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Presentation on Indian Textile Recycling Initiative

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Need for Circularity

Fashion industry is grappling with challenges related to both business sustainability and environmental impact

On Demand, per capita consumption is expected to increase by 1.8X and fibre demand is expected to reach 30mnT by 2030

Globally, 1 truck of textile waste is landfilled every second.

Despite the growth of man-made fibres, the gap is huge, with many visible symptoms:

- Increasing Cotton Prices
- Unsustainable pressure on cotton production
- Increasing environmental footprint due to increased cotton and MMF production and consumption

On Supply front, cotton production is expected to reach 5mnT by 2030

Source: Outlook on Global Fiber Demand and Supply 2030, Lenzing (2022), PriceVision (2023), Synthetic Textiles industry in India and opportunities ahead, Wazir Advisors (2018), Sustainable Apparel Materials, MSL (2015)

Two points of intervention are possible to mitigate these challenges

1

Minimise Production/ Demand

Potential Negative Impact on Economy

2

Move to Alternate Materials

Wood-based cellulosic materials	*Highest impact per kg across global warming and resource depletion*
Adoptions of Innovative Natural Materials	*Scale yet to be achieved*
Adoption of Regenerative and Recycled Materials	*High Potential*

Given the potential of recycled materials and growing business risks, adoption of recycled materials can be seen across industry leaders

Regulatory Movements

1. Directives on Corporate Sustainability Reporting
2. Upcoming EU mandates on designing for recycling and giving details around it in Product Passport
3. Upcoming EU mandates on including recycled component in textile materials (under ESPR)

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Business Risks

1. **Reputational Risk:** Global backlash by Civil Society and Media
2. **Supply Chain Risk**: Unavailability of raw materials and increasing prices

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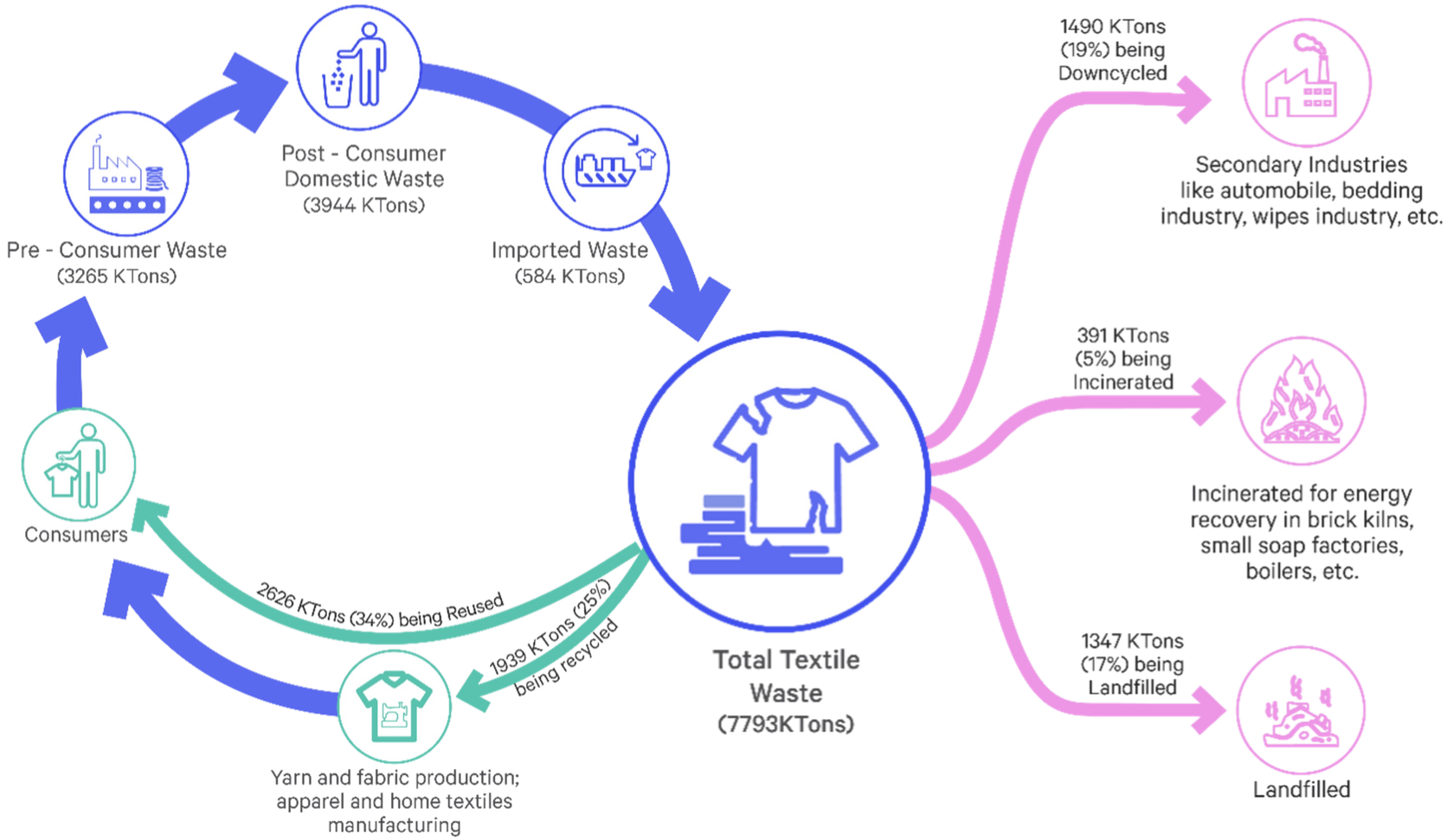
Brand/ Buyer Commitments to transition to sustainable/ recycled contents by 2025-2030

