



Comparative Analysis of Sustainability Best Practices Among Indian Textile Industry Giants

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Abstract

As a vital part of national economic activity and one of the most resource intensive industries in India, the Indian textile and apparel sector is also one of the most important sectors in terms of sustainability transformation with great environmental and economic implications. This paper offers a comparative analysis of sustainability practices of five of India's largest textile-linked corporations: Arvind Limited, Welspun Living, Vardhman Textiles, the Raymond Group, and Grasim Industries (through its Birla Cellulose business), focusing on their efforts toward renewable energy adoption, water stewardship, decarbonization, circularity, certification and sustainable sourcing. Analysis of corporate sustainability reports, Business Responsibility and Sustainability Reports (BRSR) filed as per Securities and Exchange Board of India (SEBI) mandates and independent ESG assessments, shows alignment on science-based climate targets, water-recycling infrastructure and third-party certification while divergence in the pace, scale and verification rigor of implementation exists. The paper further contextualizes these corporate initiatives in the sector's structural sustainability challenges, including water intensity, effluent pollution, low textile-waste recycling rates, and greenwashing risk. It concludes with recommendations to improve comparability, assurance, and small-and-medium enterprise (SME) participation in the sector's sustainability transition.

Keywords: Textile Industry Sustainability, Corporate ESG Practices, Renewable Energy Adoption, Water Stewardship, Circular Economy

INTRODUCTION

The Indian textile and apparel industry holds a paradoxical position in the sustainability discourse of the country. It is a key driver of employment and export revenues, employing around 45 million people directly and contributing around 2.3% of India's Gross Domestic Product and around 12% of national exports [1]. It is also one of the most environmentally intensive manufacturing value chains in the country. Textile processing units in India consume about 1.6 million litres of water per ton of product and dyeing and finishing operations are thought to account for a significant portion of global industrial water pollution [1]. The sector also generates about 7,800 kilotons of textile waste per year, of which only a small part is recycled in a formal manner [1].

India's largest textile companies, many vertically integrated across fiber, yarn, fabric and garment production, have become influential test cases for whether large-scale sustainability transformation is possible within a historically pollution-intensive industry. The combination of global buyers, rising domestic

regulation and investor pressure has pushed these companies to make environmental, social and governance (ESG) commitments that are publicly reported. This paper compares five such companies, namely, Arvind Limited, Welspun Living, Vardhman Textiles, Raymond Group and Grasim Industries/Birla Cellulose, with a view to identifying the common best practices, differentiating factors and structural gaps that remain, despite the progress at the corporate level.

Conceptual and Regulatory Framework

In the Indian textile sector, corporate sustainability practice operates in a multi-layered architecture of mandatory and voluntary instruments. SEBI has been progressively mandating Business Responsibility and Sustainability Reporting for the top listed companies by market capitalization, and, from FY 2024–25, has required "reasonable assurance" for certain disclosures among the top 150 listed entities a step explicitly intended to curb unverified or exaggerated environmental claims, commonly termed greenwashing [2].

commonly termed greenwashing [2]. International frameworks are common at the voluntary level for several of the companies analyzed in this paper. The Science Based Targets initiative (SBTi) is a methodology jointly developed by the World Resources Institute, the UN Global Compact, CDP and WWF to set greenhouse gas reduction targets that are consistent with the 1.5°C pathway of the Paris Agreement; several companies in this analysis have had near-term or long-term targets validated under this framework. The Zero Discharge of Hazardous Chemicals (ZDHC) program establishes chemical-management benchmarks for textile wet-processing, and Zero Liquid Discharge (ZLD) refers to water treatment systems at plant level which prevent any effluent from being released untreated into the environment. Certification schemes such as the Global Organic Textile Standard (GOTS), the Global Recycled Standard (GRS) and OEKO-TEX provide product- and process-level assurance on organic content, recycled content and chemical safety respectively, while the Higg Index, developed by the Sustainable Apparel Coalition, provides a standardized self-assessment tool for environmental and social performance across facilities. Finally, independent assessment bodies, including the Dow Jones Sustainability Index (DJSI), CDP, Sustainalytics and specifically for man-made cellulosic fiber producers, Canopy's Hot Button Report, provide external benchmarking that companies often refer to in their own disclosures. The paper relies on company self-reported data as indicative rather than independently audited fact, and cross-references it against third-party ratings where available, in line with the caution the literature urges regarding self-reported ESG claims [2].

