained from stakeholder consultations, the *Annual Report 2020–21* of Central Tasar Research and Training Institute, Jharkhand (CTRTI), and a report by the Central Silk Board and PRADAN on *Building Inclusive Value Chains: The Case of Tasar Silk in Jharkhand and Bihar* (Pastakia et al. 2015).

Table 2. Environmental impacts of the various stages of the handloom and sericulture sectors in Jharkhand

Note: In the table, (+) indicates positive impact and (-) indicates negative impact

Impact on the environment and working conditions	Existing and possible solutions, best practices
Silkworm rearing	
<ul style="list-style-type: none"> Bio-control methods are used for pest control, which have a positive impact on the ecosystem (+) The host plants grown for the silkworms are experiencing visible effects of climate change (-) Nylon nets are used in the plantations – disposing them is an issue (-) Chemicals such as bleaching powder and lime are used in the plantations, however the small quantities used may not cause environmental impact (-) 	<ul style="list-style-type: none"> CTRTI is working towards utilizing botanical repellents such as Eucalyptus extract to manage pests attacking tasar silkworms (India, Ministry of Textiles, Central Silk Board, CTRTI 2021, 59) More research is required on climate resilient host plant varieties for silkworms to feed on. CTRTI is undertaking work on developing organic tasar silk production focusing on climate resilience A collection system can be put in place to collect and scientifically dispose nylon nets
Tasar silk cocoon grainages	
<ul style="list-style-type: none"> Plastic boxes are used for storing the eggs laid, which are difficult to dispose safely since they are non-biodegradable (-) Handling of female moths in egg laying stages, particularly the clipping of their wings, is undesirable (-) 	<ul style="list-style-type: none"> Plastic boxes can be replaced by biodegradable boxes made of paper/leaf
Cocoon production	
<ul style="list-style-type: none"> Creation of host plantations for silkworms and conservation of forests to protect these host plants result in a net positive impact through carbon sequestration and betterment of the forest (+) Spraying urea and other chemical fertilizers in plantations can cause nitrogen contamination in soil and water (-) 	<ul style="list-style-type: none"> Carbon sequestration potential of tasar plantation has been researched and found to be high, opening up potential for carbon credits projects. NGO PRADAN is implementing tasar plantations in 8000 acres of land as part of such projects. Waste-to-wealth technologies are being researched upon to convert tasar silkworm refuse and pupae into inputs for manure and fish/poultry feed.
Procurement and storage of cocoons	
<ul style="list-style-type: none"> Cocoons that are uncut still have the worm inside them which are stifled through a boiling process to soften the cocoons for extracting yarn (-) The cocoon boiling process requires the burning of high volume of fire-wood (-) 	<ul style="list-style-type: none"> As much as possible, the shift should be made to naturally cut cocoons to ensure non-violent silk A solar-operated cocoon cooking device has been developed for softening of tasar cocoons with 95% cooking efficiency. The cost of cooking is lower by 15–30% vis-à-vis usage of firewood/LPG (India, Ministry of Textiles, Central Silk Board, CTRTI 2021).
Reeling and spinning of yarn	
<ul style="list-style-type: none"> Peroxide is used in the pre-treatment of cocoons. Safe disposal of the chemical solution needs to be ensured (-) Reeling and spinning processes employ mechanical power instead of diesel generators. For ensuring efficiency of the reeling process in the future, new machines could employ renewable energy sources (-) 	<ul style="list-style-type: none"> Existing reeling and spinning machines like Motorized Reeling cum Twisting Machine (MRTM), Motorized Tasar Reeling Charkha (MTRC), Buniyad Reeling Machine, Re- Reeling Machine and Motorized Spinning Machine were modified and are being operated by electricity produced by solar power plant.
Dyeing (common stage in silk and cotton sectors)	
<ul style="list-style-type: none"> Yarn/fabric dyeing processes use chemical dyes since natural dyeing has not been feasible. Chemical dyeing units do not have appropriate effluent treatment due to lack of awareness and resources (-) Energy used in dyeing processes currently comes either from diesel generators or burning fire-wood which creates smoke (-) 	<ul style="list-style-type: none"> Resources, awareness building, and trainings regarding effluent treatment plants must be made available to all dyeing units in the state. Focus should be on providing access to decentralized renewable energy sources to smaller dyeing units that burn fire-wood to power them.

Impact on the environment and working conditions	Existing and possible solutions, best practices
Weaving (common stage in silk and cotton sectors)	
<ul style="list-style-type: none"> • Most weavers work on handlooms which are non-polluting (+) • Power looms use electricity from the grid (-) • The fine threads and other waste generated after weaving is generally dumped openly (-) 	<ul style="list-style-type: none"> • The Ministry of Textiles' scheme for development and upgradation of the powerloom sectors provides capital subsidy to small power loom units to install solar photo voltaic plants. Weavers should be assisted in availing these schemes. • Textile waste management systems should be set up.
Finishing and marketing (common stage in silk and cotton sectors)	
<ul style="list-style-type: none"> • Processes like mending, clipping, labelling and packaging are done manually, therefore no power is consumed (+) • As of now in India, only organized silk processing units have effluent treatment plants installed (-) • Other processes like calendaring, ironing, and maintenance of the offices utilize power (-) • Most of the packaging is in plastic, the disposal of which is unregulated (-) 	<ul style="list-style-type: none"> • Efforts would be made to install either discharge to ground or zero discharge effluent treatment plants in the unorganized medium and small-scale wet processing units • Power utilization for ironing, calendaring and office maintenance can be obtained from decentralized renewable sources • Biodegradable packaging options should be explored for

5.4. Working conditions

According to the ILO, decent work sums up the aspirations of people in their working lives. It involves opportunities for work that deliver

- productivity and a fair income,
- security in the workplace and social protection for all,
- better prospects for personal development and social integration,
- freedom of people to express concerns, organize and participate in decisions that affect their lives, and
- equality of opportunity and treatment for all women and men.

Below we discuss the working conditions within the handloom and sericulture sectors in Jharkhand.

5.4.1. Income and productivity

Though the handloom and sericulture sectors have lifted many families out of poverty, country level census data shows that 97 per cent handloom households in Jharkhand earn below 5,000 rupees per month from handloom activities, and 68 per cent earn below 5,000 rupees per month from *all* their income sources (India, Ministry of Textiles 2019) – this amount is 42 per cent lower than the state's monthly minimum wage for unskilled labour. The Government marketing agencies – Jharcraft and Khadi and Village Industries Board (KVIB) – attempt to provide fair wages (at per piece rate) which are set and revised through consultations with weavers and tailors, but interviews with weavers revealed that the amount is insufficient due to involvement of allied workers in addition to the weaver to weave a single garment. A majority of weavers work for the private sector and for intermediate master weavers, and face issues of receiving low wages and requiring high capital investment. A weaver and helper take 1.5 days to stitch one saree (total piece rate is 600 rupees), each of them earning 200–250 rupees/day, 25 per cent lower than the minimum wage for unskilled work. This amount is also used to pay for the labour of other family members who support the cocoon boiling/reeling processes. Weavers are slowly shifting towards daily wage activities which pay them 300–400 rupees/day.