ADITYA BIRLA FASHION & RETAIL	Ensure zero waste to landfills with 100% traceability of waste in operation
DECATHLON	100% waste recovered by 2026
GAP	Use 60% recycled polyester 100 % of cotton from more sustainable sources by 2025
H&M	Use 30% recycled material by 2025
IKEA	Use of 90% recycled material by 2025

These trends pose a significant opportunity for India to enable a circular fashion industry

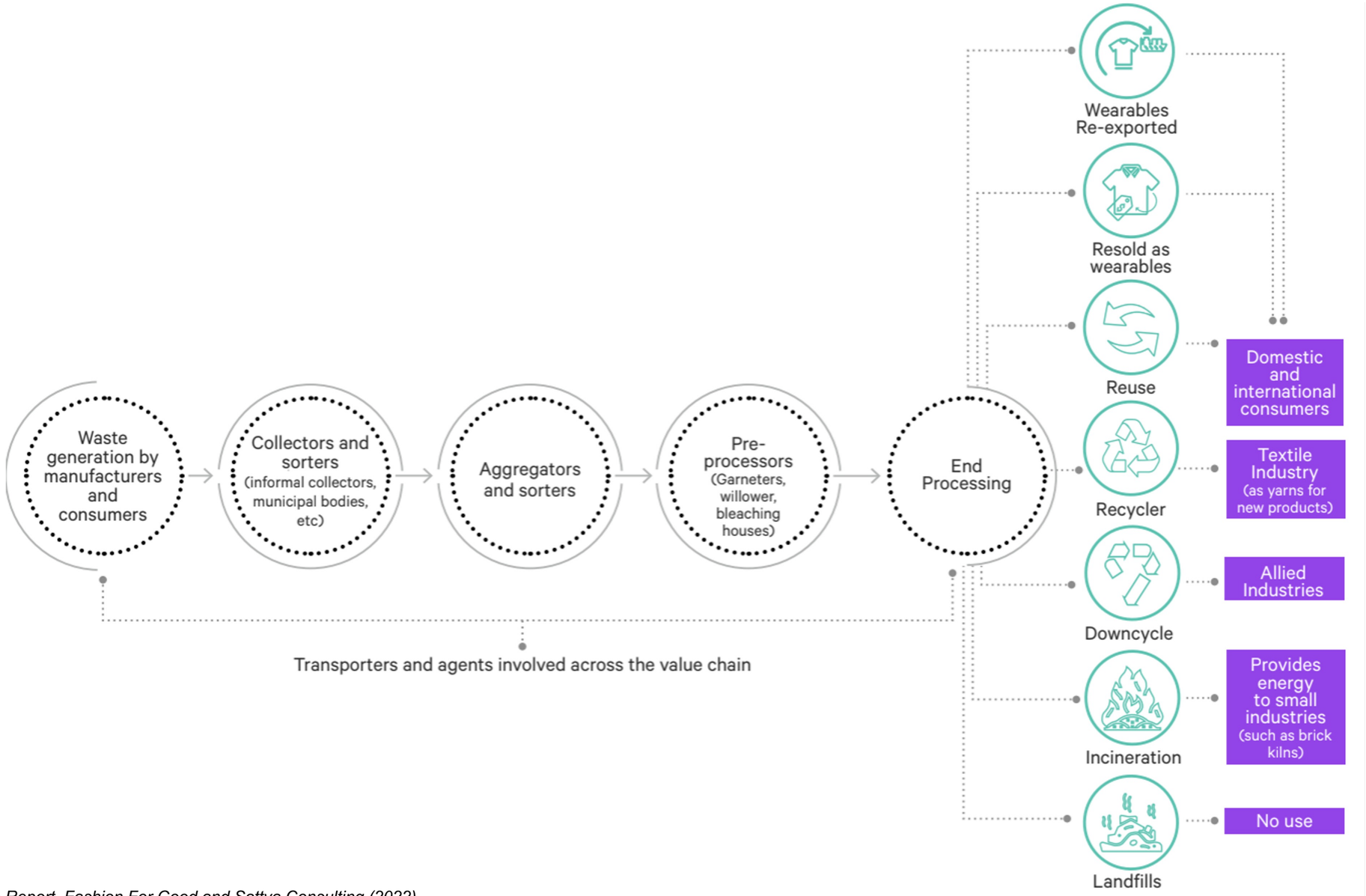
State of Textile Waste in India

India manages 8.5% of the global textile waste across pre-consumer and post-consumer waste streams….



Source: Wealth in Waste Report, Fashion For Good and Sattva Consulting (2022)

