Sustainable Craft Futures

Mapping Pathways for Regeneration through Natural Fibres

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Introduction

In response to the imperative of developing non-toxic and non-exploitative creative processes, this paper explores how an array of social enterprises and innovators in India are systematically engaging with natural materials to foster social, economic and ecological regeneration. By integrating novel designs with traditional techniques, a model that respects both the carrying capacity of bio-regions and the cultural heritage of local communities has emerged.

Natural fibres serve as a crucial resource base for the handmade industry. With a diverse array of grass, banana and bamboo species forming a significant portion of India's forest and land cover, they represent vital assets for sustainable development. This paper examines the potential of these carbon- mitigating resources in advancing creative economies, given their local availability, renewability and low-input requirements.

As a researcher and curator working on convergence of crafts with climate action, this paper reflects strategies and directions that support the belief that a matrix of localism, an inclusive approach and investment can enhance the global adoption of low-impact materials like natural fibres. Traditional items of everyday use made from natural fibres are perennially in demand locally and sold in local bi- weekly haats or markets in Indian villages. They continue to fulfil local production-to-consumption (P2C), a system foundationally disrupted in the post-industrial era. However, the producers—mostly part-time craft makers and seasonal agriculturalists—remain on the periphery of development initiatives, perpetuating generational poverty. This situation is further exacerbated by climate change, which disproportionately heightens vulnerabilities and risks for the most marginalized groups, including smallholder farmers, women, and indigenous communities (Bhargava & Bhargava, World Economic Forum, 2023).

Against this background social innovation plays a pivotal role in solving complex problems in rural economies, promoting inclusive leadership values and advancing sustainable and fair solutions that also align with European markets. The paper attempts at establishing that systems thinking is critical to design inclusive growth models, adopted by the profiled enterprises—namely, Kadam Haat, The Kishkinda Trust, and Industree. The value chain credentials of natural fibres within these social enterprises-at farm to finished product stage—regenerative agriculture, soil health, science of dyes and waste management—establish them as materials conscious of their full creative cycle. Contemporary and utilitarian products made from such materials comprise tote bags, lunch bags, wallets, laptop sleeves, jewellery boxes, bamboo trays, storage organisers and more.

The concept of 'regeneration' has been understood as a multidisciplinary living systems principle that extends beyond the domain of agriculture, with social enterprises acting as catalysts of regenerative economies. Instead of developing novel materials, resources synchronous with ecological rhythm are highlighted for their potential revival and deserving of supply chain investment. Business models of the three enterprises inform frameworks, blueprints and catalytic capital models to advance creative industries in the global south. A recent study, the Financing the Handmade report, highlights that inclusive growth, centred on people and planet welfare, is a key driver for craft-led MSMEs (Micro, Small & Medium Enterprises, a ministry under the Government of India). The report surveyed 516 handmade, craft-led MSMEs and found that brand building/profit (89%), community well-being (72%) and environmental sustainability (33%) are their top three desired goals (200 Million Artisans, 2023, p. 15).

Making design an integral part of this narrative through material optimisation, its stock-flow opportunities, biodegradability and social impact potential can unlock creative options in line with the 1.5-degree pathway by achieving multiple Sustainable Development Goals (SDGs). Carbon market potential for natural fibres is also a promising development opportunity, though research methodologies for calculation and trading need to be developed.

Methodology

"From an environmental point of view, a broom is a sustainable product. It occurs naturally in the wild, it is harvested seasonally in a manner that does not harm the soil or the environment. Its life cycle is beautifully circular and complete. It has a natural birth, it lives a full, useful life, and it dies a helpful death as fodder for cattle, only to return the following monsoon as new life. Its life is lived lightly on earth. Born from nature, transformed by human hands, and woven into the social and cultural fabric of civilization, it then dies in the arms of nature, to be reborn from the earth once again"

– Ela R. Bhatt, Anubandh: Building Hundred Mile Communities, 2015, p. 3

A humble grass broom, commonly found in Indian households, is used daily to clear dust, reflecting a ritual of renewal. Ela R. Bhatt, the late Gandhian and founder of SEWA, cited it as a simple yet profound example of regeneration. This unassuming tool, though low in economic value, plays a crucial role in sustaining life and economic activity by continually renewing living systems.

