



UNEARTHING INNOVATION – LEADING THE WAY FOR CIRCULAR TEXTILES IN INDIA

APPROACHES FOR CIRCULAR TEXTILE AND APPAREL INDUSTRY IN INDIA



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The Significance of Indian Textile & Apparel (T&A) Industry



Economic Contribution

The industry contributes approximately **2.3%** to India's GDP, **13%** to industrial production, and accounts for **12%** of exports.



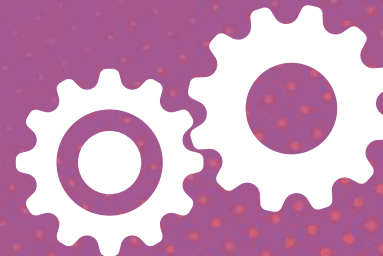
Global Presence

India holds a **4% share** in the global trade of textiles and apparel, securing its position as the third-largest exporter worldwide.



Employment Impact

With a direct employment of **45 million** and support for an additional **100 million** in allied industries, T&A stands as the country's second-largest employer.



Manufacturing Prowess

India is the second-largest global manufacturer of PPE, polyester, silk, and fiber.



The Environmental Impact of T&A Industry

- While the T&A industry's economic impact is significant, it is crucial to acknowledge and address its environmental repercussions.
- The textile industry's growth has impacted the planet and it is a matter of great concern that should not be ignored. The pollution caused by textile manufacturing and the impact of waste generated through fast fashion practices are serious issues that require our immediate attention.
- Environmental issues such as water pollution, solid waste generation, air contamination during textile manufacturing, and the impact of fast fashion practices demand action now.

Turning Adversity into Opportunity

It is time to take a closer look at the problem and consider what we can do to make a positive impact.



Rising Tide of Opportunities: The surge in textile waste presents a unique challenge and opportunity for innovators.



Holistic Approach: Addressing challenges such as water pollution, solid waste, and air contamination through innovations creates opportunities for sustainable action.



Industry Revolution: With trends evolving rapidly, there's an opportune moment for innovation in raw materials, processes, technology, business models, and skill development.



Circular Economy: The Path to a Sustainable Future

To achieve sustainable development in the textile sector, it is imperative to embrace a circular approach that spans the entire life cycle of textiles, from production to disposal.

“A CIRCULAR ECONOMY IS A SYSTEM WHERE MATERIALS NEVER BECOME WASTE AND NATURE IS REGENERATED.”

- Ellen MacArthur Foundation



The 6 Rs of Circularity

Redesign - Emphasising circular design to reuse, repair, and recycle resources in goods, processes, and systems.

Reduce - Optimising product design, minimising packaging, and encouraging responsible use to reduce waste and resource usage.

Reuse - Encourage product and material reuse to extend their lifespan and reduce waste and resource use.

Repair - Emphasising product repair to extend their lifespan, reduce replacements, and reduce environmental burden.

Recycle - Introducing recycled materials into the production cycle to reduce the need for virgin resources and waste sent to landfills or being incinerated.

Regenerate - Restoring, replenishing, and regenerating natural resources and ecosystems promoting sustainability in consumption and production processes.

This approach prioritizes waste reduction and pollution mitigation through the 6 Rs that includes redesigning products, their reuse, repair, remanufacturing and recycling. By adopting circularity, India's textile & apparel industry can forge a sustainable path for itself and the environment.



Approaches for Circular Textile and Apparel Industry in India

- The collaborative initiative between GIZ India and ABFRL seeks to inform and support the Indian textile and apparel industry by promoting the implementation of circular approaches in business practices.
- The effort aims to drive positive change and sustainable growth within the industry through hands-on activities. We additionally aim to create a more environmentally friendly and socially responsible business landscape.



2023

Approaches for Circular Textile and Apparel Industry in India

Baseline Assessment Report



The Starting Point for Circular Economy: Understanding Status Quo in the Sector

During our study of the value chain, we gained a better understanding of various waste streams and circular practices. It also became clear that innovation is essential for achieving circularity.

Scan to download the full report



A Call for Innovation

- The Innovation Challenge (IC) was initiated with the overarching aim of supporting circular innovative solutions that address challenges and gaps mentioned in the baseline report.
- It was a step forward to finalise circularity demonstration projects with technologies that are effective and ready for widespread implementation.
- The IC was hosted on **Leverist.de**, a platform hosted by the Federal Ministry for Economic Cooperation and Development (**BMZ**), Germany, to promote collaboration with actors in the private sector.
- It operates under the umbrella brand 'Partners in Transformation' - emphasizing the partnership between the private sector and development cooperation, with the shared goal of achieving social and environmental transformation in BMZ's partner countries.