It must also be noted that low monthly income in this sector is exacerbated by the low number of working days. In 2019–20, Jharkhand's handloom activities engaged weavers for an average of 206 days per year and allied workers for 177 days. Jharkhand has 1.28 allied workers per handloom worker household, ranking fourth-highest in the country (India, Ministry of Textiles 2019). Weavers expressed that the number and size of orders they receive from government agencies has reduced drastically since 2016 and further reduced after the COVID outbreak, which has forced them to shift to private work. (Note: The average number of

annual working days for weavers across India has seen a decline, reducing from 234 days in 2010 to 208 days in 2019–20). The Regional Handloom Union, which has 72 Primary Weavers' Cooperative Societies associated with it, currently has only 32 active societies since it is unable to generate market demand to keep the remaining societies engaged. Societies that once regularly employed 25–30 weavers are currently able to employ only 2–4 weavers regularly. For weavers to sell their products in private markets is challenging because of increased prices of raw materials (cotton yarn), low demand for handloom (cotton), availability of cheaper and better-quality Chinese alternatives, and lack of market-oriented design training and marketing vehicles.

A major problem faced by tasar farmers and weavers is the shortage of cocoons. There is huge gap in the demand and supply of basic DFLs (disease-free layings). Jharkhand alone needs 6 million basic DFLs for supplying Commercial DFLs to support the livelihoods of 2,00,000 farmers annually. Jharkhand State produces about 1.5 million basic DFLs, while the Central Silk Board produces around 2 million Basic DFLs which are split across 15 states. The Government provides DFLs at 12 rupees per basic DFL while they cost 20 rupees each. In addition, seasonality of the tasar DFLs (crop can be grown only between Oct-Dec every year, and adverse climatic conditions and erratic rainfall during the crop season has resulted in a 45.48 per cent reduction in tasar production in 2021–22 over 2020–21 (India, Ministry of Textiles 2023). To bridge this gap between supply and demand, it is suggested that the Government must develop a policy framework that open up DFL production to the private sector.

Another major problem is of large capital investment requirement. Tasar cocoon is converted into yarn through the process of reeling. One group of 20 women need 1 million cocoons per year for round the year production of yarn. Cost of one cocoon varies between 6–8 rupees, which means that procuring, processing and storing of 1 million cocoons one will need about 6–8 million rupees as a one-time investment, after which sale of the produced yarn will fund future raw material procurement cost. From past experience, it has been seen that taking loans to start cocoon banks are not feasible due to hidden interest rates. Therefore, a policy framework is required to allow for privatization of cocoon banks and also provide access to finance and subsidies to women groups interested in running cocoon banks.

Multiple government initiatives are working towards increasing the income and productivity of the sector. The Jharkhand Government's Textile, Apparel and Footwear Policy 2016 offers 50 per cent wage rate subsidy to local employees of handicraft units for a period of 5 years. Various technologies have been developed with evidence of additional revenue generation, such as – using nursery techniques to raise tasar plantations, boiling of cocoons in "tasar plus" chemicals to ensure uniform cooking, replacing dry reeling with wet reeling to improve strength of yarn, and development of a motorized reeling machine to reduce drudgery, among others (Jharkhand State Department of Industries 2016). In March 2023, the Ministry of MSME through the Khadi and Village Industries Commission has increased the wages of Khadi workers – spinning wages are increased from 7.50 rupees per hank to 10 rupees per hank, and weaving wages for cotton khadi, woolen khadi and polyvastra will increase by 10 per cent on 1 April 2023 (India, Ministry of Micro, Small and Medium Enterprises 2023).

5.4.2 Income disparity in the tasar silk sector

Within the tasar silk sector, the income per day is in general higher for pre-cocoon stages of the value chain but the duration of employment is very short. On the other hand, the reverse is true for post cocoon stages which provide year-round employment. Hence post-cocoon, the activity becomes the main and perhaps only livelihood of the person, while in the pre-cocoon stages, the activity is at best a part-time supplementary source of livelihood. The idea of providing year-round income through other activities like vegetable cultivation as inter-crops in host tree plantation, which has already been pilot tested through the NABARD–TDF project, should be scaled up. Tasar cocoon farmers talk about how tasar farming has improved their living conditions by providing them with an additional annual income of up to 80,000 rupees. This has helped them drastically improve their quality of living, by sending their children to school, purchasing motorbikes, building houses, and much more.

Table 3. Net income earned by producers in the tasar silk value chain through the NABARD-TDF project

Node of the value chain	Net income (rupees)	Employment days	Income / day (rupees)
Direct beneficiaries			
Nucleus seed rearing (in dedicated plantation)	37 180	75	496
Basic seed rearing (in forest)	9 650	45	214
Basic seed rearing (in plantation)	15 400	45	342
Commercial seed production (grainage)	27 730	45	616
Cocoon production (plantation)	33 030	65	508
Cocoon production (forest)	21 143	65	325
Cocoon trading	40 000	45	889
Yarn production – Reeling	32 160	240 (part-time)	134
Yarn production – Spinning	9 960	240 (part-time)	41.5
Indirect beneficiaries			
Fabric production – Weaving	48 000	300	160
Fabric production – Dyeing	42 000	300	140
Fabric production – Finishing and mending	42 000	300	140
Finished goods production – Stitching	90 000	300	300
Finished goods production – Hand printing	72 000	300	240

Source: Pastakia et al. 2015, 79.

5.4.3 Occupational safety and health

Different stages of the handloom and tasar silk value chains pose varying risk to the workforce. Below we split the value chain into pre-cocoon stages (for tasar silk), and post-cocoon stages (which will have common risks faced by both the tasar and cotton/wool handloom workers).

OSH risks in pre-cocoon processes:

- During the crop cycles for tasar silkworm rearing, farmers are required to spend 50–90 days in the forests to protect the worms from predators. The farmers belonging to tribal communities are adept at living and working in the forest, nevertheless the task is challenging and erratic weather patterns/extreme heat conditions impact their health along with crop health. Farmers also face regular conflict with the forest department despite the granting of “Right to Rearing” permissions.
- During the storage of tasar cocoons in the grainages, the silk moth handlers are at the risk of contracting upper respiratory tract disorders and bacterial infections. Research is required to understand the extent of health hazards and possible solutions.