MATERIALS AND METHODS

This paper adopts a qualitative comparative case-study design. The five companies were selected purposely to represent the breadth of India's large-scale textile manufacturing. These companies were: Arvind Limited (integrated textiles and denim, Gujarat), Welspun Living (home textiles, Gujarat), Vardhman Textiles (largest vertically integrated textile manufacturer in India, Punjab), the Raymond Group (heritage woolen and worsted fabrics, Maharashtra), and Grasim Industries thru its Birla Cellulose business (man-made cellulosic fibers, part of the Aditya Birla Group). Together, these companies cover cotton, blended, woolen and cellulosic fiber value chains and represent several of India's main textile producing regions.

Data were sourced from the latest publicly available sustainability report, ESG data book or BRSR filing of each company (mostly FY 2023-24 and FY 2024-25) supplemented with investor-facing annual reports, corporate websites and independent ESG commentary and ratings coverage. Where a company has undergone a material corporate restructuring affecting the scope of its textile operations – as in the case of Raymond Limited's demerger of its lifestyle business into a separate listed

entity, Raymond Lifestyle Limited, in 2024-25 – this is explicitly called out as it impacts the comparability of reported metrics across years. The analysis is thematic and structured around five recurring dimensions of sustainability practice within the textile sector: renewable energy and decarbonization, water stewardship, circularity and certification, sustainable sourcing, and governance and external recognition.

Sustainability Profiles of Companies

Arvind Limited: Arvind Limited, the flagship textile company of Ahmedabad's Lalbhai Group and a leading global denim manufacturer, has one of the more mature sustainability programs of the companies reviewed. The company reports a renewable energy share of 37% of its total energy mix for FY 2024–25, supported by a 24-megawatt hybrid solar-wind installation and one of India's largest single-site rooftop solar plants, with an internal ambition to raise the renewable share toward 80% [3]. Arvind mentions 8,255 megalitres of water recycled on water and says all its manufacturing facilities operate with Zero Liquid Discharge. Its Naroda denim facility in Ahmedabad is touted as the first denim mill in the world to achieve ZDHC Level-1 status [4]. The company has received Science Based Targets initiative approval for its near-term, long-term and net-zero climate targets and says that 72% of its cotton sourcing is now rated as sustainable, working with over 90,000 farmers across about 445,000 acres [5]. Arvind has been named in the S&P Global Sustainability Yearbook 2026, one of only two Indian companies to be recognized in the Textiles, Apparel and Luxury Goods category. It also received CDP scores of Bs for both climate change and water security.

Welspun Living

Welspun Living (previously Welspun India), a leading global player in home textiles, has significantly leveraged its sustainability positioning on water stewardship. Welspun Living's 30-million-litres-per-day sewage treatment plant at Anjar in the drought-prone Kutch district of Gujarat won first rank in the "Best Industry" category of the Ministry of Jal Shakti's National Water Awards (Welspun Living, n.d.-a). eports a renewable energy share of over 30% across its manufacturing sites, Science Based Targets initiative approval and a declared ambition to achieve net-zero emissions by 2040 for FY 2024-25 [6]. It also maps water-risk at supplier level across its supply chain, categorizing suppliers based on exposure to physical water stress. It reports a Sustainalytics ESG risk ranking of 16th out of 211 peer companies globally [7]. Its Wel-krishti sustainable farming program supports cotton growing communities and by 2030 the company has committed to source 100% sustainable cotton – combining Better Cotton Initiative and organic cotton.