Innovation Challenge - The Process



IC Launch on **GIZ Leverist Platform** during the Steering Committee meeting at ABFRL Head Office in March 2023



First round of evaluation by CEE, GIZ and ABFRL



Communication with finalists for further engagement

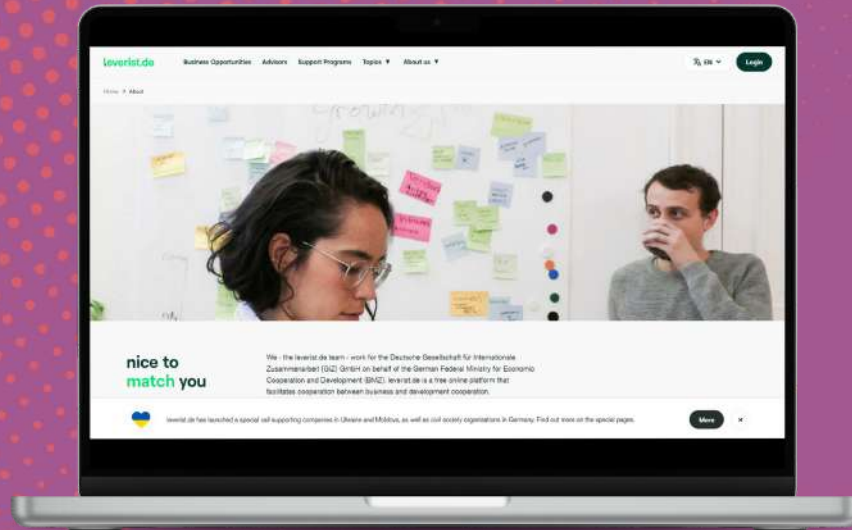


With the help of a '**Social Media Campaign**', applications were invited



Second round of evaluation by an **esteemed jury** done virtually in three sessions

Why Did We Choose **leverist.de**



- Enables businesses worldwide to access emerging economies.
- Helps businesses find new partners for sustainable development.
- Provides an opportunity to test innovation in new markets.
- Creates opportunities for businesses to leverage development cooperation support, such as networks, knowledge, and local presence.

Businesses that register on **Leverist.de** become part of the global network and, in collaboration with development cooperation, can achieve lasting impact!

How We Did it on **leverist.de**

Initiate contact with
Leverist.de to explore
possibilities

Design an innovation call with relevant
parameters, information requirements,
supporting documents etc.

Share with
Leverist.de for
alignment

Incorporate feedback
and finalise the
innovation call

Leverist.de team verifies,
translates, publishes and
disseminates the final call
in their network



- A social media campaign in parallel will help improve outreach!
- Application data can be compiled through Leverist.de or through other online forms.

Key Themes of Innovation Challenge

- | | | |
|-----------|---|---|
| 01 | Textile recycling & repurposing | Recycling and repurposing pre and post-consumer textile waste, such as novel technologies for breaking down textile fibres or making new goods from textile waste |
| 02 | Sustainable textile production | Employing renewable energy, conserving water and energy, and reducing chemical use |
| 03 | Circular materials | Innovative material for circular, environmentally friendly products, including material, production, and consumption |
| 04 | Product design | Products that are made to last, adapt, and recycle |
| 05 | Digitalization and traceability | Solutions that leverage digital technologies to support textile circularity, such as blockchain for traceability, virtual reality for product creation, or artificial intelligence for textile waste management |
| 06 | End-of-life textile management | Managing the end-of-life of textile products, such as collection models and sorting it for upcycling, repurposing, recycling, or composting |
| 07 | Sustainable packaging materials | Eco-friendly textile and apparel packaging. Innovative textile and garment packaging that reduces material while boosting usability, durability, and aesthetics |
| 08 | Innovative business model on circularity | Startups that provide "Product-as-a-Service" (PaaS), "Closed-Loop Supply Chains" (CLSC), "Circular Procurement," and other circular economy-based commercial services |
-

Scouting for Innovation

Preferred Communication Channel



- To scout for innovations, we employed a variety of strategies, including reaching out to potential innovators via social and print media. We leveraged popular social media platforms, such as Twitter, Facebook, LinkedIn, and Instagram, to connect with innovators.
- Extensive pan-India physical outreach and mailing were done to significantly increase the chances of discovering breakthrough innovations in the sector.



Applications Received!

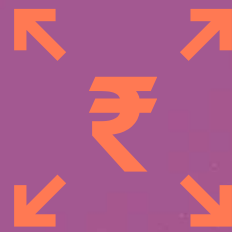
- The Innovation Challenge received a remarkable response, with a total of 87 applications.
- The applications came from diverse backgrounds, including individuals, startups, and established companies.
- After a rigorous review process consisting of two evaluation rounds, the most promising submissions were selected to receive support and assistance in bringing their innovative ideas to life.
- We carefully considered a range of factors to develop a comprehensive list of criteria for each round to evaluate each innovation.



