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Socio-Economic Impact, Challenges, and Transformation of Muga Sericulture in Assam: A Comparative Study of Traditional and Modern Practices

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Abstract

Muga sericulture, a silk-production tradition unique to Assam and protected under Geographical Indication status since 2007, occupies a significant place in the region's rural economy and cultural identity. This study examines the socio-economic contributions, structural challenges, and evolving dynamics of muga sericulture through four dimensions: community-level socio-economic impact, economic and infrastructural challenges, the interplay between traditional and modern practices, and the role of indigenous knowledge systems. Adopting a qualitative, exploratory research design, the study combines secondary literature — drawn from government reports, institutional publications, and academic sources — with primary data from semi-structured interviews conducted with 11 stakeholders, including farm owners, boutique owners, workers, and labourers across Guwahati and Sualkuchi, Assam. Findings indicate that muga sericulture continues to provide critical livelihood support and economic autonomy, particularly for women engaged in reeling, spinning, and weaving, while remaining deeply embedded in Assamese cultural identity. However, the sector faces compounding pressures, including the muga silkworm's ecological sensitivity, limited mechanization, fragmented market structures, and a decline in consumer willingness to pay premium prices amid globalisation, fast fashion, and pandemic-related disruption. Interviews further reveal an emerging generational disinterest in sericulture-based livelihoods, driven by expanding educational and career opportunities, which threatens the informal, family-based transmission of indigenous ecological and craft knowledge central to the industry's authenticity. The study finds that modernization has occurred unevenly across the value chain, concentrated in downstream marketing and retail rather than upstream rearing processes, creating structural asymmetries between production and market-facing actors. These interconnected findings suggest that the long-term viability of muga sericulture depends on coordinated interventions addressing income stability, market adaptation, technology diffusion, and knowledge preservation, rather than isolated, single-dimension solutions. Policy recommendations and directions for future research are proposed accordingly.

Keywords: *Socio-Economic; Cultural; Traditions; Traditional Practices; Modern Transformations*

Introduction

In Assam, Muga silk is derived from the silkworm *Antheraea assamensis*, commonly used to weave the traditional Mekhela Sador and other such clothes. Muga was famously coined the term “Golden silk” of Assam due to its natural shine, color and the labour it requires to be produced, and is internationally recognised for its durable quality. For lakhs of Assamese residing in districts such as Sivasagar, Jorhat and Kamrup, the primary source of income comes from the traditional practice of Muga sericulture. The industry supports over 60,000 families [1] (Duarah) across Assam. Beyond economical and commercial value, Muga sericulture represents decades old traditions and practices which reflects the region’s local knowledge, craftsmanship and cultural identity. However, in recent decades, the industry has gone under notable economic and technological transformations due to factors such as the introduction of scientific cultivation methods, improved silkworm breeds, disease

[1] Duarah, Chandan Kumar. “Climate Change Gives New Home To Assam’s Exclusive Muga Silk.” *Eurasia Review*, 2026, Accessed 17th July 2026

management techniques and government supported programmes aimed at increasing productivity and ensuring sustainability.

Despite its cultural and economic significance, Muga sericulture in Assam faces several challenges, such as globalization leading to lack of interest, that threaten its viability, sustainability and growth. Climate change, irregular weather patterns, inadequate infrastructure, etc, have greatly affected the livelihoods of Muga sericulture dependent households and communities. Additionally, increasing urbanisation and globalisation has led to change in patterns and trends, leading to less participation from younger generations due to a gravitational pull towards western fashions. Thus, raising concerns about the state and preservation of traditional knowledge and practices.

Although modern tech and scientific interventions have improved productivity and output in certain areas, their access remains uneven due to financial constraints, lack of technical awareness, and unequal access to support. Existing research has often focused on the biological or technical aspects of Muga production, while comparatively fewer studies have comprehensively examined its socio-economic impact alongside the challenges and the ongoing transition from traditional to modern practices. There is a need for a study that evaluates both systems and assesses their implications for livelihoods, sustainability and the future development of the industry.