The premise of this paper will explore this regenerative analogy in a dual manner: one focusing on the potential of natural fibres at the material level, and the other at the structural level, elucidating the role of social entrepreneurship in shaping pathways for inclusive growth. A key hypothesis is that as industries worldwide are actioning a transition from linear to circular models, craft ecosystems possess inherent mechanisms to achieve sustainable objectives.

The methodology comprises the application of academic, primary and secondary research. In this context, academic refers to the broad application of key learnings I gathered as a student of the last cohort of 'Regenerative Economies', Harvard Extension School.

The natural fibre ecosystem will be studied through assessment of the entrepreneurial portfolio of three craft-led MSMEs (Micro, Small & Medium Enterprises, a ministry under Government of India) in India: Industree, Kadam Haat and The Kishkinda Trust. The reason for selecting these three enterprises is their proven track record in successful community mobilisation and large-scale product development using natural fibres for the contemporary global market. This paper utilises primary research through virtual as well as physical interviews with the founders and visits to a few clusters to examine the business models, material evolution and social impact. Additionally, secondary research includes a. seminal craft documentation resources for mapping resource base, b. latest industry white papers for data and growth potential and c. contextualisation of the work of educators in regenerative disciplines.

Framework Development for a Regenerative Ecosystem using Natural Fibres

Regenerative practices in fashion and design draw from regenerative agriculture, popularized in the 1980s by the Rodale Institute. This approach, aimed at improving soil health and

ecosystem resilience, has been uniquely interpreted by institutions like Harvard Extension School and Schumacher College to transform value chains and knowledge systems. Carol Sanford, author of *The Regenerative Business and The Regenerative Life*, developed frameworks based on living systems thinking to create enduring wealth. This perspective aligns with the vision and progression of three social enterprises discussed in this paper, which Sanford would consider as 'economic shapers' (Sanford, 2021, p. 127). This section 'Framework Development for a Regenerative Ecosystem using Natural Fibres' adopts an enterprise-focussed approach to analyse the vision and framework necessary to transform a dormant resource into an asset and ultimately into a viable and scalable business model. Sanford emphasizes that one of the critical tools used by economic shapers is discourse, which helps create widespread impact (Sanford, 2021, p. 127). Discourse formation can be interpreted as the organisation's vision, blueprint or north star, a crucial element that guides operation, impact as well as investment.

Social Enterprise 1 - Industree Foundation: The 6C Framework and Hybrid Capital

Neelam Chhiber, 59, is a trailblazing figure in India's creative manufacturing sector. A designer by education from the National Institute of Design (NID), Ahmedabad, one of the leading design schools in India, she has just retired as co-founder and managing trustee of three-decades-old Industree Foundation, Industree Skills and Mother Earth based out of Bengaluru, India.

Neelam recognised early in her career the deep disconnect that had emerged post-industrialization between anonymous rural artisans in India, their eco-friendly products and a market increasingly dominated by modern, industrial goods. According to Chatterjee (2019, p. 203), witnessing the transformational shifts in economic, social and political contexts across the world also led the Indian government to label crafts as a "sunset industry," seen as incapable of driving economic growth. Against this backdrop, Industree's business model was born in 2000, focused on empowering non- farm producers from remote regions of India, with an ambition to organise the decentralised sector. Over the following decades, as revealed by Neelam in primary interviews, Industree successfully implemented a 6C framework—Create, Construct, Capital, Capacity, Channel, and Connect—that effectively drives transformation and attracts resources within ecosystems. This framework, grounded in the principles of a place-based economy, successfully incubates and develops producer cooperatives. The model utilizes high carbon-sequestration plants, such as bamboo and tree waste, including sal leaves and banana bark, to create sustainable products.