Uniqueness of Project



Scalability



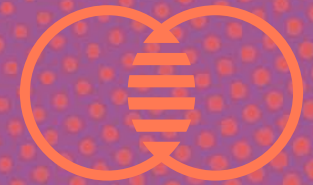
Commercial Viability



Cost Effectiveness



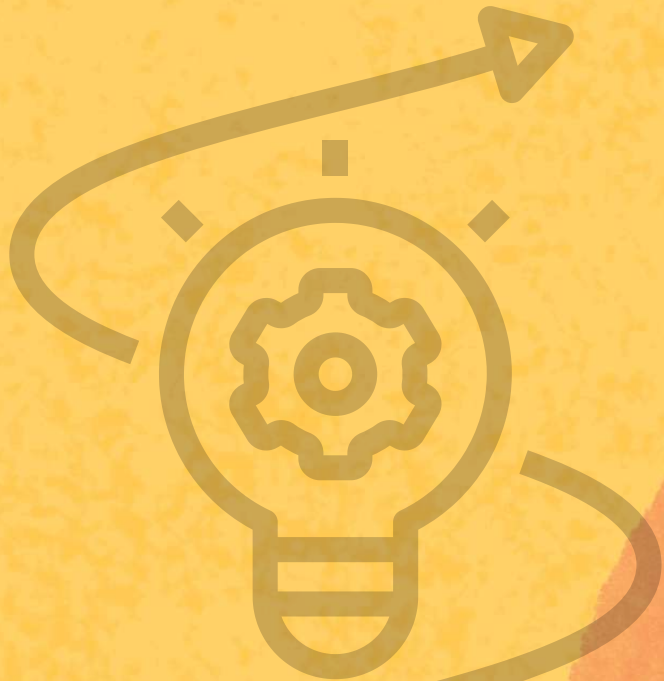
Integration



Circularity Principles

Innovation Challenge: First Round

- The application screening process was carried out collaboratively by the teams from ABFRL, GIZ and CEE. They considered the pre-defined criteria to evaluate each application thoroughly.
- Following the screening process, 34 applications were shortlisted based on the criteria.



The submissions covered a wide range of areas and hence were categorised into five segments



Alternative
Material(s)



Wet
Processing



Reuse/Recycle/
Upcycle



Packaging



Traceability

Innovation Challenge: Second Round

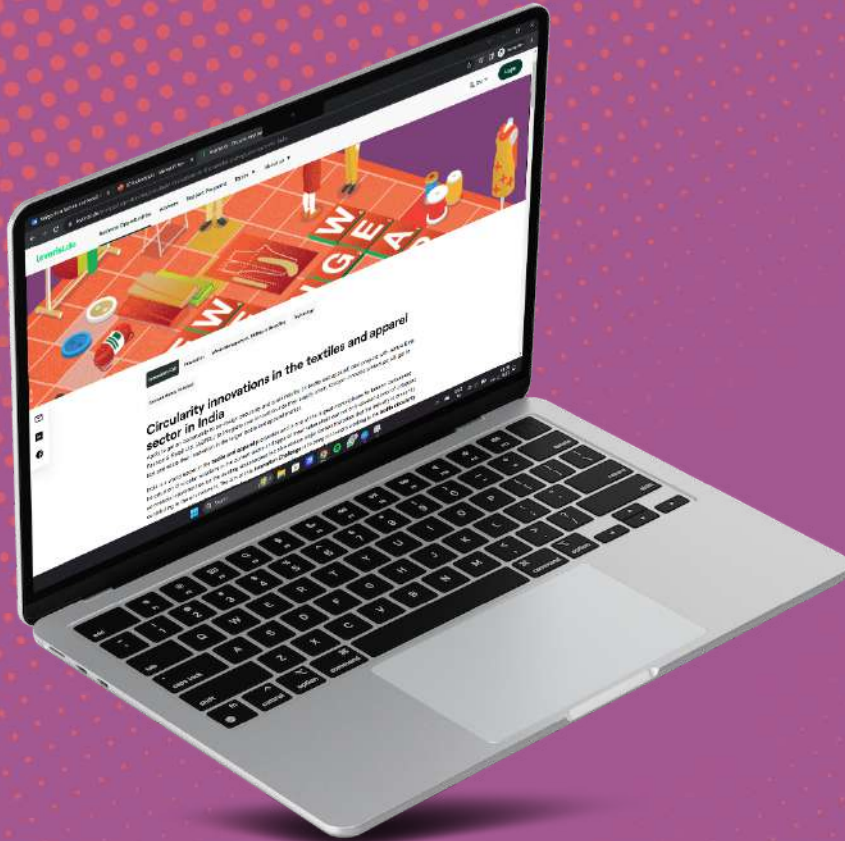
- 34 shortlisted innovators were called for the second round to present in front of a jury. The screening was done virtually from 6-7 June since participants were from across the country.
- Each innovator was given a chance to present their innovation and its key features. The presentation was expected to be focused on the unique features of the innovation and its potential for scalability.
- Following the presentation, a thorough Q&A session was conducted to scrutinize the innovation's potential in detail.