Vardhman Textiles Limited

Among the longest-dated climate commitments reviewed in this paper is Vardhman Textiles' net-zero emissions by

2045 and “Net Positive Impact” by 2050. Vardhman Textiles is headquartered in Ludhiana, Punjab, and is described in its own reporting as India’s largest vertically integrated textile manufacturer. The company targets to source 60% of its power from renewable sources by FY 2027-28 and is implementing a phased “Green Capex” program. Vardhman mentions a wide array of process and product certifications including GOTS, GRS, OEKO-TEX, Organic Content Standard, Recycled Polyester and RegenAgri. The company mentions that approximately 36% of its inputs were sourced sustainably in FY 2024–25 [8]. The company has also implemented its own chemical-management system, CHEM-IQ, and is registered on the ZDHC InCheck and Gateway platforms [8]. Independent commentary here is more mixed than for some peers: one third-party carbon-disclosure aggregator notes that, as of its most recent assessment, Vardhman had not yet published specific near-term emissions-reduction targets or disclosed Scope 3 emissions, suggesting its climate governance, while directionally ambitious, remains less externally verified than that of some peers [9].

Groupe Raymond

The Raymond Group is a unique case due to a major corporate restructuring. In 2024–25, Raymond Limited demerged its lifestyle (textile, apparel and garmenting) business into a separate listed entity, Raymond Lifestyle Limited. The original listed company is now focused on real estate, engineering and precision manufacturing [10, 11]. This demerger makes it harder to compare directly to the other four companies, whose textile operations remain in their primary reporting entities. Following the demerger, Raymond Limited’s own ESG disclosures now focus sustainability efforts on its real-estate and engineering operations – e.g., installation of 450 solar hot-water panels and low-flow plumbing fixtures at construction sites [11]. Pre-demerger disclosures for the combined group had reported more textile specific initiatives, including a 52% renewable energy portfolio at its Vapi processing plant, use of rice husk as a renewable boiler fuel at its Chhindwara plant, and waste heat recovery from dyeing effluent [10]. The Raymond case is an example of a wider methodological caution for comparative ESG analysis: corporate restructuring can substantially change what a reported sustainability metric represents from one reporting year to another.

Grasim Industries / Birla Cellulose

The clearest example of a fibre-level, not just operational, sustainability strategy among the companies studied comes from Grasim Industries, thru its Birla Cellulose business — a part of the Aditya Birla Group and one of the world’s largest manufacturers of man-made cellulosic fiber (MMCF), including viscose staple fiber. For five years running, Birla Cellulose has been named the number one company in Canopy’s Hot Button Report – an index that ranks MMCF producers on the risk of sourcing pulp from

ancient and endangered forests, earning the highest “dark green shirt” rating in the report. The company has committed to a 50% reduction in viscose water intensity from a 2015 baseline. It has already achieved approximately a 45-55% reduction by 2024 thru closed-loop, membrane-based water-treatment technologies pioneered at its Nagda, Vilayat and Kharach sites in India. Birla Cellulose has promised over US\$170 million to upgrade closed-loop production technology and has Forest Stewardship Council (FSC) certification across its sourcing (Fibre2Fashion, 2020; FSC Asia Pacific, 2025). Since MMCF production is upstream of garment and fabric manufacturing, Grasim’s practices illustrate that sustainability leadership in the Indian textile value chain is not limited to finished-goods manufacturers but also extends to raw-material producers whose choices materially shape the environmental footprint of downstream brands.

Cross-Company Comparison

Table 1 summarizes the five companies across six recurring dimensions of textile sector sustainability practice. From this comparison several patterns can be seen. All five companies have made renewable energy a headline metric, with the share of renewable energy in the total energy mix varying considerably – from roughly 30-37% currently achieved at Arvind and Welspun, to aspirational multi-year targets at Vardhman and site-specific figures at Raymond. Second, water stewardship is treated as materially significant in all cases, but the nature of the intervention varies: Arvind and Grasim emphasize closed-loop process technology and Zero Liquid Discharge at the point of production, while Welspun’s flagship initiative – the Anjar sewage treatment plant – addresses regional water scarcity beyond its own factory boundary, arguably a more community-oriented model of water stewardship.