The components of the 6Cs work together to create a holistic value chain. We can explore the agro-to- craft banana bark value chain across four clusters in Tamil Nadu, the southernmost state in India and one of the largest domestic producers of bananas. Locally available materials are identified (Create), producer groups are mobilized (Connect), and infrastructure is developed to meet international standards (Construct). Additionally, capacity building in both hard and soft skills ensures the production of high-quality products. R&D, design development and product development are all parts of 'Create'. GreenKraft, 100% women-producer-owned enterprise manufacturing hand-woven products made from waste banana bark is an example of the successful application of this model (Fig 1).

Fig 1. Industree (no date) Scene on site at GreenKraft, Tamil Nadu manufacturing hand-woven products made from waste banana bark.

Few organisations in craft-led MSMEs have been able to successfully follow a 'hybrid' economic model meaning, two distinct legal entities: a for-profit and a nonprofit that operate in parallel. By keeping an arm's distance, this model effectively addresses, legitimises as well as operationalises commercial and impact goals. The 'Capital' component is crucial, securing various funding levels to enable producer companies to grow, become profitable, and self-sustain. Both Industree Foundation and Kadam Haat (second enterprise of this study) follow this capital machinery, making hybrid capital a powerful tool for sustainable economic development in rural communities.

Social Enterprise 2 - Kadam Haat: Redefining Circularity

Kadam Haat operates as a hybrid model, with Kadam, a not-for-profit organization founded in 2006, and Kadam Haat, a social enterprise launched in 2008 to market the products created by Kadam. This circular approach uses hybrid machinery to optimize funding and reinvestment in community mobilization, skills development, supply chain creation, governance, and market access, eventually transforming villages into entrepreneurial hubs. The blended capital model also serves as a buffer, such as through the creation of a material bank by Kadam to ensure a steady supply of wild grasses harvested seasonally from common village lands.

Circularity at Kadam Haat is achieved through relationship-building across social factions and genders, fostering community engagement and teamwork. Women make up 85% of the workforce, working alongside men (15%), ensuring equitable participation even in conservative societies (Fig 2). This collaborative approach extends across social groups, such as metalsmiths crafting basket frames and women coiling fibres, resulting in a critical social exchange. This collective, community- oriented production defines Kadam Haat's circular model.

Fig 2. Kadam Haat (no date) Natural Fibre artisan group.

Social Enterprise 3 - The Kishkinda Trust: Rural Development in a Heritage Setting

In 1998, Shama Pawar, founder of The Kishkinda Trust (TKT) established a banana fibre craft initiative in the historic settlement of Anegundi near a UNESCO world heritage site, Hampi in Karnataka (Fig 3). It was the original capital of the Vijayanagara Empire, dating back to the 14th century and earlier. Anegundi means the elephant pit in Kannada and it is believed that the royal elephants were bathed here.

Fig 3. Arial image of Anegundi village situated on the northern bank of river Tungabhadra, Karnataka.

A proponent of the potential of cultural industries and creative economies, Shama refers to her holistic model as 'Rural Development in a Heritage Setting.' The potential of cultural and creative industries leveraging creativity for territorial transformation, economic recognition and value creation in areas with UNESCO world heritage sites has been widely discussed since 1970s (Schröder et al., 2022, p. 55). The Kishkinda Trust can be understood as the activation of a dense and dynamic network of spatially bound factors–self-sufficient village economies, agriculture/horticulture, architecture, local skills, conservation, soil, cultural landscape and experience-in short, both tangible and intangible resources. A circular-design approach to assets can be observed in Anegundi today through the work of TKT, be it the refurbishment of neglected heritage via the architectural conservation of traditional vernacular houses, the revival of folk traditions or the promotion of responsible tourism.

Role of Bio-materials and Design in Driving Circular Economies

Traveling through the hinterlands and countryside of India reveals a diverse and ecologically significant landscape. Regions such as Uttar Pradesh in the north, Bihar and West Bengal in the east, Karnataka and Kerala in the south, and Assam and Manipur in the northeast, exhibit a variety of flora including wild grasses, banana groves, palm trees and bamboo plantations. These vegetative areas often adjoin barren lands, agricultural fields and wetlands (Fig 4).

Fig 4. Moonj grass growing on the edge of agricultural land in Hardoi district, Uttar Pradesh.