The study aims to examine the socio-economic impacts, challenges and transformations of Muga sericulture in Assam through the following research objectives:

1. To examine the socio-economic and community-level impact of Muga sericulture on the livelihoods, employment patterns, household income, and gender participation of sericulture workers in Assam.
2. To identify the economic, infrastructural, and market-related challenges faced by Muga sericulture farmers in Assam.
3. To compare traditional and modern Muga sericulture practices in terms of cultivation techniques, productivity, sustainability, and adoption patterns in Assam.

Furthermore, the research will also document and analyze indigenous knowledge, traditional techniques, and ritual or customary practices associated with Muga silk farming among local communities in Assam. This study is significant because it provides a detailed and comprehensive understanding of Muga sericulture beyond its biological and commercial aspects by examining its social, economic, and cultural dimensions. As one of Assam's most distinctive traditional industries, Muga sericulture contributes to rural employment, women's participation in the workforce, and the preservation of indigenous knowledge. Understanding the factors that influence its development is essential for ensuring its long-term sustainability.

This research may assist policymakers, government agencies, researchers, and development organisations in designing strategies to improve production, strengthen market access, enhance farmer incomes and encourage the adoption of sustainable technologies without compromising traditional practices. The study also contributes a comparative perspective on traditional and modern sericulture systems, highlighting opportunities for balancing technological advancement with cultural preservation.

Literature Review & Methodology

Muga sericulture is one of India's oldest indigenous industries of Assam and occupies a unique position in India's silk sector. Produced by the silkworm *Antheraea assamensis,* Muga is renowned for its natural golden shine, durability and exclusivity to the historic Brahmaputra Valley. Unlike mulberry silkworms, Muga silkworms are semi-domesticated and reared outdoors on host plants, primarily Som and Soalu. The tradition of Muga silk production dates back several centuries and has been closely associated with the rich social and cultural life of Assam (Das). Historically, Muga silk was patronized by Ahom rulers and was considered a symbol of prestige and royalty. The knowledge of silkworm rearing, cocoon harvesting, silk reeling and weaving was transmitted from one generation to another within rural communities. Over time, Muga sericulture evolved into an important industry, supporting thousands of farming families while preserving indigenous knowledge and craftsmanship. In today's Assam, the sericulture sector has served as a source of employment and supplementary income for rural households, particularly women, while also preserving traditional weaving and rearing practices. It plays a vital role in reducing unemployment, particularly in districts where agricultural opportunities are seasonal and limited. Muga silk was granted the status of a Geographical Indication (GI) product in 2007[22] (Das). This exclusivity has amplified its socio-economic significance, as the golden hued fibre requires premium prices in domestic and export markets while remaining rooted in traditional, small-holder production systems.

[2] Das, Niranjan. "Geographical Indication (GI) as a means of craft tourism: a case of muga silk in Assam, India." An article published on ResearchGate.com. *ResearchGate,* August 2022. *ResearchGate,* Accessed 20 July 2026.

In addition to secondary literature, this study draws on primary qualitative data collected through semi-structured interviews with stakeholders in the Muga sericulture value chain, including farm owners, boutique owners, workers and labourers based in Guwahati and Sualkuchi, Assam. Interviewees have been anonymized as per their wish and are referred to by role and identifying number throughout this paper.

Socio-Economic Contributions

Beyond its measurable economic contribution, muga silk carries significant cultural weight in Assamese society. It is closely associated with the traditional attire of Assam, known as Mekhela Chador, worn in festivals such as Bihu and considered a significant marker of Assamese identity and heritage. This cultural embeddedness sustains demand even in the face of competition from cheaper synthetic and machine-made alternatives, and it has supported government and private efforts to position muga as a heritage craft product deserving of conservation, much like other GI-tagged textiles in India.

This deep cultural rootedness was echoed strongly in interviews conducted for this study. Farm Owner 1, based in Sualkuchi reflected on how sericulture and mekhela chador production had historically been not just an occupation but an inherited way of life, with little room for alternative career paths: “For me, there was never an option of a career outside of sericulture and manufacturing mekhela chadors, but thankfully with education my children have an option to pursue what they like”. This sentiment, shared independently by Farm Owner 2, points to a generational shift in how muga sericulture is perceived, from an inevitable inheritance to one choice among many now available to younger, more educated members of artisan families. While this reflects positive progress in educational access and economic mobility, it simultaneously signals an emerging vulnerability for the industry.