Third, on climate governance, there is a noticeable gradient in verification rigor. Arvind and Welspun have been approved by the Science Based Targets initiative, requiring independent validation of methodology; Vardhman has expressed long-dated net-zero ambitions, but according to independent carbon-disclosure assessment, had not yet published SBTi-validated targets or full Scope 3 disclosure at the time of the most recent review [9]. And this is an important distinction: a declared ‘net-zero by 2045’ commitment carries a different evidentiary weight depending on whether it is accompanied by an externally validated interim reduction pathway.

Fourth, certification density differs across business models. Vardhman’s certification portfolio (GOTS, GRS, OEKO-TEX, RegenAgri, and others) is reflective of its status as a large-volume yarn and fabric supplier to global apparel brands who themselves require chain-of-custody certification. Grasim/Birla Cellulose’s FSC certification and Canopy ranking underscore its position as a forest-linked raw material producer, where the material sustainability

Table 1: Comparison of Sustainability Practices of Five Indian Textile Companies

S No	Dimension	Arvind Limited	Welspun Living	Vardhman Textiles	Raymond Group	Grasim/Birla Cellulose
1.	Renewable energy	37% of energy mix (FY25); pursuing ~80%	>30% of energy mix (FY25); 100% RE target by 2030	Target of 60% green power by FY28	Site-level solar (e.g., 52% RE at Vapi plant)	Investing in closed-loop, energy-efficient MMCF technology
2.	Water stewardship	8,255 million litres recycled; Zero Liquid Discharge (ZLD) across plants	30 MLD sewage treatment plant at Anjar; water-risk mapping of suppliers	Freshwater-reduction and water-saving initiatives; recognised awards	Low-flow fixtures; solar water heating at construction sites	50% cut in viscose water intensity targeted by 2025; ~45% already achieved
3.	Climate targets	SBTi-approved near-term, long-term and net-zero targets	SBTi-approved targets; net zero by 2040	Net Zero by 2045; Net Positive Impact by 2050	Environmental Management System roll-out post-demerger	Closed-loop MMCF manufacturing across all sites (in progress)
4.	Certifications	ZDHC Level-1 (first denim mill globally); GOTS, Higg Index	DJSI-scored; Sustainalytics top decile	GOTS, GRS, OEKO-TEX, Organic Content Standard, Recycled Polyester, RegenAgri	ISO 14001 (in progress for realty)	FSC-certified sourcing; Canopy Hot Button “dark green” ranking (5 years running)
5.	Sustainable sourcing	72% sustainable cotton; ~90,000 farmers engaged	Wel-krishi programme; BCI and organic cotton, 100% target by 2030	~36% of inputs sourced sustainably (FY25)	Not a primary focus post-demerger (realty/engineering focus)	Sourcing shifted toward Next-Gen and recycled cellulosic inputs
6.	External recognition	S&P Global Sustainability Yearbook 2026; CDP B/B	National Water Award (Ministry of Jal Shakti); CRISIL Sustainability Yearbook	Government/industry water and energy awards	ESG Data Book disclosures	Canopy Hot Button rank 1; multiple CII/CSR awards

(Source: Company Sustainability Reports, ESG Data Books and BRSR Filings, FY 2023-24 to FY2024-25).

question is not chemical safety in finishing but responsible fiber sourcing. This implies that “best practice” in Indian textile sustainability is not a monolithic checklist, but a suite of practices calibrated to a company’s position in the value chain — fiber producer, integrated mill, or finished-goods exporter.

Finally, the Raymond case demonstrates that corporate structure itself is a variable in the comparison of sustainability. Metrics that were reported under a combined lifestyle-and-realty entity before 2024–25 are no longer directly comparable with the demerged Raymond Limited’s current disclosures and analysts looking to track the textile business’s sustainability trajectory going forward will need to follow Raymond Lifestyle Limited’s separate reporting rather than the parent companies.