The Jury: Innovation Challenge, Second Round

Session	Jury
Session 1 6th June	<p>Dr Ketan Kumar Vadodaria – Associate Professor, National Institute of Design (NID)</p> <p>Ms Deeksha Vats – Group CSO, Aditya Birla Group Sustainability Cell</p> <p>Dr Naresh Tyagi – CSO, Aditya Birla Fashion and Retail Limited (ABFRL)</p> <p>Mr Vijay Mathur – Director General & CEO, The Apparel Training & Design Centre (ATDC)</p>
Session 2 6th June	<p>Dr Ashwini Agrawal – Chair Professor, IIT - Delhi</p> <p>Dr. Prakash Vasudevan – Director, The South India Textile Research Association (SITRA)</p> <p>Dr. Rossitza Krueger - Project Manager, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)</p>
Session 3 7th June	<p>Mr Vishak Kumar – CEO, Madura Fashion Ltd (MFL)</p> <p>Mr Puneet Kumar Malik – CEO, Van Heusen Innerwear</p> <p>Mr Venkat Kotamaraju - Partner and Director, Circular Apparel Innovation Factory (CAIF)</p> <p>Ms Swati Singh Sambyal - Waste management specialist, UN Habitat</p>

Innovation Challenge: Third/Final Round



- Following the second round of evaluation by the jury members, a total of nine innovations were shortlisted out of the 34 initial entries.
- The pre-defined criteria allowed the jury to carefully assess each innovation and determine the most promising innovations to move forward.

Chosen Innovations - 09



BUNKO JUNKO



Canvaloop



Reti Ecotech





Ashwini Agrawal,
Chair Professor,
IIT - Delhi

"India's textile and garment industry has become more vibrant and innovative, promoting local talent and sustainability.

The emphasis has shifted to using recycled/upcycled materials, eco-friendly chemicals and efficient processes. Some of the examples are raw materials derived from biowaste, on-demand localized application of chemicals and dyes, plasma processing, and nanomodification of textile surfaces for achieving various functionalities."



Swati Singh Sambyal,
International Circular
Economy Expert

"In the vibrant tapestry of India's textile and apparel sector, the need for innovation is not just a necessity but a celebration of local brilliance. We can achieve this by empowering local talent, some of them have been a major part of this Innovation Challenge; weaving sustainability into every thread by focussing on resource efficient alternatives or reuse models, and by letting innovation be the loom that crafts a resilient and culturally rich future for our textile heritage."



Collaboration for Impact: Replicating and Scaling Innovation

- Effective adoption of innovation requires collaboration among stakeholders.
- As per the project's mandate, ABFRL will create demonstration projects with selected innovation ideas and bring them to the commercial market.
- Through the demonstration projects with ABFRL, innovations can be effectively tested, improved and refined to meet the highest standards to introduce to the market, thus ensuring that they are ready for wider adoption.
- This collaborative effort not only benefits ABFRL but also the wider industry and society by promoting circularity.
- Furthermore, this collaboration provides an opportunity to address key challenges and bottlenecks in the adoption of circularity within the industry.

Implementation Scale



Meet the Innovators and their Innovations Driving Circular Transformation





AltMat Pvt. Ltd.

AltMat project@altmat.in | altmat.in

GUJARAT

Product(s)/Service(s)

- Offers natural fibers and yarns made from agricultural waste

Circularity Attributes

- Converts agricultural waste into spinnable fibers, addressing the issue of stubble-burning while generating additional income for farmers
- These alternative fibers also have significantly lower water requirements

Industry Collaborations

- Showcased material viability and acceptance through pilot projects with globally recognized brands like H&M, Adidas, Nike, and PVH

Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10





Bunko Junko Studio

BUNKO JUNKO

bunkojunkostudio@gmail.com
bunkojunko.com

MAHARASHTRA

Product(s)/Service(s)

- Manufacture stunning garments, home textiles and accessories from textile offcuts/scrap

Circularity Attributes

- Upcycles textile offcuts and pre-consumer textile waste to extend material life

Industry Collaborations

- Present across 25+ online and offline retail stores, including Amazon, Bliss, and others
- B2B collaborations with industry giants like Aditya Birla, Avishkaar Group, and Indian Oil for sustainability initiatives

Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10





Punarbhavaa Sustainable Products

sakthi@pspindia.net |
pspindia.net

TAMIL NADU

Product(s)/Service(s)

- GRS-certified (Global Recycled Standard) 100% cotton-based recycled paper for sustainable packaging

Circularity Attributes

- Tree-free production process without chemical use
- Uses soy ink for printing
- 98% reduction in water usage as compared to conventional paper printing methods

Industry Collaborations

- Supplying packaging products to brands such as Oysho, Hallotex, Sense Organics, Penfield, Desmond & Dempsey

Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10





Schützen Care Pvt. Ltd

rtanna@schutzengroup.com |
schutzengroup.com

MAHARASHTRA

Product(s)/Service(s)

- Developed USFDA-certified biobased textile processing chemicals and water-soluble reusable products

Circularity Attributes

- Eliminating ethylene oxide, propylene oxide, and cationic reagents usage
- Products exhibit COD & BOD levels at 1/10th of synthetic chemicals
- Highly biodegradable raw materials, surpassing synthetic chemical performance
- Meet biodegradation standards per OECD-302B, confirming the products' decomposition
- Compliance with RSL MRSL standards, maintaining a zero PPM level
- Derived from various plant extracts, emphasizing natural and sustainable sourcing