Muga silk producers frequently face an unorganized and fragmented market. In the absence of strong institutional procurement mechanisms or transparent price discovery systems, rearers and reelers are often dependent on intermediaries and traders who capture a disproportionate share of the value chain’s margins. Price volatility, driven by fluctuating cocoon supply, seasonal demand (spiking around festivals and wedding seasons), the absence of futures or contract mechanisms, adds further uncertainty to household incomes. While the GI tag has helped build brand value for genuine Muga products, weak enforcement has allowed the market to be flooded with blended or mislabeled silk products, decreasing customer trust and depressing prices for authentic Muga silk.

Despite its socio-economic importance, muga seri-culture in Assam continues to operate well below its potential, constrained by a combination of economic, infrastructural and economic challenges. These challenges have contributed to stagnating or declining raw silk production in several muga-growing districts.

Muga culture depends almost entirely on two host plants, Som and Soalu, both of which require several years to mature and are increasingly under pressure from land-use change. Expansion of agricultural land, deforestation and encroachment on community forest areas have reduced the availability of host-plant plantations in several muga districts. Unlike mulberry, which can be grown as a fast-growing bush crop on relatively small plots, Som and Soalu require dedicated land and long gestation periods before they can support commercial-scale rearing, discouraging new producers and limiting the ability of existing rearers to expand production. Much of muga rearing continues to rely on traditional, low-input techniques passed down informally rather than standardized scientific practices. Issues such as poor seed (egg) quality, absence of disease free layings, inadequate pest and disease management, and limited access to trained extension services have kept per-unit yields low compared to other silk-producing systems. Although research institutions such as the Central Muga Eri Research and Training Institute (CMER&TI) in Lahdoigarh have developed improved rearing technologies and disease management protocols, adoption among small and marginal rearers remains uneven, constrained by limited outreach, low literacy in technical documentation, and the additional labour or cost such practices may require.

Interview data suggests that these pressures have intensified in recent years due to broader shifts in consumer behaviour. Farm Owner 1 observed that since the pandemic, consumer willingness to pay premium prices for authentic muga products has been declining, a trend attributed to the combined effects of economic disruption, increasing globalisation and the growing dominance of fast fashion, which has normalised cheap and mass produced textiles among younger and price-sensitive consumers. This shift poses a particular threat to muga silk, whose value rests heavily on its status as a premium, artisanal, heritage product. This concern was reinforced by a more forward-looking observation from Farm Owner 2, who felt that the Muga sericulture industry would need to adapt over the next five to ten years in order to remain in business amidst changing market conditions and dynamics. This perspective, offered by a producer directly engaged in the trade, lends weight to the argument, echoed in the broader literature on traditional craft economies, that heritage status and cultural value alone may be insufficient to guarantee long-term commercial sustainability. It suggests that proactive strategies, whether in

product diversification, digital market access, branding or engagement with younger customers, may be necessary to secure the sector's future.

Muga sericulture has historically been practiced using methods that have remained largely unchanged for generations, rooted in intergenerational knowledge transfer rather than formal scientific training. Understanding the tension and complementarity between traditional and modern practices is central to accessing both the resilience and vulnerability of the industry today.

Traditionally, muga silkworms are reared outdoors directly on host trees (Som and Soalu), a method that leverages natural and ecological conditions but leaves the crop highly exposed to weather vulnerability, predators and disease. Rearers typically rely on visual inspection and experiential judgment, passed down within families, to identify healthy larvae, appropriate feeding cycles and early signs of disease rather than standardized diagnostic protocols.

In contrast, modern approaches developed by research institutions such as CMER&TI[33] have introduced practices including disease-free layings (DFLs), controlled indoor or semi-indoor rearing during vulnerable life stages, improved silkworm strains bred for higher yield and disease resistance, and structured pest-management calendars. Some of these innovations aim explicitly to bridge the gap between muga's ecological sensitivity and the need for predictable, scalable output. However, as noted earlier, adoption of these modern techniques remains uneven, often concentrated among better resources rearers or those with direct access to extension officers, while smaller and remote-area rearers continue to depend heavily on traditional methods.