A variety of plant fibres such as banana, pineapple, sisal, hemp, coconut, palm, grasses, ramie, palm, cotton, nettle etc. are grown since olden times in different parts of the world. These fibres can be extracted from different parts of the plant such as the bark (banana, jute, hemp, ramie), stem (banana, palm, bamboo), leaf (palm, screw pine, sisal, agave), husk (coir), seeds (cotton), and grass (sikki, moonj). India is known for its natural fibre crafts worldwide. Each craft uses different types of grasses grown in different states (Natural Fibres, Craftmark, p. 2).

Fig 5. Toddy farmer making boat-like container (doppa) from Palm tree in Nalgonda, Telangana.

Region's micro-climate, material's sturdiness and pliability and human skills have also shaped creative solutions. Bamboo rain sheds of Assam, Tripura and Meghalaya are worn by farmers as headgear while fresh palm leaf is moulded into a boat-like container (doppa) for drinking toddy or palm wine extracted from the trees in Telangana (Fig 5). The bamboo rain shed hat, locally called jhappi, is adorned with red appliqued forms and transformed into a votive offering symbolizing a good harvest (Fig 6). These responses exemplify the resilience and ingenuity of the human spirit in harmonizing with nature.

Fig 6. Rituparno Dutta (no date) Jhappi, bamboo hat from Assam decorated with red appliqued forms.

This also reflects indigenous systems that inherently focus on closing the loop by designing out waste, maximizing resource use and aligning consumption with a deep-seated respect for nature. Social innovators are tapping system thinking to bring overlooked waste and latent materials to the forefront, emerging as sustainable alternatives to the synthetic materials that gained excessive favour after industrialization.

A. Banana Bark and Fibre

Industree: Banana bark, an agricultural byproduct generated after the harvesting of the fruit in the Indian states of Tamil Nadu, Karnataka, Andhra Pradesh etc. is typically disposed of through burning or landfilling, contributing to greenhouse gas emissions (GHGs). As a core component of 'Create' within Industree, R&D activities are conducted in laboratories to establish new product lines to utilise underutilised resources. Through backward integration, the organisation directly procures the banana bark from farmers and incorporates it into the production of basketry and handloom products. The bark is also twisted into ropes and used to craft a variety of woven products (Fig 7). Within the enterprise's training programs, eco-friendly items such as handcrafted home décor and storage solutions are developed. The development process involves product construction through lean manufacturing techniques – a combination of hand and machine and applying industrial design principles to enhance product quality and productivity.

Fig 7. Industree (no date) Woman artisan working with banana bark to make baskets.

The Kishkinda Trust: In terms of material identification, innovation and generating new value-creation loops, The Kishkinda Trust has created an immense impact with the banana fibre value chain. "Hampi has almost 1,000 women or 800 women who are doing banana fibre other than Kishkinda Trust. We created something, and a lot of people have taken to it, which is a compliment", says Shama in a virtual interview. Banana fibre, originally agro-waste, was introduced as a craft in Anegundi by The Kishkinda Trust (TKT), engaging first- and second-

generation women in the region. TKT recognized the potential of the banana tree trunk and added value to it for contemporary products like handbags, storage bins, and rugs, available on TKT's website and through ethical retailers like Powered by People. The first step was educating local farmers, assuring them that harvesting the dry trunk wouldn't harm the standing crop. Only the dried trunks are purchased, then dried, hand-twisted into ropes, and crafted into products—an entirely manual and costly process (Fig 8). Most product design and material R&D are done in-house, with lean machinery in development to improve cost efficiency and scalability. "It started because I didn't want my son to carry a plastic tiffin bag," says Shama, recalling the first banana fibre tiffin bag made in 1999. The products retain their natural beige colour without dyes.

B. Bamboo

Understanding innovation in bamboo requires examining the supportive domestic environment that benefits producers and craft-led MSMEs. The National Bamboo Mission (NBM), a Government of India initiative, emphasizes the holistic development of the bamboo sector, integrating both farming and product development. Despite bamboo's long-standing use in crafts like furniture, basketry, and housing, significant gaps exist in embedding bamboo into modern economic frameworks.