OSH risks in post-cocoon processes:

- For the reeling/spinning of tasar yarn from cocoons, the cocoons are boiled in a water and caustic soda solution for hours over firewood and the smoke is inhaled by women performing the activity. In addition, majority of the women in the Bhagaiyya cluster still follow the age-old practice of “thigh reeling” in which their bare thigh is used as a surface to roll threads/yarn out of boiled tasar cocoons – the practice is considered unhygienic. It also gives rise to skin diseases caused by the caustic soda in which cocoons are boiled before reeling. The Government has developed the Buniyaad Reeling Machine, which is expected to reel tasar yarn with significant improvement in quality, quantity and elimination of drudgery, producing almost 3x amount of yarn compared to the manual process and resulting in an additional income of 200–250 rupees a day (India, Ministry of Textiles, Central Silk Board 2020). While many of the women in Bhagaiyya have been provided with these machines, uptake has been low since they argue that the yarn reeled by

the machines is resulting in undesirable fabric quality, particularly for the high demand “giccha silk” variety. In the quest to improve the reeling machine, Abhinav Silks founded and run by Mr Dharendra Kumar (ex-IFS, ex-MD of Jharcraft and the Directorate of Handloom, Sericulture and Handicraft) has developed reeling machines that ensure high quality of woven tasar fabric.

- In fabric dyeing units, the workforce is seen handling chemicals and boiling water without any protective equipment. Smaller fabric dyeing units are interested in purchasing machinery and equipment that will make their work safer but do not have the necessary resources to afford the machinery. There is a need to build awareness on how to avail government schemes to subsidize purchase of machinery and protective gear. Strong environmental and labour law enforcement will further help shift towards safer and more decent working conditions.
- During the weaving process (for tasar silk, cotton, wool), fine particles of yarn are released into the air which cause breathing issues among weavers. Weavers’ eyes become weak due to the need for focused attention on the yarn for long periods of time. Weavers are also known to have shortened life-spans and contract diseases like tuberculosis. It is necessary to raise awareness among weavers about such issues, and explore the distribution of comfortable working masks for them. Common facilities for Primary Weavers’ Cooperative Societies are not in the best condition – many looms are lying defunct and maintenance and upkeep is poor.

5.4.4 Other decent work indicators

- **Ratification of ILO C177:** India has not yet ratified ILO C177 – Home Work Convention 1996, which encapsulates the rights of workers operating from their households or any other premises of their choice, other than the workplace of the employer. Majority of the handloom and sericulture weavers in Jharkhand carry out home-based operations and are considered to be at the lowest rung of the global textile and garment value chain. Wages for home-based workers are deducted at each step of the value chain, but technology, skills and social security do not trickle down, resulting in home-based workers being unable to get out of the vicious cycle of poverty. The Self-Employed Women’s Association (SEWA) has advocated at the national level for the implementation of the National Policy for Home-Based Workers which will include social protection measures, provision of housing subsidy for purchase of new homes and renovation of homes, accessing financial services and raw materials, and ensuring occupational safety and health, among others.
- **Freedom of association and collective bargaining:** Jharkhand’s handloom sector was built through the formation of weavers’ cooperative societies and self-help groups. There are 162 primary weavers’ cooperatives and one regional handloom union. Any worker in this sector has the freedom to be part of such workers’ organizations since the collectivizing of weavers helps with efficient marketing and sales of products. In the tasar silk sector, the Swarnajayanti Gram Swarozgar Yojana implemented in Jharkhand in 2003 demonstrated the creation and effectiveness of public-private-people’s partnerships in enhancing livelihoods of tribal and non-tribal families. The project focused on creating people’s institutions at the village, cluster, and district level which resulted in higher agency and empowerment of the workforce in influencing decision impacting their lives, and higher participation of women in livelihood activities. However, currently most of the weavers and allied workers in Jharkhand (especially in tasar sericulture) get their work from private traders/master weavers, therefore the collective bargaining power is low. Most of the weaving work is home-based and involves different members of the family, who do not get paid separately for their services. There is a need to intensify value-based organizing within the weaving sector to highlight issues faced by weavers and allied workers.
- **Equality of opportunity and treatment for all men and women:** Handloom and tasar silk are age-old sectors with traditional practices having clearly defined roles for men and women. Activities related to working in the fields, rearing silkworms, and running cocoon grainages have been performed by men from tribal communities. Women were not allowed to involve in this activity due to traditional beliefs that the plantations will become “impure” during their menstrual cycle. However, a government scheme named Mahila Kisan Sashaktikaran Yojana (translated to Women Farmers Empowerment Scheme) introduced in 2013 encouraged and trained more women to participate in rearing activities, dispelling traditional gender-based myths. The introduction of private plantations saw a rise in the participation of women, not only in raising plantations but also in silkworm rearing. Efforts by NGOs like PRADAN have showcased how

women are transitioning from supporting roles to management roles in different parts of the tasar silk value chain. When it comes to handloom and tasar weaving work, the gender split of the workforce is almost equal. However, there is a significant gender division in the activities – weavers are mostly male (62 per cent), while allied workers are mostly female (69 per cent). Weaving work is done by men, while reeling/spinning of yarn from cocoons and other such preparatory processes are done by women (mostly by the wives of weavers). Government agencies like Jharcraft and KVIB are focused on training women in handloom and tasar-based livelihoods, enabling an increase in women's participation in what are traditionally men's roles. There is further need to assess gender pay gap, make large-scale efforts to include women across the value chain, promote women-owned cooperative groups, conduct technical and managerial skill building, and provide women with access to finance and markets, in order to create equal opportunity for women to participate in the sector.

- **Social protection:** While almost all handloom weavers in Jharkhand have Adhaar cards, 74 per cent of do not have bank accounts (India, Ministry of Textiles 2019). The Government of India has instituted the Handloom Weavers Comprehensive Welfare Scheme by converging three existing schemes to create a social security system for weavers. The scheme provides an insurance cover for natural death, accidental death, complete disability and partial disability of weavers. As an add-on benefit, the scheme also provides scholarship of 100 rupees per month to a maximum of two children (studying between classes 9 and 12) of the beneficiary listed. The Regional Handloom Union, which works with 72 of the state's 162 Primary Weavers' Cooperative Societies, provides social security benefits to weavers – the union started the first weavers' hospital in the country which provides 60 per cent discount to weavers for inpatient treatment and 70 per cent discount for outpatient treatment. The hospital also gives discounts to wives and children of weavers. In addition, the union supports weavers' children with technical scholarships and provides financial support during the weddings of weavers' daughters. The Government introduced a weavers' health insurance scheme with ICICI Lombard a few years ago, but the scheme no longer exists. Weavers express that they do not have on-going health insurance/pension benefits apart from the general central government schemes. Other stakeholders in the sector mention that the central government's Ayushman Bharat scheme takes care of health coverage across the country with an annual cover of 500,000 rupees, therefore there is no need for a separate insurance scheme for weavers. Access to loans has been a challenge since hidden interest rates are making loan payback very difficult for weavers. Identity cards called Bunkar Cards are issued to weavers, using which they can avail government schemes like loans, scholarships for their children, etc. All weavers have not been issued these cards, therefore there is a need for the Government to conduct Bunkar Card creation drives to cover those who have been missed out.