Muga sericulture is inseparable from the indigenous and community-based knowledge systems that have sustained it for centuries. This knowledge extends beyond mere technical skill in rearing and weaving to encompass ecological understanding, social organization and cultural symbolism deeply embedded in Assamese society.

Generations of muga rearers have developed a sophisticated, experience-based understanding of the relationship between host-plant phenology, seasonal climatic patterns and silk worm health, knowledge that is rarely codified in formal texts but transmitted orally and through direct apprenticeship within families. Rearers often possess nuanced, location-specific knowledge of microclimatic conditions, optimal harvesting timing and early indicators of disease that have been refined through direct, sustained engagement with the local ecology over generations. This indigenous ecological knowledge complements, and in some cases predates the scientific research now being conducted by formal institutions, and represents a valuable but under documented resource for improving rearing practices sustainably.

Unlike many modern industrial processes, the transmission of muga related skills; rearing, reeling, spinning, and weaving has traditionally occurred within family and community structures rather than through formal institutional training. Skills are typically passed from generation to generation, often along gendered lines, with reeling and spinning knowledge transmitted primarily among women and rearing knowledge often shared across both genders within farming households. This informal, embedded mode of knowledge transfer has historically ensured continuity of practice but is increasingly vulnerable as younger generations pursue formal education and alternative careers, risking the erosion of traditional knowledge over time.

Muga silk occupies a central place in Assamese cultural identity, most visibly through its association with the mekhela chador, the traditional attire of Assamese women, and its ceremonial use during festivals such as Bihu and other significant events such as weddings. The golden hue of muga silk itself carries symbolic value, often associated with prosperity, purity and heritage within Assamese cultural narratives. This deep cultural embedding was reflected clearly in interviews conducted for this study, wherein Farm Owner 1 described sericulture and mekhela chador production not merely as an economic activity but as an inherited way of life with historically little separation between occupation and identity, a sentiment that underscores how indigenous cultural practice and livelihood have been intertwined for generations in communities such as Sualkuchi.

The cultural and indigenous knowledge dimensions of muga sericulture present a distinct challenge for policy and development interventions. Efforts to modernize or scale the industry must contend with the risk of eroding the very cultural authenticity and traditional knowledge systems that give muga silk its distinctive value and heritage statues. At the same time, as noted by Farm Owner 2 in this study's interviews, the industry may need to adapt to survive changing markets. This creates an inherent tension: how to document, formalize and protect valuable indigenous ecological and craft knowledge, potentially through structured knowledge-transfer programs, apprenticeship incentives, or digital documentation initiatives, without undermining the organic, community-embedded processes through which this knowledge has traditionally been sustained. Addressing this tension

[3] A , R., Antoo, S. and Kaisa, K. (2025) *Annual Report 2024-25*. rep. Jorhat, Assam: Director of CSB, pp. 5–125.

thoughtfully will be essential not only for preserving Assam's cultural heritage but for ensuring the long-term viability of the indigenous knowledge base upon which the entire muga sericulture ecosystem depends.

While a substantial literature exists on the biological, technical and ecological aspects of muga sericulture, particularly on silkworm rearing science, host-plant cultivation, and disease management, comparatively less academic attention has been paid to the lived socio-economic experiences of the people who sustain the industry. Much of the existing literature draws on secondary data from government reports, state sericulture departments and institutional studies conducted by research bodies such as CMER&TI, and while valuable for understanding aggregate trends, it often overlooks the qualitative, ground-level realities faced by individual readers, weavers and traders.

Furthermore, existing studies tend to treat muga sericulture primarily as an agro-industrial or biological system, with limited engagement with its cultural and indigenous knowledge dimensions, or with how socio-cultural shifts such as generational disinterest, changing consumer preferences and increasing globalisation, are reshaping the sector's long term viability. Similarly, the impact of recent disruptions such as the COVID-19 pandemic and accelerating rise of fast fashion on consumer demand for traditional, premium priced textiles like muga silk remains underexplored in academic literature, despite being frequently cited as pressing concerns by industry practitioners themselves.

This study seeks to address this gap by combining secondary literature with primary qualitative data gathered directly from stakeholders across the muga sericulture value chain, in order to provide a more grounded understanding of the socio-economic contributions, challenges and evolving dynamics of the industry. In doing so, this research aims to complement the largely institutional and technical framing of existing literature with perspectives drawn directly from those most directly engaged in the practice of muga sericulture today.