Fig 8. The Kishkinda Trust (no date) Women of Hari Dharti Rural Development Society (HDRDS), a producer cooperative instituted by The Kishkinda Trust working with Banana fibre.

Industree Foundation's 2020 initiative, POWER (Producer-Owned Women Enterprises), addresses these gaps through a climate-resilient, women-led project in Karnataka and Maharashtra. Supported by NBM and USAID, the project encourages marginal farm families to plant bamboo, enhancing their income while contributing to biosphere regeneration via permaculture practices. These efforts aim to establish India's first Forest Stewardship Council (FSC) certified bamboo plantations.

A key advancement is the establishment of the Bamboo Research Centre in Channapatna, Karnataka, functioning as a business and livelihood incubator. This centre facilitates the formation of collectives, providing end-to-end support from bamboo plantation to the global market. Additionally, Industree's Platform for Inclusive Entrepreneurship (PIE) is developing bamboo farm-to-product manuals as a collective common resource to fill the knowledge gap for aspiring farmers and producers, actioning the ethos of mutualism and generosity which are foundational to a regenerative practice.

The initiative reconnects indigenous communities with their traditional crafts through social innovation, supporting the socio-economic development of the Medhar community in Karnataka (Fig 9). This community, historically integral to the bamboo value chain due to their skills and techniques since 1200 AD, has faced challenges in gaining social and economic benefits due to a lack of resourceful initiatives. By recognising the inherent intelligence at all levels and reinforcing self- organization, Industree ensures that innovation can emerge organically, addressing the socio- economic gaps and promoting sustainable development within these communities.

Fig 9. Industree (no date) Bamboo plantations by small-land holding farmers part of Industree's POWER initiative.

C. Grasses (both wild and cultivated)

According to Payal Nath, co-founder of Kadam Haat (KH), India is home to 10 of the 12 global sub- species of grasses, and Kadam Haat works with nine of them, including bamboo. These grasses are regionally distributed: in West Bengal, artisans use sabai grass, sitalpati, madhur kathi, and shola pith; in Odisha, golden grass and sabai; in Uttar Pradesh, kansa and moonj grasses; in Kashmir, willow wicker; and in Bihar, sikki grass.

Payal Nath recalls that when she started her entrepreneurial venture two decades ago, she consciously chose to work with the most marginalized communities and overlooked materials. “Even now, the skill levels in communities working with natural fibres are not particularly strong. Traditional methods are often outdated, taking significant time without yielding proportional value. We break these barriers to make the craft relevant for today.” Kadam Haat has honed what it calls "process engineering" in natural fibres—breaking down processes to achieve optimal forms, sturdiness and functionality. Design and product development are ongoing, with approximately 600 designs created so far, 150 of which were featured on Kadam Haat’s website last financial year.

One example is Kadam Haat's bestselling sitalpati laptop sleeve, which showcases transformation design thinking at both the design and dye stages. Sitalpati, meaning ‘cool mat’ in Bengali, is traditionally made from locally grown reed in Cooch Behar, West Bengal. Known for its cooling effect and silken texture, achieved through the seamless plaiting of thin reed strips in a twill pattern, sitalpati mats are a craft of the Kayastha community, who cut the reeds using traditional tools.

Leveraged this traditional skill to create products involves resource mapping followed by building relationships with artisans, defining modern product requirements, adapting traditional techniques and iterating designs. The resulting laptop sleeve (Fig 10) features minimal aesthetics, sleek design, padding for cushioning and reed that complements temperature control—ideal for laptops. In a pioneering move, after much iteration two REACH-certified dyes (Registration, Evaluation, Authorization and Restriction of Chemicals) in black and blue have been perfected to deliver monochromatic and matte shades appealing to a cosmopolitan and conscious audience. The product is 100% eco-friendly and compostable, embodying the 'soil-to-soil' regenerative principle.