Industry Collaborations

- Garnered approvals and utilization partnerships with leading entities like KPR Mills, TESCO, and DONEAR, validating industry acceptance and performance

Implementation level at the time of evaluation





**Canvaloop Fibre Pvt
Ltd**

hello@canvaloop.com |
canvaloop.com

GUJARAT

Product(s)/Service(s)

- Offers natural fibers and yarns made from agricultural waste

Circularity Attributes

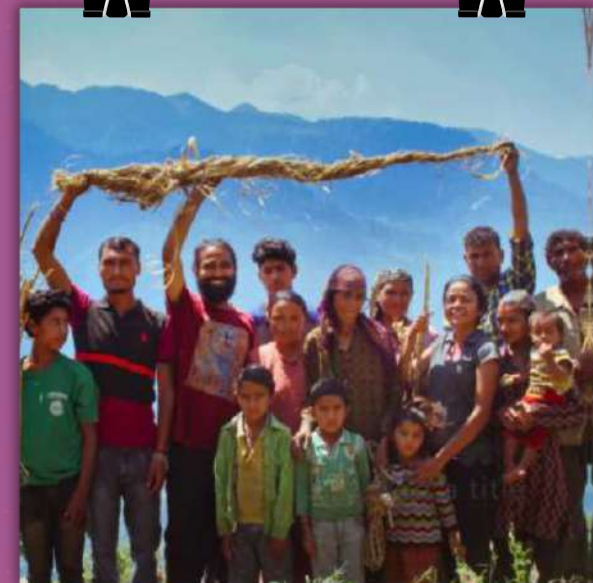
- Converts agricultural waste into spinnable fibres, addressing the issue of stubble-burning while generating additional income for farmers.
- These alternative fibers also have significantly lower water requirements

Industry Collaborations

- Collaborating and working with Arvind, Vardhman, GAP, Levi's, and Raymond

Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10





Birla Cellulose
Fibres from nature

Birla Cellulose

birlacellulose.com

GUJARAT

Product(s)/Service(s)

- Blockchain technology for real-time traceability of raw material in the textile value chain

Circularity Attributes

- Ensures authenticity & provenance of sustainable textiles against generics

Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10

BLOCKCHAIN-POWERED TRACEABILITY PLATFORM





EcoKaari Pvt Ltd

nandan@ecokaari.org | ecokaari.org

MAHARASHTRA

Product(s)/Service(s)

- Upcycling waste plastic and wrappers using traditional charkha and handloom techniques to manufacture fashion accessories, bags, home décor, etc.

Circularity Attributes

- Products made from waste plastic procured from waste collectors and through donations from conscious consumers
- Increasing product life through lifetime free repairs service
- Take-back initiative for products at the end of their lifecycle

Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10



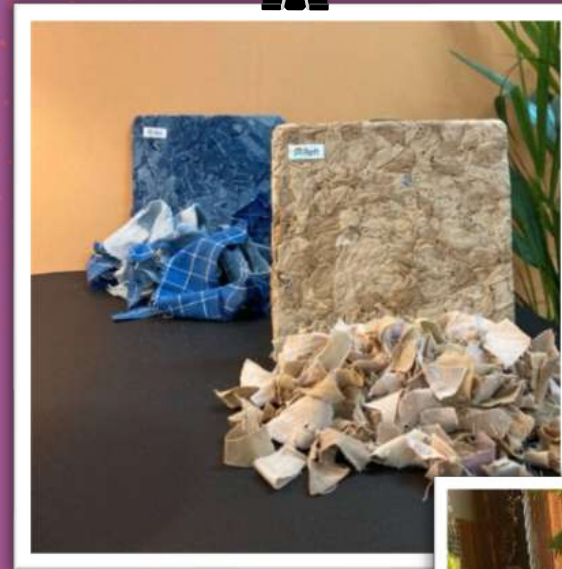
KARNATAKA

Product(s)/Service(s)

- Transforms textile waste into compressed panels for indoor furniture, partition walls, false ceilings, and brick cladding using a proprietary binder

Circularity Attributes

- Pre-consumer textile waste from garment factories, manufacturers, waste management organizations, and textile waste aggregators is the primary raw material.



Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10

MAHARASHTRA

Product(s)/Service(s)

- SUPRAUNO™ is a patented sustainable dyeing and finishing technology that utilizes Supercritical CO2 as the solvent instead of traditional water-based dyeing.

Circularity Attributes

- Allows the dyeing of various Polyester, Nylon, Acrylic, Cotton, Viscose, Linen, Silk, Aramid, etc., as well as their blends
- Zero water usage
- Up to 90% reduction in chemicals used
- Enhanced dye utilization, resulting in stronger and more vibrant shades



Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10

Kudarat Bioleather

kudaratbioleather@gmail.com

UTTAR PRADESH

Product(s)/Service(s)

- Compostable and bio-based leather, an alternative to animal-based leather with similar properties

Circularity Attributes

- It offers waterproof capabilities and excellent tensile and tear strength with natural components and without animal cruelty.
- Crafted from sustainable sources like marine seaweed, plant-based dyes derived from flowers, and a blend of organic waste materials such as rose, marigold, indigo, walnut shells, etc.