This study adopts a qualitative, exploratory research design, chosen for its suitability in investigating lived experiences, perceptions and contextual nuances that are difficult to capture through purely quantitative methods. Given that the research seeks to understand not only the measurable socio-economic contributions of muga sericulture but also the subjective experiences, challenges and outlooks of individuals engaged in the industry.

The research combines two primary components:

1. Secondary research - taking existing academic literature, government and institutional reports, and industry publications to establish the historical, economic and technical context of muga sericulture, as presented in the literature review.
2. Primary research - conducted through semi-structured interviews with stakeholders directly involved in the muga sericulture industry, aimed at capturing first-hand experiences and perspectives on socio-economic contributions, challenges and perceptions of the industry's future.

The semi-structured interview format was selected to allow flexibility in exploring themes raised by interviewees, while maintaining sufficient structure to ensure balanced insights across different categories of stakeholders. This approach is particularly well-suited to a small selected sample, where the goal is depth and contextual richness rather than generalizability

This study focuses on two locations within Assam, both of which hold particular significance within the muga sericulture and silk-weaving ecosystem: Guwahati and Sualkuchi.

Sualkuchi, located in Kamrup district, approximately 35 km from Guwahati, is widely regarded as one of the most significant silk-weacing centres in Assam. The village has a long-standing tradition of silk production, encompassing muga, eri and pat silk varieties, with many households engaged in weaving as a primary or even a supplementary occupation passed down across generations. Sualkuchi was selected as a key study site due to its status as a hub of both traditional muga silk production and mekhela chador manufacturing, making it well suited to capturing perspectives from farm owners and artisans directly engaged in the craft.

Guwahati, the largest city in Assam and the primary commercial centre of the region, was selected as a complementary study site to capture the market facing and retail dimensions of the muga silk value chain. As a major urban hub, Guwahati hosts numerous boutiques, retail outlets and designer establishments that market muga silk products to domestic, and increasingly international consumers. Including Guwahati in the study area allowed for the inclusion of boutique owner perspectives, offering insight into consumer demand trends, pricing dynamics and marker positioning that complement the production-side perspectives gathered in Sualkuchi.

Dimensions of Muga Sericulture in Assam

Socio-Economic and Community-Level Impact

The socio-economic contributions of muga sericulture at the household and community level, findings presented earlier in this paper demonstrated that Muga sericulture functions as considerably more than income-generating activity; it operates as a multi-layered socio-economic institution embedded within household labour structures, gender dynamics and community identity.

At the household level, the labour-intensive, low-capital nature of muga-based activities allows for broad participation across the value chain, from rearing to weaving without requiring significant land or financial resources. This structure is particularly significant for women, for whom reeling, spinning and weaving represent not only the income sources but avenues of relative economic autonomy within household decision-making, a finding consistent with the broader literature on women's role in India's handloom and sericulture sectors.

At the community level, muga sericulture reinforces social and cultural cohesion, particularly in hubs like Sualkuchi, where silk production has historically structured community identity and inter-household relationships around shared craft and trade. Interview data reinforces this: Farm Owner 1's description of how deeply the occupation was embedded not just economically but socially within community life, with limited separation between livelihood and identity.

However, this study's findings also point to an emerging tension within this socio-economic dimension. As educational access expands and alternative career paths become available, particularly for younger generations, the community-level embeddedness that has historically sustained muga sericulture's socio-economic function is beginning to loosen. This suggests that the sector's socio-economic contribution, while historically stable and deeply rooted, cannot be assumed to remain static, and may require deliberate intervention to sustain participation levels going forward.

Economic, Infrastructural, and Market-Related Challenges

Examining the structural challenges constraining the sector's economic performance, spanning biological vulnerability, infrastructural gaps, and market inefficiencies, the findings suggest that these challenges are not isolated but mutually reinforcing, compounding one another in ways that limit the sector's ability to scale or modernize.