5.5. Challenges

- 1. Reduction in working days:** The number of working days in the year, especially for weavers, has gone down drastically over the last 4–5 years. This has resulted in many weavers leaving this field of work while the others continue to work in the sector earning very low incomes. Following are the possible reasons identified for a reduction in orders/work days –
 - Shortage of raw materials: There has been a shortage in tasar cocoon supply and an increase in cocoon prices. Cocoons are not easily available to weavers for purchase. Cotton yarn prices have also increased. When sourcing cotton yarn from the National Handloom Development Corporation, money is taken upfront but the materials are delivered with a 3–4 month delay, causing losses.
 - Need for a more market-oriented approach: The designs of handloom products need to be updated and standardized as per market requirements and customer trends. Some Primary Weavers' Cooperative Societies have a large stock of ready-made products but are finding it hard to sell them in the markets.
 - Unavailability of capital investment: The sector requires significant upfront capital investment to carry forward activities such as reeling, spinning, and weaving. In the absence of this investment, handloom workers without significant savings are incurring losses and are unable to sustain their livelihoods. Taking loans from banks having hidden interest rates have proven detrimental in the past.
- 2. Insufficient wages:** Since more than one family member/worker is generally involved in weaving and related processes, the wages paid for the activity are not sufficient to sustain the family.

- 3. Insufficient training:** Weaver training organized by the Government lasts between 45–60 days. Master weavers say that this period is not sufficient for effectiveness of training, and that a 6-month training period will reap better results. Weavers are looking for trainings focused on improved designs and better stitching/weaving techniques.
- 4. High levels of home-based, informal work and low levels of unionization and collective bargaining:** Though government agencies like Jharcraft and KVIB conduct tripartite dialogue within handloom and sericulture sectors in setting the piece rates, majority of the workforce today is associated with private traders thereby having low collective bargaining power and unionization.
- 5. Less importance of handicrafts in younger generation:** The younger generation is not interested in taking up handloom work as a profession since it involves intensive manual labour throughout the day, pays low wages compared to other professions, and involves uncertain working conditions.
- 6. Difficulty in accessing benefits:** Despite many benefits being put in place by the Government, weavers are unable to access them because of the involvement of paperwork, making bank visits, making advance deposits etc. The lack of clear understanding of banking and financial systems are becoming limiting factors in weavers being able to access such benefits.
- 7. Low awareness levels on environmental sustainability:** While stakeholders at the government and civil society level are familiar with the concepts of environmental sustainability, entrepreneurs running small units such as dyeing or screen-printing establishments are not aware of the environmental implications of untreated waste disposal. Sufficient avenues are not available for capacity-building or availing financial resources and technical support for small and informal enterprises to adopt greener practices.
- 8. Low feasibility of environmentally sustainable solutions:** Processes like natural dyeing and setting up of effluent treatment plants are expensive and do not have much uptake in the sector. Lack of incentives and subsidies to adopt these practices reduces their feasibility.
- 9. Under-utilized facilities:** Multiple dyeing facilities are present within Jharkhand State, including a large unit in Deoghar, Niranjana Textiles, which offers dyeing, bleaching and finishing services. These facilities are not being utilized to their capacity. Yarn and fabrics are being sent outside the state for dyeing and finishing purposes. The state also has infrastructure for mega handloom clusters in multiple locations, but these are yet to be made functional. Primary Weavers' Cooperative Societies campuses have been shut down or are running on very low capacity with most looms being defunct.
- 10. Lack of exposure to markets:** Master weavers do not have adequate access to exhibitions and markets and therefore they are unable to gauge customer preferences. They also face low/reduced demand, lack of marketing capacity and low access to e-commerce portals.
- 11. Low regulation in post-cocoon tasar silk sector:** While there are structures in place to run the pre-cocoon parts of the tasar silk value chain (grants and subsidies), no strong agencies are present to regulate the tasar weaving sector which is currently in control of independent entrepreneurs.
- 12. Sub-standard living and working conditions:** The common work sheds as well as the households of weavers are not well maintained and need funding for regular upkeep and maintenance. Since these are the daily workplaces for weavers, efforts need to be made to keep them hygienic, ventilated, and operational.
- 13. Challenges in decent work creation:** There is high prevalence of thigh-reeling among women, and other occupational safety and health related risks across the value chain of sericulture and handloom sectors, with low awareness and available solutions to mitigate these risks. The tasar sericulture sector does not allow freedom of association and collective bargaining due to high prevalence of private buyers and lack of organization of the informal workforce.
- 14. Gender-based work:** Apart from small pockets where civil society organizations work, handloom and sericulture sector still sees clear distinction in the roles of men and women at different stages of the value chain. Though many women are being trained in weaving, their participation in the workforce remains limited due to existing social and cultural norms.
- 15. Impact of climate change:** Research points towards climate change negatively impacting both host plants for silkworms, as well as the growth of silkworms, particularly increase in the average temperature of the region.
- 16. Lack of transparency and accountability of government agencies:** Government agencies responsible for promoting and marketing the handloom and sericulture sectors have not been able to ensure consistent livelihoods for the weavers associated with them due to operational issues, delayed payments, inability to generate sufficient demand for the products, and lack of transparency in their processes which creates distrust in the institutions among the workforce.



TEXTILE/GARMENT FACTORIES

6

6. TEXTILE/GARMENT FACTORIES

The announcement of Jharkhand's Textile, Apparel and Footwear Policy in 2016 incentivized the setup of industries in the sector by improving their feasibility. The policy provides capital and interest subsidy, tax incentives, stamp + registration fee + power tariff reimbursement, employment generation subsidy of 5,000 rupees per worker per month for 7 years, and 6,000 rupees per worker per month for Scheduled Caste/Scheduled Tribe/women for 7 years, one-time skill development support of 13,000 rupees per person, cluster development subsidy and more (JIIDC, n.d.).

The policy has attracted reputed names in the TAGS to set up their factories in Jharkhand, including Orient Craft, Arvind Mills, Kishore Exports, Matrix, Valencia Apparel, Waste Band, and Laguna. Currently, 22 private textile units have been setup in the state as a result of a conducive policy environment, of which 18 are garment stitching units and 4 are technical textile units (in Jamshedpur and Dhanbad districts). The Department of Industries (Dol) has disbursed 1.05 billion rupees to various textile and garment units, mostly in the form of employment generation subsidy – no other policy in the state offers a wage subsidy of 5,000–6,000 rupees per employee per month. Other major subsidies disbursed include capital investment, electricity duty, stamp duty and export subsidy. Based on its success, the validity of the policy has been extended till 2022 and is expected to be further extended till Sep 2023.

Institutional mechanisms are in place to ensure that industries availing subsidies from Dol are compliant to land, environmental, and labour laws and regulations. A "single window clearance" process has been setup to ease up paperwork for enterprises, in which a committee constituting the departments of finance, land revenue, forest, labour, energy and pollution control are required to sign-off on each applicant industry.

6.1. Employment – Current and future scope

Data obtained from the Dol indicates that 15 textile and garment factories operating currently employ 12,550 people, of which over 80 per cent are women. Twenty-seven more units are under implementation/proposed, which are expected to create direct employment for over 31,000 people, bringing the total employment in 42 textile and garment factories to 43,744 in the coming years. To drive the additional employment, an investment of over 1 billion rupees will be made. Given below is data provided by the Department of Industries, Jharkhand on existing and upcoming textile and garment units in the state.