Implementation level at the time of evaluation





Nano-Dye Technologies LLC

lon@nano-dye.com |
nano-dye.com

UNITED STATES

Product(s)/Service(s)

- Circular closed-loop nano cationic patented process system for exhaust dyeing.

Circularity Attributes

- Eliminates Salt in the dyeing process
- Maximizes water recycling to reduce wastewater generation in textile dyeing operations

Industry Collaborations

- Successfully tested in the United States and actively utilized in operational contexts, notably in Bangladesh



Implementation level at the time of evaluation





Relove

kirti@relove.in | relove.in

MAHARASHTRA

Product(s)/Service(s)

- A technology platform that offers a peer-to-peer resale marketplace and handles the liquidation of damaged inventory, focusing on optimizing fashion resale

Circularity Attributes

- Facilitates participation of fashion brands in circular economy by encouraging customers to resell unwanted items, aiming to minimize environmental impact

Industry Collaborations

- Working with brands such as Anita Dongre, the Summerhouse, Bunaai, Suta, Okhai, and Aachho

Implementation level at the time of evaluation



Relove

A Peer to Peer resale marketplace for your customers



Retake

Bespoke takeback programs designed to fit your brands needs



Rescue

Liquidate damaged inventory from your warehouse





Grasim Industries Limited

grasim.com

MAHARASHTRA

Product(s)/Service(s)

- Blended fibers, made of Aditya Birla's range of proprietary cellulosic fibres (such as VSF, Birla Modal, Excel, Reviva) and pre and post-consumer textile waste using state-of-the-art mechanical recycling technology

Circularity Attributes

- Innovated a yarn blend of 50% mechanically recycled pre- or post-consumer waste and 50% proprietary cellulosic fiber
- Implementation of blockchain technology for traceability of the blended yarn throughout the production process



Implementation level at the time of evaluation





**Kayman Ventures
Pvt Ltd.**

kiabza2017@gmail.com |
kiabza.com

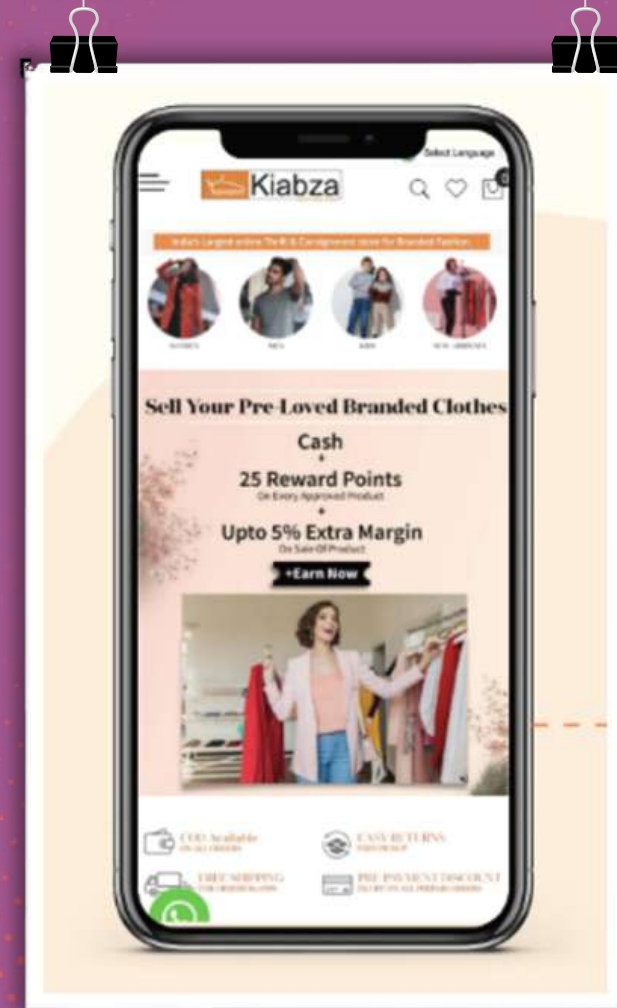
MAHARASHTRA

Product(s)/Service(s)

- Offers a premier thrift and consignment store focused on pre-owned, branded, sustainable fashion items

Circularity Attributes

- Promotes circular fashion by facilitating the resale of pre-owned clothing, extending the life of fashion items.
- Decrease in carbon footprint associated with manufacturing, transporting, and disposing of clothing items.



Implementation level at the time of evaluation





Texool Ltd

recycle@texool.com |
texool.com

MAHARASHTRA

Product(s)/Service(s)

- Recycle and upcycle pre- and post-consumer textile waste

Circularity Attributes

- Recycles smaller components like zippers, by reconditioning to re-use.
- Recycling and upcycling of clothing.
- Extending product lifespan by upcycling and recycling, thus helping reduce the carbon footprint associated with manufacturing, transporting, and disposing of new clothing items

Industry Collaboration

- It has strategic partnerships and circularity agreements with prominent entities like Arvind and Lindstrom India.