...through its well integrated, albeit unorganised value chain



Source: Wealth in Waste Report, Fashion For Good and Sattva Consulting (2022)

The presence of the vibrant value chain and recycling infrastructure makes India one of the largest mechanical recycling hubs in the world

High-grade Mechanical Recycling

- Tirupur
- Panipat/ Parts of Punjab

Yarns for consumption in global apparel value chains

Low-grade Mechanical Recycling and Downcycling

- Tirupur
- Panipat/ Parts of Punjab
- Amroha

Yarns and fibre for consumption in home furnishings industry and local apparel value chains

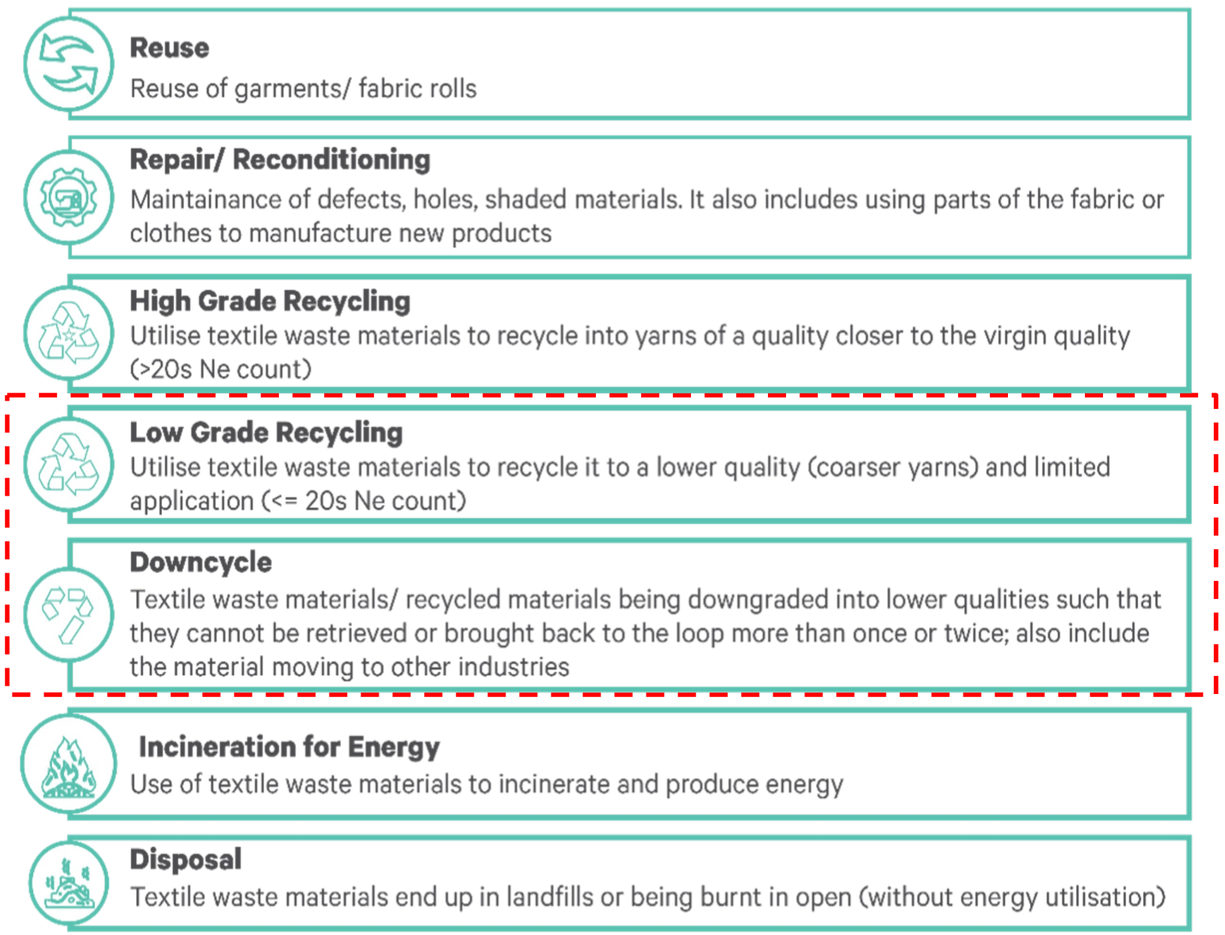
Advanced Recycling (Chemical)