Table 4. Employment and investment in current and upcoming textile and garment factories in Jharkhand State

Status of units	No. of units	Direct employment (Nos)	Investment (billion rupees)
Functional units	15	12 550	2.785
Units under implementation	19	19 050	7.228
Proposed units	8	12 114	3.462
Total	42	43 744	13.474

Source: Data directly shared by the Jharkhand State Department of Industries.

The Department of Industries is working towards setting up textile park projects around the above 42 textile units with facilities such as solid liquid waste management, rainwater harvesting, and treated water supply system.

Table 5. Plans and status of textile park projects in Jharkhand State

Textile park project	Location	Segment	Investment (million rupees)	Status
Silk Park, Irba	Irba, Ranchi	Apparel	100	In operation
Rudram Industrial Park, Sarwal	Sarwal, Ranchi	Apparel	217	Under approval
Total			317	

Source: Data directly shared by the Jharkhand State Department of Industries.

To manage the new workforce entering the TAGS, many agencies including the Jharkhand Skill Development Mission Society are providing trainings and some companies conduct their own training programmes. The Dol provides a one-time training support of 13,000 rupees per person, and 50 per cent subsidy on land cost for the training institute. However, this amount has not been claimed by any agency yet since they have not met the necessary criteria to avail the benefit. Considering that in the near future, an additional 31,000 jobs are expected to be created in the TAGS industries, there will be a need to estimate short-term employment and training needs, and design and deploy relevant training programmes based on industry demand.

6.2. Environmental impact

Since the TAGS factories in Jharkhand are mainly garment stitching units and do not involve any wet processing such as dyeing, they are categorized under the “white zone” of industries by the Jharkhand State Pollution Control Board, which mean they are practically non-polluting. No environmental issues have been flagged by the Jharkhand Department of Industries and the State Pollution Control Board around textile and garment factories. There have been no issues in obtaining “Consent to Establish” for these industries. There has also not yet been a need for establishing effluent treatment plants due to lack of water-based pollution, but if it is required then Jharkhand Industrial Infrastructure Development Corporation has provisions for the same under the Prime Minister Gati Shakti Programme (infrastructure development programme). In terms of waste disposal, some companies contract waste management agencies which collect the waste in a segregated manner, but we could not gather information on how the waste is finally treated/disposed. It is important to assess the type of threads used in the materials disposed (such as cotton, polyester, viscose) and design circular systems that will minimize their negative environmental impact.

Export-oriented factories are audited on environmental and social compliance for international buyers by a third-party organization, following the Global Organic Textile Standards. However, trade unions argue that these audits do not necessarily capture the on-ground picture and do not necessarily ensure green and decent work creation.

Most of the issues arising from the industries are around requirement of land from the Government. Requests also come in for more information on ethanol and Electric Vehicle based schemes. Currently, none of the factories employ renewable energy sources for electricity generation – this can be explored along with the Jharkhand Renewable Energy Development Agency (JREDA).

6.3. Working conditions

Majority of the labour employed in textile and garment factories (almost 75 per cent) are locals, and most of them are women. According to representatives from the Department of Labour and Employment, no major decent work challenges have been flagged in the factories – wages are paid adequately and in time (in accordance with the Government’s minimum wage mandate and as verified with the company accounts by the state Labour Department), shifts are adhered to strictly, canteen and transport facilities are provided to the employees, adequate ventilation is ensured in the factory premises, and separate toilets are provided for men and women. However, current rules

under the Factory Act do not contain occupational safety and health (OSH) provisions. It was suggested that detailed research be conducted to assess specific OSH risks within textile and garment factories. It was also suggested that the cost of doing overtime in factories is slightly less and can be increased.

On instruction from the Government, the state's Labour Department is in process of creating worker committees in each factory and have also provided an online portal and toll-free number for workforce grievance redressal. Most of the employees in the factories are women – many have reverse migrated from factories in South Indian states or have been rescued.

On paper, wage setting for textile and garment factories is to be done through a tripartite advisory committee consisting of the employer representatives, employee representatives, relevant trade unions, and the Department of Labour and Employment (which acts as a neutral body to facilitate productive discussions). The lack of trade unions for TAGS factory workers in Jharkhand undermines this process. Since the textile and garment industry enforces the Factory Act, Equal Remuneration Act, Child Labour Act, these aspects are not issues within this industry. The Bonus Act and Gratuity Act are not yet in play in the TAGS and need to be instituted. Retrenchment is also not an issue since cases of firing people have been very rare and based on improper behaviour exhibited during work.

It is to be noted that there is no established trade union for the textile and garment factories within the state, therefore it is difficult to assess the challenges faced by workers and to verify the effectiveness of the implemented welfare measures for the workers. Some factories have a welfare officer assigned to address any issues raised by the workforce. It could be seen that collective bargaining and freedom of association was absent among the workers of TAGS factories. The research could not speak with and bring in workers' perspectives on their working conditions because of this. Therefore, issues identified by the ILO (2017) in certain garment stitching units – such as high prevalence of migrant and contract labour in the sector who face workers' rights abuse and absence of social security, over time work, issues with wage payment (under payment, non-payment, delays in payment), verbal and sexual harassment of female workers, and sub-standard health and safety conditions, among others – could not be verified, hence it cannot be stated that the TAGS factories are creating decent working conditions.

6.4. Challenges

The major challenge faced by industries being set up in Jharkhand in context of green jobs and decent work creation is the lack of presence of a trade union for TAGS factories which poses a barrier in being able to assess specific challenges faced by the workforce. The general situation of cancellation of trade union registrations within the state and union-busting by employers exacerbates the issue. Interactions with factory management, state Department of Industries and state Department of Labour brought out further green jobs and decent work challenges such as no incentives from the Government for factories to adopt green technologies, no clear knowledge of end disposal of textile scraps generated from the factories, lack of in-depth understanding of OSH risks in the factories, low rate for overtime work, need for transportation arrangements for drop and pick up of women workers in the nights, and workers finding it inconvenient to live in rented accommodation away from factories. Further, the effectiveness of environmental and labour regulations in factories needs to be studied more deeply.

In addition to the above, TAGS factories face other challenges such as lack of land availability for setting up of factories, deficiency of locally procured raw materials and machinery, delays in provision of clearance through the single window system, and coordination. The single window clearance system requires multiple departments including environment, labour, and energy among others, to assess and clear factories to avail licenses and subsidies within a 90-day period. Though this process was introduced to make clearances more efficient, delays are common since all the departments do not respond within the given time frame.

The case of Orient Craft Apparel Factory, Ranchi

Orient Craft is a reputed garment design house which exports to major brands across the world, including Jockey and Marks & Spencer. Employing a workforce of 2,000, the founder envisions employing 5,000 people over the next 6 months and 10,000 in the coming years. Seventy per cent of the workforce comprises women, and the average age is between 20 and 23.