Biologically, the muga silkworm's sensitivity to climatic variation and disease creates a baseline of production uncertainty that ripples through the entire value chain, from cocoon supply volatility to inconsistent household incomes. This uncertainty is compounded by infrastructural gaps including limited mechanization in reeling and processing, and uneven adoption of improved rearing technologies developed by institutions like CMER&TI - which constrain productivity even when biological risks are managed successfully.

Market-related challenges add a further layer of difficulty. The study's interviews revealed that these challenges are evolving rather than static: Farm Owner 1's observation that willingness to pay premium prices for authentic muga silk has declined since the pandemic in 2020, driven in part by globalisation and the rise of fast fashion, suggests that market risk is no longer confined to traditional concerns like intermediary-driven price volatility or GI enforcement gaps, but now extends to shifting consumer values and purchasing behaviour at a more fundamental level. Compounding this, both farm owners interviewed cited pandemic-related disruption and a shortage of unskilled labour in Sualkuchi as tangible operational challenges, indicating that labour market pressures are affecting the sector at multiple skill levels simultaneously — not only among specialized artisans, whose generational continuity is discussed in sections below, but also among the broader unskilled workforce needed to sustain production volumes.

Taken together, these findings suggest that economic and infrastructural challenges in muga sericulture are best understood not as a fixed set of long-standing constraints, but as a dynamic and worsening risk landscape, shaped increasingly by external forces - global consumer trends, pandemic aftershocks, and shifting labour markets that lie largely outside the direct control of individual producers.

Traditional vs. Modern Muga Sericulture Practices

Exploring the extent to which traditional practices persist alongside, or are being replaced by, modern interventions across the muga sericulture value chain. This study's findings indicate a pattern of **selective and uneven modernization**, rather than a uniform shift from traditional to modern methods.

Modernization has advanced furthest in areas farthest from the biological core of the process — most notably in marketing, retail, and design, where boutique-linked producers have integrated contemporary tools such as design software and digital retail channels. In contrast, the core biological process of silkworm rearing remains heavily reliant on traditional, experience-based methods, constrained by the silkworm's ecological sensitivity and the uneven reach of institutional extension services.

This pattern carries an important implication: modernization in muga sericulture appears to be occurring primarily downstream in the value chain, closer to the consumer, while upstream production processes remain comparatively traditional. This creates a structural asymmetry in which market-facing actors (such as boutique owners) may experience and drive modernization more directly than rearers and reelers, whose work remains most exposed to the sector's underlying ecological and infrastructural constraints. Farm Owner 2's view that the industry may need to adapt over the coming decade can be read in this light -not necessarily as a call for wholesale modernization of traditional rearing practices, but as an acknowledgment that the pace of downstream market change may increasingly outstrip the traditional pace of upstream production, unless deliberate efforts are made to align the two.

Indigenous Knowledge and Traditional Practices

The role of indigenous knowledge systems and traditional cultural practices in sustaining muga sericulture, and the risks facing their continuity. The findings here are closely linked to those under Objective 1, but focus more specifically on the knowledge systems themselves, rather than their broader socio-economic function.

This study's findings affirm that muga sericulture's indigenous knowledge base — spanning ecological understanding of host-plant and silkworm behaviour, and the technical craft knowledge underlying reeling, spinning, and weaving — has historically been transmitted informally through family and community structures rather than formal training. This mode of transmission has been effective in sustaining the craft across generations, but is also inherently fragile, dependent on continuous generational participation to remain intact.

The generational disinterest noted by both Farm Owners 1 and 2 therefore represents more than a labour continuity concern; it represents a direct threat to the preservation of indigenous knowledge itself. Because this knowledge has rarely been formally documented or codified, its loss due to declining generational uptake would be difficult to reverse. This finding suggests a specific and actionable area for intervention: structured documentation of indigenous ecological and craft knowledge, potentially through partnership between research institutions and artisan communities, could help preserve this knowledge base independently of whether current transmission patterns continue at historical levels.

At the same time, the cultural symbolism attached to muga silk — reflected in its role in Assamese festivals, attire, and identity — appears more resilient than the technical knowledge base itself, at least in the near term, given continued demand for muga products for culturally significant occasions. This suggests a potential divergence between the *cultural value* of muga silk, which may persist even amid declining artisanal participation, and the *technical knowledge* required to produce it authentically, which is more directly at risk. This divergence carries an important implication: preserving muga silk as a cultural symbol may prove easier than preserving the indigenous knowledge and skill required to sustain its authentic, traditional production.