- Being explored across the country

Yarns for consumption in global value chains

Source: Wealth in Waste Report, Fashion For Good and Sattva Consulting (2022)

However, from a circularity perspective, <25% of recyclable waste has a high value valorisation in the current setup



01	Material Composition	• High presence of dark colours and printed materials • Increasing share of blended and synthetic material
02	Waste collection and sorting	• Contamination of waste during collection process • Leakage of waste to low value outputs due to lack awareness and communication
03	Processing Limitations	• Lack of innovations for processing low quality materials (washed multiple times, lower count yarns, etc)

Source: Wealth in Waste Report, Fashion For Good and Sattva Consulting (2022)

Advanced recycling technologies hold the potential to resolve these challenges but are at a nascent stage in the country

Operate at higher scale than current capacities of mechanical recycling in India

Require aggregation of specific quality of waste and hence, changes in current waste collection and aggregation value chain

Require significant investments for setting up the required infrastructure and technology transfers

Source: Wealth in Waste Report, Fashion For Good and Sattva Consulting (2022), Unveiling India's Textile Waste Landscape: A Cost Analysis, IDH (2023)

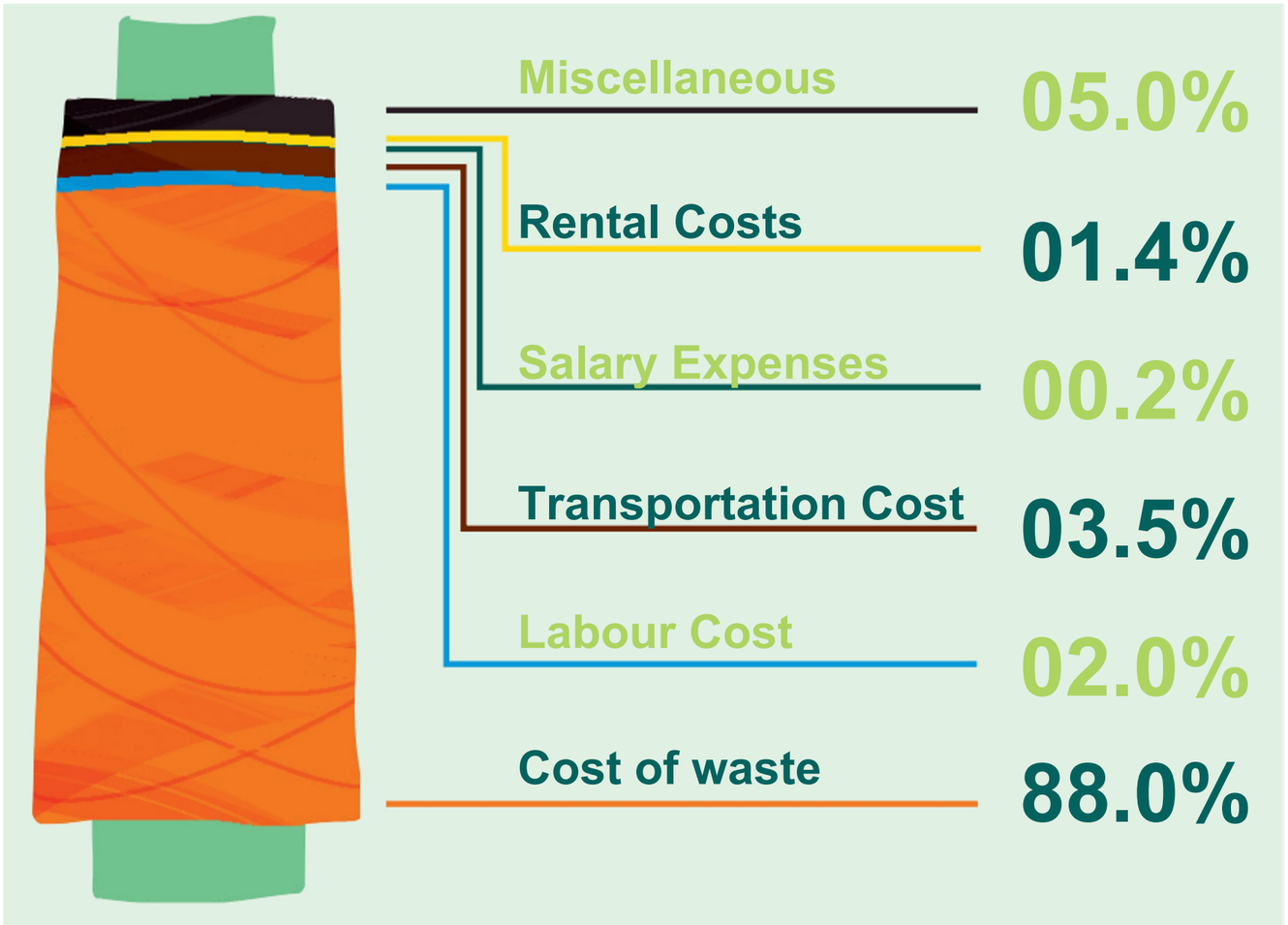
Furthermore, the existing recycling industry and its value chain requires more support to ensure business sustenance and growth (1/2)

	High-grade Mechanical Recyclers	Low-grade Mechanical Recyclers
OUTPUT	**Recycled yarn >20s Ne Count**	**Recycled yarn <20s Ne Count**
CAPITAL EXPENSES	**~INR 8 Crores**	**~INR 3 Crores**
OPERATING EXPENSES	**~INR 60-107 per kg**	**~INR 26-125 per kg**
PAYBACK PERIOD	**~1-2 Years**	**~5 Years**
CHALLENGES	• **Lack of right quality and quantity** of waste feedstock • **Mixed quality and contaminated waste** reaching the recyclers, thus limiting their returns	• **Low quality output** thus reducing the premium pricing possible on the outputs • **Limited capacity to invest** in innovations and new technologies

Source: Unveiling India's Textile Waste Landscape: A Cost Analysis, IDH (2023)

Furthermore, the existing recycling industry and its value chain requires more support to ensure business sustenance and growth (2/2)

Operating expenses of INR 7 to 175 per kg with average margin of 10%



Challenges faced by the Waste Handlers

1. **Lack of established use cases and consensus on the value of the sorted waste** limits their returns.

2. **Cost of procuring the waste** depends on the virgin material price but the returns don't vary significantly.

