Circular Fashion: How Brands Can Reduce Textile Waste

Paul Wright, Group ESG Director, PDS Limited

*In an exclusive interaction with Industry Outlook, **Paul Wright, Group ESG Director, PDS Limited**, discusses how India's fast fashion industry has increased textile waste, prompting brands to adopt circular strategies such as recycling, upcycling, and closed-loop production. Innovations in bioengineered fabrics, waste-to-fiber technologies, and digital traceability are enhancing sustainability, reducing dependence on virgin resources, and promoting responsible consumption. Paul Wright is a seasoned Sourcing, ESG, and Operations leader with three decades of experience in retail and manufacturing. He excels in leadership, strategy, quality, compliance, and cost optimization, driving sustainable sourcing, team development, and operational excellence across global organizations.*

Fast fashion has worsened textile waste in India. How are brands adopting circular strategies like recycling and upcycling to minimize environmental impact?

The era of fast fashion has changed what used to be a four-season annual fashion cycle into a 365-season fashion cycle. This has exponentially increased the inflow of cheap textile products with increasingly shorter lifespans, thus leading to an unprecedented amount of **textile waste** created in the production and post-purchase stages. It is no longer sustainable to follow traditional linear production processes, and there is a dire need to integrate **circular production** (https://www.theindustryoutlook.com/manufacturing/news/sustainable-manufacturing-balancing-innovation-with-environmental-responsibility-nwid-12087.html) into the textile production ecosystem. This is relevant both from an environmental and a business standpoint for us, as consumer preferences also shift towards environmentally conscious products.

With increasing textile waste, what innovations in fabric recycling and regenerative materials are proving most effective for sustainable circular fashion models?

Post-consumer recycling culture can be a challenge in the absence of supporting infrastructure that makes widespread implementation an uphill journey. However, a variety of small-to-medium scale innovations are being adopted by the industry to tackle the problem of textile waste.

An impactful recent innovation is the widespread movement towards recycling synthetic fibers into polyester canvas fabric for industrial applications – which is now also being used in the creation of mainstream fashion products. There has also been a tangible shift in the global fashion industry towards embracing more **regenerative materials** in textiles. Biofabrication and the use of plant-based materials is gaining traction as brands adapt products on the design level to replace synthetic fibers with biodegradable and regenerative materials.

India's textile industry faces supply chain inefficiencies. How can closed-loop production and waste-to-fiber technologies help brands achieve circularity?

Closed-loop production systems are a major component to achieving the circular economy model in the textile industry. This approach allows for textile products to be reused and regenerated at the end of their lifecycle, with efficient sorting technologies helping recover materials and reduce textile waste -which can supplement the existing supply chains in the sector and ease the demand for virgin materials. This integration of recycled materials back into the production chain strengthens and increases the efficiency of the existing supply chain. **Waste-to-fiber technologies** are further increasing the volume and quality of materials recovered from textile waste and are crucial for enhancing circularity in India's textile industry.

High production costs and limited recycling infrastructure hinder circular fashion in India. How can brands overcome these financial and technological barriers to scale sustainability?

While India's current infrastructure and awareness around textile recycling present challenges for widespread adoption, there are several promising developments in this sector aimed at addressing these obstacles. In the long term, businesses can expect substantial positive returns from implementing efficient fashion recycling systems in a market as vast as India, making the initial investment worthwhile.

The top priority for businesses should be to increase access to recycling facilities in the country to bridge the gap between consumers and recyclers, which will kick start the culture towards recycling. As a secondary goal, we can then look to sponsor the development and modernization of recycling technology to increase efficiency and capacity – which may eventually allow the recycling businesses to become self-sufficient. For instance, automation and **AI-driven quality control** (https://www.theindustryoutlook.com/machinery-and-equipment/news/aipowered-smart-homes-the-next-big-thing-in-indian-real-estate-nwid-12562.html)can optimize material usage, reduce costs, and offer digital traceability to strengthen supply chain efficiency. PDS has worked towards accomplishing this through our partnership with Neptune Recyclers, which allows us to ensure full traceability of recycled materials and lead by example by setting responsible waste management practices in the textile sector.

Consumer participation is key for circular fashion. How are brands leveraging take-back programs and digital traceability to encourage responsible consumption?

Consumer participation is essential to advancing circular fashion, and brands are currently implementing a variety of incentive programs to kick start this model through take-back programs and digital traceability to promote responsible consumption. A classic example is brands offering take-back schemes to consumers, inviting returns of used garments for recycling or resale in exchange for discounts on future purchases.

Digital traceability, on the other hand, is letting brands leverage tracking tools to enhance transparency of their sourcing and production. The European Union recently passed legislation creating the Digital Product Passport (DPP) as a requirement to track product lifecycles and sourcing and promote conscious purchasing. PDS is supporting this initiative by implementing DPP traceability in our products in partnership with Fabacus and Nobody's Child. Additionally, we conduct accurate and automated carbon accounting, to track emissions across the fashion value chain through AI-powered carbon accounting through our partnership with Carbon Trail.

Finally, through additional collaborations with third party organizations, many brands are also offering official second-life resale from consumer to consumer – allowing for unwanted clothing to be repurposed and resold. In FY 2023-24, these initiatives helped process 25 million garments and diverted 1 million items monthly from landfills.