Conclusion

Summary of Findings

This study set out to examine muga sericulture in Assam through four interconnected lenses: its socio-economic and community-level contributions, the economic and infrastructural challenges constraining the sector, the interplay between traditional and modern practices, and the role of indigenous knowledge systems in sustaining the craft. Drawing on a combination of secondary literature and primary interviews conducted with 11 stakeholders across Guwahati and Sualkuchi, the study finds that muga sericulture remains a deeply significant livelihood and cultural institution, but one facing mounting and interconnected pressures.

Findings confirm that muga sericulture continues to provide vital income and employment opportunities for rural households, with particular significance for women's economic participation through reeling, spinning, and weaving activities. At the same time, the sector faces substantial structural constraints, including the muga silkworm's biological sensitivity to climatic variability, limited mechanization in processing, fragmented market structures, and gaps in credit and institutional support. Primary interview data enriched these findings considerably, revealing that market challenges are evolving beyond traditional concerns around intermediaries and price volatility to include shifting consumer behaviour driven by globalisation, fast fashion, and pandemic-related disruption, alongside a growing shortage of unskilled labour in weaving hubs like Sualkuchi.

The study also finds that modernization within the muga silk value chain has occurred unevenly, concentrated more heavily in downstream market-facing activities such as design and retail, while upstream production processes — particularly silkworm rearing — remain heavily reliant on traditional, experience-based methods due to both ecological constraints and concerns over preserving product authenticity. Underlying all of these dimensions is a deeper concern around the erosion of indigenous knowledge, as generational disinterest — clearly articulated by interview respondents in this study — threatens the informal, family-based transmission systems through which muga-related ecological and craft knowledge has historically been sustained.

Collectively, these findings suggest that the challenges facing muga sericulture are not isolated but mutually reinforcing, and that the sector's long-term viability depends on how effectively these interconnected pressures are addressed in tandem.

Policy Implications

The findings of this study carry several implications for policymakers, industry bodies, and institutions engaged in supporting Assam's muga sericulture sector.

First, the evidence of declining generational interest in sericulture-based livelihoods suggests that policy support needs to extend beyond production-side subsidies and technical assistance toward interventions that make sericulture-based careers more economically and socially attractive to younger generations. This may include improving income stability, formalizing access to social security or insurance mechanisms, and enhancing the social recognition attached to skilled artisanal work.

Second, the observed shift in consumer demand — including declining willingness to pay premium prices amid rising fast fashion consumption — suggests that GI protection alone may be insufficient to safeguard muga silk's market position. Policy efforts may need to be paired with more active brand-building, digital market access initiatives, and stronger enforcement against mislabeled or blended silk products to protect the price premium that sustains rearer and weaver incomes.

Third, the uneven adoption of modern rearing and processing technologies points to a persistent research-to-field gap. Policymakers and research institutions such as CMER&TI may benefit from strengthening extension services and demonstration programs specifically targeted at smallholder and remote-area rearers, who are least likely to currently benefit from existing technological advances.

Finally, the risk of indigenous knowledge erosion identified in this study suggests a role for policy in supporting structured knowledge documentation efforts, potentially through partnerships between government bodies, research institutions, and artisan communities themselves, to ensure that ecological and craft knowledge is preserved independently of generational participation trends.

Recommendations

Based on the study's findings, the following recommendations are proposed:

1. **Strengthen social security and insurance mechanisms** for muga rearers, particularly to address income losses from disease outbreaks and climatic disruption, reducing the economic precarity that discourages younger generations from entering the sector.
2. **Invest in labour-sensitive mechanization**, particularly in reeling and processing stages, that improves productivity without compromising the artisanal qualities central to muga silk's premium positioning, potentially through subsidized access to appropriately scaled equipment for smallholder households.
3. **Expand extension and outreach programs** to improve last-mile adoption of existing scientific advances in disease management and rearing technology, with particular attention to remote and underserved muga-growing districts.
4. **Support market diversification and digital access** for producers and boutique-linked sellers, enabling direct-to-consumer channels that could help offset declining traditional retail demand and better communicate the authenticity and heritage value of genuine muga products to new consumer segments.
5. **Establish structured indigenous knowledge documentation initiatives**, potentially in partnership with local universities or research institutions, to formally record ecological and craft knowledge currently held informally by experienced rearers, reelers, and weavers.
6. **Address unskilled labour shortages** in key production hubs such as Sualkuchi through targeted skilling and employment linkage programs, recognizing that labour constraints affect not only specialized artisanal roles but also the broader workforce needed to sustain production volumes.