Enduring Sector-Wide Issues

Despite the initiatives documented above, corporate level progress among India’s largest textile companies co-exists with considerable, and largely unresolved, sector-wide environmental pressure. Textile clusters in India continue to be linked with serious localized pollution. The Noyyal River in Tamil Nadu, downstream of the Tirupur knitwear cluster, and the Bandi River in Pali, Rajasthan, have both been reported as polluted by untreated or poorly treated textile effluent, often from smaller units that do not have the capital to set up individual effluent treatment plants [1, 12]. Surat, Gujarat is the second-largest textile manufacturing cluster in India and has almost 400 dyeing and printing units in the city. There is no uniform standard for the disposal of “chindi” (fabric

offcut) waste, which is often burned or dumped rather than recycled [12]. At the national level, India produces an estimated 7,800 kilotonnes of textile waste every year and is the second largest producer of man-made fibers in the world, mainly polyester and viscose. Blended fibers like cotton-polyester are technically difficult to recycle and only about a quarter of textile waste is recycled formally, while the rest is reused informally, downcycled, incinerated or landfilled [1]. Synthetic garments also add to the microplastic pollution during laundry, with one wash load of polyester clothing estimated to release hundreds of thousands of microplastic fibers into wastewater [2].

These structural pressures increase the risk of greenwashing—the gap between a company’s public sustainability narrative and the verifiable environmental performance of its full operations and supply chain, especially among smaller subcontracted units that fall outside a large company’s directly reported scope. India’s regulatory response has begun to address this. The Consumer Protection Act, 2019 has liability provisions applicable to false environmental claims; SEBI’s move toward mandatory “reasonable assurance” of BRSR disclosures for the largest listed companies from FY 2024–25 is a concrete step toward independent verification [2,13]. Yet, at present, this assurance obligation is confined to the largest listed entities. The small and medium enterprises comprising much of the textile supply chain’s dyeing, printing and finishing base, including many operating in clusters such as Tirupur, Surat and Ludhiana, are still largely outside formal ESG disclosure and assurance regimes, despite their aggregate environmental footprint being significant.

CONCLUSIONS

The comparative analysis reveals that India's largest textile businesses have come to adopt a broadly consistent set of headline sustainability practices — renewable energy expansion, water recycling and Zero Liquid Discharge, science-based climate target-setting and international certification — but diverge notably in the pace, verification rigor and value-chain positioning of these commitments. Arvind Limited and Welspun Living demonstrate the best externally verified climate governance among the companies analyzed, with SBTi target approval and positive third-party ESG ratings. Vardhman Textiles shows a depth of certification but a comparative gap in independently verified emissions targets. The Grasim Industries thru Birla Cellulose example demonstrates that sustainability leadership in Indian textiles extends upstream to fiber production where the central material issue is forest-sourcing integrity. Raymond's corporate demerger for 2024-25 exemplifies a methodological risk for sustainability benchmarking: structural change may make year-on-year and company-to-company comparisons discontinuous.

Recommendations

Three recommendations ensue. First, comparative ESG analysis of Indian textile companies should explicitly track corporate restructuring events, as demergers, acquisitions and business realignments can change the scope of what a reported metric represents without necessarily being flagged as such in headline disclosures. Second, given the well-documented disconnect between large company disclosure and pollution outcomes at the cluster level, policy and industry association effort should focus on scaling assurance-grade disclosure requirements or, at the very least, standardized effluent and waste-management support to small and medium enterprises operating within major textile clusters, as these units are often embedded in the same supply chains as the large companies discussed in this paper. Third, future comparative research would benefit from more systematic triangulation of company-reported figures against independent third-party ratings — as this paper has done selectively thru sources such as CDP, Sustainalytics, and Canopy — rather than relying solely on self-reported sustainability and ESG data books, to better distinguish verified performance from aspirational commitment.

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