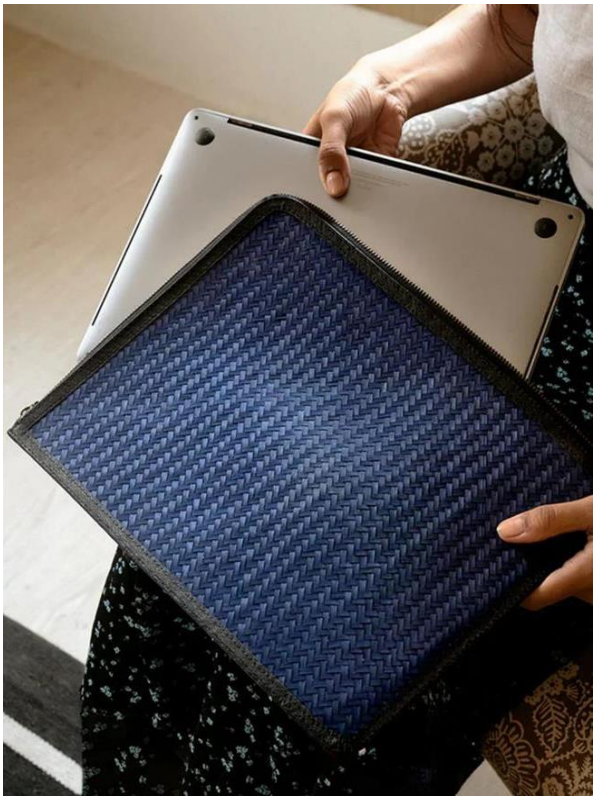

Fig 10. Kadam Haat (no date) Kadam Haat’s Sitalpati Laptop Sleeve.

Potential of Carbon Market

Carbon markets have emerged as an alternative source of mobilising resources for mitigating climate change. Within the handicraft sector, especially with natural fibres it can unlock new revenue streams for ethical grassroot producers plus contribute to global climate mitigation efforts. An extremely low- carbon production from farm to final product is a viable base for exploring the carbon market.

The materials in the value-chain discussed emphasis regenerative way of material cultivation, in both organised and unorganised ways. For example, while bamboo agriculture is moving towards cultivation in forest stewardship mechanisms, wild grasses grow in unattended land parcels, typically classified as 'wastelands.' However, these lands serve as village common lands and are recognized as potent carbon sinks within global environmental discourse. They grow in the wild requiring no fertiliser or planned irrigation system. These areas play a critical role in maintaining ecological balance and sequestering carbon through extensive root systems, which store carbon in the soil. Depending on the grass species significant amounts of carbon both above and below ground can be sequestered. Above ground, the biomass of wild grasses captures atmospheric carbon dioxide through photosynthesis, contributing to carbon sequestration. The extraction system employed by communities adheres to a no-tillage approach, preserving the root system, allowing the grasses to regenerate and maintain soil health, further enhancing their role in carbon sequestration and promoting ecological sustainability. Wild grasses can sequester up to 3 tons of carbon per hectare per year, depending on the species and environmental conditions (Bai, Y., & Cotrufo, M. F., 2022, p. 1058-1065). They can be an essential component in strategies promoting sustainable land management practices.

In India, the carbon credit market against banana fibre or wild grasses has not been explored as extensive funding for feasibility assessment as well as methodology creation against existing life cycle will be developed. In recent development, Varaha India, a decarbonization tech venture is exploring the carbon market through a project in Africa. The project is in inception stage, whose details are not out in public. If the pilot of successful, organisations with scalability can develop feasibility plans.

Bamboo also has impressive carbon sequestration credentials. On average, one hectare of bamboo can absorb approximately 17 metric tons of carbon dioxide per year. Industree has planted ~1,575 hectares of bamboo, sequestering ~26K tons of CO2 annually (Industree Annual Report, 2023, p. 9). These carbon offsets created through Industree's initiatives could potentially be monetized in the carbon market.