Looking ahead, what emerging textile innovations, such as bioengineered fabrics and chemical recycling, could revolutionize circular fashion in India?

The future of circular fashion lies in a variety of upcoming innovations such as bioengineered fabrics, chemical recycling, and more. Bioengineering is introducing groundbreaking materials that align with environmental goals while minimizing their harmful effects or environmental pressure. Bio-textiles created through synthetic biology for instance eliminate the need for harmful dyes and chemical treatments, paving the way for minimal impact circular production models. Biofabricated materials like mycelium-based leather and lab-grown cotton are some examples of high impact products in this category. **Chemical recycling technologies** break down blended fabrics with much higher efficiency into reusable raw materials, reducing reliance on virgin resources.

PDS has long been investing in **next-gen material science** supporting such innovations. For instance, we have invested in the only existing **3D manufacturing** method for the production of textiles from mushroom roots; while our inititative Colorifix's biotechnology-based dyeing and Nature Coatings' bio-based pigments are offering eco-friendly alternatives to petroleum-based dyes. These innovations, coupled with circular design principles, will be instrumental in reducing industry reliance on virgin resources.

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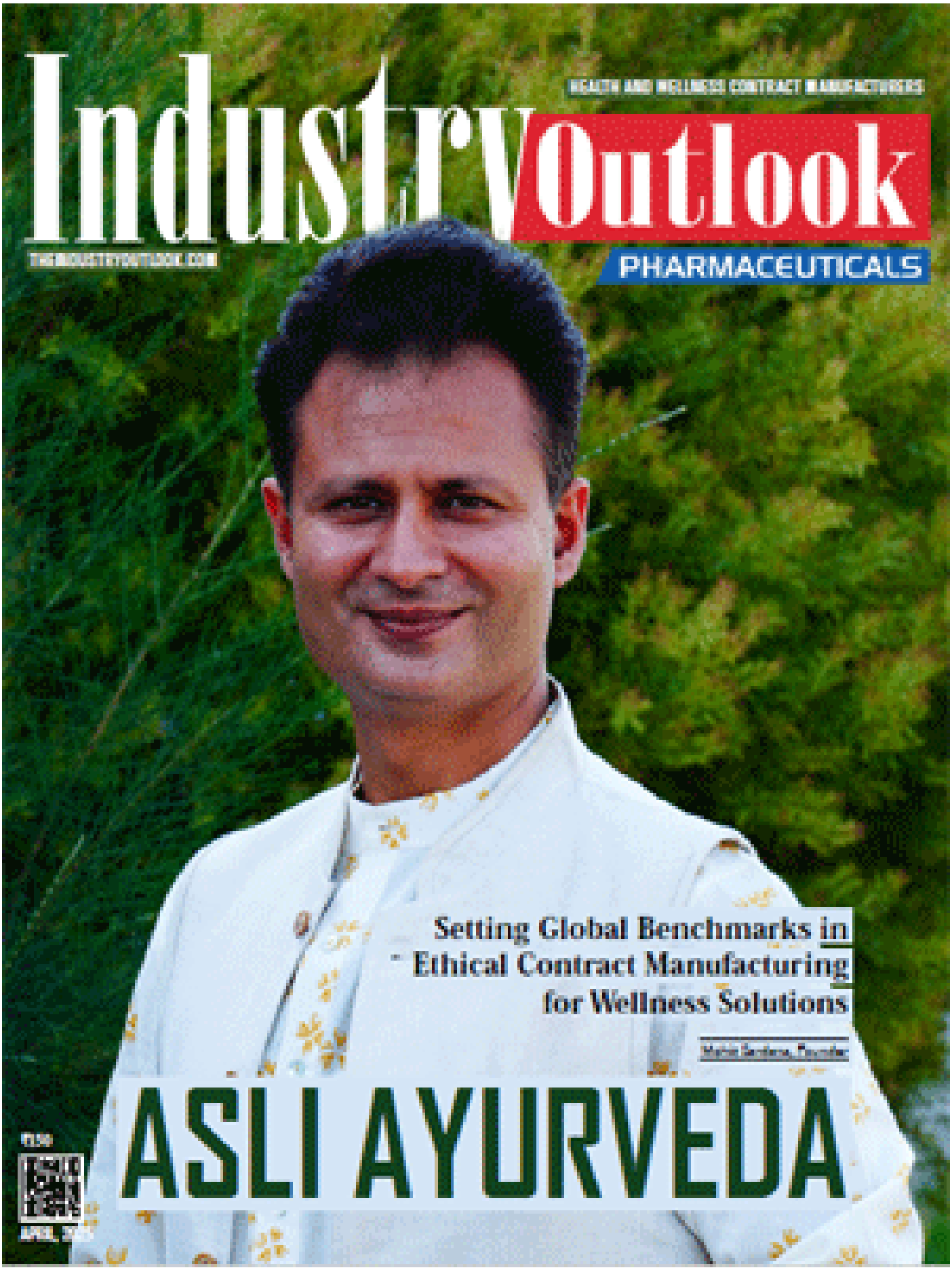

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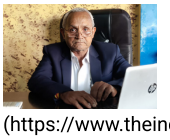

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