This factory undertakes all garment work from cutting and stitching to packaging and shipping. Being an export-oriented unit, environmental and social compliance audits are mandatory. Orient Craft is frequently audited against the Global Organic Textile Standards (GOTS) framework by a third-party auditor and the results are uploaded onto an online platform that can be accessed by brands across the world. GOTS stipulates requirements throughout the supply chain for ecological and labour conditions in textile and garment manufacturing. The audit includes health and safety checks (air, food, and water quality testing), workforce checks (timely and adequate wage payment, overtime payments), and technical compliance (stitching quality, processes followed). Given below are the mandatory criteria by GOTS:

Environmental criteria	Social criteria (based on ILO, UNGP, OECD guidelines)
<ul style="list-style-type: none"> • Separation from conventional fibre products and identification of organic fibre products • Use of GOTS approved colourants and auxiliaries in wet-processing only • Processing units must demonstrate environment management, including wastewater treatment • Technical quality parameters for colour fastness and shrinkage for finished goods required • Restrictions on accessories • Restrictions on additional fibre materials • Environmentally hazardous substances prohibited in chemical inputs • Evaluation of toxicity and biodegradability for chemical inputs 	<ul style="list-style-type: none"> • Employment is freely chosen • Freedom of association and collective bargaining • Child labour shall not be used • No discrimination is practised • Occupational safety and health (OSH) • No harassment and violence • Remuneration and assessment of living wage gap • Working time • No precarious employment is provided • Migrant workers

The company provides adequate facilities to its workforce to ensure decent working conditions, including provision of transportation to and from the workplace, PPE equipment during handling of chemicals, assigning a Welfare Officer to address the needs of the workers, a committee to address sexual harassment issues, and conducting CSR activities.

Source: GOTS, n.d.



RECOMMENDATIONS AND CONCLUSIONS

7

7. RECOMMENDATIONS AND CONCLUSIONS

7.1 Recommendations

1. **Providing more work to weavers:** Government institutions such as Jharcraft and KVIB could build a strategy and action plan to increase the demand for handloom and silk products, so as to provide more work to the weavers. This can include hiring of freelance professionals from design institutions to conduct market research, provide inputs on current market trends, obtain and prepare model designs, and translate this information to weavers through trainings. This can also include hiring of marketing professionals (including social media/digital marketing) to create a marketing plan, explore new sales avenues (such as linking to export markets), and engage customers. A major aspect of the marketing should include awareness generation around the uniqueness of handloom products, how they are made, and the variation between one handloom product and another since they are not produced by machines. As done before, orders for fabric or upholstery for government offices, schools, and hospitals can be provided on a regular basis by the khadi/cotton weavers.
2. **Increasing earnings of weavers:** Measures need to be put in place to increase the earnings of weavers. This needs to be done in different ways – the prices of raw materials need to be subsidized when they are very high (tasar silk cocoon prices have shot up from 2–3 rupees per cocoon to 8–9 rupees per cocoon in a matter of months), the government-set wage rates need to be increased as weavers find the current rates insufficient given that multiple family members engage in the production of one garment (current labour charges for weaving one tasar silk saree is between 500–700 rupees and should be increased to 800–1,000 rupees to pay weavers a decent wage and prevent them from looking out for higher-paying work), technologies that increase productivity of reeling/weaving processes (such as Automated Reeling Machines) should be piloted and scaled up. Year-round income opportunities can be explored for tasar farmers through other activities like vegetable cultivation as inter-crops in host tree plantation. Government-set wage rates need to be increased based on tripartite consultation while taking into consideration the involvement of allied workers in the weaving process.
3. **Ensuring availability of raw materials:** Cocoon shortage over the past year is directly jeopardizing the amount of work that tasar silk weavers are able to do, and therefore their incomes. For this, first there is a need for high quality disease-free layings (DFLs) to be provided by government agencies to tasar farmers in order to maximize cocoon production. More R&D is required to ensure sustained and adequate production of DFLs, and a policy framework allowing the privatization of cocoon production may serve critical in improving the supply and quality of DFLs. Cocoon prices have also shot up – the Government should provide a subsidy so that weavers can afford to purchase cocoons. Secondly, there is a need to create cocoon banks closer to weaving clusters such as Bhagaiyya, so that weavers can purchase cocoons directly at fair government rates without relying on private third-party sellers, and can sell yarn back for government rates. Cocoon banks can also be privatized. Raw materials for the cotton sector also need to be made available to individual weavers at reasonable rates from the National Handloom Development Corporation without mandating that only PWCS can purchase yarn through high advance payments.
4. **Creating a policy framework to provide working capital to weavers:** Post-cocoon activities such as reeling, spinning, and weaving require significant upfront capital investment on a monthly basis (a common facility centre run by 20 women requires at least 6–8 million rupees per year, a single weaver requires 300,000–400,000 rupees for 6 months). State government agencies should create a policy framework that lays out ways in which reelers/weavers can avail the money/loans at minimal interest rates of 4–5 per cent, making sure that no hidden rates are included by banks. Alternatively, weavers can be provided with a specific amount of raw material for a month along with 5,000 rupees to sustain their daily expenses.
5. **Accelerating environmental sustainability efforts:** The workforce in the handloom and sericulture sector should be made aware of how they can incorporate environmental sustainability into their work. Capacity-building and financial support (grants, subsidies) should be provided for the adoption of more modern, sustainable practices such as organic farming, natural dyeing, use of renewable energy to power machinery, upcycling of textile scraps. R&D efforts on sustainable technologies for the sector should be accelerated, and focus should be on implementation of developed solutions and incorporation of feedback from beneficiaries.