3. **Share of logistics costs (rental and transportation) add to the cost burden,** reducing the profit margins and leading to poor working conditions

Source: Unveiling India's Textile Waste Landscape: A Cost Analysis, IDH (2023)

Opportunities for the Sector

In summary, Indian industry holds a high potential but is crippled by certain challenges

~7800 KTons OF WASTE ALREADY BEING GENERATED OR IMPORTED INTO THE COUNTRY ANNUALLY
But fragmented and not traceable

~4MN WORKERS, ESPECIALLY WOMEN, EMPLOYED IN EXISTING WASTE VALUE CHAIN
But well-networked only for ~50% of waste but overall unorganised with unsafe working conditions and limited business case for value chain stakeholders

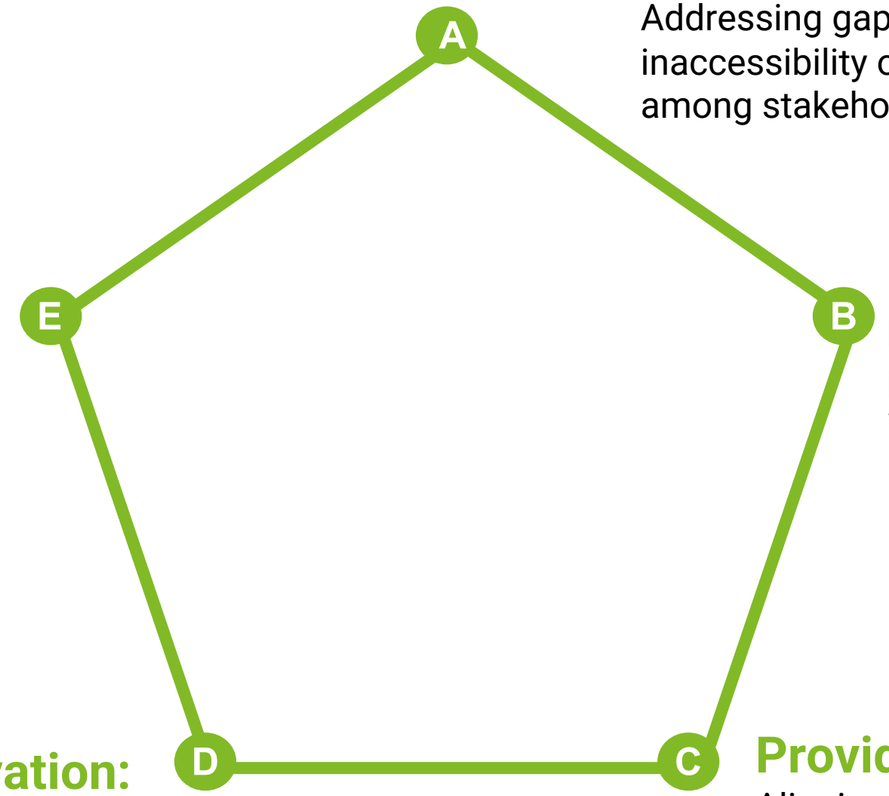
~17% WASTE GETTING LANDFILLED
But full value potential not being realised for ~50% waste

25% WASTE BEING UTILISED BY THE RECYCLING INDUSTRY AND INFRASTRUCTURE
But non-resilient, lacks advanced technologies and is struggling against low value virgin materials

NEW AGE TECHNOLOGIES ENTERING INTO THE COUNTRY
But their acceptability, scale and success is unclear

Source: Wealth in Waste Report, Fashion For Good and Sattva Consulting (2022)

Five interconnected intervention pathways that can be leveraged for building an inclusive and circular economy in the sector



Capacity and capability building:

Addressing gaps around individual inaccessibility of knowledge, low awareness among stakeholders, inadequate skills, etc.

Infrastructure provisions:

Providing adequate and affordable processes and facilities to support the value chain

Providing incentives:

Aligning the interests and motivations of all stakeholders by providing monetary or non-monetary support for their activities

Fostering innovation:

Promoting R&D across the value chain

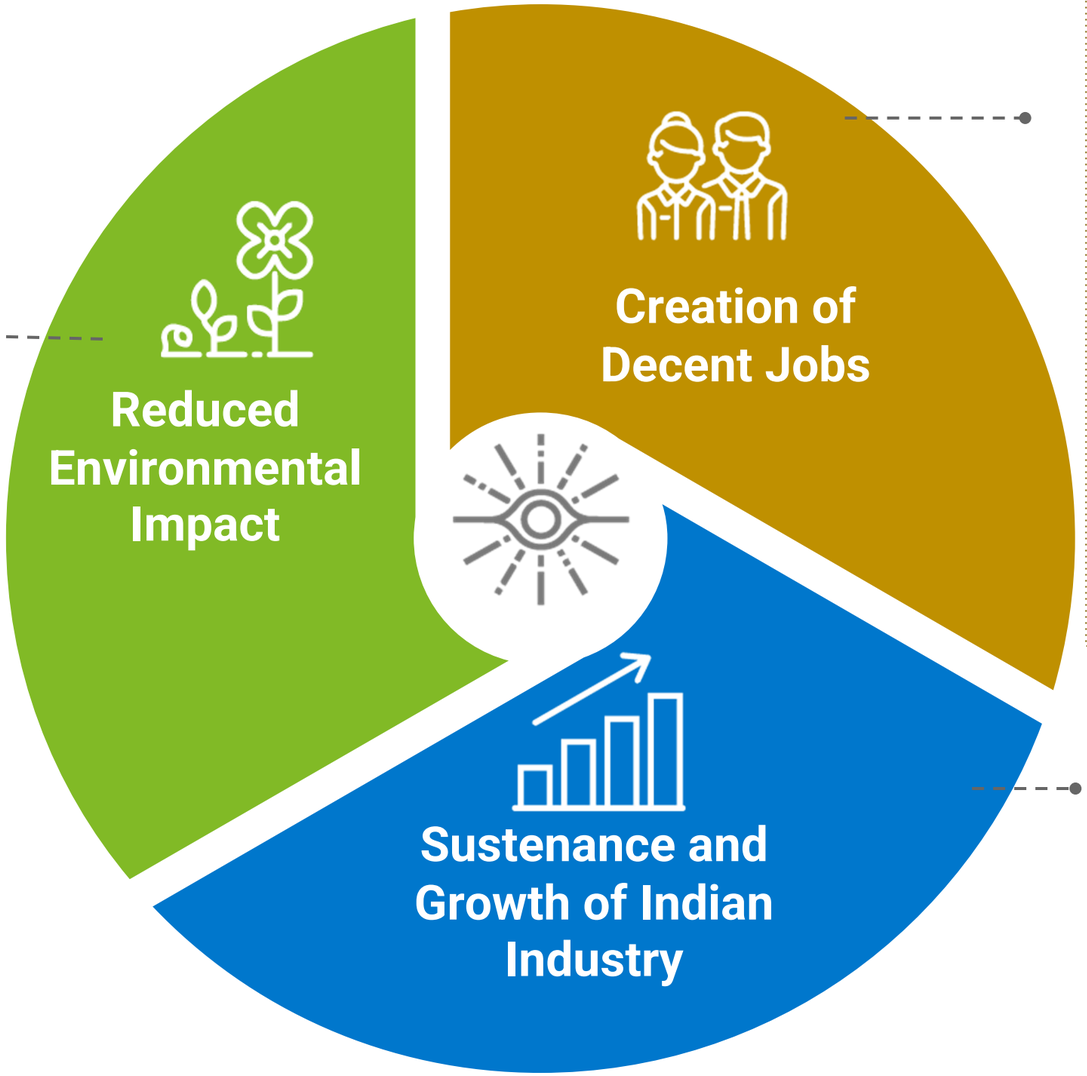
Building Rules and Policies:

Setting up systems and structures to support seamless and standardised operations across the value chain

Through these interventions, the industry can unlock Social, Environmental and Economic Impact

- **~16%** GHG Emission reduction
- **~4%** Freshwater consumption reduction
- **~3%** reduction in Negative influence on human health reduction

(Basis market projects that recycled fibres will acquire 46% market share by 2050)



- **~4mn worker** livelihood can be uplifted
- **20 jobs per 1000 pieces of textile waste** can potentially be created
- **High impact potential on women sorters** who comprise at least 50% of the workforce and are the least paid workers

- **At scale production** of recycled fibres and boost the existing market
- Potential to become a **Responsible Sourcing Hub** for the globe

Source: UNLOCKING THE TRILLION-DOLLAR FASHION DECARBONISATION OPPORTUNITY, FFG and AII (2021), Measuring Fashion, Quantis (2018), GEARING UP THE INDIAN WORKFORCE FOR A GREEN ECONOMY, JPM and Sattva (2023)

Talk to us today to see how we can co-create societal impact at scale

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