Implementation level at the time of evaluation





Material Library of India

MATERIAL
LIBRARY of INDIA

projects@materiallibraryofindia.com |
materiallibraryofindia.com

DELHI - NCR

Product(s)/Service(s)

- Woven, non-woven, and composite textiles using recycled materials
- Initiated set-up of a post-consumer Textile Recycling Facility (TRF)

Circularity Attributes

- Dedicated sustainable textile waste management
- Integrating processes for and facilitating recycling, donation, repair, and the sale of upcycled products crafted from textile waste.

Samples of the textile developed by MLI using post consumer textiles



Implementation level at the time of evaluation





Compreli Consulting Pvt Ltd

ramesh@wearrepair.com |
compreli.com

SRI LANKA

Product(s)/Service(s)

- Offers garment repair services as a strategic solution to enhance the value of rejected or damaged pieces

Circularity Attributes

- Resource Optimization: Reducing dependence on new production and minimizing resource use by repairing and restoring existing garments
- Enabling manufacturers to maximize revenue and reduce waste by salvaging and refurbishing



Implementation level at the time of evaluation



studio
Alternatives

Studio Alternatives LLP
sonali@studioalternatives.com

MAHARASHTRA

Product(s)/Service(s)

- Manufacture home furnishing accessories such as cushion covers, curtains and upholstery, bags, notebooks, and tabletops from textile waste

Circularity Attributes

- Upcycles textile offcuts and pre-consumer textile waste



Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10

Patch Over Patch

patchoverpatch.kavisha@gmail.com

HIMACHAL PRADESH

Product(s)/Service(s)

- Offers upcycled clothing made from fabrics leftover from existing production

Circularity Attributes

- Upcycles textile offcuts and pre-consumer textile waste



Implementation level at the time of evaluation





Mysa Jaipur

mysajaipur.org@gmail.com |
mysajaipur.org

RAJASTHAN

Product(s)/Service(s)

- Converts pre-production fabric waste into high-quality home decor, fashion accessories, toys, and utility products using traditional techniques such as stitching and embroidery

Circularity Attributes

- Has supported three factories to achieve a waste-free status through upcycling and repurposing 2000kg of fabric waste into valuable and unique items

Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10





Oh Scrap! Madras

ohscrapmadras@gmail.com |
ohscrapmadras.com

TAMIL NADU

Product(s)/Service(s)

- The startup manufactures various fashionable and functional products, including hair accessories, jewelry, home décor, toys, and games

Circularity Attributes

- The startup procures fabric scraps from garment exporters, tailoring units, and individuals across Chennai
- Achieving optimal processing efficiency by meticulously sorting the leftovers according to colour, texture, and size. It crafts a variety of products from these textile leftovers to repurpose them

Implementation level at the time of evaluation





Grasim Industries Ltd

grasim.com

MAHARASHTRA

Product(s)/Service(s)

- Provides fabrics comprised of 70% viscose filaments derived from wood sourced from FSC® certified forests and 30% pre-consumer textile waste

Circularity Attributes

- Fostering circularity through textile waste utilization and responsibly sourced wood
- Transparency: distinctive molecular tracer integrated with blockchain-based traceability
- Recycled Claim Standard (RCS) certification, validating its recycled content and sustainable sourcing practices

Industry Collaborations

- Adopted by well-established brands such as Selected from Bestseller, H&M Group, and Pimkie



Implementation level at the time of evaluation





Green Worms

akshay@greenworms.org |
greenworms.org

KERALA

Product(s)/Service(s)

- A social enterprise that recycles and upcycles post-consumer textiles collected from donations and thrift shops into secondhand clothing

Circularity Attributes

- Waste Traceability through an ISO-certified app in collaboration with CleanHub (cleanhub.com)
- Employs textile sensors for sorting waste
- Skill Development 100 trained women sorters for efficient waste sorting



Implementation level at the time of evaluation

1 2 3 4 5 6 7 8 9 10



Goodway Indsol Pvt. Ltd.

Suresh@goodway.in | goodway.in

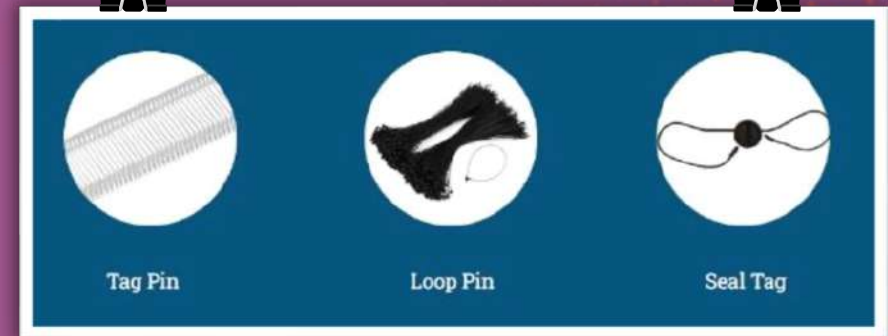
TAMIL NADU

Product(s)/Service(s)