- 6. Identifying, supporting, revitalizing enterprises in the sector:** Currently, many small and informal enterprises in the handloom and sericulture sectors, such as dyeing and block printing units in Bhagaiyya village, are unregistered due to the lack of knowledge and exposure of the benefits of registration. Such dyeing, screen-printing, finishing units can be identified and supported in processes like registration, awareness building on relevant government schemes and benefits, need-based technical capacity-building such as in new dyeing techniques, provision of financial support/subsidies or access to green micro-finance for the purchase of modern/environmentally sustainable machinery, and awareness of occupational safety and health risks. This can be achieved by registering the enterprises on the Ministry of MSME's Udyam platform, which will help them avail various benefits and support offered by the Ministry.
- 7. Conducting longer, more deliberate training:** Weavers or master weavers should be trained by design professionals for 6–12 months until the highest quality of designs has been met. More training is required in design, use of modern looms (4-pedal, 6-pedal looms), IT functions such as building websites and using online markets for selling their products, and financial literacy and banking. In the cotton sector, more garment stitching trainings and strict quality assurance processes are required. Trainings can be facilitated by government bodies like Jharcraft and KVIB through collaborations with professional designers and private garment companies for guidance on demand-based designs. For TAGS factories, short-term workforce estimation should be made and demand-oriented trainings should be designed and conducted through feedback obtained from employers, for example, the recent demand for 250 garment stitching workers skilled in double-stitch for export quality that could not be fulfilled due to lack of skilled workforce.
- 8. Increasing weavers' exposure:** Weavers' representatives from different weaving clusters should be provided with the opportunity to attend multiple exhibition each year which will not only help them sell their products but also obtain direct feedback from customers so that they can improve their designs accordingly. A transparent system needs to be set up in which each weaver cluster can democratically and fairly select the weaver groups who will attend the exhibitions. Annual technological and sales exhibitions should be held to display the progresses in R&D work on efficient looms, solar powered machines, and other developments that can increase the productivity of work and expand the market. Weavers should also be made aware of the various dyeing/finishing/printing units operating in the state so that they can avail these services within Jharkhand for reasonable rates. This can be facilitated through a collaboration – government agencies such as Jharcraft and KVIB can provide information about where and when various exhibitions are being conducted, while weavers' cooperatives will obtain the slots and nominate master weavers/weavers to attend the exhibitions through a transparent and democratic selection process that maximizes the number of weavers who are able to gain exposure and make sales – this could be ensured by publicly displaying the names of weavers who attend the exhibitions.
- 9. Creating decent working conditions:** R&D and uptake of automated reeling machines needs to be ensured among women in weaving clusters to eliminate the practice of thigh-reeling by incorporating their feedback on their experience with the machines. For workers across the supply chain in handloom and sericulture sectors as well as TAGS factories, occupational safety and health risks need to be measured and mitigated, particularly in informal dyeing facilities. In TAGS factories, transportation facilities should be arranged for drop and pickup of women workers and overtime rate should be increased. TAGS factories have reduced migration of women to other states and also enabled reverse migration – assessments can be undertaken to quantify the change in their working conditions in factories outside the state vs within the state of those who reverse migrated to Jharkhand. There is further need to assess gender pay gap in the sector, make large-scale efforts to include women across the value chain, promote women-owned cooperative groups, conduct technical and managerial skill building for women, and provide women with access to finance and markets, in order to create equal opportunity for women to participate in the sector.
- 10. Improving social security:** Health insurance/benefits are required specifically for occupational health risks such as eyes and lung related problems. Weaver identity cards should be made consistently to cover those entering the workforce each year. Efforts should be made to help weavers understand government schemes and benefits they can avail, and to provide assistance to them to complete the required paperwork and processes. Since a majority of weavers work from home, special provisions should be made for supporting renovation or purchase of homes. Occupational safety and health risks arising from the TAGS in the state need to be assessed and addressed.

- 11. Promoting Bhagaiyya cluster as a craft village for tourism:** The Bhagaiyya tasar weaving cluster is a group of villages bustling with tasar silk weaving and related activities, with almost every household having an active handloom. The village has the highest concentration of tasar weavers in Jharkhand and is also a hub for enterprises. Developing the Bhagaiyya cluster into a craft village could help promote tasar handicrafts, provide additional income to weavers, and improve overall living conditions and environment of weavers (similar to the National Craft Village programme by the Ministry of Textiles). This would require significant efforts towards decent work creation as well as planning for infrastructural revamp – including repairing the approach roads to the village, setting up public sanitation and waste management facilities in the village, training people in the village to guide and host tourists.
- 12. Repurposing closed coal mines/government wastelands through tasar silk plantations:** A pilot project should be undertaken to demonstrate the plantation of tasar silk host trees over unused/shut down coal mining areas/wasteland, and subsequent creation of other parts of the tasar silk value chain. This project has been previously proposed and can be implemented by the Tasar Development Foundation.
- 13. Making the sector attractive to the younger generation:** One way to attract young people is to claim the craft as an intangible cultural heritage, so as to promote a sense of pride in the young people in carrying on the tradition. Programmes can be designed by the Government, along with economic incentives to engage youth and provide allowances for the older masters to pass on this heritage to younger generation in this sector.
- 14. Protecting allied workers:** Jharkhand has one of the country's highest ratios of allied workers for each weaver (1.28), and at the same time allied workers in the state have only 177 annual days of work in handloom related activities. This prompts the need to further study the working conditions of allied workers and possibilities of alternate livelihoods and social protection mechanisms designed for them.
- 15. Build/strengthen workers organizations:** This needs to be done both for the sericulture and handloom sectors, as well as for the TAGS factories in order to enable collective bargaining and highlight workforce issues. However, since unionization in informal sectors is challenging, a Jharkhand State level tripartite body must be instituted, building over existing mechanisms, with regular social dialogue held among the parties.
- 16. Strengthen regulation enforcement, accountability, and transparency in government agencies:** To ensure that environmental and decent work law and regulations are followed within the TAGS sector, there is a need for strict enforcement, monitoring, and public reporting of the performance of factories and industries. There is also a need for more accountability and transparency in the processes of government agencies, which will instil a sense of trust among weavers and create a level playing field for all stakeholders in the sector – including weavers, traders, investors and customers – without any hinderances caused by middle-men. In government agencies supporting the TAGS sector, such as Jharcraft and KVIB, there is a need to assess the adequacy of staff, adequacy of compensation/staff salary, and regularity and amount of travel reimbursement provided to staff to conduct field visits to farms and weaving clusters. The above being inadequate could contribute to ineffective institutional performance.

7.2. Conclusions

Given that Jharkhand is one of India's largest coal mining states, the current shift towards privatization of mines as well as towards renewable energy sources will impact a large workforce in the state that is formally and informally engaged with coal PSUs (Public Sector Undertakings). These developments will impact the employment as well as economy of the region. To ensure a Just Energy Transition, there is a need to minimize and manage the challenges posed by such changing environments and to understand how low-carbon industries can be identified and promoted within the regions to boost employment and economic development.

Overall, the textile and garment factories in the state have the scope to create environmentally sustainable jobs but cannot guarantee decent work creation until the formation of tripartite committees at state and factory unit level and have representation through trade unions. In context of the transition away from coal in Jharkhand and the associated job losses (roughly 23,000 job at risk in the coming years) and economic losses that the state may face, the state's existing and upcoming TAGS factories are expected to generate significant new employment opportunities (approximately 30,000 jobs) and revenues. It is to be noted that coal miners and textile/garment

workers have different demographic and skill profiles, therefore those losing jobs in coal mines will not necessarily or even likely move to the textile industry. Also, while the textile sector is not considered a “green” sector, the TAGS factories in Jharkhand show potential for further greening and being low-carbon in nature. It is also necessary to ensure decent working conditions in these factories – since they are privately owned, there is a need for tripartism as well as strict implementation and monitoring of environmental and labour compliances, OSH provisions, social security provisions, and other decent work indicators such as ensuring equal opportunity for men and women.