7. **Encourage youth engagement through hybrid career pathways**, such as design, digital marketing, or entrepreneurship roles within the muga value chain, which may appeal to educated younger generations while keeping them connected to the sector.

Limitations and Future Research

This study is subject to several limitations that should be considered when interpreting its findings. First, the primary research component was based on a small, purposively selected sample of 11 respondents across two locations, which, while valuable for generating rich qualitative insight, does not allow for statistical generalization to the broader population of muga sericulture stakeholders across Assam. Findings from interview data should therefore be understood as illustrative and exploratory rather than representative.

Second, the geographic scope of this study was limited to Guwahati and Sualkuchi, both of which have distinct characteristics — Sualkuchi as a specialized weaving hub and Guwahati as an urban commercial centre — that may not reflect conditions in other muga-growing districts of Assam, such as Lakhimpur, Dhemaji, or Goalpara, where production conditions, market access, and socio-economic dynamics may differ considerably.

Third, this study relied on self-reported qualitative data from interviews, which, while rich in contextual detail, is inherently subject to individual perspective and recall, and was not independently verified against production records, financial data, or longitudinal observation.

Future research could build on this study in several directions. A larger-scale, mixed-methods study incorporating quantitative survey data across a broader geographic sample would help validate and generalize the qualitative themes identified here. Longitudinal research tracking generational participation trends over time would help clarify whether the generational disinterest observed in this study reflects a durable long-term trend or a more transient response to recent disruptions such as the pandemic. Further research could also usefully explore consumer-side perspectives directly, particularly regarding changing willingness to pay for heritage textiles amid rising fast fashion consumption, to complement the producer-side perspectives gathered in this study. Finally, more detailed research into the technical and economic feasibility of labour-sensitive mechanization in muga reeling and processing could help inform practical policy interventions aimed at improving productivity without undermining product authenticity.

References

Das, Anushka. “Muga Silk – Weaving Golden Dreams.” *IIAD Udit*, 30th May 2022, https://www.iiad.edu.in/the-circle/muga-silk-weaving-golden-dreams/. Accessed 20 July 2026

Das, Niranjan. “Geographical Indication (GI) as a means of craft tourism: a case of muga silk in Assam, India.” An article published on ResearchGate.com. *ResearchGate*, August 2022. *ResearchGate*, https://www.researchgate.net/publication/362425979_Geographical_Indication_GI_as_a_means_of_craft_tourism_a_case_of_muga_silk_in_Assam_India. Accessed 20 July 2026.

Duarah, Chandan Kumar. “Climate Change Gives New Home To Assam’s Exclusive Muga Silk.” *Eurasia Review*, 2026, https://www.eurasiareview.com/27122017-climate-change-gives-new-home-to-assams-exclusive-muga-silk/. Accessed 17th July 2026.

Bhattacharyya, Manisha & Goswami, Chandrama. (2015). Muga Industry—A Pride of Assam: An Estimation of Employment Generation, Kamrup Distric. Space and Culture, India. 3. 42-53. 10.20896/saci.v3i2.149.

Das, Dr. Niranjan. “Traditional Muga Silk (Antheraea Assamensis) Rearing as a Means of Rural Livelihood and Conservation Efforts among the Indigenous Communities of Assam.” International Journal of Advances in Agricultural Science and Technology, International Journal of Advances in Agricultural Science and Technology, 2021.

Borah, Pooja, and Rahul Goswami. “Changing Climatic Patterns and Their Implications for Muga Sericulture in Jorhat, Assam, India”. *International Journal of Environment and Climate Change*, vol. 16, no. 4, Mar. 2026, pp. 422-9, doi:10.9734/ijecc/2026/v16i45370.

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