- Developed products like tag-pin, loop-pin & seal tag using cellulose composite which is a renewable polymer

Circularity Attributes

- Utilizes cellulose composite, a renewable polymer, thus reducing reliance on finite fossil fuel resources
- Minimal impact on the environment at the end of their life cycle



Implementation level at the time of evaluation





VR Green Pvt Ltd

info.vrgreen@gmail.com |
www.vrgreen.co.in

UTTAR PRADESH

Product(s)/Service(s)

- Biodegradable and compostable apparel packaging bags crafted from corn starch and certified by CEPAT, EN-1342, ASTM D-6400 standards

Circularity Attributes

- Sustainable Packaging: Alternative to single-use plastics,

Industry Collaborations

- Partnered with Aditya Birla brand Pantaloons since March '22



Implementation level at the time of evaluation



Sattva Polybags

sattvapolybags@gmail.com

TAMIL NADU

Product(s)/Service(s)

- Recycles waste polybags to make granules and polybags. Additionally, also produces bio-compostable bags.

Circularity Attributes

- Sustainable packaging: Alternative to single-use plastics
- Resource Efficiency



Implementation level at the time of evaluation



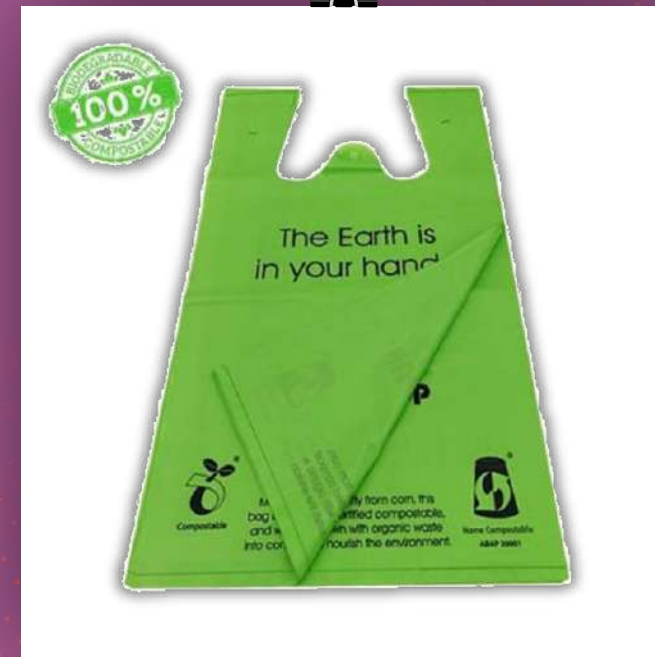
MAHARASHTRA

Product(s)/Service(s)

- Developed compostable tape/fabric for packaging applications using PLA (Poly Lactic acid)

Circularity Attributes

- PLA is a unique biopolymer sourced from natural materials, produced using eco-friendly processes, physically and chemically recyclable, and industrially compostable.
- High Composability 90% biodegradation within 110 days of dumping



Implementation level at the time of evaluation





**Infinite X Circular
Systems Pvt. Ltd.**

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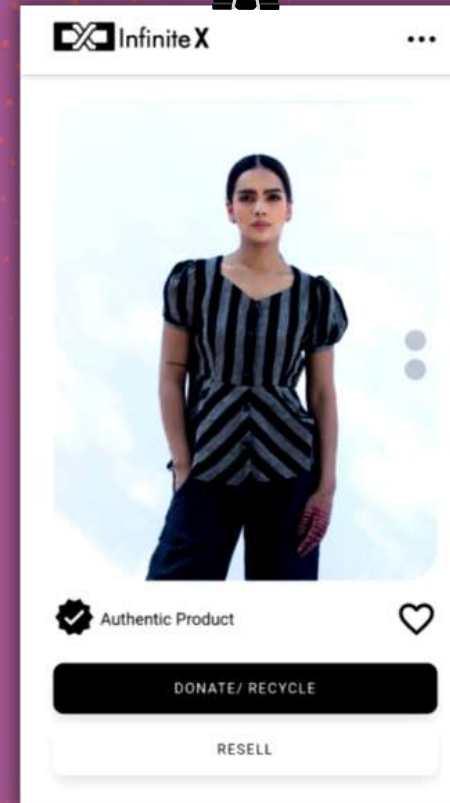
KARNATAKA

Product(s)/Service(s)

- Developing a pan-India reverse logistics network through smart and unique IDs called Digital Product Passports (DPP) attached to garments

Circularity Attributes

- DPP provides product lifecycle information and production traceability



Implementation level at the time of evaluation





As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Registered offices: Bonn and Eschborn

Approaches for circular textile and apparel industry in India

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Designed by: House of TDF

As of February 2024

Delhi, India

On behalf of the: German Federal Ministry for Economic Cooperation and Development (BMZ)

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