From Industrial Scaling to Ecological and Social Integration

In the 1990s, basketry in Moradabad, Uttar Pradesh, was industrialized, with raw materials transported to factories where production occurred in detached, ecologically indifferent environments—a hallmark of industrial progress. By challenging these conventional frameworks, social innovators and economic shapers such as Kadam Haat, Industree, and The Kishkinda Trust have pioneered a paradigm shift that integrates ecological and social dimensions into production. Their regenerative systems leverage heterogeneous, distributed biomass, creating a ripple effect that benefits even the most remote producers. This new approach signifies a revolutionary shift in how we can view the future of natural fibres, transforming traditional products like mats, stools, and baskets from local to refined domestic

and global markets. A key takeaway is the transition from vertical industrial scaling to a model of horizontal collectivization, which fosters socially responsible growth and redefines sustainable development pathways.

Benchmarks for International Market

Besides developing alternate ecosystems that can compete with industrial quality designs, the profiled organisations have played a crucial role in establishing benchmarking systems within the handicrafts sector that address multiple SDGs and have global applications. We have understood that Industree's 6C framework can serve as a comprehensive tool for enterprise building. Additionally, Industree has an emergent Equity, Climate and Gender (ECG) framework, tailored to the Global South, that has impacted 500,000 lives and facilitated over $58 million in market access, nurturing climate-positive local economies. The framework is adaptive and not evaluative in intent, allowing organizations to follow distinctive courses and is being offered to social innovators globally including the Catalyst 2030 (a global movement of social entrepreneurs with the common goal of creating innovative, people-centric approaches to attain the SDGs by 2030).

Organising and scaling resources at the bottom-up level for a compliant global value chain is Industree's vital contribution to India's decentralized crafts ecosystem. The company's bamboo and banana fibre products have regular markets with major global brands like IKEA, West Elm, H&M, Carrefour, Anthropologie etc. and funding for projects from World Bank Institute, Commonwealth Secretariat, UNDP, US Aid etc. (Fig 11). Through GreenKraft, Industree has collectivized nearly 4,000 women producers and farmers in Tamil Nadu, forming a scalable, compliant and traceable enterprise that significantly reduces its carbon footprint. Example, by localising economic activities, it has saved 247,860 kilograms of CO2 per year.

Fig 11. Industree (no date) Banana bark basketry for contemporary use.

With materials like grass, communities either restrict to natural shades of grass or dye them with bright market-available colours like pink, green, and red. The larger colour palette in natural fibre space relies on azo-free and chemical dyes, which can cut through the silica present in the wild grasses. However, for compliance and consumer trust, especially in the EU

market, REACH-certified dyes are crucial. Forerunners like Kadam Haat, who are constantly investing in R&D through dedicated dyeing labs can eventually contribute to formalising better practices and bringing systematic changes within the decentralised crafts sector, addressing environmental challenges as production scales up.

Indicators of Prosperity

Regenerative economic models enhance human potential by focusing on the possibilities inherent in human agency (Sanford 2021, p. 129). At the rural level, handicraft production not only mitigates rural-to-urban migration but also provides productive employment opportunities. For examples, as the profits are distributed among the entire team, rather than individual artisans, the collective approach enables artisans to invest in community projects, such as libraries or solar lamps, thus intertwining social empowerment with economic empowerment. For example, in the small village of Hardoi, Uttar Pradesh, 149 first-generation women artisans engaged in moonj basketry have experienced a profound sense of financial independence and empowerment, gaining a sense of agency and purpose previously unfamiliar to them. Similarly, market for roti (bread) box crafted by the Sabai cluster in Odisha has transformed lives, including that of 40-year-old Nirupama Jena, a mother of two who now leads the enterprise.

Production for Kadam Haat occurs in artisans' homes rather than factories, allowing women to work in a safe environment, surrounded by children and peers, after completing daily chores. This setup enables group work and training within their own spaces (Fig 12). Over the past decade, Kadam Haat has engaged 1,100 artisans directly, impacting approximately 5,000 in total.

Similarly, the Kishkinda Trust's transition from direct involvement to an ecosystem enabler emphasizes research, technology and incubation of new materials. The Hari Dharti Rural Development Society (HDRDS), a cooperative of 750 women, has gained full ownership and management, aiming for self-sufficiency and market expansion. This evolution reflects a shift towards fostering long-term sustainability and community empowerment.

Fig 12. Kadam Haat (no date) Community mapping and training exercise in Sabai cluster, West Bengal by Kadam Haat.

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