The handloom and sericulture subsectors on the other hand, while they are largely environmentally sustainable and generate significant employment for vulnerable and marginalized communities, including tribal groups, are more traditional industries which have been practiced for over 100 years in specific communities in the state. Both the sectors were largely under government agencies until a few years ago, but are now mostly unorganized and controlled by private players, since government agencies are unable to generate enough demand to keep the workforce engaged. Privatization of this sector has resulted in more work for the weavers but less wages, less power to organize and bargain, no focus on occupational safety and health, and uncertain working conditions, all this resulting in many weavers leaving the profession. Development of a comprehensive social protection policy framework and organizing the informal workforce, along with clear strategies and budgets to increase employment in the sector are crucial for creating green and decent work opportunities, which will boost employment and economic development of the region.

REFERENCES

- CIF (Climate Investment Funds). n.d. "Just Transitions in India", available at: https://unfccc.int/sites/default/files/resource/Inputs%20from%20Climate%20Investment%20Funds_%20India_CIF%20Case%20Study.pdf.
- Ernst & Young, SED Fund (Sustainability, Equity and Diversity Fund), and FICCI (Federation of Indian Chambers of Commerce and Industry). 2022. *Skill Action Plan to Fuel Transition from Coal to Renewable Energy*.
- GOTS (Global Organic Textile Standards). n.d. "Ecological and Social Criteria", available at: <https://global-standard.org/the-standard/gots-key-features/ecological-and-social-criteria>.
- Hari, Devyani, and Ramanuj Mitra. 2022. *Circular Textile and Apparel in India: Policy Intervention Priorities and Ideas*. CRB.
- IBEF (India Brand Equity Foundation). 2013. "Indian Textiles Industry: An Overview", *IBEF Blog*, 30 November.
- iFOREST (International Forum for Environment, Sustainability and Technology). 2021. "Beyond Coal: Just Transition in India's Coal Districts", iFOREST Policy Brief.
- ILO. 2016. "What Is a Green Job", available at: https://www.ilo.org/global/topics/green-jobs/news/WCMS_220248/lang--en/index.htm.
- . 2017. *Working Conditions of Migrant Garment Workers in India: A Literature Review*.
- India, Ministry of Micro, Small and Medium Enterprises. 2023. "Press Release on National Minimum Wage Scheme", 16 March 2023.
- India, Ministry of Textiles. 2019. *Fourth All India Handloom Census 2019–20*.
- . 2023. *Annual Report 2022–23*.
- India, Ministry of Textiles, Central Silk Board. 2020. *The National Silk Policy – 2020*.
- . 2022. *Functioning of Central Silk Board & Performance of Indian Silk Industry*.
- India, Ministry of Textiles, Central Silk Board, CTRTI (Central Tasar Research and Training Institute). 2021. *Annual Report 2020–21*.
- India, MOF (Ministry of Finance), Department of Economic Affairs. 2023. *Economic Survey 2022–23*.
- Jharcraft. n.d. "Sericulture", available at: <http://www.jharcraft.in/sericulture/>.
- Jharkhand State Department of Industries. 2016. *Jharkhand State Textile, Apparel and Footwear Policy 2016*.
- . 2021. *Jharkhand Industrial Investment Promotion Policy 2021*.
- JIIDC (Jharkhand Industrial Infrastructure Development Corporation). n.d. "Textile Park", available at: <https://www.jiidco.co.in/textile-park/#:-:text=Textile%20Sector%20in%20the%20State,enhancing%20quality%20of%20Tasar%20silk>.
- MacDonald, Margaux, and John Spray. 2023. "India Can Balance Curbing Emissions and Economic Growth", *IMF Country Focus Blog*, 7 March.
- Pastakia, Astad, Md. Shamshad Alam, K. Sathyanarayana, Khitish Pandya, Binod Raj Dahal, and Rajendra Khandai. 2015. *Reel of Fortune – Building Inclusive Value Chains: The Case of Tasar Silk in Bihar and Jharkhand*. PRADAN and Central Silk Board.
- Rai, Suresh, and K. Sathyanarayana. 2022. "Trend of Tasar Silk Industry in India – A Statistical Approach." *Plant Archives* 22 (Special Issue): 265–273.
- Thailand, MOI (Ministry of Interior), Community Development Department. n.d. "Community Development Department", available at: <https://embassyofindia bangkok.gov.in/public/assets/pdf/OTOP30318.pdf>.

ANNEX I. PHOTOGRAPHS FROM THE MISSION TO JHARKHAND'S TEXTILE AND APPAREL SECTOR (JANUARY – FEBRUARY 2023)

Visit to stitching unit run by the Jharkhand State Khadi and village Industries Board, Ranchi, Jharkhand



Visit to Tasar Development Foundation office in Ranchi, Jharkhand. Picture below shows tasar cocoons and yarn



Visit to the Chotanagpur Regional Handloom and Khadi Weavers' Cooperative Union Limited, their weaving and dyeing units, store room



Visit to Primary Weavers' Cooperative Societies (PWCS) in Ranchi district, Jharkhand. Many of the facilities were poorly maintained – many looms were lying defunct, cleanliness was not maintained, not functioning to capacity.



Visit to Primary Weavers' Cooperative Societies in Ranchi district. Government-led weaver trainings were underway.





Visit to a Primary Weavers' Cooperative Society in Ranchi district, Jharkhand. This PWCS is productive and led by a motivated and proactive leader, Mr Khalil (top right). They procure orders from private players along with from government agencies.



Visit to Niranjana Textiles factory in Deoghar, Jharkhand. It is the largest dyeing and finishing facility in the state but is not able to generate enough work to sustain its operating costs. Most of the dyeing and finishing work in the state is being sent to factories outside the state to reduce costs.



Visit to Bhagaiyya weaving cluster in Godda district, Jharkhand – a hub for home-based tasar silk weaving industry. Pictures showcase the process of boiling tasar silk cocoons, reeling them into yarn, collecting the yarn into bobbins, and weaving them into garments



Visit to Bhagaiyya weaving cluster in Godda district, Jharkhand. The pictures below showcase how various small and informal enterprises and artists are creating value additions to the woven tassar garments locally, including screen printing, hand-painting, dyeing and finishing.





PAGE PARTNERSHIP FOR ACTION ON GREEN ECONOMY

India is one of the fastest growing economies in the world and has made significant progress in mainstreaming green economy activities into the country's macroeconomic and national development plans. The accessibility of reliable energy sources, such as coal, has been instrumental in India's development, but at the same time the country is striving to decouple its economic growth from emissions through a focus on scaling up renewable energy.

To ensure a Just Energy Transition, there is a need to identify and promote low-carbon industries within coal mining regions to support employment and economic development in the event of a transition away from coal. This report zooms in on Jharkhand – one of India's largest coal-producing states – and assesses green jobs and decent work opportunities within the textile and garment sector – one of the state's "thrust areas" for upcoming industrial development. The assessment explores recommendations for measures aimed at promoting environmentally sustainable practices, decent work creation and overall growth in the sector.

For further information:

PAGE Secretariat
UN Environment Programme
Resources & Markets Branch
11-13 Chemin des Anémones
CH-1219 Chatelaine-Geneva
Switzerland
page@un.org



www.un-page.org



twitter.com/_un_page



<https://www.linkedin.com/company/un-page/>



https://www.instagram.com/_un_page/